UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
S-6J

June 10, 2002

Bonnie Allyn Barnett
Drinker Biddle & Reath
One Logan Square
18th & Cherry Streets
Philadelphia, PA. 19103

US EPA RECORDS CENTER REGION 5
406977

Douglas K. Cowin, P.G.
Blasland, Bouck & Lee, Inc.
200 S. Wacker Drive
Chicago, IL 60606

Re: Request for Risk-Based Disposal Approval of PCB Remediation Waste from the Bryant Mill Pond Area

Dear Ms. Barnett and Mr. Cowin:

I am responding to the May 9, 2002 request of Blasland, Bouck & Lee, Inc. ("BB&L") for risk-based disposal approval pursuant to 40 C.F.R. § 761.61(c). I understand that subsequent to the conclusion of U. S. EPA's removal action at the Bryant Mill Pond area of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site (the "Site"), approximately 500 cubic yards of PCB-contaminated paper residuals were found to be located in the Bryant Mill Pond area. BB&L seeks approval to dispose of those residuals, some of which contain PCBs at concentrations exceeding 50 ppm, in a manner consistent with that taken by U.S. EPA during the removal action, *i.e.* in the area referred to as the Bryant FRDL #3. U.S. EPA understands that BB&L hopes to complete this work this summer.

Region 5's TSCA and Superfund programs have reviewed the materials submitted by BB&L with its request, as well as certain other relevant materials contained in the Administrative Record for the Bryant Mill Pond removal action. TSCA and Superfund agree that FRDL #3 is an appropriate disposal area for the additional contaminated residuals, and that disposal of these

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residuals in this area of the Site will not pose an unreasonable risk of injury to public health or the environment. Accordingly, Region 5 approves the May 9, 2002 request.

Although U.S. EPA expects that the disposal of these contaminated residuals in FRDL #3 will be consistent with the final remedy selected for the Allied OU, this risk-based disposal approval pertains only to the additional contaminated materials that BB&L will remove from the Bryant Mill Pond area, and not to the entire FRDL #3. U.S. EPA understands that Millennium Holdings is currently conducting an Interim Remedial Measure at the Bryant HRDL and FRDLs under the authority and supervision of the Michigan Department of Environmental Quality. U.S. EPA anticipates that Millennium Holdings will eventually seek risk-based disposal approval for the Bryant HRDL and FRDLs as part of the permanent remedy for the Allied OU.

Sincerely yours,

Wm. E. Muno

William E. Muno
Director, Superfund Division
Region 5 U.S. EPA

cc: John Connell (DT-8J)
Shari Kolak (SR-6J)
Eileen Furey (C-14J)
Paul Bucholtz (MDEQ)

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Transmitted Via FedEx

May 9, 2002

Mr. William E. Muno
USEPA Region 5
Superfund Division Director
77 W. Jackson Boulevard (S-6J)
Chicago, IL 60604-3507

Ms. Eileen L. Furey, Esq.
USEPA Region 5
Office of Regional Counsel
77 W. Jackson Boulevard (C-14J)
Chicago, IL 60604-3507

Re: Request for Risk-Based TSCA Disposal Approval
Allied Paper, Inc. Operable Unit
Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site
Project #: 645.60.009 #2

Dear Mr. Muno and Ms. Furey:

We write on behalf of Millennium Holdings LLC (MH) requesting Region 5 approval of a risk-based disposal of PCB-containing paper-making residuals (residuals) at the Allied Paper, Inc. Operable Unit (Allied OU) in Kalamazoo, Michigan.

During additional investigation activities at the Allied OU, paper-making residuals were discovered on the east bank of Portage Creek within the historical 790 feet above mean sea level contour that defined the limits of the 1998-1999 USEPA removal action. Isolated deposits of the residuals contain PCB at concentrations exceeding 50 milligrams per kilogram (mg/kg), the threshold above which TSCA potentially applies. The proposed work, which includes the disposal of 400-500 cubic yards of residuals into the area referred to as the Bryant Former Residuals Dewatering Lagoon (FRDL) #3, is not exempt from permitting requirements, and will necessitate approval by the USEPA. Attachment A presents a description of the proposed activity, and figures depicting the removal and disposal areas.

Approval is sought pursuant to the implementing regulations of TSCA, specifically 40 CFR§761.61(c). The proposed activity essentially would be a continuation of the removal action conducted by the USEPA, during which residuals and over-excavated soils were removed from the former Bryant Mill Pond and disposed in areas referred to as the Bryant Historic Residuals Dewatering Lagoon (HRDL) and FRDLs. The volume of residuals to be disposed corresponds to less than one-tenth of one percent (<0.1%) of the approximately 600,000 cubic yards of residuals already present in the Bryant HRDL and FRDLs. Further, the environment of the Bryant HRDL and FRDLs appears to be consistent with many of the desired conditions of a TSCA chemical waste landfill. The specifications for TSCA chemical

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waste landfills are identified in 40 CFR§761.75, which stipulates that they be constructed in areas that are underlain by a thick, relatively impermeable formation such as a clay pan, or a soil of particular geotechnical properties. The desired geotechnical properties are:

- Permeability equal to or less than $1x10^{-7}$ cm/sec;
- Greater than 30% liquid limit;
- Plasticity index greater than 15%;
- Greater than 30% soil passing No. 200 sieve; and
- In-place soil thickness of 4 feet, or a compacted liner thickness of 3 feet.

PCB-containing residuals were generated during the process of recycling waste paper. Additional details regarding the physical and chemical characteristics of the residuals, and the processes that produced them, are provided in the Administrative Record for the site, specifically the Revised Action Memorandum for the removal action (Ullrich, June 12, 1998) and the Final Report (Weston, January 2000). The residuals, which are composed principally of clay minerals and wood fiber, have a permeability that is estimated to range from $3.82x10^{-8}$ to $2.94x10^{-7}$ cm/sec (see Attachment B). The liquid limit of residuals samples collected at the site ranges from 110% to 225% (see geotechnical data summary in Attachment B). The plasticity index (i.e., the difference between the plastic limit and liquid limit) ranges from 39 to 69. No data are available on particle size analysis (sieve analysis) for the residuals. However, the residuals in the Bryant HRDL and FRDLs are up to 20 feet thick, which compares favorably with the 3- to 4-foot thickness requirement of a TSCA chemical waste soil or compacted clay liner. In short, the material is equally or more protective than a TSCA chemical waste landfill liner.

Information regarding the hydrostratigraphy of the site was submitted to Steve Johnson of the USEPA Waste, Pesticides & Toxics Division on November 4, 1998 (Attachment C). Although substantial additional data are now available to supplement the information presented in that submittal, the overall observations remain the same: a laterally extensive glacial till unit, as thick as 40 feet in some areas, underlies nearly all of the Bryant HRDL and FRDLs. This unit acts as a confining layer to groundwater present in strata immediately beneath the disposal areas.

An Interim Response Measure (IRM) is currently underway in the area of the Bryant HRDL and FRDLs to provide additional assurance of containment of the residuals. The IRM includes:

- Installation of approximately 2,600 linear feet of sealed-joint sheetpile in the perimeter berm along Portage Creek;
- Completion of a landfill cap over the Bryant HRDL and FRDLs, designed in accordance with the requirements of Michigan Act 451, Part 115 solid waste regulations. The cap design consists of a geosynthetic drainage composite (GDC), overlain by 12-inch thick (minimum) sand gas venting layer, overlain by a 30-mil polyvinyl chloride (PVC) flexible membrane liner, overlain by a second GDC layer, overlain by a minimum 24-inch thick soil protection layer, and overlain by a minimum 6-inch layer of topsoil with vegetative cover; and
- Installation and operation of a groundwater recovery system to mitigate groundwater mounding behind the sheetpile. The groundwater recovery system consists of two recovery wells, a series of horizontal recovery trenches that drain into five permanent sumps, and five temporary sumps.

Attachment D presents a map showing the IRM components.

The sheetpile was installed two years ago and the groundwater recovery system has been in operation for 1-½ years. The cap is 80% constructed, and we intend to complete it this summer after disposal of the additional material. Groundwater conditions are currently monitored at 62 locations in the Bryant HRDL and FRDLs area, and we intend to install seven additional perimeter wells this summer. These measures will mitigate the potential for PCB releases from the disposal areas, and provide a means to monitor groundwater conditions prior to and after disposal of the residuals.

Based on the characteristics of the residuals in the Bryant HRDL and FRDLs, the hydrostratigraphy of the site, and the understanding that the residuals would be capped during the IRM, it was the USEPA's judgment in 1998 that these were appropriate locations for the disposal of materials from the former Bryant Mill Pond, which likely would be consistent with the final remedy for the site. We request that the USEPA make a similar determination and approve this risk-based disposal activity.

We believe that this letter and its attachments satisfy the requirements of 40 CFR§761.61(c). Should you have any questions or want to discuss this issue further, please contact me at 312/674-4937.

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Doug Cowin/TLD

Douglas K. Cowin, P.G.
Associate

DKC/tld
Attachments

cc: Paul T. Bucholtz, MDEQ-ERD
Bradley T. Stimple, USEPA
Shari L. Kolak, USEPA
Bonnie A. Barnett, Esq., Drinker Biddle & Reath LLP
Joyce S. Schlesinger, P.E., ENVIRON
Mark P. Brown, Ph.D., BBL
Richard P. DiFiore, BBLES

Attachment A

Proposed Removal of East Bank Soils/Residuals Removal

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Attachment A: East Bank Soils/Residuals Removal

Isolated deposits of paper-making residuals (residuals) on the east bank of Portage Creek are to be removed and backfilled with clean fill, and the creek bank re-established and re-vegetated. Figure A-1 presents the layout of the proposed removal area.

The removal area is located within the area of the former Bryant Mill Pond that was addressed by the USEPA Removal action in 1998-1999 (within the historical 790 feet above mean sea level contour line). An estimated 400 cubic yards (cy) of residuals and soil that contain PCB at concentrations exceeding the USEPA cleanup goal of 1 milligram per kilogram (mg/kg) are present along an approximately 300-foot stretch of the east bank of Portage Creek (see Figure A-1). The target area is located on privately-owned land, to which access will be necessary through parcels owned by others. Access to the target area will also require that removal and hauling vehicles pass across a small ditch that leads to Portage Creek in this area. MDEQ approval of the Nationwide 38 permit for this activity is contingent upon the acquisition of signed agreements for access to these properties. Other administrative requirements include approval by the Kalamazoo County Office of the Drain Commissioner of a permit application for a Part 91 Soil Erosion and Sedimentation Control Program, and approval by the USEPA for on-site disposal of TSCA-regulated waste.

After clearing vegetation and debris, a 16-foot wide, nominal 6-inch thick temporary access road will be created extending from the Monarch HRDL to the target area. A culvert consisting of an approximately 20-foot long, 24-inch diameter corrugated steel pipe will be temporarily placed into the drainage ditch and covered with compacted gravel.

Erosion control measures will be used to mitigate the potential release of solids to Portage Creek. These measures will include the placement of silt fencing around the area of excavation, and double silt curtains within Portage Creek along the area of interest. Erosion controls will not be necessary at the disposal area because it is surrounded by containment berms, and will be capped after the removal action.

A small excavator will be used to remove the soil and residuals. Hauling trucks will transport the excavated materials to the designated disposal area. Gravel from the access road will be placed along the bank of the creek over a non-woven geotextile to stabilize the bank. The removed material will be transported to the Bryant FRDL for disposal beneath a Part 115-compliant landfill cap (see Figure A-1).

The bank of Portage Creek will be restored to its pre-removal state in order to maintain its original functions, which include flood storage, shoreline stabilization, and wildlife habitat. To facilitate restoration of the proper hydrologic functions, the excavated areas will be backfilled with an approximately equal volume of certified clean fill with drainage characteristics similar to the original soil. Proper care will be taken when filling excavated areas to minimize over-compaction of the fill material. Areas where the ground surface lies above the 100-year floodplain will be covered with a minimum 6-inches of topsoil, and will be seeded and re-planted to promote re-vegetation. The remaining disturbed areas will be seeded as soon as practical after removal with a mixture of hydrophytic species that are quickly-colonizing and representative of local areas. Erosion control measures will remain at the excavation area until vegetation is re-established.

Verification samples will be collected of the excavated areas using a biased sampling approach similar to that used for the soil removal in the perimeter soils area. Soil samples will be sent to the project laboratory, Severn-Trent Laboratory of Colchester Vermont, for PCB analysis by USEPA SW-846 Method 8082.

Attachment B

Residuals Permeability Calculations

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TABLE B-2

ALLIED PAPER, INC. /PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

ALLIED PAPER, INC. OPERABLE UNIT GEOTECHNICAL ANALYTICAL RESULTS OF RESIDUALS SAMPLES

Boring	Depth (feet)	Average Depth (feet)	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Specific Gravity	Organic Content (%)	Dry Unit Weight (pcf)	Avg. Total Unit Wt. (pcf)	Cc/ $1 + e_0$	Water/ Organic Content
MW-22B	8-10		73.5	110.0	56.0		24.5				
DLHB-1	4-5		232.0			2.33	35.3				
DLHB-4	0-2		19.2			2.32	2.3				
	4-6		17.1			2.62	1.5				
MLSS-2	6-8		317.0			1.83	59.5				
	8-10		325.0				48.2				
	12-14		233.0			1.62	54.4				
MLSS-3	2-4		449.0			1.69	58.6				
	10-12		315.0				50.7				
	12-14		268.0			1.84	47.8				
H1-1	2-3	2.5	308.0				61.1				5.0
H1-3	6-7	6.5	244.0	225.0	157.0	1.99	48.6				5.0
H1-4	9-11	10.0	230.0				48.5				4.7
H3-1	2-3	2.5	245.0				42.0				5.8
H3-3	6-7	6.5	269.0				52.9				5.1
H3-4	9-11	10.0	206.0	185.0	136.0	1.23	44 8				4 6
H6-1	2-3	2.5	307.0				49.6				6.2
H1-2	3-5	4.0							76.5		
	3.9-4	4.0	173 0				17.7				9.8
	4.1-4.2	4.2	127.0					32.1		0.23	
H1-4	9-11	10.0							81.3		
	9.5-9.7	9.6	227.0				43.5				5.2
	10-10.1	10.1	173.0					27.2		0.28	
	10.1-10.9	10.5									
H3-2	4-6	5.0							86.0	0.33	
	4.2-4.3	4.3	248.0								
	4.3-4.4	4.4	228.0				50.2				4.5
H3-5	9-11	10.0							77.8	0.35	
	9.1-9.2	9.2	230.0								
	9.5-9.6	9.6	220.0								
	9.6-9.7	9.7	240.0								
	9.7-9.9	9.8	234.0				53.1				4.4
	10-10.1	10.1	195.0								
H6-2	3-5	4.0							74 8	0.23	
	3.1-3.2	3.2	220.0								
	3.3-3.4	3.4	181.0				39.9				4.5
	3.4-3.5	3.5	149.0					32.7			
	3.7	3.7	84.7								
H6-3	12-14	13.0							87.2	0.27	
	12.1-12.2	12.2	224.0								
	12.4-12.5	12.5	198.0				39.0				5 1
	12.5-12.6	12.6	196.0					26.0			
	12.8-12.9	12.9	205.0								
F2-1-1	2-3	2.5	236.0	152.0	113.0	1.41	36.0				6.6
F5-1-1	2-3	2.5	101.0	140.0	71.0	2.09	13.4				7.5
F5-3-1	2-3	2.5	347.0				45.0				7.7
F5-3-3	6-7	6.5	240.0				43.7				5.5
F5-3-4	9-11	10.0	178.0				40.7				4.4
F5-1-2	3-5	4.0							67.8		
	3.4	3.4	280.0								
	3.6-3.7	3.7	251.0					20.8		0.32	
	3.7-3.8	3.8	235.0				53.4				4.4
	3.8-3.9	3.9	240.0								
	4.3-4.4	4.4	267.0								
F5-1-3	8-10	9.0							77.0		
	8.3	8.3	224.0								
	8.7-8.8	8.8	193.0								
	8.9-9	9.0	153.0					30.6		0.24	
	9-9.1	9.1	173.0				42.0				4.1
	9.1-9.2	9.2	184.0								
F5-3-2	7-9	8.0							69.6		
	7.8-7.9	7.9	257.0				36.0				7.1
	7.9-8	8.0	233.0					21.6		0.32	
F5-3-5	9.7-11.7	10.7							69.0		
	10.3-10.4	10.4	258.0					19.4		0.37	
	10.5-10.6	10.6	206.0				18.2				11.3
	10.6-11.6	11.1									

Attachment C

Site Hydrostratigraphic Information

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engineers & scientists

Transmitted via FedEx

November 4, 1998

Steve M. Johnson
U.S. Environmental Protection Agency
DRT-14J
77 West Jackson Boulevard
Chicago, IL 60604-3590

Scott D. Cornelius
MDEQ-ERD
Superfund Section
301 S. Capital Avenue
Lansing, MI 48933

Re: Allied Paper, Inc. Operable Unit
Supplemental Evaluation of the Middle/Upper-Middle Clay Unit
Project #: 645.51.017 #2

Dear Steve:

Based upon your recommendation at the July 30, 1998 meeting between representatives of the U.S. Environmental Protection Agency (USEPA), Michigan Department of Environmental Quality (MDEQ) and Millennium Holdings, Inc., Blasland, Bouck & Lee, Inc. (BBL) has conducted a Supplemental Evaluation of the geology at the Allied Paper, Inc. Operable (OU) in Kalamazoo, Michigan. The available information regarding the subsurface geology was reviewed specifically to assess the lateral extent of the middle/upper-middle clay unit observed at the OU. The previous interpretation of this clay unit prepared in association with the Remedial Investigation of this OU presented a very conservative estimate of the potential extent of the clay based on the MDEQ's assumption that the clay unit is discontinuous wherever insufficient data exists to demonstrate that it is continuous (BBL Technical Memorandum #7, August 1997). This Supplemental Evaluation seeks to assess whether the clay may be continuous across most, if not all, of the OU.

The middle/upper-middle clay unit appears to act as a confining unit between upper and lower water-bearing units across much of the OU. However, the previous interpretation conservatively assumed that if data was not present or not available, that the clay unit was not present. In this Supplemental Evaluation, existing data were further evaluated for locations where the clay unit was assumed not present to determine the nature of the data gaps and whether the middle/upper-middle clay unit could exist. Existing data included the interpreted clay unit elevations and the existing network of soil boring logs at the site.

Procedures

The activities performed in connection with the Supplemental Evaluation involved reviewing all of the soil boring and monitoring well logs where clay was presumed to be absent. There was a total of 50 boreholes where clay was assumed to be absent. In addition, the presence of clay on a representative set of logs previously reported to contain the clay unit also was verified. Information obtained from these logs relevant

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to this evaluation included the total boring depth elevations, soil sample interval, date of soil boring, and observations relative to the presence or absence of the clay unit. Copies of the 50 boring logs reviewed for the Supplemental Evaluation are provided in Attachment A. The data tabulation for each boring log is provided in Table 1.

Results

Based on the above described re-evaluation, we found that in 19 of the 50 borings (DLHB-5, GEO-1, MA-2, MA-3, MA-5, MW-2, MW-2S, MW-21, MW-25, MW-113A, MW-114, P-2, SB-510, SB-2012, SB-A, SB-D, SB-H, TW-2, and WA-7) clay was reported on the log, but this information was not shown on the existing map. Table 2 presents a summary of the soil classifications from the boring log at the elevation of the units where clay was reported on the logs but not incorporated into the previous interpretation on maps in Technical Memorandum #7.

An additional ten soil borings in which clay had not been reported were not continuously sampled, but sampled at 5-foot intervals. Therefore, it is possible that the middle/upper-middle clay unit may have been present, but overlooked at these locations including: MW-9, MW-12, MW-18, MW-23, MW-125A, SB-2010, SB-2011, SB-2014, SB-F, and SB-G. Finally, another 15 of the borings in which the clay unit was not observed did not extend deep enough to penetrate the clay unit, based on the known and interpreted clay unit elevations. These borings include BLHB-3, DLHB-6, MA-1, MA-4, MLHB-1, MLHB-2, MLSS-1, MLSS-2, MLSS-3, MW-6, MW-113A, TW-1, WA-2, WA-3, and WA-4. Of the 50 logs, only five borings (BMP-3, MLSS-4, MLSS-5, MW-12R, and MW-125B) were continuously sampled and clay was not detected.

Soil borings where the presence of the clay unit was confirmed indicate that the previous interpretation of the clay unit as discontinuous within the site should be revised. Additionally, the presence or absence of the clay is still unknown in areas where the borings are too shallow or the soil sampling was not continuous. This suggests that the clay unit may extend beyond the previously interpreted extent.

A revised middle/upper-middle clay elevation map (Figure 1) and three revised geologic cross-sections (Figures 3, 4, and 5) have been prepared illustrating a reinterpretation of this clay unit. Based on a reevaluation of the clay elevations, much of the central portion of the OU appears to be underlain by the clay unit (Figure 1), and BBL believes that a more continuous clay unit exists beneath most of the OU than conservatively had been estimated in the previous investigation. Figure 1 identifies those soil borings that contained clay at the elevation expected for the middle/upper-middle clay unit. Figure 1 also identifies those soil borings that are too shallow to encounter the clay and those soil borings that were not continuously sampled.

The cross-section plan for the revised geologic cross-sections is presented on Figure 2. The reevaluated and revised geologic cross-section A-A' (Figure 3) illustrates the expanded lateral extent of the middle/upper-middle clay unit based on this reinterpretation. Soil boring DLHB-3 was too shallow to have intercepted the clay unit, but SB-502 clearly shows the clay unit along the trajectory indicated from the earlier version. Also, the southern portion of this cross-section, where the unit is described as peat, is actually peat grading into clay. This also supports an interpretation of the clay unit as extending further to the northwest.

The reevaluated and revised geologic cross-section C-C' (Figure 4) illustrates the potential continuity of the clay unit across the area beneath the FRDLs. The soil boring drilled for monitoring well MW-25 encountered approximately 3 feet of clay at the base of the borehole according to the log, as did the DLHB-5 boring, which has approximately one foot of clay when projected onto the cross-section. The presence of clay in these logs extends the interpreted continuity of middle clay unit to the approximate extent of the cross-section.

Modified geologic cross-section G-G' (Figure 5) suggests the potential for greater continuity of the clay unit within the southwestern corner of the OU. The soil boring log for WA-7 indicates the presence of clay at the base of the boring. This extends the clay unit to the south. The upper surface of the clay unit at this point can be projected to MW-9, although no clay was noted in the log for this location. This could be due to the discontinuous sampling at MW-9 or the removal of original material via erosion at this location, which has been subsequently replaced by fill.

Conclusions

This evaluation shows that the middle/upper clay unit is more continuous and laterally extensive than previously had been reported. The clay unit appears to extend beneath most of the Bryant side of the OU (including the HRDL and FRDLs), and beneath portions of Portage Creek.

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Doug Cowin/ccm

Douglas K. Cowin, P.G.
Manager

Enclosures

DKC/tla
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cc: Bonnie A. Barnett, Esq., Drinker Biddle & Reath LLP
Joyce S. Schlesinger, P.E., ENVIRON
Gregory W. Peterson, LTI-LimnoTech, Inc.
Mark P. Brown, Ph.D., Blasland, Bouck & Lee, Inc.

Table 1

Summary of Relevant Soil Boring Information

Kalamazoo, Michigan
Allied Paper Inc. OU

Monitoring Well/Soil Boring	Date Installed	Date Boring Log Revised	By	Sample Interval	Depth of Boring	Elevation at Base of Borehole	Comments
DLHB-5	07/22/93		PW	2 feet - continuous	8	785.1	grades with clay at 786 feet
FLF-1	08/17/93		PW	2 feet - continuous	8	786.5	not deep enough to encounter clay unit, if present
GEO-1	08/13/93		PW	2 feet - continuous	50	760.3	top of clay at 805.5 feet
MA-2	08/03/93		BBL	1.5 feet - continuous	4.5	781.3	top of clay at 785.8 feet
MA-3	08/03/93		BBL	1.5 feet - continuous	4.5	782.9	top of clay at 787.4 feet
MA-5	08/03/93		BBL	1.5 feet - continuous	4.5	781.9	top of clay at 786 feet
MW-2	12/01/81	11/30/91	WW	5 feet and 2 feet	18.5	772.92	top of clay/organic matter at 785.42 feet
MW-2S	08/17/93		PW	2 feet	8	780.8	peat grades with clay at 785 feet
MW-21	07/21/89	12/01/91	LTI	5 feet and 2 feet	15.5	787.6	top of clay at 790.6 feet
MW-25	07/25/89	12/01/91	LTI	5 feet and 2 feet	30.5	776	top of clay at 779.5 feet
MW-113A	07/28/89	12/01/91	LTI	5 feet and 2 feet	32.5	766	top of clay at 768 feet - possibly lower clay unit
MW-114	07/27/89	12/01/91	LTI	5 feet and 2 feet	43	751.8	top of clay at 753 feet
P-2	08/10/93		PW	2 feet - continuous	20	787.3	top of clay at 792 feet
SB-510	11/21/89	12/02/91	LTI	5 feet and 2 feet	25.5	781	one foot of clay at 782.5 feet
SB-2012	11/20/89	12/03/91	LTI	5 feet and 2 feet	35.5	757	banded clay starting at 770.5 feet
SB-A	05/02/88	11/27/91	WW	5 feet and 2 feet	28	793.3	top of clay at 787 feet
SB-D	05/04/88	11/27/91	WW	5 feet and 2 feet	40	772.67	thin fingers of clay starting at 779 feet - possibly lower clay unit
SB-H	05/09/88	11/27/91	WW	5 feet and 2 feet	35	782.52	top of clay at 785.52 feet
TW-2	10/18/98	12/01/91	PM	unknown	39	762	top of clay at 762 feet
WA-7	08/05/93		PW	2 feet - continuous	24	794.8	trace clay at bottom of borehole
MW-9	11/07/85	11/30/91	WW	5 feet and 2 feet	20	780.3	no clay present, but discontinuous sampling
MW-12	11/07/85	12/01/91	WW	5 feet and 2 feet	50	756.8	no clay present, but discontinuous sampling
MW-18	06/24/88	12/01/91	WW	5 feet and 2 feet	45	747.24	no clay present, but discontinuous sampling
MW-23	07/24/89	12/01/91	LTI	5 feet and 2 feet	30.5	780.6	no clay present, but discontinuous sampling
MW-125A	07/22/93		PW	unknown	25	782.7	no clay present - fill at anticipated clay elevation
SB-2010	11/08/89	12/02/91	LTI	5 feet and 2 feet	25.5	771.95	no clay present, but discontinuous sampling
SB-2011	11/08/89	12/03/91	LTI	5 feet and 2 feet	25.5	767.6	no clay present, but discontinuous sampling
SB-2014	11/20-21/89	12/02/91	LTI	5 feet and 2 feet	40.5	752.5	no clay present, but discontinuous sampling
SB-F	05/05/88	11/27/91	WW	5 feet and 2 feet	35	770.06	no clay present, but discontinuous sampling
SB-G	05/06/88	11/27/91	WW	5 feet and 2 feet	40	772.47	no clay present, but discontinuous sampling
BLHB-3	09/23/93		BBL	0.5 foot - continuous	5.5	796.7	not deep enough to encounter clay unit, if present
DLHB-6	07/26/93		PW	2 feet - continuous	14	784	not deep enough to encounter clay unit, if present
MA-1	08/03/93		BBL	2 feet - continuous	4.5	789.3	not deep enough to encounter clay unit, if present
MA-4	08/03/93		BBL	2 feet - continuous	4.5	786.5	not deep enough to encounter clay unit, if present
MLHB-1	09/23/93		BBL	1 foot	1	798.1	not deep enough to encounter clay unit, if present
MLHB-2	09/23/93		BBL	2 feet - continuous	2	808.2	not deep enough to encounter clay unit, if present
MLSS-1	07/23/93		PW	2 feet - continuous	18	786.4	not deep enough to encounter clay unit, if present
MLSS-2	07/21/93		PW	2 feet - continuous	24	784.7	not deep enough to encounter clay unit, if present
MLSS-3	07/21/93		PW	2 feet - continuous	22	787.1	not deep enough to encounter clay unit, if present
MW-6	11/06/85	11/30/91	WW	5 feet and 2 feet	25	785.7	not deep enough to encounter clay unit, if present
MW-113B	07/28/89	12/01/91	LTI	5 feet and 2 feet	15	780	not deep enough to encounter clay unit, if present
TW-1	10/04/89	12/02/91	PM	unknown	30	768.1	not deep enough to encounter clay unit, if present
WA-2	08/09/93		PW	2 feet - continuous	18	796	not deep enough to encounter clay unit, if present
WA-3	08/09/93		PW	2 feet - continuous	18	799.6	not deep enough to encounter clay unit, if present
WA-4	08/09/93		PW	2 feet - continuous	12	808.4	not deep enough to encounter clay unit, if present
BMP-3	07/29/93		PW	1 foot - continuous	8	773.5	no clay present - fill at anticipated clay elevation
MLSS-4	07/20/93		PW	2 feet - continuous	22	786.5	no clay present
MLSS-5	07/20/93		PW	2 feet - continuous	26	779.8	no clay present - fill at anticipated clay elevation
MW-12R	08/19/93		PW	2 feet - continuous	41.5	764.7	no clay present
MW-125B	07/21/93		PW	2 feet- continuous	54	753.6	no clay present - fill at anticipated clay elevation

Notes:

BBL = Blasland, Bouck & Lee
LTI = Limno-Tech, Inc.
PM = Peerless-Midwest, Inc.
PW = Parratt-Wolff
WW = Wilkins & Wheaton

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Table 2

Kalamazoo, Michigan
Allied Paper, Inc., OU

Clay Unit Descriptions in Borings

Monitoring Well/Soil Boring	Description of Clay Unit*	Driller
DLHB-5	Medium sand and gravel, grades with clay	PW
GEO-1	Clay seams in fine-to-medium sand	PW
MA-2	Clay, some organic matter (peat)	BBL
MA-3	Clay, some organic matter (peat)	BBL
MA-5	Organic matter and clay (peat)	BBL
MW-2	Clay - organic matter. Trace sand and fine gravel	WW
MW-2S	Peat grades with clay	WW
MW-21	Silty clay with little fine sand	LTI
MW-25	Silty clay with some sand and trace gravel	LTI
MW-113A	Silty clay	LTI
MW-114	Silty clay with some sand	LTI
P-2	Silt and clay	PW
SB-510	Gravelly clay	LTI
SB-2012	Banded clay with fine-silty sand	LTI
SB-A	Organic clay	WW
SB-D	Silty clay	WW
SB-H	Silty clay with silt seams	WW
TW-2	Clay and gravel	PM
WA-7	Trace clay in fine sand	PW

Notes:

* May represent differences in interpretation by various geologists and/or drillers.
LTI = Limno-Tech, Inc.
PM = Peerless-Midwest, Inc.
PW = Parratt-Wolff
WW = Wilkins & Wheaton

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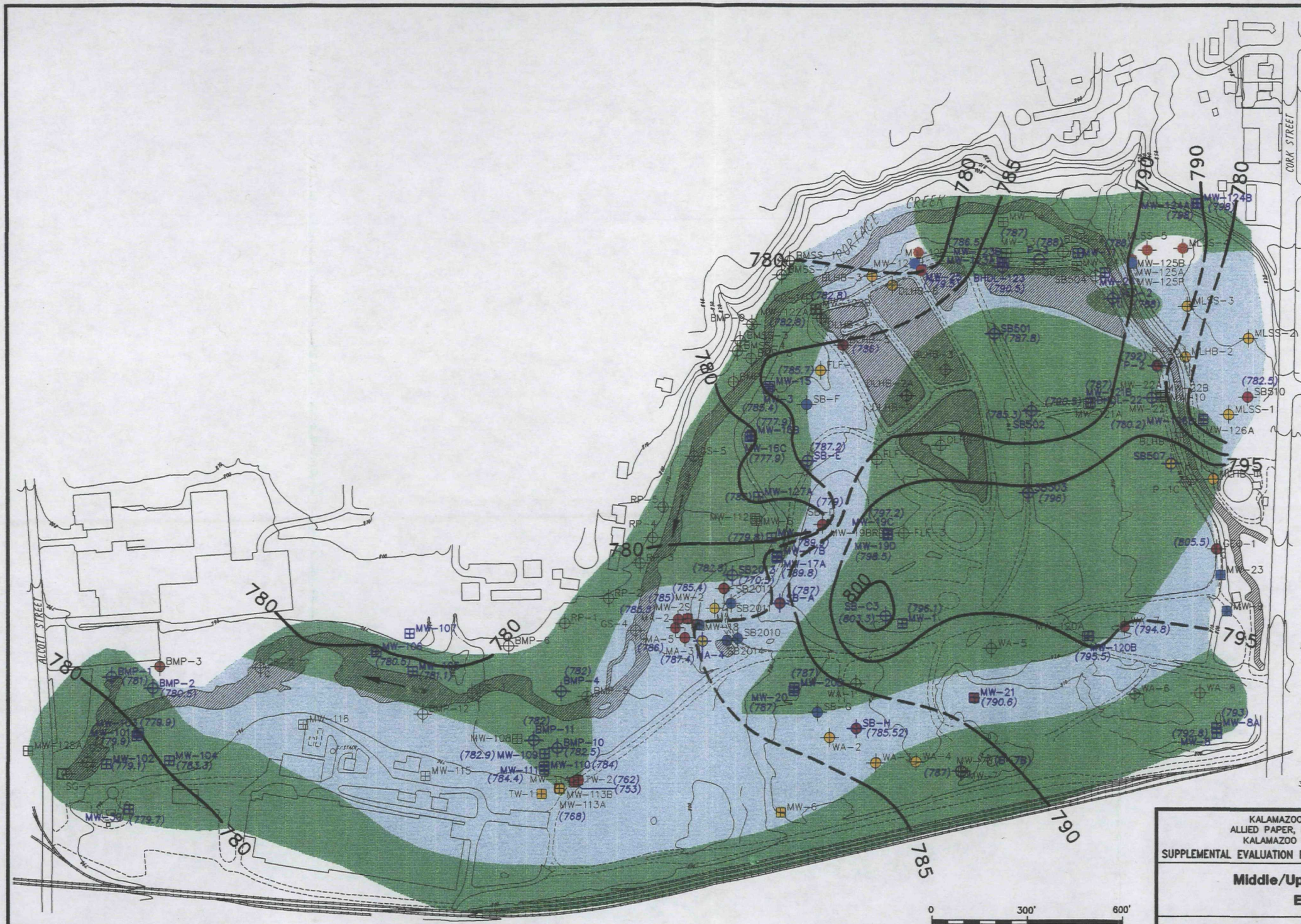
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ALCOTT STREET
CREEK
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785
790
795
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MW-125B
MW-125A
MW-125R
MW-124B
MW-126A
MW-120B
MW-21
MW-23
MW-8A
MW-20
MW-19C
MW-19D
MW-17A
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BMP-11
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SB502
SB507
SB310
SB-C3
SB-H
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SB-E
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SB2010
SB2011
SB2014
MLSS-1
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MLSS-3
MLHB-2
MLHB-3
BLHB-3
DLHB-3
BMSS-1
BMSS-4
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MW-112
MW-122A
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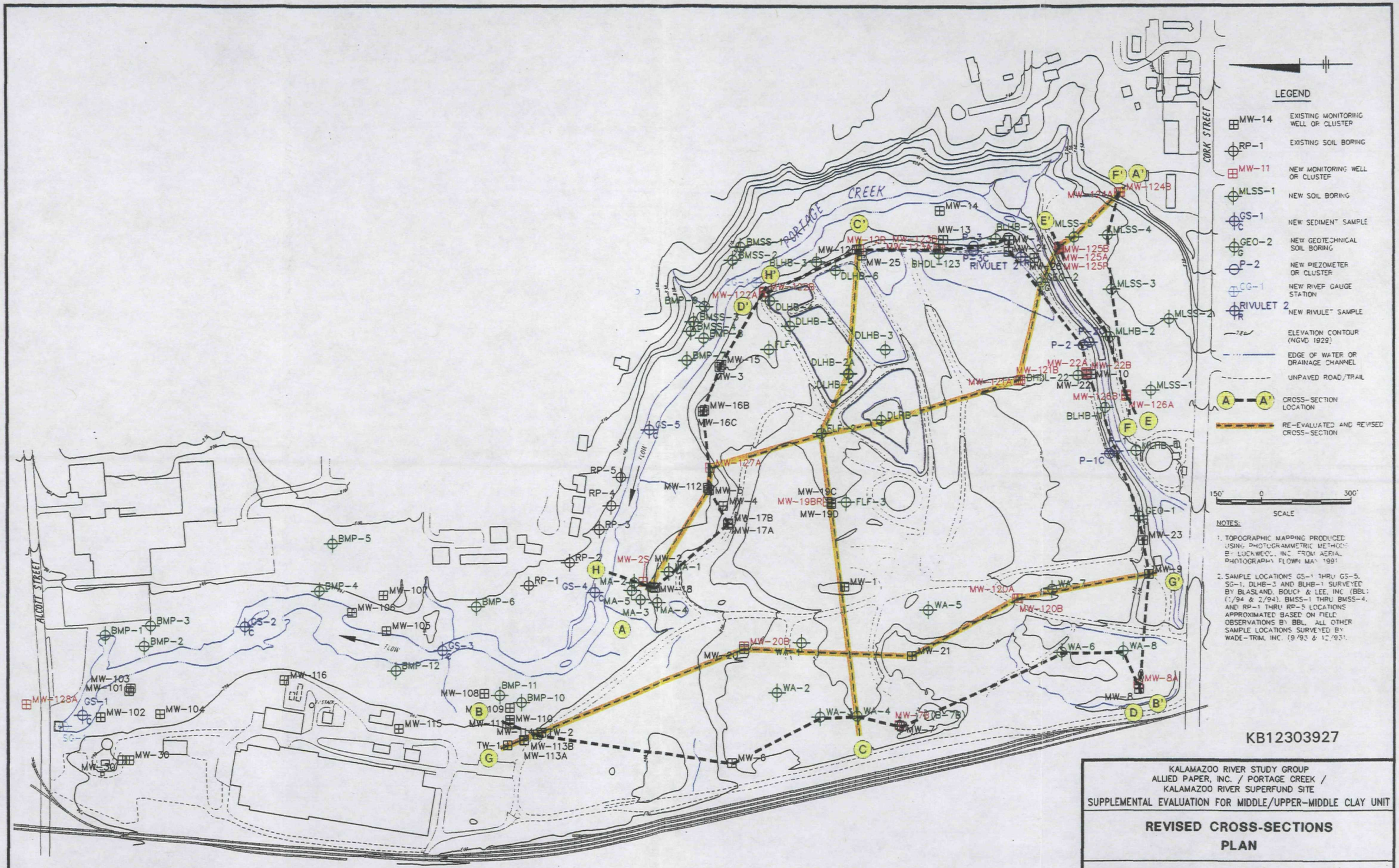


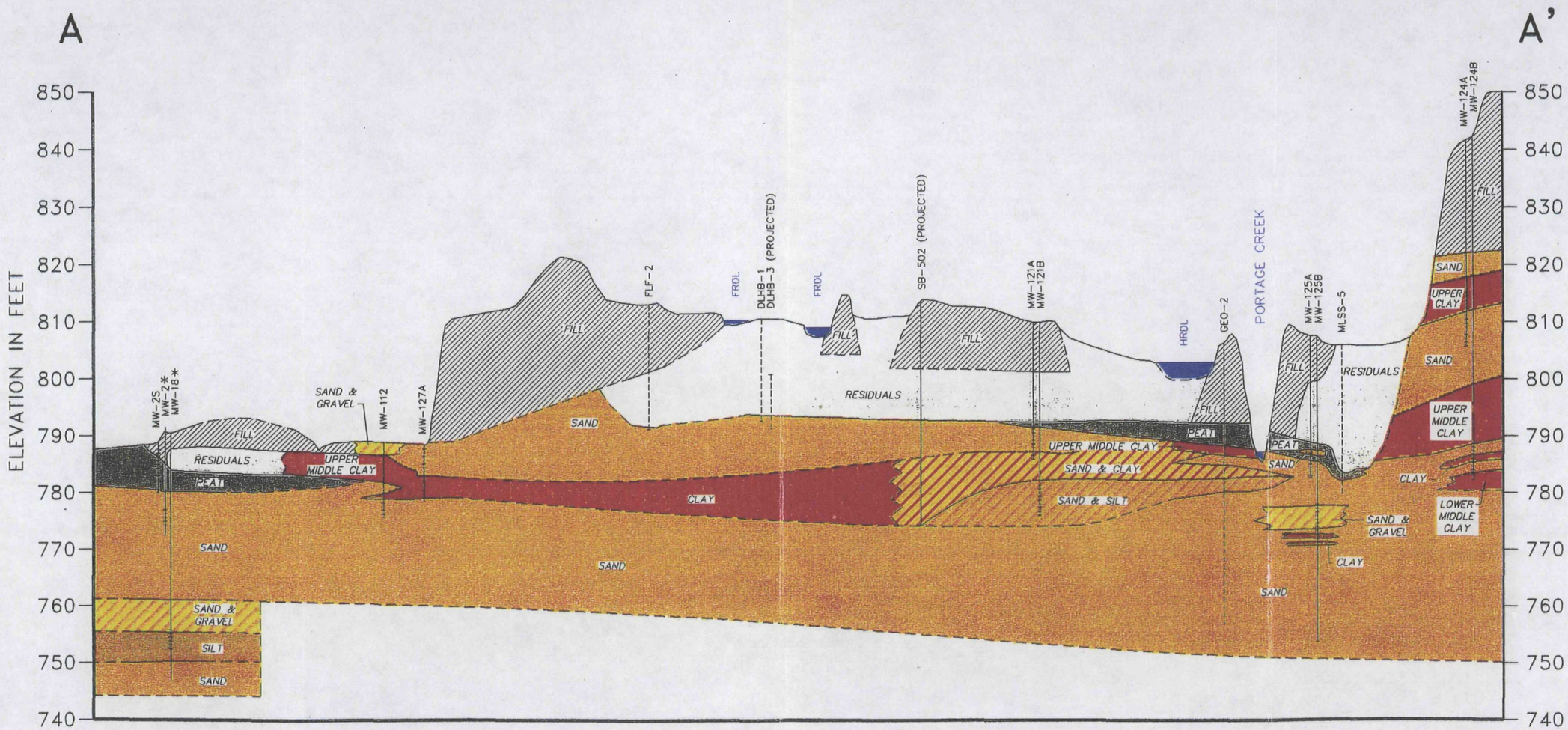
KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC. / PORTAGE CREEK /
KALAMAZOO RIVER SUPERFUND SITE
SUPPLEMENTAL EVALUATION FOR MIDDLE/UPPER-MIDDLE CLAY UNIT

REVISED CROSS-SECTIONS PLAN

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 2

L:ON=*, OFF=REF
9/29/98 54-RLP,NES,PGL X: 64551X12.DWG (1995)
64551500\64551G07.DWG P: DJ-B.PCP, CI-FY-B.PCP (FIERY)



LEGEND

FLF-2 — BORING/WELL NUMBER

MW-121A — MONITORING WELL

SOIL BORING

*NOT CONTINUOUSLY SAMPLED AT 5 FOOT INTERVALS

SCREENED INTERVAL

BOTTOM OF BORING

RESIDUALS
FILL
PEAT
CLAY
SILT
SAND
GRAVEL

NOTES:

1. SURFACE-WATER ELEVATIONS ARE APPROXIMATE.
2. DASHED LINES BETWEEN UNITS REPRESENT INFERRED BOUNDARIES.
3. SURFACE ELEVATIONS FROM TOPOGRAPHIC MAPPING BY LOCKWOOD, INC.

10' 0 10' 20'
VERTICAL SCALE:

100' 0 100' 200'
HORIZONTAL SCALE:

KB12303928

KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC. / PORTAGE CREEK /
KALAMAZOO RIVER SUPERFUND SITE

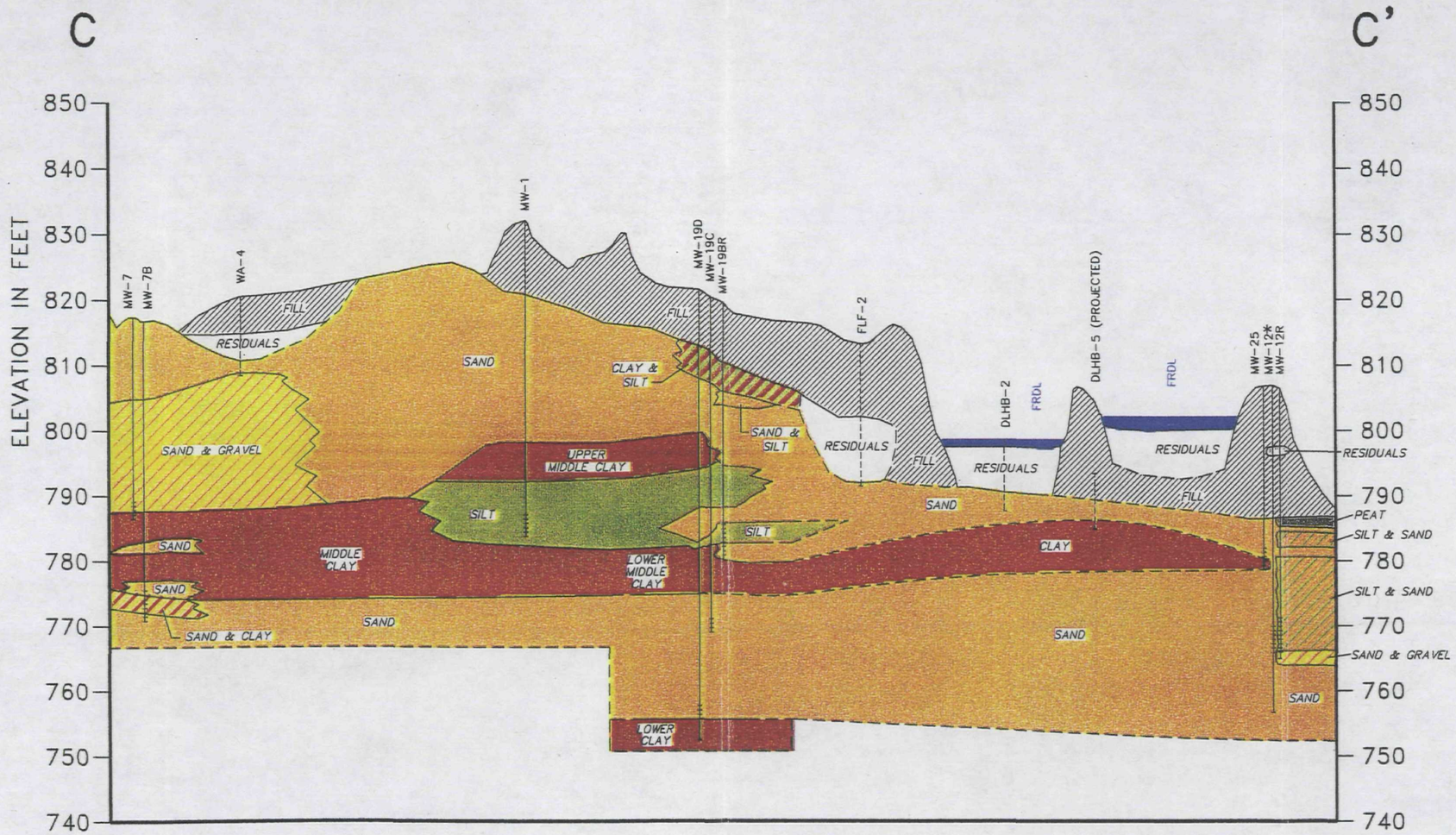
SUPPLEMENTAL EVALUATION FOR MIDDLE/UPPER-MIDDLE CLAY UNIT

RE-EVALUATED AND REVISED GEOLOGIC CROSS-SECTION A-A'

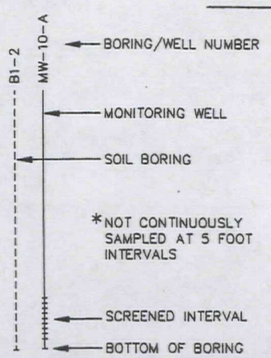
BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 3

CSA.PCP
9/29/98 SYR-54-DMW.PGL
64551402\64551CSA.DWG



LEGEND



- RESIDUALS
- FILL
- PEAT
- CLAY
- SILT
- SAND
- GRAVEL

NOTES:

1. SURFACE-WATER ELEVATIONS ARE APPROXIMATE.
2. DASHED LINES BETWEEN UNITS REPRESENT INFERRED BOUNDARIES.
3. SURFACE ELEVATIONS FROM TOPOGRAPHIC MAPPING BY LOCKWOOD, INC.

10' 0 10' 20'
VERTICAL SCALE:

100' 0 100' 200'
HORIZONTAL SCALE:

KB12303929

KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC. / PORTAGE CREEK /
KALAMAZOO RIVER SUPERFUND SITE

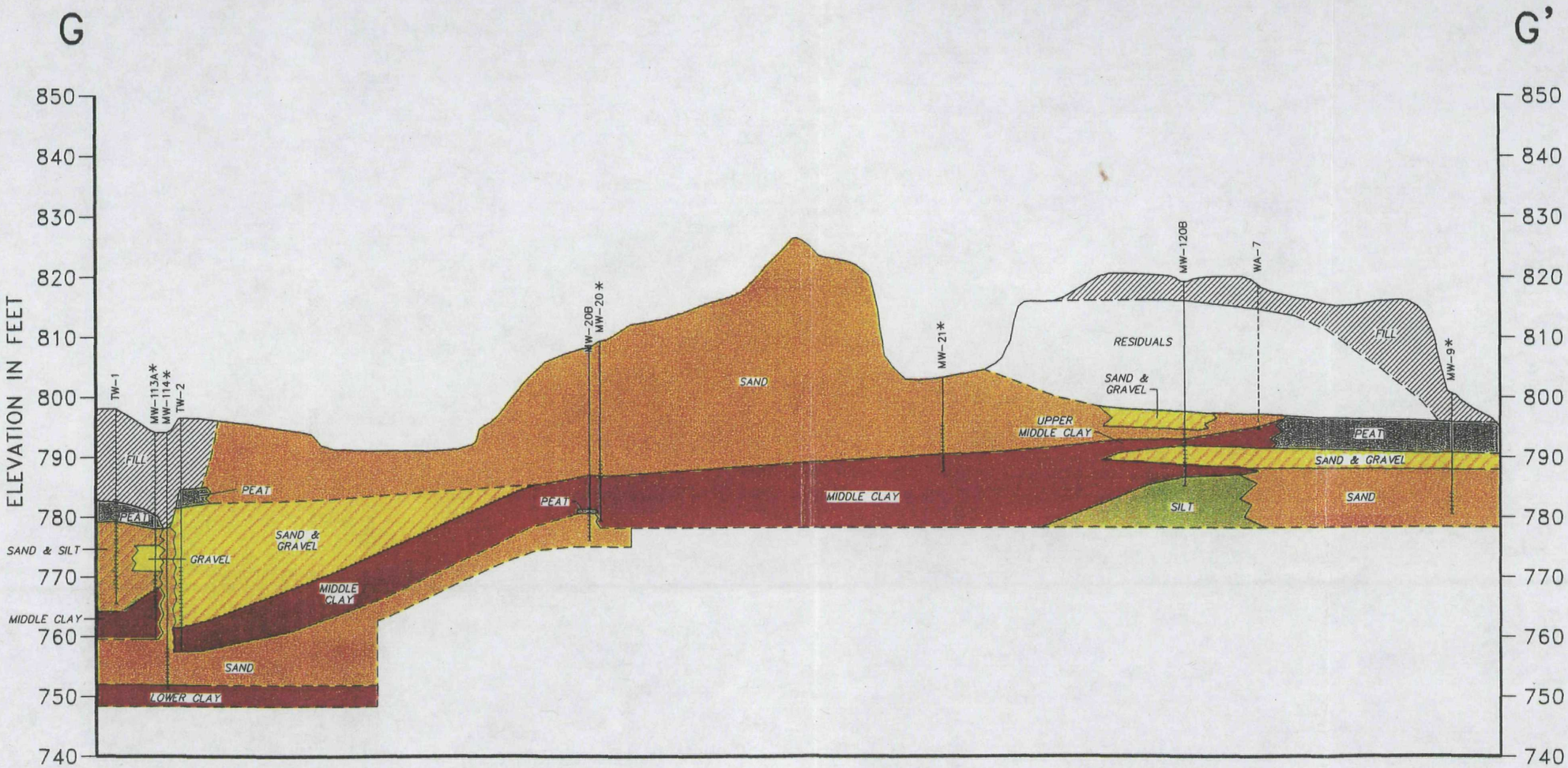
SUPPLEMENTAL EVALUATION FOR MIDDLE/UPPER-MIDDLE CLAY UNIT

RE-EVALUATED AND REVISED GEOLOGIC CROSS-SECTION C-C'

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 4

CSA.PCP (FIERY17)
9/29/98 SYR-34-DMW.PGL
64551402/64551CSC.DWG



LEGEND

- BORING/WELL NUMBER (B1-2)
- MONITORING WELL (MW-114)
- SOIL BORING
- *NOT CONTINUOUSLY SAMPLED AT 5 FOOT INTERVALS
- SCREENED INTERVAL
- BOTTOM OF BORING

- RESIDUALS
- FILL
- PEAT
- CLAY
- SILT
- SAND
- GRAVEL

NOTES:

1. DASHED LINES BETWEEN UNITS REPRESENT INFERRED BOUNDARIES.
2. SURFACE ELEVATIONS FROM TOPOGRAPHIC MAPPING BY LOCKWOOD, INC.

10' 0 10' 20'
VERTICAL SCALE:

100' 0 100' 200'
HORIZONTAL SCALE:

KB12303930

KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC. / PORTAGE CREEK /
KALAMAZOO RIVER SUPERFUND SITE

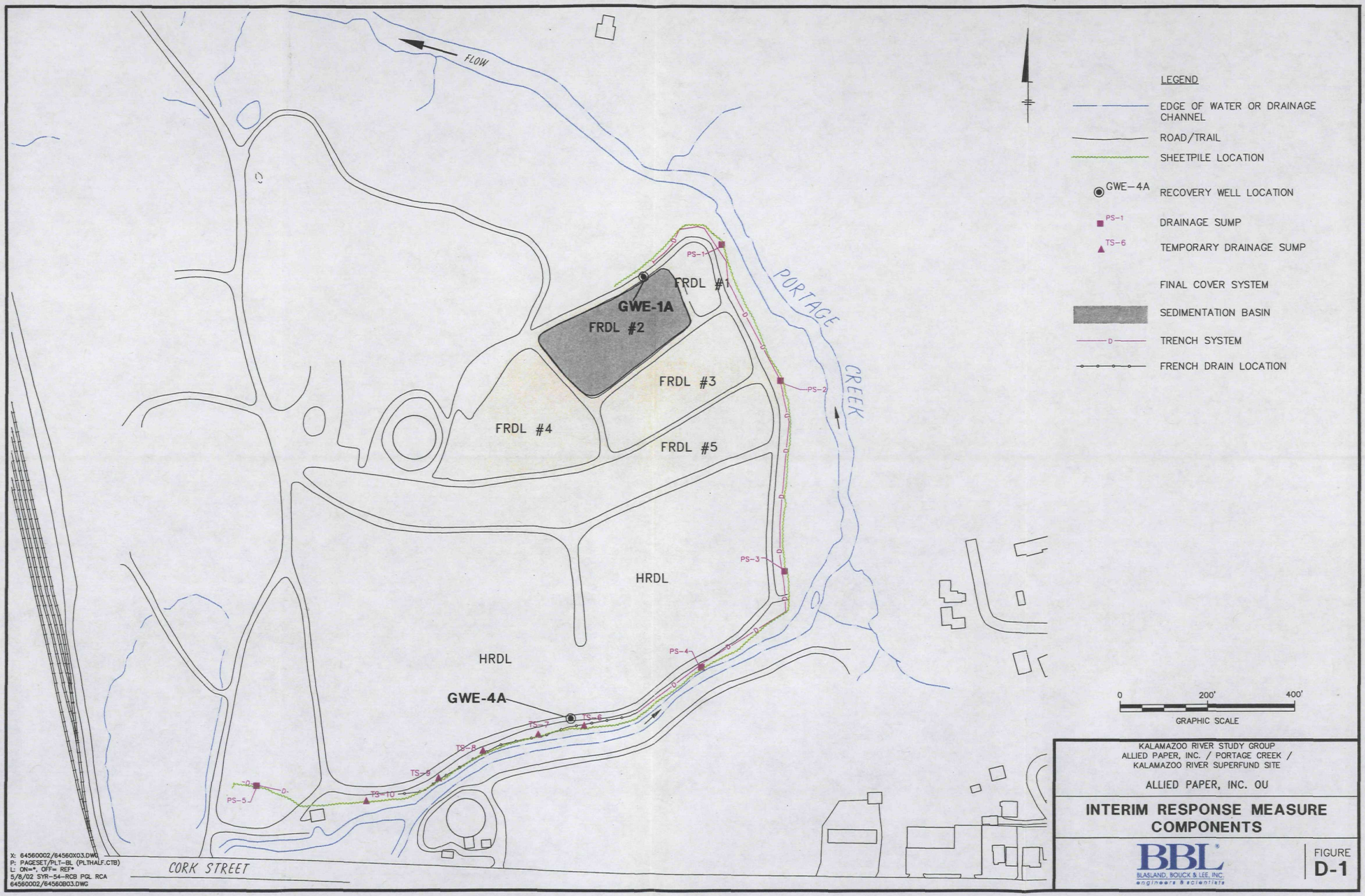
SUPPLEMENTAL EVALUATION FOR MIDDLE/UPPER-MIDDLE CLAY UNIT

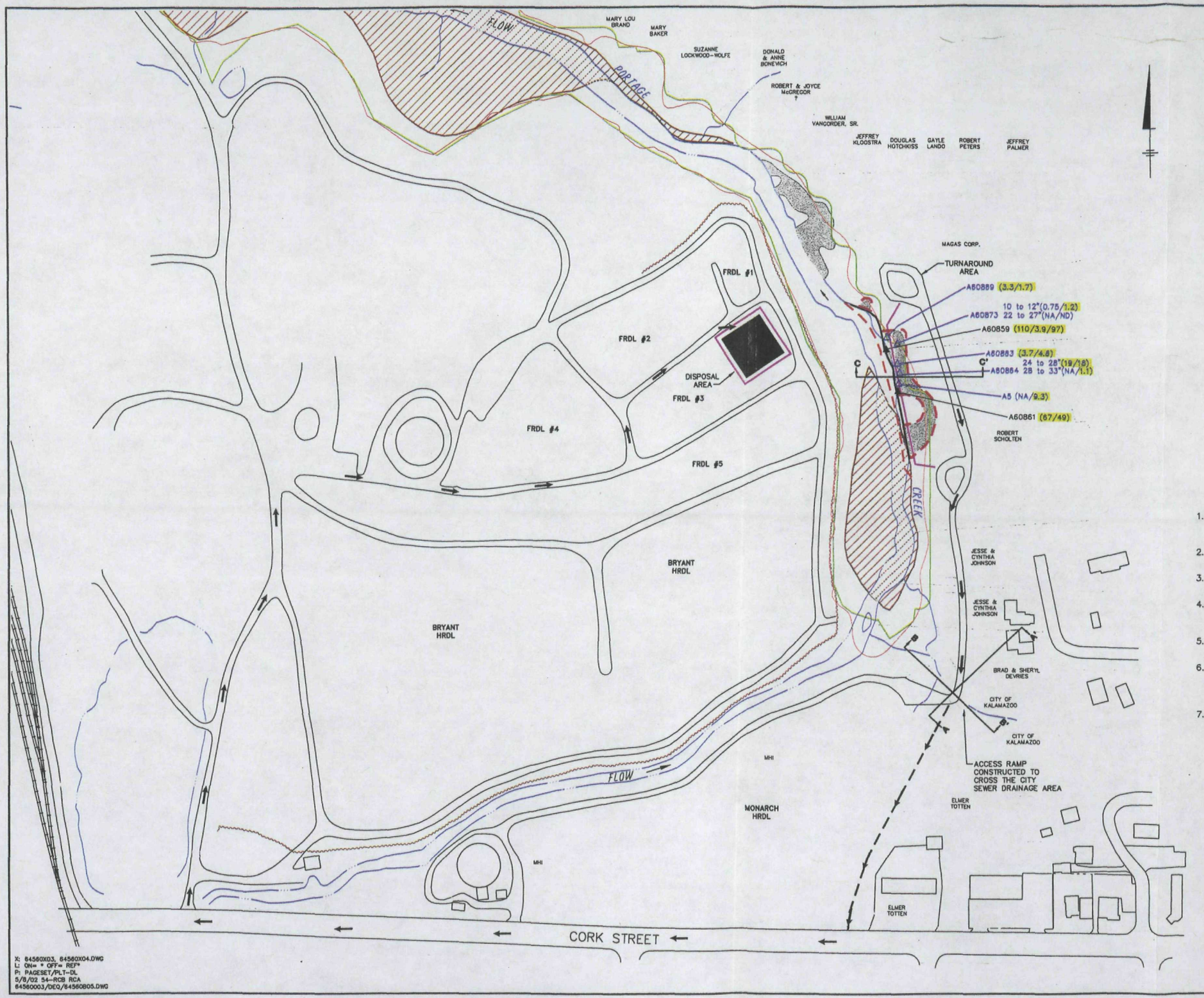
RE-EVALUATED AND REVISED GEOLOGIC CROSS-SECTION G-G'

BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists

FIGURE 5

9/29/98 SYR-54-DMW,PGL
64551402\64551CSG.DWG


FLOW
PORTAGE CREEK
CORK STREET
FRDL #1
FRDL #2
FRDL #3
FRDL #4
FRDL #5
HRDL
HRDL
GWE-1A
GWE-4A
PS-1
PS-2
PS-3
PS-4
PS-5
TS-6
TS-7
TS-8
TS-9
TS-10
LEGEND
EDGE OF WATER OR DRAINAGE CHANNEL
ROAD/TRAIL
SHEETPILE LOCATION
GWE-4A RECOVERY WELL LOCATION
PS-1 DRAINAGE SUMP
TS-6 TEMPORARY DRAINAGE SUMP
FINAL COVER SYSTEM
SEDIMENTATION BASIN
TRENCH SYSTEM
FRENCH DRAIN LOCATION
0 200' 400'
GRAPHIC SCALE
X: 64560002/64560X03.DWG
P: PAGESET/PLT-BL (PLTHALF.CTB)
L: ON=*, OFF= REF*
5/8/02 SYR-54-RCB PGL RCA
64560002/64560B03.DWG
KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC. / PORTAGE CREEK /
KALAMAZOO RIVER SUPERFUND SITE
ALLIED PAPER, INC. OU
INTERIM RESPONSE MEASURE COMPONENTS
BBL
BLASLAND, BOUCK & LEE, INC.
engineers & scientists
FIGURE
D-1



X: 64560X03, 64560X04.DWG
L: ON= * OFF= REF*
P: PAGESET/PLT-DL
5/8/02 54-RCB RCA
64560003/DEQ/64560B05.DWG

LEGEND

- EDGE OF WATER OR DRAINAGE CHANNEL
- ROAD/TRAIL
- HISTORIC 790 ELEVATION LINE (SEE NOTE 7)
- APPROXIMATE TAX MAP PROPERTY LINE
- SHEETPILE LOCATION
- ALTERNATE LOCATION OF ACCESS ROAD
- SILT CURTAIN (DOUBLE LAYER) LOCATION
- SILT FENCE LOCATION
- BANK STABILIZED WITH RIPRAP
- LIMITS OF EXCAVATION
- LIMITS OF USEPA EXCAVATION (SEE NOTE 7)
- APPROXIMATE EXTENT OF RESIDUALS
- LOCATION OF ACCESS ROAD
- TENTATIVE DISPOSAL AREA
- TRUCK DISPOSAL ROUTE
- EMERGENT WETLAND
- ▲ A60859 — BANK FACE SAMPLE (APPROXIMATE LOCATION)
- △ A60883 — SOIL BORING LOCATION (LOCATIONS IN BLUE SURVEYED BY ATWELL-HICKS, 2001, ALL OTHERS APPROXIMATE)
- (9.3) — PCB CONCENTRATION IN PARTS PER MILLION (ppm)
- (67/49) — BBL RESULT/MDEQ SPLIT SAMPLE RESULT (ppm)
- (NA) — NOT ANALYZED
- (ND) — NOT DETECTED
- (110/3.9/97) — PCB CONCENTRATION GREATER THAN 1 PPM

NOTES

1. PHOTOGRAPHY FLOWN MAY 1991. BY LOCKWOOD, INC. FROM AERIAL USING PHOTOGRAMMETRIC METHODS TOPOGRAPHIC MAPPING PRODUCED.
2. PROPERTY OWNER INFORMATION OBTAINED FROM kalamazoocity.org website.
3. LOCATIONS OF ACCESS ROADS ARE SUBJECT TO CHANGE DEPENDING ON FIELD CONDITIONS.
4. BANK STABILIZATION WILL CONSIST OF RIPRAP USED FOR ACCESS ROAD/RAMP CONSTRUCTION PLACES ABOVE AND BELOW THE WATER LINE.
5. EXCAVATED AREAS WILL BE BACKFILLED WITH CLEAN TOPSOIL AND THE SURFACE REVEGETATED WITH NATIVE SEEDS.
6. WETLANDS WERE DIGITIZED FROM A PAPER COPY OF FIGURE 3.2.1 FROM THE JANUARY 2002 CDM, KALAMAZOO RIVER AND PORTAGE CREEK WETLAND DELINEATION STUDY, DATED DECEMBER 18, 2001 AT AN APPROXIMATE SCALE OF 1" = 1000'.
7. THE HISTORIC 790 ELEVATION LINE AND THE LIMIT OF THE USEPA EXCAVATION WERE COPIED FROM FIGURE 4-2 OF THE ALLIED PAPER/PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE FINAL REPORT, PREPARED BY WESTON, JANUARY 2000.

0 200' 400'

GRAPHIC SCALE

KALAMAZOO RIVER STUDY GROUP
ALLIED PAPER, INC. / PORTAGE CREEK / KALAMAZOO RIVER SUPERFUND SITE

ALLIED PAPER, INC. OU

EAST BANKFACE SOILS/RESIDUALS REMOVAL SITE PLAN

BBL®
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE
A-1

Attachment A
Boring Logs

BLASLAND, BOUCK & LEE, INC
engineers & scientists

KB12303931

Date Start/Finish: 9/23/93 – 9/23/93 **Drilling Company:** Blasland, Bouck & Lee **Driller's Name:** Bill Schaefer **Drilling Method:** Hand Auger **Hole Size:** N/A-in. **Auger Size :** 3.0-in. **Rig Type:** N/A **Spoon Size:** N/A-in. **Hammer Weight:** N/A-lb **Height of Fall:** N/A-in.	**Northing:** 430458.1 **Easting:** 12777057.4 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 5.5 ft. **Ground Surface Elev.:** 802.2 ft. **Geologist:** David Lay	**Well No.** BLHB-3 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 802.2 ft										GROUND SURFACE	
		A60713				0.5	0.9			Brown fine to medium SAND, some silt, little coarse sand and gravel, trace organic matter, loose, moist.	
		A60714 (D)				0.5					
						0.5					
						0.5				Light gray SILT and CLAY, trace paper fibers, soft, dry.	
	800					0.5					
						0.5					
						0.5				Light brown fine SAND, trace medium to coarse sand and gray paper fibers, loose moist.	
						0.5					
						0.5					
5		A60715				0.5	3.4			Light gray SILT and CLAY, soft, moist.	
										Dark brown SILT and ORGANIC MATTER, trace rootlets, loose, moist, (PEAT).	
	795									Brown SILT and fine SAND, trace organic matter and iron staining, loose, moist.	
										End of boring at 5.5 ft. BGS.	
10											
	790										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700924

Date Start/Finish: 7/29/93 – 7/29/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** David Straton **Drilling Method:** Hand Auger **Hole Size:** N/A-in. **Auger Size :** 3.0-in. **Rig Type:** N/A **Spoon Size:** N/A-in. **Hammer Weight:** N/A-lb **Height of Fall:** N/A-in.	**Northing:** 282722.2 **Easting:** 12795827.7 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 8 ft. **Ground Surface Elev.:** 781.5 ft. **Geologist:** William Schaefer	**Well No.** BMP-3 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 781.5 ft.										**GROUND SURFACE**	
		A60629				0.5				Yellow SAND and SILT, trace rootlets, loose, moist.	
						0.5					
	780					1.0				Gray SILT, CLAY, and PAPER *FIBERS, some organic matter, soft,* moist.	
						1.0					
						1.0				Grades to wet.	
						1.0					
5						1.0				Strong odor in residuals.	
		A60630				1.0					
	775	A60631				1.0					
										Dark brown PEAT, some medium sand, loose, wet.	
										End of boring at 8 ft. BGS.	
10											
	770										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels

Date / Time	Elevation	TOC
		NA
		NA
		NA

KB12303933

KB53700927

Date Start/Finish: 7/23/93 – 7/23/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Straton **Drilling Method:** Driven Split Spoon **Casing Size:** N/A-in. **Auger Size :** N/A-in. **Rig Type:** Tripod **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280350.8 **Easting:** 12796680.1 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 10 ft. **Ground Surface Elev.:** 797.5 ft. **Geologist:** William L. Schaefer	**Well No.** DLHB-2 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 797.5 ft										GROUND SURFACE	
		A60582		WOH		0.4	0.1			Light Gray, CLAY and PAPER FIBERS, soft, moist.	
		A60583		WOH			0.1				
				WOH	0						
				WOH							
		A60584		WOH		1.3	10.0				
	795			WOH							
				WOH	0					Grades to wet.	
				WOH							
		A60585		WOH		0.7	3.6				
				WOH							
5				WOH	0						
				WOH							
		A60586		WOH		2.0	2.7				
				WOH							
				WOH	0						
	790			WOH						Brown fine to medium SAND, some coarse sand, loose, moist.	
		A60587		WOH		2.0					
				WOH							
		A60600		WOH	0						
				WOH							
10										End of boring at 10.0 ft. BGS.	
	785										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

Date Start/Finish: 7/26/93 - 7/28/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Straton **Drilling Method:** Driven Split Spoon **Bit Size:** N/A-in. **Auger Size :** N/A-in. **Rig Type:** Tripod **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280227.8 **Easting:** 12798762.9 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 10 ft. **Ground Surface Elev.:** 801.8 ft. **Geologist:** William L. Schaefer	**Well No.** DLHB-3 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 801.8 ft.										**GROUND SURFACE**	
		A60595		WOH			0.5			Light gray CLAY and PAPER FIBERS, very soft, moist.	
		A60596		WOH		0.9	0.9				
				WOH	0						
	800			WOH							
		A60597		WOH		1.6	0.8				
				WOH							
				WOH	0						
				WOH							
		A60598		WOH		2.0	0.5				
				WOH							
5				WOH	0						
				WOH							
		A60599		WOH		2.0	0.5				
				WOH							
	795			10	11						
				12							
		A60600		19		2.0	0.0			Gray coarse SAND and fine GRAVEL, some organic matter, dense, wet.	
				20							
				21	41						
				19							
10										End of boring at 10.0 ft. BGS.	
	790										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

Date Start/Finish: 7/22/93 – 7/22/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Doug Thomas **g Method:** Driven Split Spoon **ze:** N/A-in. **Auger Size :** N/A-in. **Rig Type:** Tripod **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280550.8 **Easting:** 12796840.5 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 8 ft. **Ground Surface Elev.:** 793.1 ft. **Geologist:** William L. Schaefer	**Well No.** DLHB-5 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 793.1 ft.											
										GROUND SURFACE	
		A60581				2.0				Black CLAY and ORGANIC MATTER, loose, moist, (PEAT).	
										Gray SILT and fine SAND, loose.	
						2.0				Grades with gravel and organic matter.	
	790									Green/gray medium SAND and GRAVEL, loose.	
5						2.0					
						2.0					
										Grades with clay.	
	785									End of boring at 8.0 ft. BGS.	
10											
	780										
5											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700943

Date Start/Finish: 7/26/93 – 7/26/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Straton **Drilling Method:** Driven Split Spoon **Casing Size:** N/A-in. **Auger Size :** N/A-in. **Rig Type:** Tripod **Spoon Size:** 2.0-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280394.8 **Easting:** 12797028.8 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 14 ft. **Ground Surface Elev.:** 798.0 ft. **Geologist:** William L. Schaefer	**Well No.** DLHB-6 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 798.0 ft.											
										GROUND SURFACE	
		A60601		WOH WOH WOH WOH	0	0.3	0.8 0.5			Dark Gray PAPER FIBER, some organic matter, loose, wet.	
		A60602		WOH WOH WOH WOH	0	0.9	0.5				
	795	A60603		WOH WOH WOH WOH	0	2.0	1.2			Grades with clay.	
5		A60604 A60607 (D)		WOH WOH WOH WOH	0	2.0	0.6				
	790	A60605		5 3 3 5	8	2.0	0.2			Grades with little sand and gravel. Sand and gravel lense.	
10		A60606		14 8 8 13	21	0.4	0.0			Sand and gravel lense.	
	785	A60608		16 76 50 23	82	0.3	5.1			Grey coarse SAND and GRAVEL, very dense, wet.	
15										End of boring at 14.0 ft. BGS.	

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700944

Project: 845.51 Script: Kalaold

KB12303937

Date Start/Finish: 8/17/93 – 8/17/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Rick Navatka **Drilling Method:** Hollow Stem Auger **Bit Size:** N/A-in. **Auger Size :** 4.25-in. **Rig Type:** CME-850 **Spoon Size:** N/A-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280620.5 **Easting:** 12798761.8 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 8.0 ft. **Ground Surface Elev.:** 794.5 ft. **Geologist:** Emily Gloeckler	**Well No.** FLF-1 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
@ elevation 794.5 ft										**GROUND SURFACE**	
		A60094		2 2		1.0				Brown fine SAND, some silt, loose, dry.	
				2 3	4					Gray PAPER FIBERS, some silt, fine sand and clay, loose, dry.	
		A60095		3 2		1.5				Grades with coarse sand, moist.	
				2 1	4					Grades with trace coarse sand.	
		A60096		2 3		2.0				Dark gray PAPER FIBERS and CLAY, trace coarse sand, soft, moist.	
5	790			3 4	6						
		A60097		2 2						Laminated brown coarse loose SAND, and gray soft CLAY, and some paper fibers, moist.	
		A60098		2 3	4					Brown ORGANIC MATTER, some clay and fine sand, loose, wet (PEAT).	
										End of boring at 8.0 ft. BGS.	
10	785										
15	780										

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

Date Start/Finish: 8/13/93 – 8/13/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Straton **Drilling Method:** Hollow Stem Auger **Bit Size:** 3 7/8-in. **Auger Size:** 4.25-in. **Rig Type:** Diedrich D-50 **Spoon Size:** 2.0-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279373.6 **Easting:** 12798197.8 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 50.0 ft. **Ground Surface Elev.:** 810.3 ft. **Geologist:** Emily F. Gloeckler	**Well No.** GEO-1 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 810.3 ft.										GROUND SURFACE	
	810			6 8 7 6	15	1.4				Brown medium SAND, some very coarse sand, trace fine gravel, trace clay, medium dense, damp (FILL).	
				4 2 4 50/0	6	1.0				Brown fine SAND, some medium sand, trace very coarse sand, trace clay loose, damp (FILL).	
5	805			2 2 2 1	4	1.5				*Grading gray in color.*	
				2 2 1 2	3	1.0				Gray CLAY, some fine sand, soft, moist. Grading dark gray to gray-black in color.	
				3 1 1 3	2	1.0				*Grading with trace coarse sand to fine gravel, wet.*	
10	800			5 3 2 2	5	0.9					
				5 2 2 3	4	1.0				*Gray and black fine SAND grading to medium to coarse sand, trace clay loose, moist.* Grading wet.	
15				8 5 7	12	1.4					

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700951

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

erable Unit:
Allied Operable Unit

Well No. GEO-1

Total Depth = 50.0 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	795			6		1.2				Black ORGANIC MATTER, some rootlets, damp (PEAT).	
				5 7 7 6	14	1.7				Gray fine SAND, wet Black organic SILT, roots, moist, (PEAT).	
20	790			16 41 33 35	74	0.9				Dark gray fine to medium SAND, with dark gray clay seams, some very coarse sand and fine gravel, dense, wet.	
				11 16 18 15	34	0.2					
25	785			11 16 18 15	34	1.7				Grades to gray medium to coarse SAND, wet. Light brown fine SAND, subrounded, dense, wet.	
				14 18 27 32	45	0.1					
				24 25 25 29	50	0.5					
30	780			10 18 20 29	38	1.0				Light brown fine to medium SAND, trace coarse to very coarse sand, dense, wet.	
				21 35 47 53	82	1.0					
35				11 14 17	31	1.0					

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite/cement upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB53700952

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

erable Unit:
Allied Operable Unit

Well No. GEO-1

Total Depth = 50.0 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	775			21						Light brown fine to medium SAND, trace coarse to very coarse sand, wet.	
				14 21 24 25	45	1.0				Black SILT, some sand, trace very coarse sand (PEAT).	
				17 27 24 26	51	1.0				Gray/brown medium SAND, some coarse sand and fine gravel, dense, wet.	
40	770			10 15 18 27	33	0.0					
				15 19 19 21	38	1.0					
				18 35 53 61	88	1.0					
45	765										
				14 21 24 31	45	1.5				Gray/brown fine SAND, trace very coarse sand, organic matter, trace peat, dense, wet.	
50	760									Gray medium to coarse sand, poorly sorted, loose, wet.	
										End of boring at 50 ft. BGS.	
55											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite/cement upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700953

KB12303941

Date Start/Finish: 8/3/93 – 8/3/93 **Drilling Company:** Blasland, Bouck & Lee, Inc. **Driller's Name:** Bill Schaefer **g Method:** Hand Auger **Size:** N/A-in. **Auger Size :** 2-in. **Rig Type:** N/A **Spoon Size:** 2.0-in. **Hammer Weight:** N/A-lb **Height of Fall:** N/A-in.	**Northing:** 280958.1 **Easting:** 1279801.0 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 4.5 ft. **Ground Surface Elev.:** 793.8 ft. **Geologist:** Emily Gloeckler/Bill Schaefer	**Well No.** MA-1 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
as elevation 793.8 ft.										GROUND SURFACE	
		A60065				1.5	0.0			Brown coarse SAND and GRAVEL, loose, dry.	
						1.5	0.0			Black SILT, some fine sand, trace coarse sand and gravel, loose, moist. Thin layer of brown fine SAND.	
	790	A60066									
5						1.5	0.0			End of boring at 4.5 ft. BGS.	
	785										
10											
	780										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▼	NA

Project: 845.51 Script: Kalaold

KB12303942

KB5370096O

Date Start/Finish: 8/3/93 – 8/3/93 **Drilling Company:** Blasland, Bouck & Lee, Inc. **-'s Name:** Bill Schaefer **g Method:** Hand Auger **Bit Size:** N/A-in. **Auger Size :** 2.0-in. **Rig Type:** N/A **Spoon Size:** N/A-in. **Hammer Weight:** N/A-lb **Height of Fall:** N/A-in.	**Northing:** 281079.1 **Easting:** 12795974.9 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 4.5 ft. **Ground Surface Elev.:** 785.8 ft. **Geologist:** Emily Gloekler	**Well No.** MA-2 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 785.8 ft.										GROUND SURFACE	
	785	A60067				0.5	0.0			Brown/orange CLAY, some organic matter, trace rootlets, loose, wet (PEAT).	
						0.25	NS				
		A60068				0.5	1.9				
5										End of boring at 4.5 ft. BGS.	
	780										
10	775										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels		
Date / Time	Elevation	TOC
		NA
		NA
		NA

KB12303943

KB53700961

Date Start/Finish: 8/3/93 – 8/3/93 Drilling Company: Blasland, Bouck & Lee, Inc. Driller's Name: Bill Schaefer Drilling Method: Hand Auger Bit Size: N/A-in. Auger Size : 2.0-in. Rig Type: N/A Spoon Size: N/A-in. Hammer Weight: N/A-lb Height of Fall: N/A-in.	Northing: 281055.5 Easting: 12795917.8 Well Casing Elev.: N/A ft. Corehole Depth: N/A ft. Borehole Depth: 4.5 ft. Ground Surface Elev.: 787.4 ft. Geologist: Emily Gloeckler	Well No. MA-3 Operable Unit: Allied Operable Unit Site: Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 787.4 ft										GROUND SURFACE	
		A60069				1.12				Black clay, some organic matter, trace silt, coarse sand, roots and small snails, soft, wet (PEAT).	
						0.75	2.0				
	785										
		A60070				75	11.3				
5										End of boring at 4.5 ft. BGS.	
	780										
10											
	775										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB5370096 2

Date Start/Finish: 8/3/93 – 8/3/93 **Drilling Company:** Blasland, Bouck & Lee, Inc. **Y's Name:** Bill Schaefer **g Method:** Hand Auger **Bit Size:** N/A–in. **Auger Size :** 2.0–in. **Rig Type:** N/A **Spoon Size:** N/A–in. **Hammer Weight:** N/A–lb **Height of Fall:** N/A–in.	**Northing:** 280998.2 **Easting:** 12795907.4 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 4.5 ft. **Ground Surface Elev.:** 791.0 ft. **Geologist:** Emily Gloecker	**Well No.** MA–4 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 791.0 ft										GROUND SURFACE	
		A60071				1.5	2.2			Black medium to coarse sand, some organic matter, trace silt, trace gravel, loose, moist (PEAT).	
	790					1.5	NS				
		A60072				1.5	51.5			Black CLAY and coarse SAND, trace fine sand and gravel and garbage, soft, moist. (FILL)	
5										End of boring at 4.5 ft. BGS.	
	785										
10											
	780										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
	▽	NA
	▽	NA
	▽	NA

KB53700963

Date Start/Finish: 8/3/93 – 8/3/93 **Drilling Company:** Blasland, Bouck & Lee, Inc. **Driller's Name:** Bill Schaefer **Drilling Method:** Hand Auger **Bit Size:** N/A-in. **Auger Size :** 2.0-in. **Rig Type:** N/A **Spoon Size:** -in. **Hammer Weight:** N/A-lb **Height of Fall:** N/A-in.	**Northing:** 281087.4 **Easting:** 12795846.8 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 4.5 ft. **Ground Surface Elev.:** 786.4 ft. **Geologist:** Emily Gloeckler	**Well No.** MA-5 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 786.4 ft.										**GROUND SURFACE**	
		A60073				1.5				Red/brown coarse SAND, trace clay, loose, moist.	
	785					0.75				Black ORGANIC MATTER, and CLAY, trace fine sand, soft, moist (PEAT). Grades to wet.	
		A60074 A60075 (D)				1.12				Grades with hydrocarbon odor.	
5										End of boring at 4.5 ft. BGS.	
	780										
10											
	775										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

Project: 845.83 Script: Kalaold

KB12303946

KB53700964

Date Start/Finish: 9/23/93 – 9/23/93 **Drilling Company:** Blasland, Bouck & Lee, Inc. **Driller's Name:** Bill Schaefer **g Method:** Hand Auger **ize:** N/A-in. **Auger Size :** 2-in. **Rig Type:** N/A **Spoon Size:** N/A-in. **Hammer Weight:** N/A-lb **Height of Fall:** N/A-in.	**Northing:** 279383.9 **Easting:** 12796418.5 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 1.0 ft. **Ground Surface Elev.:** 799.1 ft. **Geologist:** David Lay	**Well No.** MLHB-1 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 799.1 ft.											
										GROUND SURFACE	
		A60722				0.5	0.0			Dark brown fine SAND and SILT, trace medium to coarse sand and rootlets, dense, moist.	
		A60723				0.5	0.0			Grades to wet.	
										End of boring at 1.0 ft. BGS.	
	795										
5											
	790										
10											
	785										
5											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▼	NA

KB53700965

Date Start/Finish: 9/23/93 – 9/23/93 **Drilling Company:** Blasland, Bouck & Lee, Inc. **Driller's Name:** Bill Schaefer **Drilling Method:** Hand Auger **Bit Size:** N/A–in. **Auger Size :** 2–in. **Rig Type:** N/A **Spoon Size:** N/A–in. **Hammer Weight:** N/A–lb **Height of Fall:** N/A–in.	**Northing:** 279470.2 **Easting:** 12798803.0 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 2.0 ft. **Ground Surface Elev.:** 810.2 ft. **Geologist:** David Lay	**Well No.** MLHB–2 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 810.2 ft										GROUND SURFACE	
	810	A60724				0.5	0.0			Brown fine to medium SAND, some silt, trace rootlets, loose, moist.	
						0.5	0.0				
						0.5	0.0			Grades with trace gravel, iron staining, wet.	
		A60725				0.5	0.0				
										End of boring at 2.0 ft. BGS.	
5	805										
10	800										
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700966

Date Start/Finish: 7/23/93 – 7/23/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Doug Richmond **Drilling Method:** Hollow Stem Auger **Bit Size:** N/A-in. **Auger Size :** 4.25-in. **Rig Type:** Diedrich D-50 **Spoon Size:** 2.0-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279334.8 **Easting:** 12796621.9 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 18 ft. **Ground Surface Elev.:** 804.4 ft. **Geologist:** Emily F. Gloeckler	**Well No.** MLSS-1 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 804.4 ft.											
										GROUND SURFACE	
		A60033 A60034 (D) A60035		8 12 15 17	26	2.0	1.5 0.7			Black SILT and CLAY, some fine sand and organic matter, very stiff, moist, (PEAT).	
										Dark Brown fine GRAVEL, medium dense, moist, grades to concrete fragments, (FILL).	
	800			14 18		1.2	1.1				
5				40 20	41						
				32 50/.3	>50	1.0	3.2				
		A60036 A60041 (D)		2 2		2.0	17.9			Light Gray PAPER FIBER, trace clay, loose, moist.	
	795			2 2	4						
10		A60037		1 2		1.6	16.8			Grades with trace coarse sand.	
				1 1	2						
		A60038		3 2		2.0	14.3			Grades with fine gravel.	
				1 1	3						
	790	A60039		2 3		1.5	32.9				
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB12303949

KB53700967

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

Well No. MLSS-1

Total Depth = 18 ft.

erable Unit:
Allied Operable Unit

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				4	7						
				4							
		A60040		3		1.5	2.8			Dark Brown fine SAND, some clay and organic matter, loose, moist, (PEAT).	
				4							
				4	8						
				4							
										End of boring at 18.0 ft. BGS.	
	785										
20											
	780										
25											
	775										
30											
	770										
35											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB12303950

KB53700968

Date Start/Finish: 7/21/93 – 7/21/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Doug Thomas **Drilling Method:** Driven Split Spoon **Bit Size:** N/A-in. **Auger Size :** N/A-in. **Rig Type:** Tripod **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279272.5 **Easting:** 12796862.4 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 24 ft. **Ground Surface Elev.:** 808.7 ft. **Geologist:** William L. Schaefer	**Well No.** MLSS-2 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
as elevation 808.7 ft.											
										GROUND SURFACE	
		A60560		3		1.5	0.0			Gray PAPER FIBER, trace rootlets, loose, moist.	
				4			2.7				
				4	7						
				3							
		A60562		1		1.6	8.9			Grades with clay.	
				1							
				2	2						
	805			1							
				1		1.0	6.9			Grades with strong odor.	
				WOH							
5				1	1						
				1							
				1		1.2	5.6			Grades to wet.	
				1							
				WOH	1						
				1							
				WOH		1.7	4.7				
	800			WOH							
				WOH	0						
				WOH							
10				WOH		1.7	18			Grades with gray and dark gray color variations.	
				WOH							
				WOH	0						
				WOH							
				WOH		2.0	24				
				WOH							
				3	3						
	795			3							
		A60568		WOH		2.0	44				
				1							

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB53700969

KB12303951

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

Operable Unit:
Allied Operable Unit

Well No. MLSS-2

Total Depth = 24 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				1 1	2					Grades with gray and dark gray color variations.	
		A60569		3 2		1.7	27			Gray PAPER FIBER, trace rootlets, loose, moist.	
				3 3	5						
		A60570				2.0	53				
	790										
20		A60571				2.0	42				
		A60572				2.0	19			Dark brown ORGANIC MATTER, some silt and sand, trace gravel, loose, wet, (PEAT).	
	785										
										End of boring at 24.0 ft. BGS.	
25											
	780										
30											
	775										
35											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB12303952

KB5370097O

Date Start/Finish: 7/21/93 – 7/21/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Doug Thomas **Drilling Method:** Driven Split Spoon **Bit Size:** N/A-in. **Auger Size :** N/A-in. **Rig Type:** Tripod **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279464.1 **Easting:** 12796962.7 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 22 ft. **Ground Surface Elev.:** 809.1 ft. **Geologist:** William L. Schaefer	**Well No.** MLSS-3 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 809.1 ft.										**GROUND SURFACE**	
		A60540		WOH		1.5	1.4			Gray PAPER FIBER, little clay, soft, dry.	
				WOH			84				
				WOH	0						
				WOH							
				WOH		1.1	171			Grades to yellow, some organic matter.	
				WOH							
				WOH	0						
				WOH							
	805			WOH		0.0	27.6			Grades to wet.	
				WOH							
5				WOH	0						
				WOH							
				WOH		0.7	32.3				
				WOH							
				WOH	0						
				WOH							
		A60545		WOH		1.5	38.8				
		A60546 (D)		WOH							
	800			WOH	0						
				WOH							
10				WOH		2.0	41.3				
				WOH							
				WOH	0						
				WOH							
		A60548		WOH		1.6	49.2			Layer of black paper fibers.	
				WOH						Grades to dark gray with some clay.	
				WOH	0						
				WOH							
	795	A60549		WOH		1.6	15.3				
15				WOH							

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels		
Date / Time	Elevation	TOC
		NA
		NA
		NA

KB53700971

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

Well No. MLSS-3

Total Depth = 22 ft.

erable Unit:
Allied Operable Unit

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				WOH	0					Dark gray PAPER FIBER, some clay, *soft, moist.*	
				WOH							
		A60550		WOH		1.9	26.7				
				WOH							
				WOH	0						
				WOH							
		A60551		3		2.0	32.0				
				3							
	790			2	6						
				5							
20		A60552		3		1.6	97.6			Dark Brown ORGANIC MATTER and medium SAND, moist, loose, (PEAT).	
				12							
				8	14						
				5							
										End of boring at 22.0 ft. BGS.	
	785										
25											
	780										
30											
	775										
35											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700972

KB12303954

Date Start/Finish: 7/20/93 – 7/20/93 **Drilling Company:** Parratt Wolff Inc. **'s Name:** Dave Straton **Method:** Driven Split Spoon **Bit Size:** N/A-in. **Auger Size :** N/A-in. **Rig Type:** Tripod **Spoon Size:** 2.0-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279477.4 **Easting:** 12797144.4 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 22 ft. **Ground Surface Elev.:** 808.5 ft. **Geologist:** William L. Schaefer	**Well No.** MLSS-4 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
@ elevation 808.5 ft.										GROUND SURFACE	
		A60520		WOH		0.5	0.0			Gray PAPER FIBER, trace clay, loose, wet.	
				WOH			0 0				
				WOH	0						
				WOH							
				WOH		0 4	0.0			Red and green color variations.	
				WOH							
				WOH	0						
	805			WOH							
				WOH		0.9	0 0				
				WOH							
5				WOH	0						
				WOH							
		A60524		WOH		1.4	0.0				
				WOH							
				WOH	0						
				WOH							
				WOH		1.7	0.0			Grades with some black granules of ashes.	
	800			WOH							
				WOH	0						
				WOH							
10				WOH		1.3	0.0			Grades with pieces of wood.	
				WOH							
				WOH	0						
				WOH							
		A60527		WOH		2.0	0 0				
				WOH							
				3	2						
	795			2							
		A60528		WOH		0 5	0.0				
				WOH							
5											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels		
Date / Time	Elevation	TOC
7/20/93 / 1600	▼	0.5
	▼	NA
	▽	NA

KB53700973

KB12303955

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

Operable Unit:
Allied Operable Unit

Well No. MLSS-4

Total Depth = 22 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				WOH	0					Gray PAPER FIBER, trace clay, loose, wet.	
				WOH							
		A60529		WOH		1.3	0.0				
				1							
				1	1						
				1							
		A60530		WOH		2.0	0.0				
	790			WOH							
				3	3						
				3							
20		A60531		6		1.3	0.0			Black ORGANIC MATTER, loose, moist, (PEAT).	
				7						Brown medium SAND, medium dense, wet.	
				8	14						
				7						Brown fine to coarse SAND and GRAVEL, medium dense, wet.	
										End of boring at 22.0 ft. BGS.	
	785										
25											
	780										
30											
	775										

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite/cement grout upon completion.

Water Levels		
Date / Time	Elevation	TOC
7/20/93 / 1600	▼	0.5
	▼	NA
	▽	NA

KB53700974

Date Start/Finish: 7/20/93 – 7/20/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Stranton g Method: Driven Split Spoon ze: N/A-in. Auger Size : N/A-in. **Rig Type:** Tripod **Spoon Size:** 2.0-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279589.0 **Easting:** 12797139.3 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 26 ft. **Ground Surface Elev.:** 805.8 ft. **Geologist:** William L. Schaefer	**Well No.** MLSS-5 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc. /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 805.8 ft.										GROUND SURFACE	
		A60500		WOH		0.0	0.0			Black ORGANIC MATTER, loose, moist, (PEAT).	
	805			WOH			0.0				
				WOH	0					Gray PAPER FIBER, trace clay, loose, wet.	
				WOH							
				1		0.6	0.0				
				1						Grades with odor.	
				1	2						
				1							
				1		0.25	0.0				
5				1	2						
	800			1		0.6	0.0				
				1	2						
		A60505		1		2.0	0.0				
				1	2						
10				1		1.9	0.0				
	795			1	2					Color grades to a dark gray.	
		A60507		1		1.6	0.0				
				1	2						
				1		1.4	0.0				
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700975

Site:
Allied Paper, Inc. /Portage Creek/
alamazoo River Superfund Site

Operable Unit:
Allied Operable Unit

Well No. MLSS-5

Total Depth = 28 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	790			1, 2, 2	2	1.6	0.0			Dark gray PAPER FIBER, trace clay, loose, wet.	
				2, 2, 2	4						
		A60510		WOH, WOH, WOH			0.0				
				7, WOH, WOH	3						
20		A60511		WOH, WOH, WOH		1.9	0.0				
	785			5, 11							
		A60512		14, 2		2.0	0.0				
				4, 12	16						
		A60513		28, 63		2.0	0.0			Black ORGANIC MATTER with lenses of fine SAND, some medium to coarse sand, trace fine gravel, medium dense, wet, (PEAT).	
25				54, 19	82					Brown medium SAND, very dense, wet.	
	780									Brown fine to coarse SAND and fine GRAVEL, very dense, wet.	
										End of boring at 28.0 ft. BGS.	
30	775										

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB12303958

KB53700976

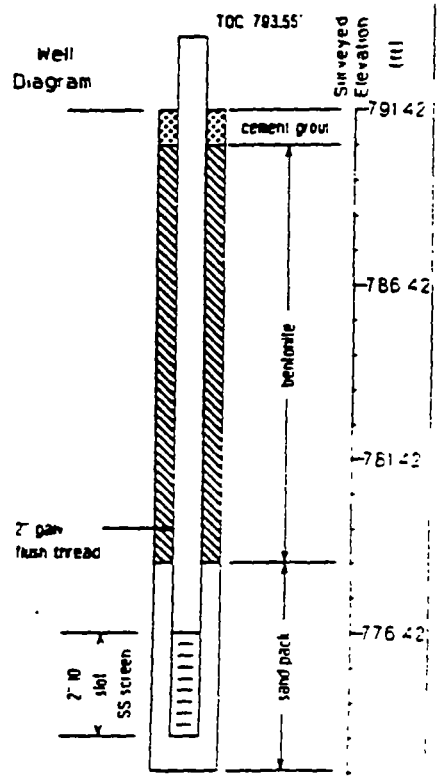
MW 2

Project: JD7
Site: Landfill, Allied Paper, Kalamazoo, MI
Revision Date: 11/30/1991

Date Drilled: 12/1/1981
Drilled By: Wilkins and Wheaton
Water Depth Encountered During Drilling (ft): 8.0

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					FILL	Brown medium to coarse sand. Fine to coarse gravel (FILL)
						Wood fiber-cardboard (FILL material)
5	1, 7, 8					
					OL/OH	Black CLAY – organic matter. Trace of sand and fine gravel.
10	0.5, 0.5, 1					
					SW	Brown fine to coarse SAND. Fine to medium GRAVEL. Trace of clay and silt.
15						
						End of Boring.
20						
25						
30						
35						
40						

Well Diagram



LTI-Limno-Tech, Inc

KB53701118

Date Start/Finish: 8/17/93 – 8/17/93 Drilling Company: Parratt & Wolff Inc. Driller Name: Rich Navatka Drilling Method: Hollow Stem Auger Bit Size: 3 7/8-in. Auger Size: 4.25-in. Rig Type: CME-850 Spoon Size: 2.0-in. Hammer Weight: 140-lb Height of Fall: 30-in.	Northing: 281048.1 Easting: 12795977.8 Well Casing Elev.: 791.12 ft. Corehole Depth: N/A ft. Borehole Depth: 8.0 ft. Ground Surface Elev.: 788.8 ft. Geologist: Emily F. Gloeckler	Well No. MW-2S Operable Unit: Allied Operable Unit Site: Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	ge elevation 788.8 ft.									GROUND SURFACE	Vented Casing Cap 4-in diameter steel protective casing stick-up 2.62 ft. above ground surface (including locking cap).
				WOH	0	1.0				Dark brown fine to medium SAND, some clay, trace coarse sand, very loose, wet.	Cement Grout 0.2 ft. to 0.5 ft. BGS Bentonite Slurry Seal 0.5 ft. to 1.0 ft. BGS
				WOH 6 1 1	7	0.3				Black ORGANIC MATTER and SILT, trace coarse sand, very loose, wet (PEAT).	2-in diameter well casing, stainless steel, approx. 2.51 ft. stick-up
	785			1 1 WOH 1/1.5	1	0.1				Grades with clay.	0.01 stainless steel screen from 1 ft. to 6 ft. BGS Sandpack from 1 ft. to 6 ft. BGS
5				WOH 0 0 2	0	1.2					
										Gray fine to medium SAND, trace gravel, loose, wet.	
	780									End of boring at 8.0 ft. BGS.	
10											
	775										

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

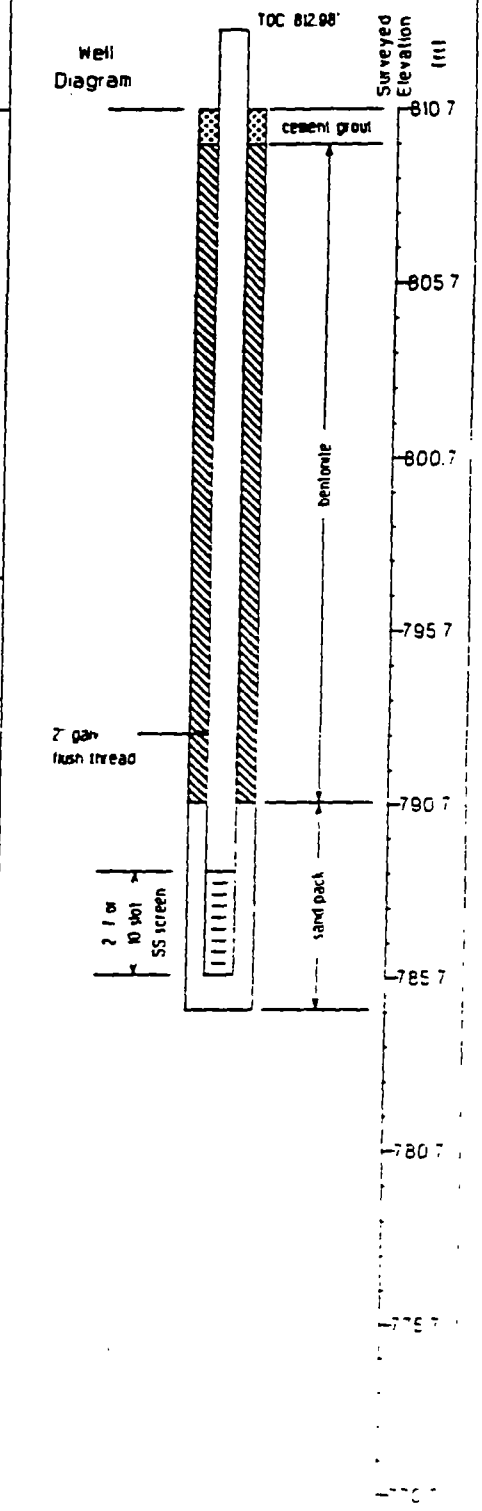
Date / Time	Elevation	TOC
08/09/93 13:20	▼	3.45
08/27/93 10:54	▼	2.82
12/14/93 12:55	▽	3.66

MW 6

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 11/30/1991

Date Drilled: 11/6/85
Drilled By: Wilkins and Wheaton
Water Depth Encountered During Drilling (ft): 14

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0						Light brown fine to coarse SAND and fine GRAVEL. Trace silt
	4 6 6		X		SW	
5						
	6 9 14		X			
10						
	3 3 6		X		SW	Blackish gray fine to coarse SAND. Occasional fine gravel. Trace silt.
15						
	5 6 8		X		SP	N.S.R. (mainly gravel wash)
20						Brown medium to coarse SAND and fine GRAVEL. Occasional medium and coarse gravel
	6 6 8		X			
25						End of Boring
						Screened Interval: 22-25
30						
35						
40						



LTI-Limno-Tech, Inc

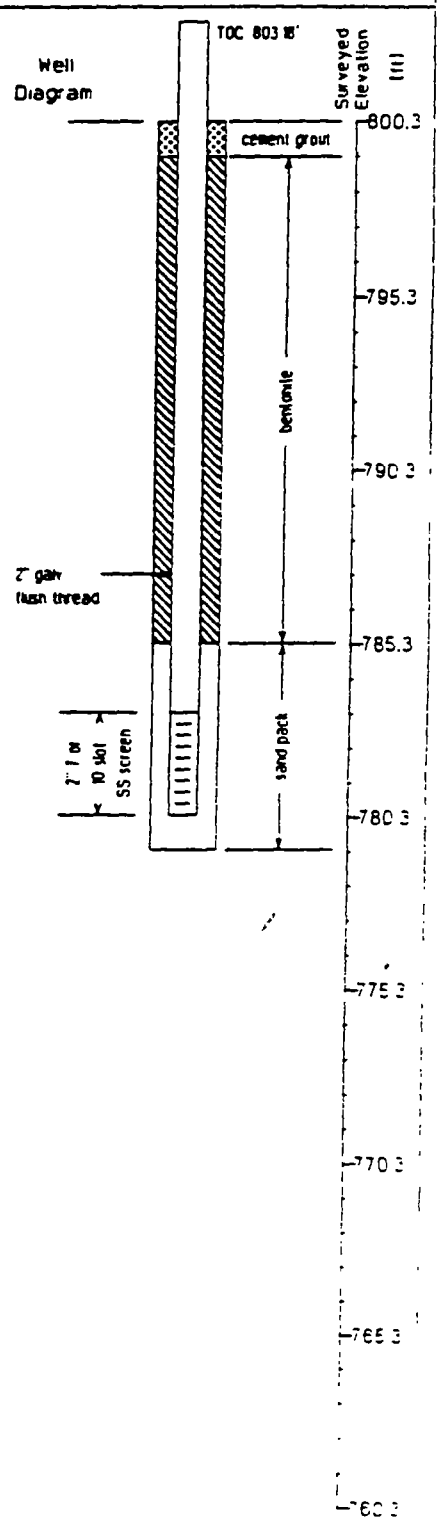
KB53701123

MW 9

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 11/30/1991

Date Drilled: 11/7/85
Drilled By: Wilkins and Wheaton
Water Depth Encountered During Drilling (ft): 4

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					Topsoil	Topsoil
					FILL	FILL SAND Brown medium sand with trace of fine gravel
	1, 7, 2					
5					OL/OH	Black organic material
	10, 11, 12					
10					SP	Black medium to coarse SAND and fine GRAVEL Some organic material
					SW	Brown fine to coarse SAND Occasional fine to medium gravel Trace silt
	5, 8, 10					
15						
	10, 14, 14					
20						End of Boring
						Screened Interval 17-20'
25						
30						
35						
40						



LTI-Limno-Tech, Inc.

KB53701126

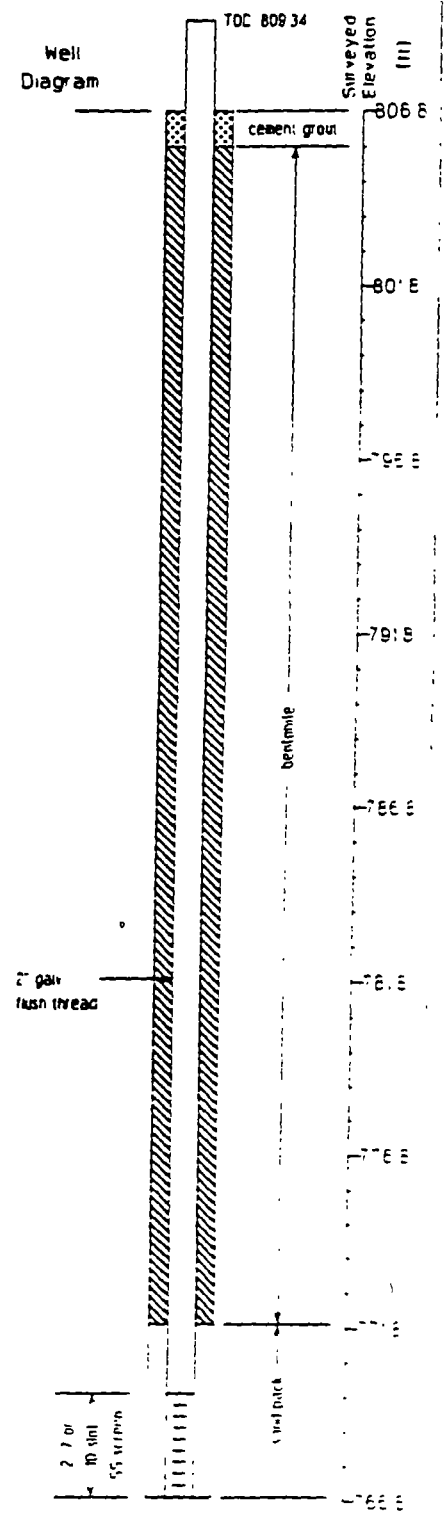
MW 12

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 11/7/85
Drilled By: Wilkins and Wheaton
Water Depth Encountered During Drilling (ft): 18

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					SW	Light brown fine to coarse SAND. Occasional fine to coarse gravel. Clay binder
	6, 7, 9		X			
5					SP	Light brown fine to medium SAND. Occasional fine gravel. Trace clay binder.
	1, 2, 2		X			Possible presence of paper sludge at 9'.
10						
	2, 2, 12		X			Dark brown fine to medium SAND. Occasional fine to coarse gravel. Clay binder
15						Possible presence of paper sludge at 18'
	3, 6, 24		X			Green-brown fine to medium SAND. Occasional fine to medium gravel. Clay binder
20						
	6, 6, 9		X		SM/SC	Light brown clayey, silty fine to medium SAND. Occasional fine gravel
25						
	16, 17, 21		X			Gray-brown silty, clayey fine to medium SAND. Occasional fine gravel
30						
	14, 20, 25		X			Gray-brown silty, clayey fine to medium SAND. Occasional fine to medium gravel
35						
	3, 14, 16				SW / SC	Light brown silty fine to coarse SAND. Fine to medium gravel. Trace of clay
40						

Well Diagram



LTI-Limno-Tech, Inc

KB12303959

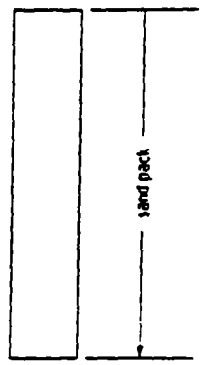
MW 12

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 11/7/85
Drilled By: Wilkins and Wheaton
Water Depth Encountered During Drilling (ft): 18

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
40					SC	Light brown clayey fine to medium SAND	766.6
	16 39 62+					Gray brown, clayey fine to medium SAND Occasional fine gravel	
45					SC		761.6
	11 12 21						
50						End of Boring	756.6
						Hole backfilled with sand to bring up to where screen was set at 37-40'	
55							751.6
60							746.6
65							741.6
70							736.6
75							731.6
80							726.6

Well Diagram



LTI-Limno-Tech, Inc

KB537022

Date Start/Finish: 8/19/93 – 8/19/93 Drilling Company: Parratt & Wolff Inc. Dr Name: Dave Straton Dr. Method: Hollow Stem Auger Bit Size: N/A-in. Auger Size : 4.25-in. Rig Type: Truck Mounted Spoon Size: 2.0-in. Hammer Weight: 140-lb Height of Fall: 30-in.	Northing: 280313.5 Easting: 12797099.3 Well Casing Elev.: 808.30 ft. Corehole Depth: N/A ft. Borehole Depth: 41.5 ft. Ground Surface Elev.: 808.2 ft. Geologist: Wiliam Schaefer	Well No. MW-12R Operable Unit: Allied Operable Unit Site: Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
Ground Elevation 808.2 ft.										GROUND SURFACE	Vented Casing Cap 4-in diameter steel protective casing stick-up 2.26 ft. above ground surface (including locking cap).
	805			2 3 3 4	6	1.0	6.1			Brown fine to coarse SAND, trace gravel, dry, loose.	Cement pad 0.5 ft. AGS to 1.5 ft. BGS
				8 7 6 6	13	0.0	NS			No recovery.	
5				5 9 8 9	17	1.0	0.0			Grading with some angular gravel.	2-in diameter well casing, stainless steel, approx. 2.10 ft. stick-up
	800			10 8 5 7	13	0.0	NS			No recovery.	
		A60706		2 2 4 3	6	2.0	32.8			Gray PAPER FIBERS and clay, compact, moist.	
0				5 5 6 7	11	1.0	14.1			Light brown fine to coarse SAND, trace gravel, loose, moist.	Cement Grout 1.5 ft. to 31.0 ft. BGS
	795			3 3 4 5	7	1.0	10.2				
				14 11 2	13	1.0	2.0				

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels		
Date / Time	Elevation	TOC
09/08/93 14:20	▼	20.08
09/27/93 11:42	▼	19.68
12/14/93 12:55	▽	21.43

KB5370085 6

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

Operable Unit:
:d Operable Unit

Well No. MW-12R

Total Depth = 41.5 ft.

ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
			4						Light brown fine to coarse SAND, trace gravel, loose, moist.	
790	A60707		7 3 8 9	11	0.8	6.1				
			10 7 16 18	23	0.0	0.0				
			5 7 9 11	16	1.0	0.0			Black PEAT, some coarse sand and fine gravel, medium dense.	
785									Light gray-brown fine to medium SAND, trace coarse sand, medium dense, wet.	
			7 10 16 19	26	1.8	0.0			Light gray-brown SILT and fine SAND, coarse sand and gravel, medium dense, wet	
	A60695		21 29 32 41	61	2.0	0.0			Light gray-brown medium to coarse SAND, some gravel, very dense, wet.	
780			22 24 30 29	50	0.8	0.0			Yellow-brown fine SAND and SILT, some coarse sand, very dense, wet.	
			50 50/.3	50+	0.2	0.0				
			13 19 41 53	60	1.6	0.0			Grading with clay.	
775			23 46 40 54	82	0.5	0.0				Bentonite Slurry Seal 31.0 ft. to 34.0 ft. BGS
			25 41 54	95	2.0	NS				

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 14:20	▼	20.08
09/27/93 11:42	▼	19.68
12/14/93 12:55	▽	21.43

KB5370085 7

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

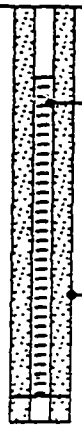
Well No. MW-12R

Total Depth = 41.5 ft.

Operable Unit:
Allied Operable Unit

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description
				56						Yellow-brown fine SAND and SILT, some coarse sand, very dense, wet.
	770	A60696		28 43 52 50/.4	95	2.0	0.0			
				28 54 67	121	2.0	0.0			
40						1.0	0.0			Gray coarse SAND and GRAVEL, some medium sand, trace fine sand, loose, wet.
	785									End of boring at 41.5 ft. BGS.
45										
	760									
50										
	755									

Well Construction



BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 14:20	▼	20.08
09/27/93 11:42	▼	19.68
12/14/93 12:55	▽	21.43

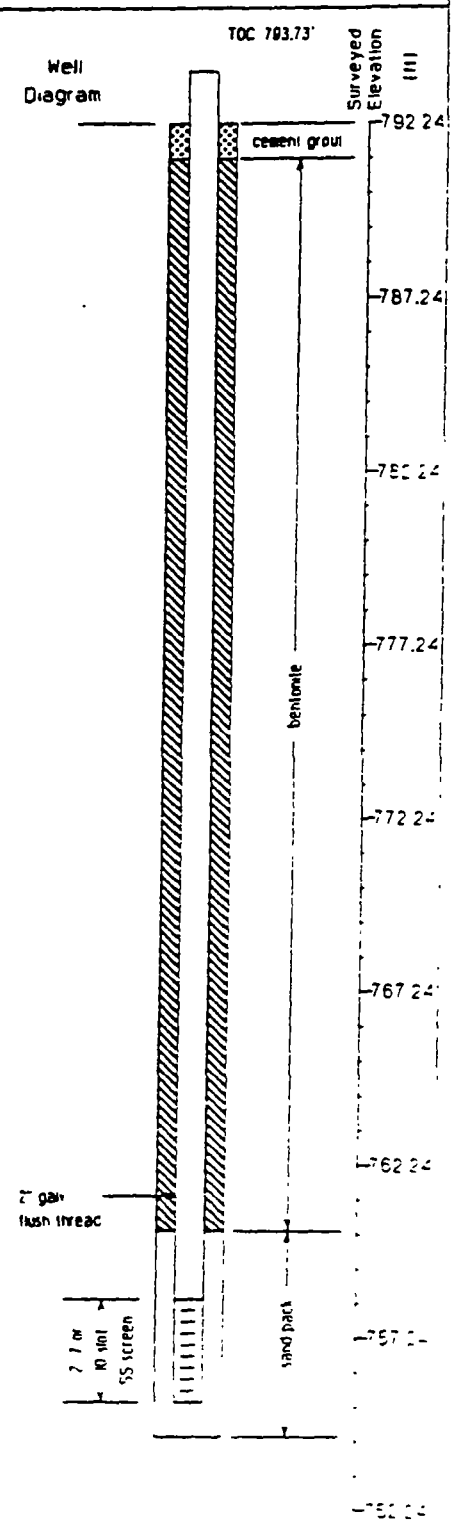
KB5370085 8

MW 18

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 6/24/1988
Drilled By: Wilkins and Wheaton
Water Depth Encountered During Drilling (ft): 8.0

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					SM	Black silty fine SAND with some fine gravel and trace of cobbles
	12 50				FILL	Light brown paper residuals - cardboard
5						
	2/18"				PT	Brown/black organic PEAT
10						
	8 12 10				SW/GW	Brown/dark brown fine to coarse SAND, fine to coarse GRAVEL with trace silt and trace clay binder
15						
	12 12 10				SC	Brown clayey SAND with alternating silty layers and trace of fine to coarse gravel
20						
	9 13 15				SM	Gray fine SAND with some medium to coarse sand and some silt
25						
	10 14 18				SW	Brown fine to coarse SAND with trace fine to medium gravel and trace of silt
30					SW/GW	Brown fine to coarse SAND and fine to coarse gravel
	12 16 17					Brown fine to coarse SAND and fine to coarse GRAVEL with trace of silt and trace of clay binder
35						
	16 22 3				ML	Gray sandy SILT with alternating layers of brown fine to medium sand and fine to coarse gravel
40						



LTI-Limno-Tech, Inc

MW 18

Project: JD7
Site: Allied-Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 6/24/1988
Drilled By: Wilkins and Wheaton
Water Depth Encountered During Drilling (ft): 8.0

TOC: 793.73'

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Well Diagram	Surveyed Elevation (ft)
40					ML			752.24
	14 18 25				SM	Gray silty fine to medium SAND with layer of fine to medium sand and trace of coarse gravel		
45						End of Boring. Screened Interval 34-37'		747.24
50								742.24
55								737.24
60								732.24
65								727.24
70								722.24
75								[illegible]
80								[illegible]

LTI-Limno-Tech, Inc

KB53701141

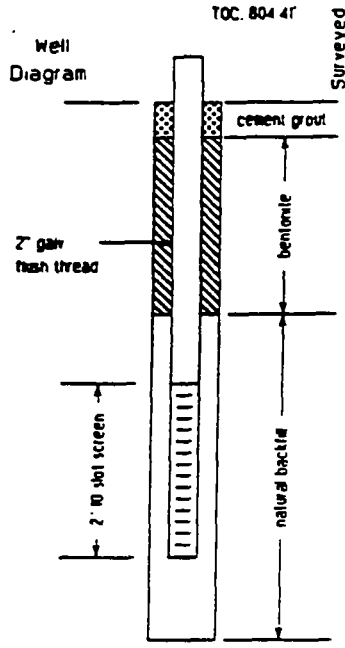
MW 21

Project: JD7
Site: Allied Paper Company, Kalamazoo
Revision Date: 12/01/1991

Date Drilled: 7/21/89
Drilled By: CTI
Water Depth Encountered During Drilling (ft) 4.0

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0						
	6 7 7	SS-1			SM	Medium compact moist brown silty medium fine to coarse SAND with some fine gravel
5						
	15 17 15	SS-2				Compact wet brown silty medium fine SAND with traces of gravel and cobble (drove stone)
10						
	3 5 10	SS-3			CL	Stiff moist gray silty CLAY with little fine sand and a trace of clay
15						End of Boring
						Screened Interval 8.09-13.09'
20						
25						
30						
35						
40						

Well Diagram



Surveyed Elevation (ft)

803.1
798.1
793
788.1
783.1
778.1
773.1
768.1
763.1

LTI-Limno-Tech, Inc

KB53701149

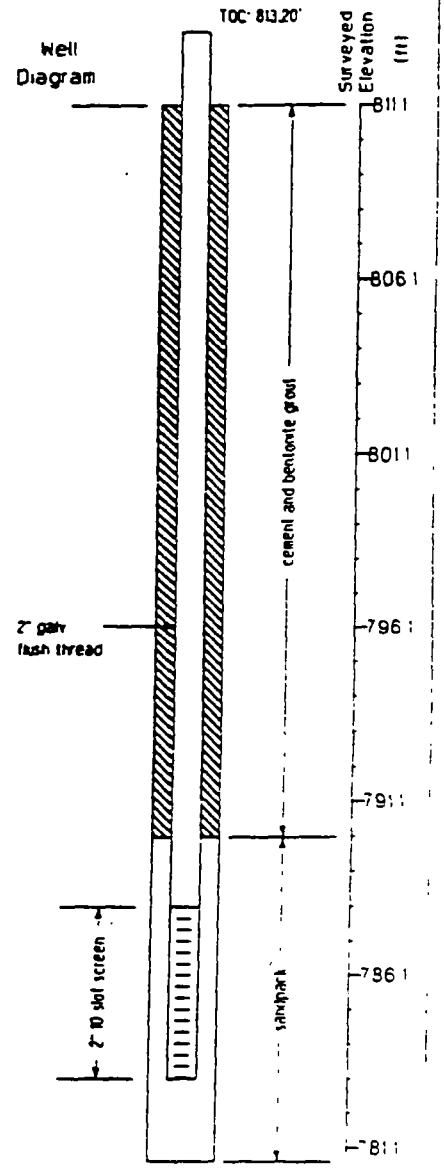
MW 23

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 7/24/89
Drilled By: CTI
Water Depth Encountered During Drilling (ft): 21

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					FILL	Loose moist brown fine to medium SAND with traces of silt and gravel (FILL)
						Loose moist gray fine to medium SAND with traces of silt and gravel (FILL)
5	2, 1, 6		X			Moist gray sandy SILT with some gravel (FILL)
						Compact moist gray medium to coarse SAND with little gravel (FILL)
10	16, 24, 22		X			
						Medium compact moist brown medium SAND with traces of silt, gravel and clay seams (FILL)
15	7, 13, 10		X			
20	2, 5, 6		X		PT	Medium stiff moist black PEAT with a trace of sand seams
					SP	Medium compact wet gray fine to medium SAND with a trace of gravel
25	5, 6, 8		X			
30	13, 15, 15		X			
						End of Boring
						Screened interval: 23.1-28.1
35						
40						

Well Diagram



LTI-Limno-Tech, Inc

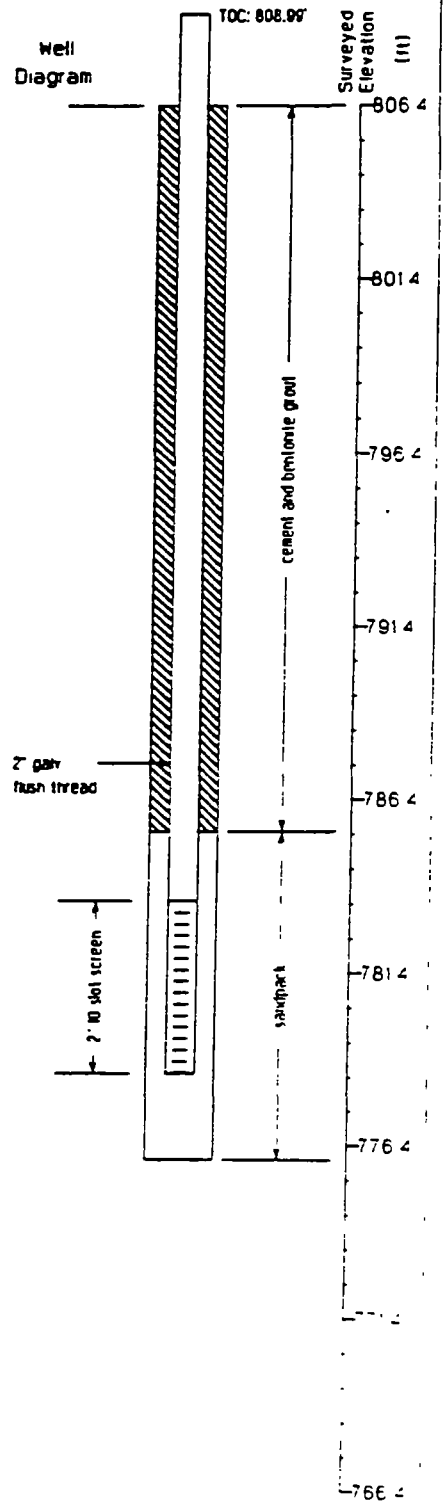
KB53701151

MW 25

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 7/25/89
Drilled By: CTI
Water Depth Encountered During Drilling (ft): 19.2

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					SC	Loose moist medium to coarse brown clayey SAND with trace of pebbles
5	1 2 5	SS-1			SP	Loose moist fine to medium black SAND (odor) (oily)
10	4 5 6	SS-2				
15	4 3 5	SS-3			SP	Loose moist medium to coarse gray SAND with traces of silt and pebbles
20	9 18 20	SS-4			SM	Compact moist fine to medium gray SAND with some silt and a trace of gravel
25	24 45 45	SS-5				Very compact moist fine to medium gray SAND with some silt and a trace of gravel
30	23 35 41	SS-6			CL	Moist very stiff silty gray CLAY with some sand and a trace of gravel
35						End of Boring
40						Screen Interval 22.98-27.98



LTI-Limno-Tech, Inc.

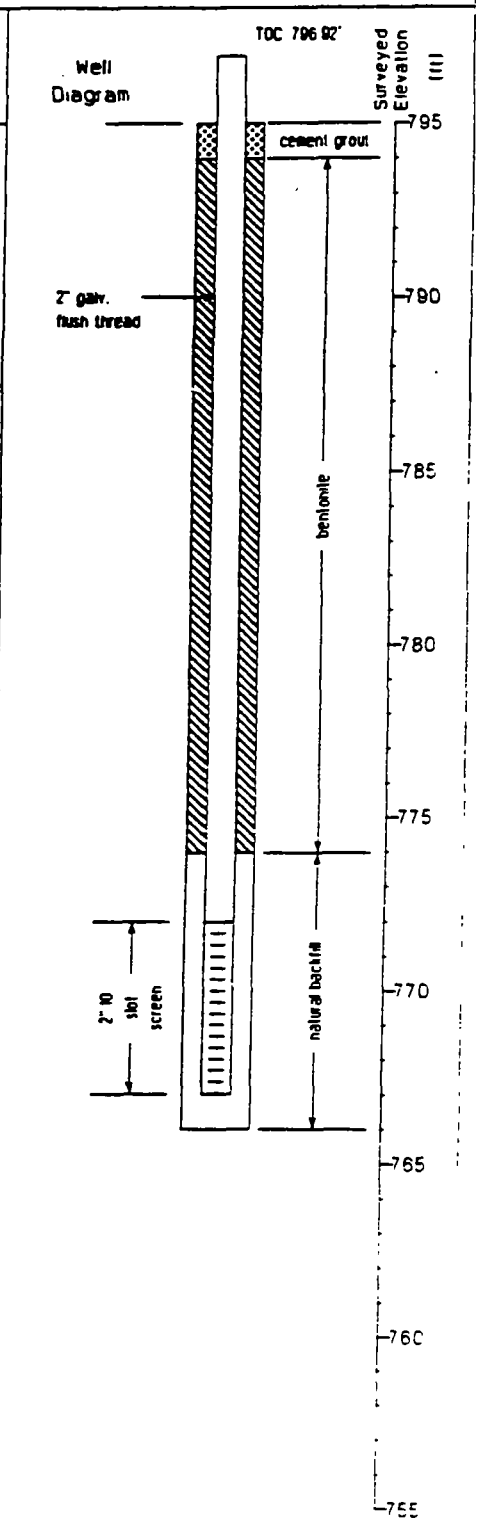
KB53701153

MW 113A

Project: JD7
Site: Bryant Mill Pond, Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 7/28/1989
Drilled By: CTI, R.N./J.S./D.H.
Water Depth Encountered During Drilling (ft): 9.0

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0						Loose moist brown silty fine SAND with little topsoil and traces of concrete and cinders
5	2 3 4	SS-1			SM	
10	1 1 1	SS-2			SP	Very loose wet black medium fine SAND with little gravel and a trace of organic material
15	1 1 3	SS-3			Pt	PEAT with little organic material
					SM	Medium compact wet brown silty fine SAND with a trace of gravel
20	7 11 14	SS-4			GP	Medium compact wet fine GRAVEL with a trace of fine sand
25	12 14 17	SS-5			SM	Compact wet brown silty fine SAND with a trace of fine gravel
30	3 7 10 6 9 11 14	SS-6			CL	Very stiff moist gray silty CLAY
35						End of Boring
						Note: well set at 28.0
40						



LTI-Limno-Tech, Inc

KB53701168

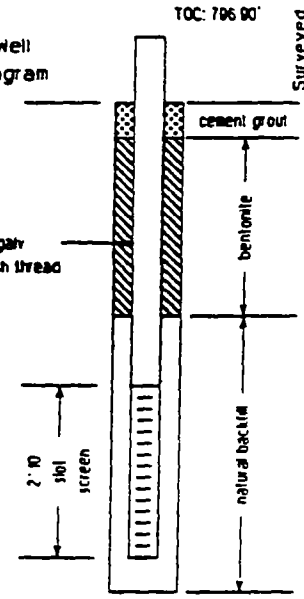
MW 113B

Project: JD7
Site: Bryant Mill Pond, Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 7/28/1989
Drilled By: CTI, R.N./J.S./D.H
Water Depth Encountered During Drilling (ft): 9.0

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0						Loose moist brown silty fine SAND with little topsoil and traces of concrete and cinders
5	1 3 5	SS-1			SM	
10	1 2 2	SS-2			SP	Very loose wet black medium fine SAND with little gravel and a trace of organic material
15					Pt	PEAT with little organic material
						End of Boring.
						Note: well set at 13.0'
20						
25						
30						
35						
40						

Well Diagram



Surveyed Elevation (ft): 795, 790, 785, 780, 775, 770, 765, 760, 755

Page 1 of 1

LTI-Limno-Tech, Inc

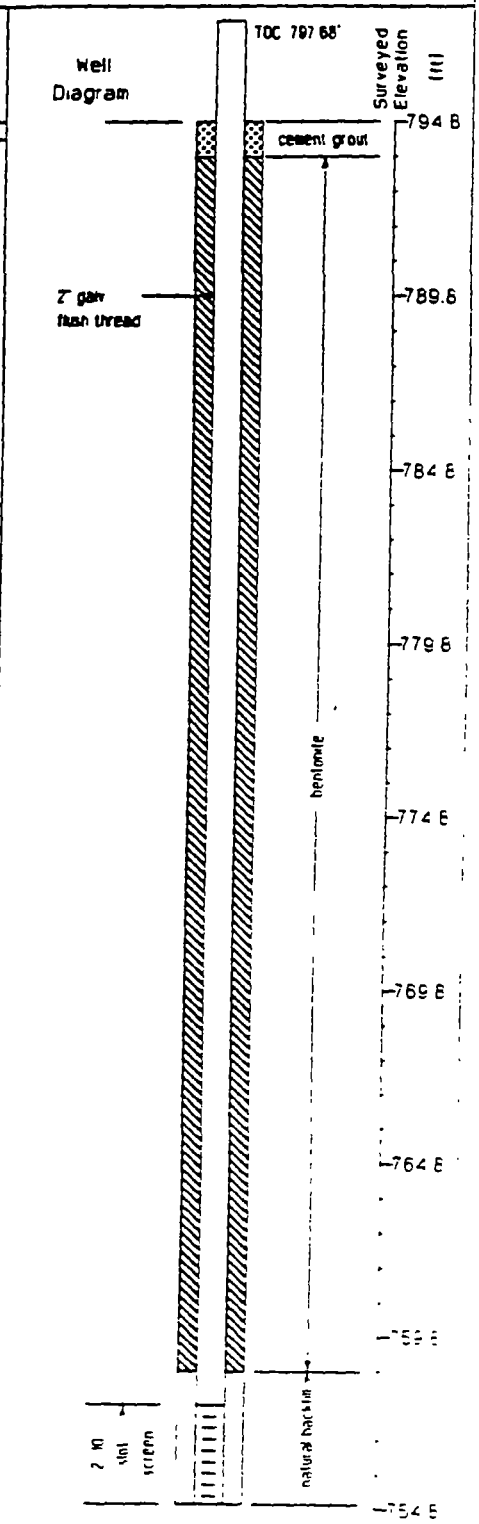
KB53701169

MW 114 (TB 114)

Project: JD7
Site: Bryant Mill Pond, Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 7/27/1989
Drilled By: CTI, R.K.
Water Depth Encountered During Drilling (ft): 9.5

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					TOPSOIL	Moist black silty TOPSOIL
						Brown and black moist medium compact medium to coarse sand and a trace of gravel (FILL)
5	5, 6, 9	SS-1			FILL	
10	34, 6, 4	SS-2				Loose wet black medium to coarse sand with some gravel (FILL) (poor)
						Loose wet medium to coarse gray SAND with a trace of gravel and some organic material and garbage
15	4, 2, 4	SS-3			SP	
						Very compact wet brown medium to coarse SAND with a trace of gravel
20	13, 3, 24	SS-4				
25	3, 10, 15	SS-5				Medium compact wet brown medium to coarse SAND with a trace of gravel
30	4, 15, 12	SS-6			SP	
35	6, 10	SS-7				
40	12, 16, 22	SS-8				Compact wet brown medium to coarse SAND with a trace of gravel



LTI-Limno-Tech, Inc

KB53701170

MW 114 (TB 114)

Project: JD7
Site: Bryant Mill Pond, Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 7/27/1989
Drilled By: CTI, R.K
Water Depth Encountered During Drilling (ft) 9.5

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Well Diagram	Surveyed Elevation (ft)
40							TOC 797.68'	
	10 16 16	SS-9			SP		2" ID slot screen; natural backfill	754.8
					CL	Very stiff moist gray silty CLAY with some sand		
						End of Boring.		
45						Note: Well set at 42.0'.		749.8
50								744.8
55								739.8
60								734.8
65								729.8
70								724.8
75								719.8
80								714.8

LTI-Limno-Tech, Inc

KB53701171

Date Start/Finish: 7/22/93 – 7/23/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Doug Richmond **Drilling Method:** Hollow Stem Auger **Borehole Size:** 4.25-in. **Auger Size:** 4.25-in. **Rig Type:** Diedrich D-50 **Spoon Size:** 2.0-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279637.4 **Easting:** 12787101.5 **Well Casing Elev.:** 810.05 ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 25.0 ft. **Ground Surface Elev.:** 807.7 ft. **Geologist:** Emily Gloeckler	**Well No.** MW-125A **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	Ground Surface 807.7 ft									GROUND SURFACE	Vented Casing Cap 4-in diameter steel protective casing stick-up 2.71 ft. above ground surface (including locking cap).
	805									Dark brown CLAY, some fine to medium sand, little coarse sand to fine gravel, soft, moist, (FILL). Grades to wet.	Cement pad 0.5 ft. AGS to 1.5 ft. BGS 2-in diameter well casing, stainless steel, approx. 2.35 ft. stick-up
5	800									Dark brown fine SAND, some clay, trace coarse sand, loose, wet. Light gray PAPER FIBERS, trace clay, soft, moist. Grades with coarse sand. Grades to no coarse sand.	Cement Grout 1.5 ft. to 25.0 ft. BGS
	795										

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 11:30	▼	17.43
09/27/93 14:04	▼	17.33
12/14/93 12:55	▽	17.40

KB53700896

Date Start/Finish: 8/5/93 – 8/5/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Straton **Drilling Method:** Hollow Stem Auger **Casing Size:** N/A-in. **Auger Size :** 4.25-in. **Rig Type:** Truck Mounted **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279885.3 **Easting:** 12795954.7 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 24 ft. **Ground Surface Elev.:** 818.8 ft. **Geologist:** William L. Schaefer	**Well No.** WA-7 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 818.8 ft										**GROUND SURFACE**	
		A60638		9 5 2 2 6	7	1.0	19			Brown medium SAND, some rootlets, loose, moist. Grades with some gravel and fill debris.	
				3 2 2	5	1.0	5.8				
	815			1						Gray PAPER FIBERS, some sand, little clay, loose, moist.	
- 5				1 1 1 1	2	0.1	0.0				
				1 1	2	0.9	0.0				
	810	A60639		1 1 1	2	1.2	5.8			Grades to green/gray in color, with some medium sand.	
0		A60640		1 1 1 WOH	2	0.8	7.7			Grades to wet with some odor.	
				1 1 2	2	0.8	3.8				
	805			1 1	2	2.0	19				

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700988

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

Well No. WA-7

Total Depth = 24 ft.

erable Unit:
Allied Operable Unit

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 in.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				1 2 4						Gray PAPER FIBERS, some sand, little clay, loose, moist.	
		A60641		3 3 4	6	1.0	3.8				
	800	A60642		2 2 2 3	4	2.0	3.8				
20		A60643		1 1 3 4	4	2.0	5.8				
		A60644		6 9 10 10	18	1.0	0.0			Black coarse SAND, some medium sand, trace fine sand, loose, wet.	
	795									Brown fine SAND, some silt, trace clay, medium dense, wet. End of boring at 24.0 ft. BGS.	
25											
	790										
30											
	785										
5											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite/cement grout upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB53700989

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

rable Unit:
Allied Operable Unit

Well No. MW-125A

Total Depth = 25.0 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	790									Light gray PAPER FIBERS, trace clay, soft, moist.	Bentonite Slurry Seal 18.4 ft. to 19.4 ft. BGS
-20										Gray coarse SAND, some fine gravel, loose, wet.	0.01 stainless steel screen from 19.5 ft. to 24.5 ft. BGS
										Dark brown ORGANIC MATTER, loose, damp. (PEAT).	
	785									Dark gray fine to coarse SAND, loose, wet.	Sandpack from 19.4 ft. to 25.0 ft. BGS
										Dark gray fine SAND, loose, wet. Grades to light brown in color.	
25										Brown coarse SAND, some fine gravel, loose, wet. End of boring at 25.0 ft. BGS.	
	780										
	775										

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring log augmented from adjacent borehole MW-125B.

Water Levels

Date / Time	Elevation	TOC
09/08/93 11:30	▼	17.43
09/27/93 14:04	▼	17.33
12/14/93 12:55	▽	17.40

KB53700897

Date Start/Finish: 7/21/93 – 7/21/93 **Drilling Company:** Parratt & Wolff Inc. **Dr[illegible]'s Name:** Doug Richmond **C[illegible] Method:** Hollow Stem Auger **Bit Size:** –in. **Auger Size :** 4.50–in. **Rig Type:** Diedrich D–50 **Spoon Size:** 2.0–in. **Hammer Weight:** 140–lb **Height of Fall:** 30–in.	**Northing:** 279639.1 **Easting:** 12797106.5 **Well Casing Elev.:** 809.92 ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 54.0 ft. **Ground Surface Elev.:** 807.6 ft. **Geologist:** Emily Gloeckler	**Well No.** MW–125B **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
										GROUND SURFACE	Vented Casing Cap 4–in diameter steel protective casing stick–up 2.87 ft. above ground surface (including locking cap).
		A60019 A60020		5 8 5 5	13	1.5	0.0 0 0			Dark brown CLAY, some fine to medium sand, little coarse sand to fine gravel, soft, moist, (FILL).	Cement pad 0.5 ft. AGS to 1.5 ft. BGS
	805	A60021		3 4 3 4	7	1.5	0 0				
		A60022		1 1 1 1	2	1.3	0 0			Grades to wet.	2–in diameter well casing, stainless steel, approx. 2.32 ft. stick–up
5		A60023		1 1 1 1	2	1.3	0 0				
	800	A60024		WOH WOH 1 1	2	2.0	7 4			Dark brown fine SAND, some clay, trace coarse sand, loose, wet. Light gray PAPER FIBERS, trace clay, soft, moist.	
0		A60025		1 1 1 1	2	1.0	0.0			Grades with coarse sand.	Cement Grout 1.5 ft. to 25.0 ft. BGS
	795	A60026		1 1 1 1	2	2.0	4 2			Grades to no coarse sand.	
		A60027		1 2 1	3	2.0	250				

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 11.52	↧	13.58
09/27/93 14:08	↧	12.77
12/14/93	▽	12.58

KB53700898

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

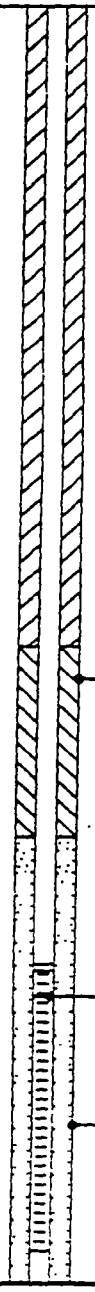
Well No. MW-125B

Total Depth = 54.0 ft.

erable Unit:
Allied Operable Unit

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description
				2						Light gray PAPER FIBERS, trace clay, soft, moist.
		A60028				2.0	45.4			
	790									
		A60029 (18'-19')		2 3	5	2.0	94.8			
		A60030 (19'-20')		2 3			21.9			
-20		A60031		2 2 2 3	4	2.0	2.1			Black ORGANIC MATTER and medium SAND, trace coarse sand, loose, moist, (PEAT).
										Gray coarse SAND, loose, wet.
										Dark brown ORGANIC MATTER, loose, damp, (PEAT).
	785			3 2 3 4	5		-			Dark gray fine to coarse SAND, loose, wet.
										Grades to fine sand.
				4 8 12 18	20	1.6				Grades to light brown in color.
-25										Brown coarse SAND, some fine gravel, loose, wet.
				8 9 10 11	19	1.0				
	780									
				22 18 27 32	45	2.0				Grades to fine sand, trace clay.
										Grades to coarse sand.
				21 23 19 22	42	2.0				Grades with some clay, medium dense.
										Brown coarse SAND and fine GRAVEL, trace clay, dense, wet.
	775			22 15 17 18	32	1.5				
				4 8 13	21	1.6				Brown medium SAND, trace clay, medium dense, wet.

Well Construction



BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 11:52	▼	13.58
09/27/93 14:08	▼	12.77
12/14/93	▽	12.58

KB53700899

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

erable Unit:
Allied Operable Unit

Well No. MW-125B

Total Depth = 54.0 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				10						Brown CLAY, some medium sand, stiff, wet.	
				23 27 24 24	51	2.0				Brown medium to coarse SAND, some clay, dense, wet.	
	770									Brown CLAY, some fine sand, trace fine gravel, stiff, wet.	
				7 9 8 10	17	2.0				Brown medium SAND, trace fine subrounded gravel, trace clay, very dense, wet.	
										Brown/gray fine SAND, trace coarse sand, very dense, wet.	
40				17 19 28 30	47	2.0					Cave-in from 35.0 ft. to 54.0 ft. BGS
	765			19 31 50/ 4	81+	2.0				Grades to light brown in color, no coarse sand.	
45				17 31 50/.3	81+	2.0					
				32 50/ 4	50+	2.0					
	760			20 23 23 27	46	2.0					
50				18 21 26 31	47	1.5					
	755			26 31 50/ 3	81+	NR				End of boring at 52.7 ft. BGS.	
55											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 11:52	▼	13.58
09/27/93 14:08	▼	12.77
12/14/93	▽	12.58

KB53700900

Date Start/Finish: 8/10/93 - 8/10/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** David Straton **Drilling Method:** Hollow Stem Auger **Bit Size:** N/A-in. **Auger Size** : 4.25-in. **Rig Type:** Truck-mounted **Spoon Size:** N/A-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 279559.5 **Easting:** 12796775.3 **Well Casing Elev.:** 807.07 ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 20 ft. **Ground Surface Elev.:** 807.3 ft. **Geologist:** William Schaefer	**Well No. P-2** **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 807.3 ft.											Flush mount at surface
										GROUND SURFACE	
				4 6 6 5	12	1.3				Brown fine to coarse SAND, trace silt and clay, medium dense, moist.	Cement pad (0 to 0.5 ft. BGS)
	805			6 6 5 5	11	1.0					Grout (0.5 to 2.0 ft. BGS) 2-in diameter PVC casing (0 to 6.5 ft. BGS)
5				6 5 4 5	9	0.1				Brown fine to coarse SAND and GRAVEL, loose, moist.	Bentonite Slurry Seal (2.0 to 4.0 ft. BGS)
				4 2 1	4	2.0				Grades with trace organic matter.	
	800			2 1 1 1	2	1.4				Brown fine SAND and SILT, loose, moist.	0.010-in PVC screen (6.5 to 16.1 ft. BGS)
10				4 3 3	6	[illegible]				Black fine to medium SAND, soft, moist.	
	795	460677		2 1 1	2	5				Brown SILT and CLAY, trace medium sand, loose, moist. Grades to wet. Black fine to medium to coarse SAND, trace gravel, loose, wet	Silica Sandpack (4.0 to 17.0 ft BGS)
15				4	5	3					

BLASLAND, BOUCK & LEE, INC
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 16:18	▼	12.87
	▽	NA
12/14/93 8.30	▽	13.28

Site:
Allied Paper, Inc., /Portage Creek/
Kalamazoo River Superfund Site

Operable Unit:
Allied Operable Unit

Well No. P-2

Total Depth = 20 ft.

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				2						Black medium to coarse SAND, loose, wet.	
				4 6 5 5	11	20				Black SILT and CLAY, trace coarse sand and gravel, loose, wet.	
	790									Black fine to medium SAND, trace coarse sand, loose, wet.	
				3 3 4 6	7	20				Black ORGANIC MATTER, some clay and silt, soft, moist (PEAT).	
										Brown fine SAND and SILT, trace coarse sand and gravel, loose, wet.	
20										Brown medium to coarse SAND, trace gravel, loose, wet.	
										Brown SILT and CLAY, trace gravel and coarse sand, soft, wet.	
										End of boring at 20.0 ft. BGS.	
	785										
25											
	780										
30											
	775										
35											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Water Levels

Date / Time	Elevation	TOC
09/08/93 16:18	▼	12.87
	▼	NA
12/14/93 8.30	▽	13.28

Project. 645.51

Script. Kalaold
Date 09/25/98

KB12303961

SB 510

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/02/1991

Date Drilled: 11/21/89
Drilled By: LTI, GWP
Water Depth Encountered During Drilling (ft): 4

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Estimated Elevation (ft)
0							806.5
					FILL	FILL (sand, black soil, concrete, brick, ash, wood)	
5	42 25 20	P				FILL (mostly gravel, brown coarse sand, concrete, pushed through brick)	801.5
10	1 1 1	A,P			FILL	gray fibrous PAPER RESIDUALS	796.5
	1 1 1	A,P					
	3	A,P					
15	3 3	A,P			SP		791.5
					PT	PEAT	
20	6 9 10	A,P			SM	2"-6" band of dark brown silty SAND with roots, then white sedimentary SAND and GRAVEL with clay binder	786.5
25	12 19 22	A,P			CL	gray gravelly CLAY	781.5
					SP	dense, tan, uniform fine SAND	
						End of Boring	
30							776.5
35							771.5
40							766.5

SS Split Spoon
P Physical Sample
A Analytical Sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB53701054

SB 2010

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/02/1991

Date Drilled: 11/8/89
Drilled By: LTI, JTP
Water Depth Encountered During Drilling (ft): 8

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0						FILL (brown to dark brown, fine to med. sand, trace gravel, rubble, paper residuals, plastics, styrofoam)	797.45
5	6 8 8	P			FILL	FILL (dense brown, fine to med. sand, trace of fine gravel, cloth)	792.45
10	5 8 10	P				bits of CONCRETE (blow counts may be exageration of soil strength because of ease of drilling)	787.45
	1 1 1	SNR				no recovery	
15	1 1 12	P			Pt	Dark brown, fibrous, rooty PEAT w/ gray, granular fill on top (no resistance, drilled like water)	782.45
					SP GP	Very dense, brown, fine to med. SAND and fine to med. GRAVEL	
20	9 13 18	P			SP	Dense, gray-brown, fine to med. SAND, trace of fine gravel	777.45
						Dense, gray-brown, fine SAND, trace of fine gravel	
					SP GP	Gray-brown, med. to coarse SAND and fine GRAVEL, trace med. gravel	
25	12 12 13	P				End of Boring.	772.45
30							767.45
35							762.45
40							757.45

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB53701096

SB 2011

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/03/1991

Date Drilled: 11/8/89
Drilled By: LTI, JTP
Water Depth Encountered During Drilling (ft): 5

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0						FILL (light brown, fine to med. sand, trace fine gravel)	793.1
						FILL (black, fine, silty sand, trace coarse gravel)	
		A,P					
	8 4 2	SNR			FILL	no recovery	
5							788.1
	8 22 17	P				black, silty SAND, some FILL (wood), oil sheen on water run out	
	1 1 2	P			PT	Dense, fibrous PEAT some roots, oil at top of peat	783.1
10							
	6 10 22	P			SP GP	banded: light brown, fine SAND and coarse GRAVEL; brown, fine to med. SAND and fine GRAVEL; yellow-brown, coarse SAND and fine GRAVEL	778.1
15							
	8 12 15	P			SP	Brown, fine to med. SAND, trace fine gravel	773.1
20							
	5 6 9	P			SM	Gray, silty SAND, trace fine to med. gravel	768.1
25						End of Boring	
30							763
35							758
40							753

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB12303962

SB 2012

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/03/1991

Date Drilled: 11/20/89
Drilled By: LTI, JTP
Water Depth Encountered During Drilling (ft): 4

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0						FILL (black sand, ash, roots, wood, rubbish, concrete, brick)	792.47
5	1 9 5	A			FILL	FILL (black soil, wood, oil, gravel, concrete)	787.47
10	1 2 3	A,P			PT	Brown to black PEAT and MARL, organic matter, rubber odor	782.47
15	9 8 7	P			ML	Gray, clayey SILT, trace of fine gravel	777.47
20	7 7 6	P			SM	Grey-brown, fine, silty SAND, trace of med., silty sand, trace of fine gravel	772.47
25	6 12 17	P			SC	banded gray, silty CLAY brownish gray, silty SAND brown, fine SAND, trace med. sand gray, clayey SAND gray CLAY	767.47
30	9 14 20	P			SP	brown fine to med. SAND trace of clay trace of fine to med. GRAVEL	762.47
35	14 17 25	P			CL	Brown, silty CLAY trace of sand	757.47
						End of Boring	
40							752.47

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc

KB53701098

SB 2014

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/02/1991

Date Drilled: 11/20-21/89
Drilled By: LTI, JTP
Water Depth Encountered During Drilling (ft): 4

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Moisture Content	Description	Surveyed Elevation (ft)
0							FILL (black soil and ash, organic matter, concrete, brick, wood)	793
5	2 5 8	A,P			FILL		FILL (brown, gravel, brick, concrete, metal, paistic, wood)	788
10	2 2 2	SNR			CL	moist	Black to brown, silty MUCK, organic fibers	783
15	9 11 12	P			GW SP		Fine to coarse GRAVEL and brown, coarse SAND	778
20	12 13 10	P			SM		Gray-brown to rust-brown, silty SAND, trace of fine to coarse gravel	773
25	7 12 13	P			SP		Brown, fine to med. SAND, trace of fine to med. gravel	768
30	11 15 16	P			SM GP		Brown, fine, silty SAND and fine GRAVEL, trace med. gravel	763
35	9 13 16	P			SP GP		Brown, fine to med. SAND and fine GRAVEL, trace med. gravel	758
40	15 14 15	P			SP		Gray-brown fine SAND	753

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB53701100

SB 2014

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/02/1991

Date Drilled: 11/20-21/89
Drilled By: LTI, JTP
Water Depth Encountered During Drilling (ft): 4

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Moisture Content	Description	Surveyed Elevation (ft)
40					SP		End of Boring	753
45								748
50								743
55								738
60								733
65								728
70								723
75								718
80								713

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB53701101

SB A

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 11/27/1991

Date Drilled: 5/2/1988
Drilled By: Wilkins & Wheaton
Water Depth Encountered During Drilling (ft): 17

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0							811.83
	3 2 2		X			Grayish tan fine to medium sand with trace fine gravel, small piece of plastic and FILL	
5							806.83
	5 2 5		X		FILL	Grayish brown fine to medium sand with cardboard and wood. FILL	
10							801.83
	5 4 4		X			Grayish fine to medium sand with plastic and wood. FILL	
15							796.83
	4 4 28		X		SP	Grayish SAND with trace fine gravel	
						Grayish black fine to medium SAND with some fine to medium gravel, trace clay binder, some metal pieces	
	7 7 5		X		FILL	Grayish fine to medium sand - concrete at bp, black sandy clay with cinders, FILL	
20							791.83
	2 3 4		X		SP	Gray fine to medium SAND	
25							786.83
	2 2 2		X		OH/OL CL	Black 3" organic CLAY layer Gray CLAY Gray sandy CLAY with organic material, some sand	
						End of Boring	
30							781.83
35							776.83
40							771.83

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB5370

SB D

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 11/27/1991

Date Drilled: 5/4/1988
Drilled By: Wilkins & Wheaton
Water Depth Encountered During Drilling (ft): 21.5

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0						Gray/whitish bale paper residual mixed with fine to medium sand	812.67
						Brown fine to coarse sand with some fine gravel and binder of paper residual	
	1 1 1				FILL	Slightly more residual	
5							807.67
						Trace of plastic/paper residual, fine to coarse black sand	
					SW		
	6 7 8					Brown fine to coarse SAND with some fine gravel	
10					SW		802.67
						Brown/black layers fine to coarse SAND with some fine gravel, trace of silt and trace clay binder	
	3 2 2						
15					SW		797.67
	8 2 23					Black/brown wood and plastic	
20					FILL		792.67
	3 3 5					(Sample not recovered)	
	3 6 9					Brown/gray fine to medium SAND	
25							787.67
	6 6				SP	Grayish/brown fine to medium SAND	
30							782.67
	10 10 15				CL	Gray/brown mottled dense silty CLAY	
35						Yellowish/brown fine to medium SAND with some gray clay	777.67
					SC		
	6				CL	Gray/brown mottled silty CLAY trace fine gravel	
					SP	Yellowish brown fine to medium SAND	
40	6				CL	Gray/brown mottled silty CLAY trace fine gravel	

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc

KB12303963

SB F

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 11/27/1991

Date Drilled: 5/5/1988
Drilled By: Wilkins & Wheaton
Water Depth Encountered During Drilling (ft) 16.2

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0						Trace of topsoil	805.06
						Dark brown fine to coarse sand with some fine to medium gravel, trace clay binder, FILL	
	2, 3, 3		X				
5							800.06
	2, 1, 3						
	2, 3, 3		X		FILL	Dark brown fine to coarse sand with some fine to medium gravel, trace clay binder, trace paper fiber	
10							795.06
	6, 5, 5		X			Plastic, wood fiber, some paper fiber	
	9, 8, 6		X			(Sample not recovered)	
15							790.06
	3, 2, 3		X			Brown fine to coarse sand with some fine to medium gravel, dark brown organic material - wood, twigs, roots - at end of sample	
	4, 3, 6		X		SW		
20					SP	Brown fine to medium sand, trace fine gravel, trace wood	785.06
	6, 5, 7, 8, 13, 18		X			Light brown silty fine SAND	
25							780.06
	6, 10, 16		X		SW	Light brown silty fine SAND	
30							775.06
	10, 15, 24		X			Light brown silty fine SAND	
35						End of Boring	770.06
40							765.06

SS Split Spoon
P Physical Sample
A Analytical Sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB53701037

SB G

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 11/27/1991

Date Drilled: 5/6/1988
Drilled By: Wilkins & Wheaton
Water Depth Encountered During Drilling (ft): 16.5

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0					FILL	Black organic topsoil, FILL	812 47
					SP	Dark brown fine to medium SAND with some fine gravel, trace clay binder	
	2/18						
5					SP	Black/brown fine to medium SAND with some fine gravel, trace of binder and organic wood pieces	807 47
	1 1 2				FILL	Gray/white paper residuals	
10							802.47
	2 4 12					Gray/white paper residuals	
15					SP	Black/brown fine to medium SAND	797 47
	5 7 9					Brown fine to coarse SAND with trace fine to medium gravel	
20							792 47
	8 9 9				SW		
25							787 47
	3 4 8					Brown fine to coarse SAND some fine to medium gravel trace silt	
30						Brown fine to coarse SAND some fine to medium gravel, trace silt	782 47
	7 7 8				SW	(Sample not recovered) Brown fine to coarse SAND with some fine to medium gravel, trace of silt	
35							777 47
	7 9 10				SP	Brown fine to coarse SAND with fine to coarse gravel trace silt trace clay	
40						End of Boring	

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc

KB5370100

SB H

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 11/27/1991

Date Drilled: 5/9/1988
Drilled By: Wilkins & Wheaton
Water Depth Encountered During Drilling (ft): 19.5

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description	Surveyed Elevation (ft)
0						Black fine to medium SAND with some fine to medium gravel, trace paper residuals and wood, trace of clay binder	817.52
	35 32 15		X		SP	Brown fine to coarse SAND with some fine to medium gravel, trace clay binder and wood	
5							812.52
	35 20 12		X			Black/brown fine to coarse SAND with some fine to medium gravel, trace clay binder, some cinders	
	1 2 2		X		FILL	Gray/white paper residuals	
10							807.52
	1 2 2		X				
15							802.52
	14 17 7		X		GW	Black brown fine to coarse GRAVEL with fine to coarse sand	
20							797.52
	7 6 8		X			Brown/black fine to coarse GRAVEL with fine to coarse sand, trace of silt	
25							792.52
	9 11 15		X		SW	Brown fine to coarse SAND with trace of fine to medium gravel trace of silt	
30							787.52
	14 17 30		X		CL	Gray silty CLAY with silt seams	
35						End of Boring	782.52
40							777.52

SS Split Spoon
P Physical Sample
A Analytical sample
S Screening Sample

LTI-Limno-Tech, Inc.

KB53701039

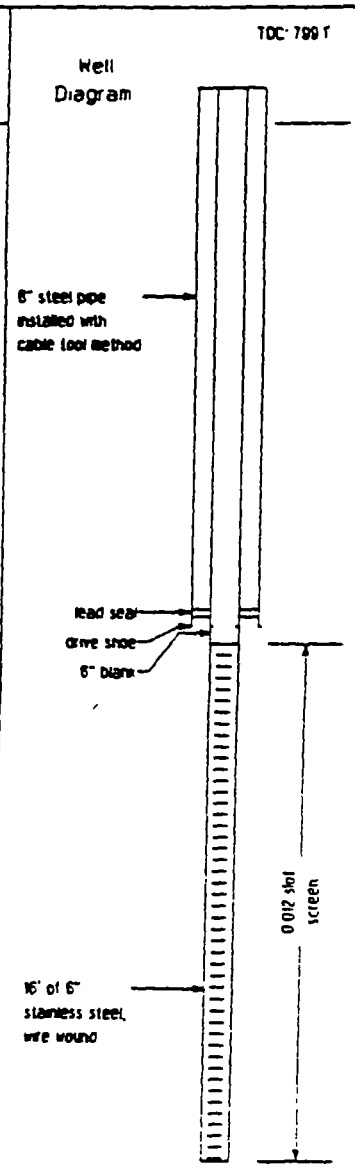
TW 1

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/02/1991

Date Drilled: 10/4/1989
Drilled By: Peerless-Midwest, Inc.
Water Depth Encountered During Drilling (ft).

Depth (ft)	Blow Counts	Sample Type	Sample Range	Log	USCS Symbol	Description
0					GP	GRAVEL & Debris, fine medium SAND
5						
10						
15					Pt	PEAT
					SM	Very fine silty SAND
20						
25						
30						End of Boring
35						
40						

Well Diagram



Surveyed Elevation (ft)

798.1
793.1
788.1
783.1
778.1
773.1
768.1
763.1
758.1

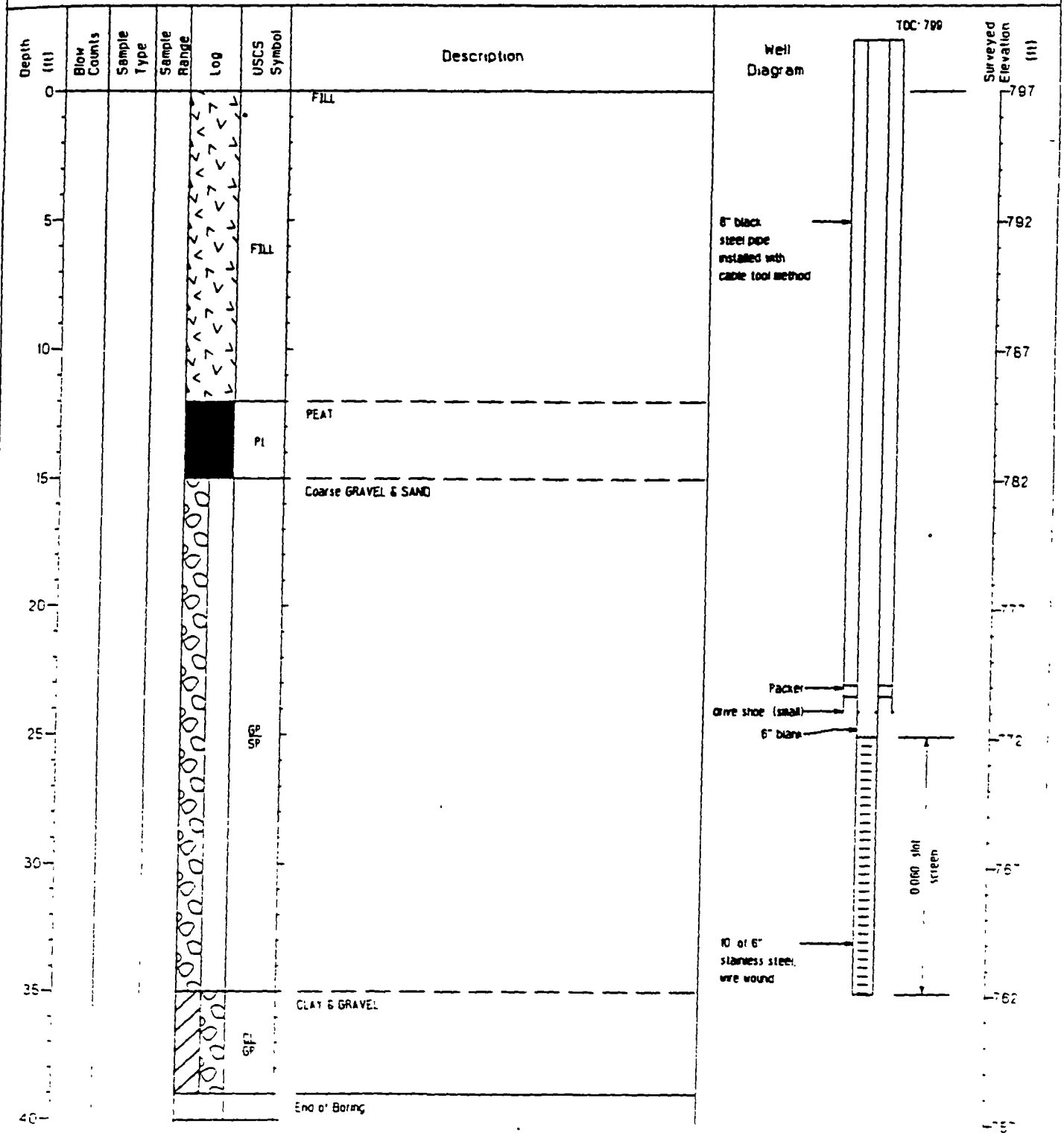
LTI-Limno-Tech, Inc.

KB12303964

TW 2

Project: JD7
Site: Allied Paper, Kalamazoo, MI
Revision Date: 12/01/1991

Date Drilled: 10/18/1989
Drilled By: Peerless-Midwest, Inc
Water Depth Encountered During Drilling (ft):



LTI-Limno-Tech, Inc

KB12303965

Date Start/Finish: 8/9/93 – 8/9/93 **Drilling Company:** Parratt Wolff Inc. **'s Name:** Dave Straton **g Method:** Hollow Stem Auger **Bit Size:** N/A-in. **Auger Size :** 4.25-in. **Rig Type:** Truck Mounted **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280595.6 **Easting:** 12795805.7 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 18 ft. **Ground Surface Elev.:** 814.0 ft. **Geologist:** William L. Schaefer	**Well No.** WA-2 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
GS elevation 814.0 ft.										GROUND SURFACE	
		A60670		6 7 2 2	9		31.2 2.0			Black medium SAND and roots, loose, moist.	
				2 1 1 3	2		4.1			Light gray PAPER FIBERS, little clay, soft, moist.	
	810			WOH 1 WOH WOH	1		4.1			Thin layer of gray medium to coarse SAND. Thin layer of gray medium to coarse SAND.	
5		A60671 A60672 (Dup)		1 WOH 1 1	1		2.0				
	805	A60673		1 WOH WOH 5	0	1.0	2.0				
10		A60674		2 2 1 2	3	1.0	12.4			Thin layers of medium to coarse SAND.	
		A60675		3 4 5 5	9	1.0	6.2			Thin layer of medium to coarse SAND.	
	800	A60676		4 7	14	0.4	4.1				
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB53700979

Site:
Allied Paper, Inc., /Portage Creek/
alamazoo River Superfund Site

Well No. NA-2

Total Depth = 18 ft.

Operable Unit:
Allied Operable Unit

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				7 6 4 4 8 8	12	0.7	2.0			Light gray PAPER FIBERS, little clay, soft, moist. Brown coarse SAND and GRAVEL, some medium sand, medium dense, moist.	
										End of boring at 18.0 ft. BGS.	
	795										
20											
	790										
25											
	785										
30											
	780										
5											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

ect: 845.51 Script: Kalaold

KB5370098O

Date Start/Finish: 8/9/93 – 8/9/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Straton **Drilling Method:** Hollow Stem Auger **Bit Size:** N/A-in. **Auger Size :** 4.25-in. **Rig Type:** Truck Mounted **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280449.8 **Easting:** 12785525.5 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 18 ft. **Ground Surface Elev.:** 817.8 ft. **Geologist:** William L. Schaefer	**Well No.** WA-3 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
	as elevation 817.8 ft.									**GROUND SURFACE**	
		A60664		1 1 1 2	2	1.0	14.5			Brown medium SAND, some organic matter, trace coarse sand, loose.	
	815	A60665		1 1 1 2	2	2.0	10.4			Light gray PAPER FIBERS, little clay, soft, moist.	
5				3 3 2 2	5	0.4	4.1			Grades with some peat.	
	810			WOH WOH WOH 3	0	1.0	4.1			Grades with thin layers of medium sand.	
				1 1 3 3	4	2.0	4.1				
		A60666		1 WOH WOH 1	0	1.6	6.1				
	805	A60667		2 1 2 2	3	2.0	4.1			Grades to wet.	
		A60668		2 2	5	2.0	6.2				

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB53700981

Site:
Allied Paper, Inc., /Portage Creek/
'alamazoo River Superfund Site

Well No. WA-3

Total Depth = 18 ft.

Operable Unit:
Allied Operable Unit

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
				3 6						Brown medium SAND, trace coarse sand and gravel, loose, wet.	
		A60689		3 4 4 8	8	2.0	0.0			Brown coarse SAND and GRAVEL, some medium sand, loose, wet.	
	800									End of boring at 18.0 ft. BGS.	
20											
	795										
25											
	790										
30											
	785										
5											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:
Boring filled with bentonite/cement grout upon completion.

Water Levels		
Date / Time	Elevation	TOC
	▼	NA
	▽	NA
	▽	NA

KB53700982

Date Start/Finish: 8/9/93 – 8/9/93 **Drilling Company:** Parratt Wolff Inc. **Driller's Name:** Dave Straton **Drilling Method:** Hollow Stem Auger **Bit Size:** N/A-in. **Auger Size :** 4.25-in. **Rig Type:** Truck Mounted **Spoon Size:** 2-in. **Hammer Weight:** 140-lb **Height of Fall:** 30-in.	**Northing:** 280322.9 **Easting:** 12795528.2 **Well Casing Elev.:** N/A ft. **Corehole Depth:** N/A ft. **Borehole Depth:** 12 ft. **Ground Surface Elev.:** 820.4 ft. **Geologist:** William L. Schaefer	**Well No.** WA-4 **Operable Unit:** Allied Operable Unit **Site:** Allied Paper, Inc., /Portage Creek/ Kalamazoo River Superfund Site

DEPTH	ELEVATION	Sample Run Number	Sample/Int/Type	Blows/6 In.	N	Recovery (ft.)	PID (ppm) Headspace	Geotechnical Test	Geologic Column	Stratigraphic Description	Well Construction
gs elevation 820.4 ft.										GROUND SURFACE	
	820	A60659		2 3	4	1.6	0.0 0.0			Dark brown medium SAND, some organics, loose, dry.	
				1 1 1						Yellow medium SAND, trace coarse sand and gravel, loose, moist.	
				1 1 1 1	2	1.0	2.0				
		A60660		1 1 1	2	1.0	2.0				
5	815										
		A60661		2 2 2 2 2	4	0.3	4.1			Gray PAPER FIBERS, little clay, loose, moist.	
		A60662		2 1	3	2.0	6.2				
10	810	A60663		6 6 6 10 15	16	1.2	0.0			Brown medium SAND, medium dense, moist.	
		A60062								Yellow medium to coarse SAND and GRAVEL, loose, moist.	
										End of boring at 12.0 ft. BGS.	
15											

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

Remarks:

Boring filled with bentonite/cement grout upon completion.

Water Levels

Date / Time	Elevation	TOC
	▼	NA
	▼	NA
	▽	NA

KB53700983

Attachment D

Interim Response Measure Components

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engineers & scientists