A.L. Taylor
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FIVE-YEAR REVIEW
FINAL
FOR THE
A.L. TAYLOR SITE
BROOKS, KENTUCKY

(Contract No. 68-W9-0029)
Work Assignment C04021B

Submitted to:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV

June 30, 1992

Submitted by:

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EXECUTIVE SUMMARY

The A.L. Taylor Site was owned and operated by Mr. A.L. Taylor who dumped hazardous wastes in excavated pits and trenches on his land from at least 1967 until his death in 1977. The paint and coatings industries in the Louisville area were the primary waste generators dumping at the site. Remedial action began in April 1987, and included the installation of a clay cap, a perimeter drainage system, groundwater monitoring wells, and a security fence.

Resource Applications, Inc. (RAI) has reviewed pertinent documents and performed a site inspection visit and sampling of groundwater, surface water, and sediment, to determine whether or not the remedial action continues to be protective of human health and the environment.

Sampling data generated by RAI was compared to previous data obtained in five quarterly sampling events that occurred from September 1988 to February 1990. All sample results are tabulated herein.

Based on the findings in this review, it was determined that the remedial actions that were performed at the site remain protective of human health and the environment. However, the presence of inorganics in the groundwater, and PCBs in the sediments in Wilson Creek warrant further sampling. The following recommendations are made:

1. Several tests should be performed for the sediments in Wilson Creek, including a rapid bioassessment, a Total Organic Carbon test, and possible toxological testing required by the results of the rapid bioassessment.

2. Necessary sampling should be performed on the groundwater beneath the site to confirm that the aquifers are classified as Class III (undrinkable).

3. Groundwater, surface water, and sediment should be sampled at previously sampled locations, and at proposed locations, on a quarterly basis to ensure that levels of contamination in the aquifers are not changing over time. Soil samples should be taken quarterly at the locations shown in Figure 3.1 until a determination of the source of the PCB contamination is made.

4. Continued maintenance of the site should be performed, such as mowing the grass on the cap to within four inches to help storm water to run off the cap, thus preventing infiltration into the buried waste.

5. Repair of several minor erosion areas on the cap should be performed to prevent the growth of these areas into major erosion areas. The presence of major erosion on the cap could threaten the integrity of the cap.

6. Vegetation growing in the rip-rap in the perimeter drainage channel is minor, however, excessive growth can inhibit the capacity of the channel. It is suggested that the vegetation be removed using an EPA-approved herbicide.

7. It is recommended that the excessive vegetation around the security fence in the area east of ALT-04 be controlled, using an EPA-approved herbicide, to prevent any possible damage to the fence.

8. Repairs to the site security fence should include blocking off the gaps underneath the fence to discourage entry into the site by small animals and

possibly small children. The rear gate has some minor damage, and should be repaired.

9. The area outside of the rear gate is rutted and stays muddy even in periods of dry weather. This area should be regraded and stabilized with gravel to allow easy access to ALT-01.

10. Potholes on the access road between the upper gate and the front gate should be filled in and stabilized with gravel to prevent fill from washing out.

11. An accurate recent topographic map of the site was unavailable for this review. It is suggested that a new topographic map be prepared to accurately show the locations of the wells, and other important site features, to show any settlement of the clay cap, and to satisfy the conditions in the Operations and Maintenance Plan.

Again, it has been determined that the selected remedy at the A.L. Taylor Site is presently protective of human health and the environment, and is effective. The remedy also complies with all Applicable or Relevant and Appropriate Regulations (ARARs). The initiation of the above recommendations will ensure the continued protectiveness and effectiveness. The next review is suggested to be conducted after the collection of at least two more quarters of sampling, and after obtaining the results of the tests mentioned above. The Commonwealth of Kentucky has received funds from the cost recovery settlement with responsible parties for the site for 29 years of operations and maintenance activities. It is anticipated that the State will begin these activities soon. It also is suggested that a public meeting be held to inform the public of the present and future status of the site.

1.0 INTRODUCTION

Resource Applications, Inc. (RAI) has been tasked by the U.S. Environmental Protection Agency (EPA), Region IV, under the Technical Enforcement Support (TES) program, to perform a Five-Year Review of the A.L. Taylor Site under the terms outlined by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by Section 121(c), and Section 300.430(f)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). Under CERCLA as amended by the NCP, a review must be performed within five years of the initiation of the remedial action, and every five years thereafter. This review is for sites that will not allow for unlimited use and unrestricted exposure after attainment of the performance standards stated in the Record of Decision (ROD).

The purpose of the Five-Year Review is 1) to confirm that the remedies implemented remain operational and functional, and 2) to evaluate whether cleanup standards and/or Applicable or Relevant and Appropriate Requirements (ARARs) are no longer considered adequate, and 3) to determine if institutional controls in place remain protective of human health and the environment.

EPA has established a three-tier approach to conducting five-year reviews, the most basic of which provides a minimum protectiveness evaluation (Level I Review). The second and third levels (Level II and Level III) of review are intended to provide the flexibility to respond to varying site-specific considerations, employing further analysis. EPA has determined that a modified Level I Review is appropriate for evaluation of the A.L. Taylor Site.

1.1 BACKGROUND

1.1.1 SITE DESCRIPTION

The A.L. Taylor Site, sometimes referred to as "The Valley of the Drums," is a 13-acre site located in Bullitt County, Kentucky, near the community of Brooks at an approximate latitude of 38°04'55", longitude of 85°42'56". The site is approximately 1.3 miles west of Interstate 65 and 1.7 miles northwest of Brooks, Kentucky, off of State Highway 1020. The site is bordered to the north and west by woods and to the south and east by several private rural residences and a golf course.

The A.L. Taylor Site is located in the Salt River drainage basin. Wilson creek, which runs along the eastern edge of the site, is a small tributary originating from a spring (or relic farm pond) south of the site. The creek initially flows northward, joining the Southern Ditch approximately 4 miles downstream of the site, and then flows approximately 2.5 miles into Pond Creek, which flows for approximately 14 miles before it drains into the Salt River just above the Salt River's confluence with the Ohio River.

The normal stream flow of Wilson Creek is low and subject to fluctuation from seasonal storm and snow-melt water contribution. The low flow of the creek combined with the high flow in the Ohio River gives a dilution factor of greater than 1,000,000 to 1 for any drinking water intake on the Ohio River downstream of the Salt River (Feasibility Study, 1982).

The A. L. Taylor site is in the Knobs physiographic region, which is a series of erosional remnants formed of Mississippian and Pennsylvanian rocks overlying Silurian and Devonian rocks. The Mississippian rocks are limestones and siltstones with some shale beds, while the Pennsylvanian rocks are sandy limestones and sandstones which form the cap rocks in the Knobs.

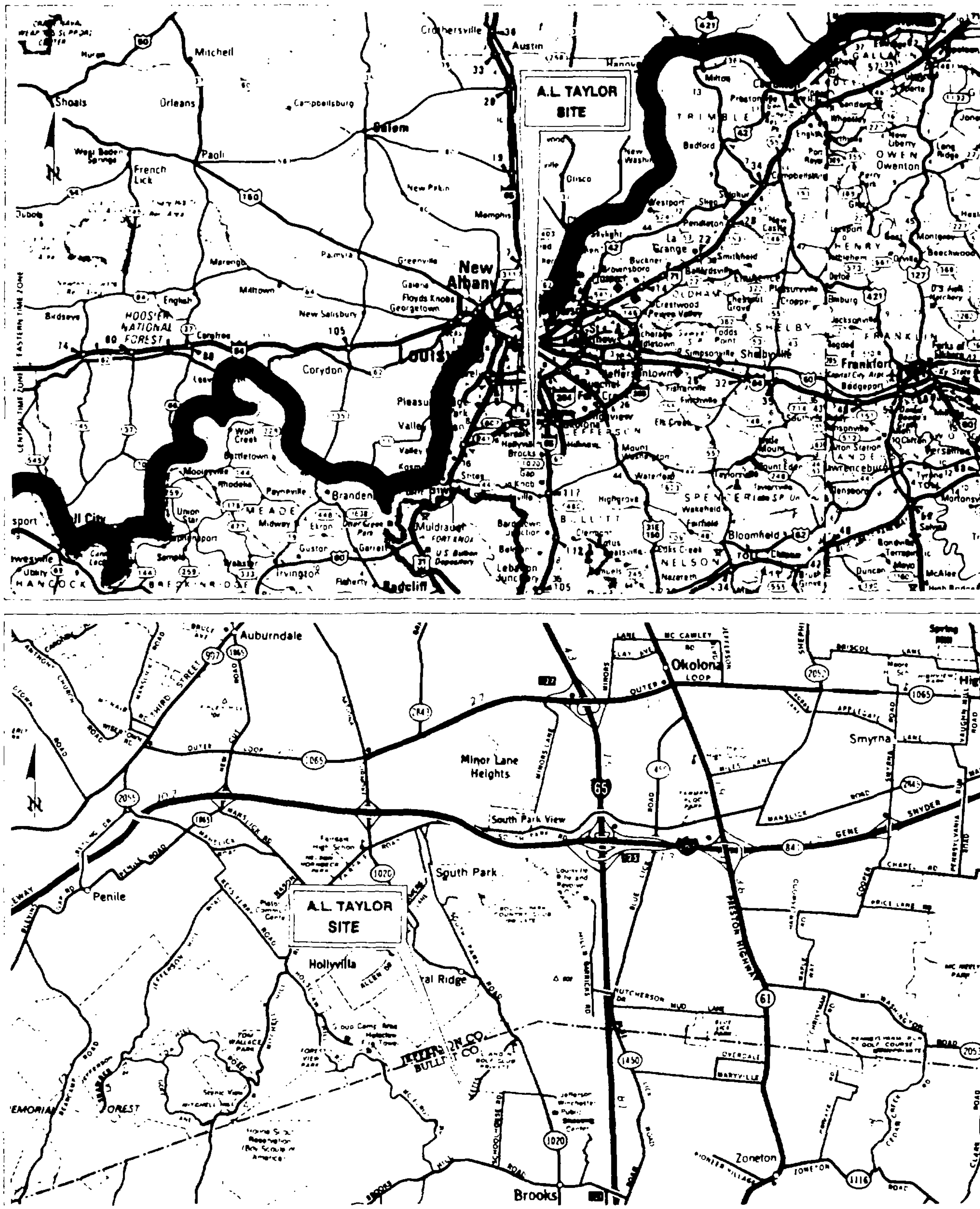

FIGURE 1.1
LOCATION MAP
A.L. TAYLOR SITE
BROOKS, KENTUCKY

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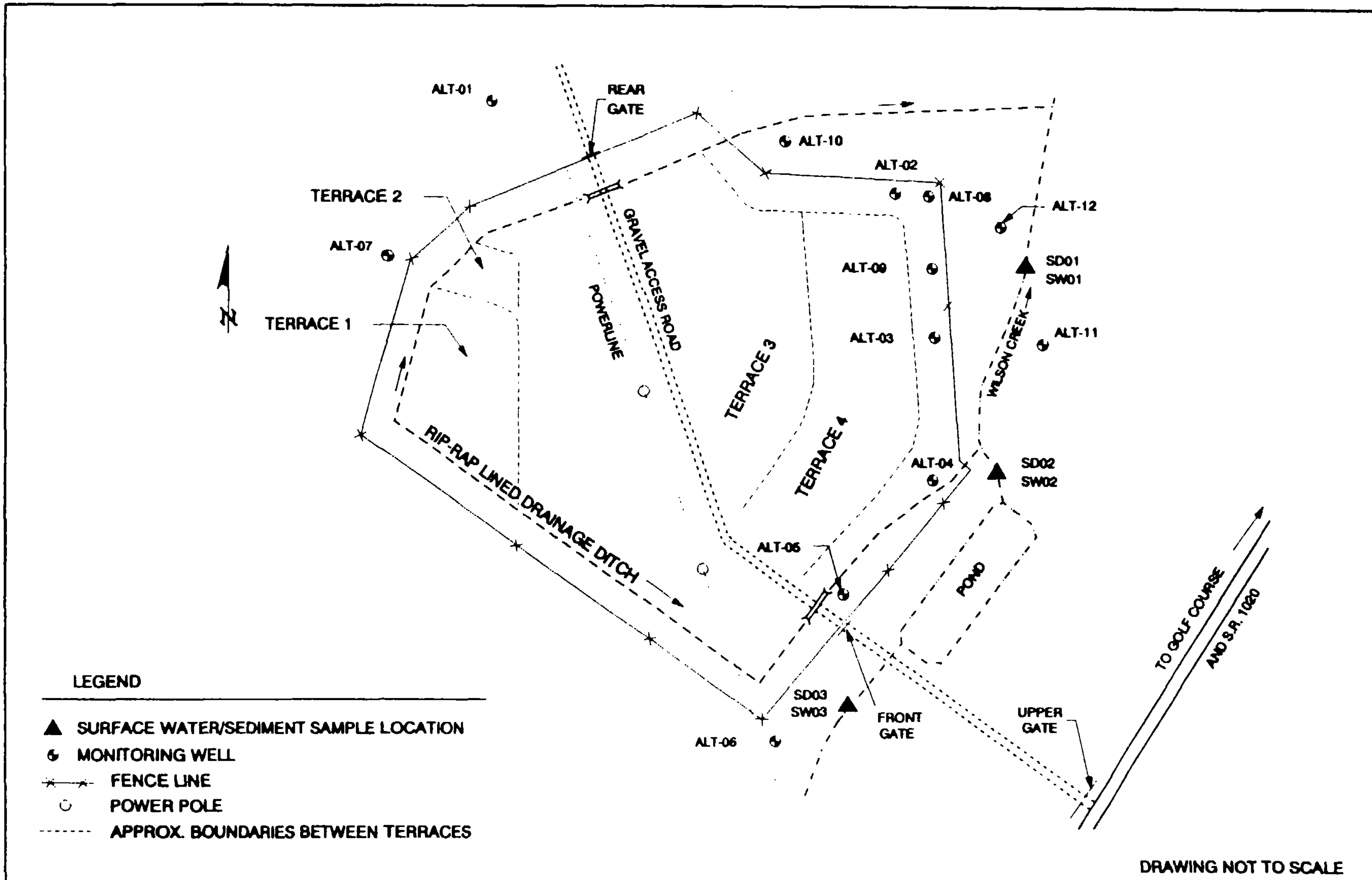

FIGURE 1.2 SITE MAP	A.L. TAYLOR SITE BROOKS, KENTUCKY	RESOURCE APPLICATIONS, INC. ENGINEERS ■ SCIENTISTS ■ PLANNERS 1000 CAMBRIDGE SQUARE SUITE D

The Knobs province is on the western edge of the Jessamine Dome, a structural dome which lies along the axis of the Cincinnati Arch. Regional dip of the formations in the vicinity of the site is gentle at 2 to 4 degrees to the southwest.

The site is underlain, in descending stratigraphic order by the New Providence Shale, the New Albany Shale, the Louisville Limestone, and the Waldron Shale. The New Providence Shale begins as shallow as 3 feet and is weathered to a depth of 12 to 13 feet. Joints and fractures in the New Providence Shale are numerous and are 2 to 5 feet long. It is not known at this time how open the fractures are, how continuous they are, or if there is significant intersecting of openings.

Groundwater at the site occurs in two aquifers: a shallow unconfined residual soil aquifer and a deeper confined consolidated rock aquifer. The shallow aquifer varies in thickness from approximately 3 to 25 feet. Water levels from hand-augured wells in this aquifer range from 2.4 to 6.4 feet below land surface. Based on topography, shallow bedrock, and water levels in wells, the direction of groundwater flow in the shallow aquifer is from the hills southeasterly toward the valley of Wilson Creek.

Shales, which comprise the uppermost geologic formations in the site ares, are relatively impermeable and thus retard the downward movement of water. In the Knobs area, the small number of sink holes and low-yielding springs indicates that the subsurface drainage system is poorly developed.

The deep aquifer occurs in the limestones under the confining shale formations. The Louisville Limestone of Silurian age, along with the Jeffersonville and Sellersburg Limestones, forms a single confined aquifer of secondary importance that yields most of the water pumped from consolidated rocks in this area of the state. Water is contained in and moves along interconnected fractures and solution channels.

Locally, little use is made of the shallow or deep aquifers, and no nearby wells that penetrate the deep aquifer are known to be in use. The five homes located closest to the site get their drinking water from cisterns, and other nearby residences and businesses are on cisterns or are connected to a municipal drinking water supply. An adjacent land owner had drilled a well, but it was never used because of it's low yield. This well was sampled during the Remedial Investigation and found to contain concentrations of iron and manganese that were approximately 30 and 3 times the National Drinking Water Standards, respectively.

Vertical groundwater flow direction has not been defined; flow is related to the interconnection of fractures or joints within the rocks and the hydraulic gradient. Although movement of groundwater from the shallow aquifer to the deep aquifer cannot be precluded, it is unlikely.

The groundwater aquifers beneath the A.L. Taylor Site are assumed to be classified as Class III aquifers, or undrinkable. This decision is based on several factors. The naturally occurring high levels of iron and manganese have an adverse effect on the aesthetic quality of the water. Low yield makes it difficult to obtain a good supply. The Smith's Farm Superfund Site, which is in the same county, and is also in the Knobs physiographic region, has been classified as a Class III aquifer and is not suitable for drinking.

1.1.2 SITE HISTORY

The A.L. Taylor Site was first identified as a waste disposal site by the Kentucky Department of Natural Resources and Environmental Protection Cabinet (KDNREPC) in

1967. The paint and coating industries in the Louisville area were the primary waste generators using the site. The surface features of the site were significantly disturbed, as Mr. Taylor had excavated pits and emptied the contents of waste-containing drums into them prior to recycling the drums. Mr. Taylor also disposed of solvent wastes in the drums by burning the wastes in the open pits. After KDNREPC stopped Mr. Taylor from burning solvents, soil from the nearby hillsides was used to cover the pits. Figure 1.3 shows the approximate locations of the covered burial pits. Thousands of drums were stored on the ground surface, especially during the later years of operation. During the Remedial Investigation, four or five cells of buried wastes containing chemical liquids, sludges and crushed drums were identified.

KDNREPC first became involved with the site in 1967 after receiving reports of a fire that had been burning for approximately one week. The State noted that an approved sanitary landfill could be operated by Mr. A.L. Taylor at this location with proper permitting. Mr. Taylor did not apply for a sanitary landfill permit, but continued receiving and disposing of waste on the site, under the business name of the A.L. Taylor Drum Cleaning Service, until November 1977. KDNREPC first documented releases of hazardous substances from the site in 1975 and pursued legal actions against Mr. Taylor until his death in late 1977.

In January 1979, at the request of KDNREPC, EPA responded to releases of oil and hazardous substances at the A.L. Taylor Site. Under the authority of Section 311 of the Clean Water Act, the EPA Emergency Response Branch prevented further releases of pollutants into Wilson Creek by constructing interceptor trenches, constructing a temporary water treatment system, securing leaking drums, and segregating and organizing drums on site. The EPA operated and maintained the carbon treatment system on site until December 1979, when the KDNREPC assumed responsibility for the system.

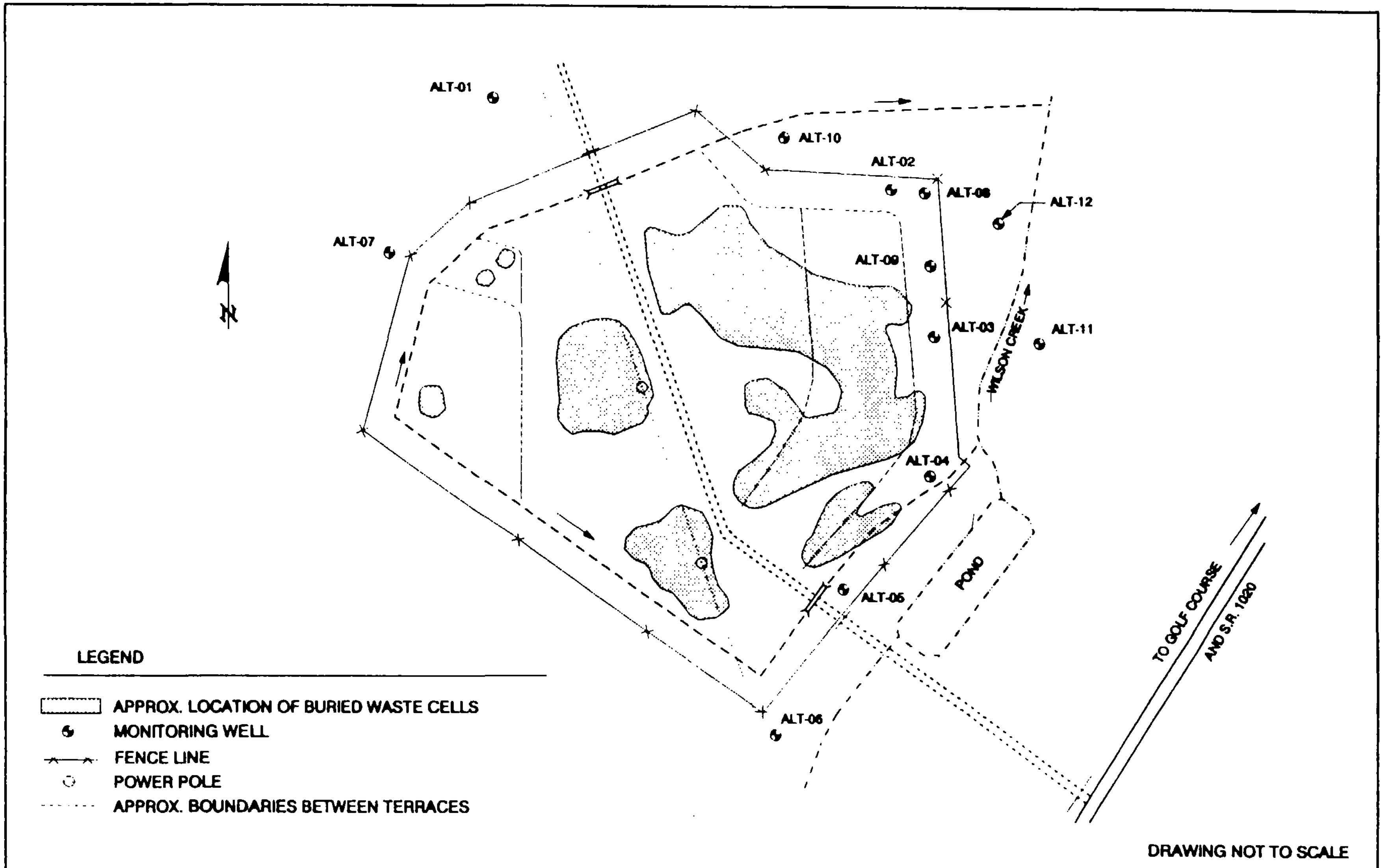

FIGURE 1.3
LOCATION OF BURIAL PITS

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The EPA's final count of drums located on the site after the 1979 emergency response action was 17,051 drums, of which 11,628 were empty. In 1980, KDNREPC contacted five Responsible Parties (RP) who identified and removed approximately 20 percent of the drummed waste remaining on the surface. The five generators contacted include: Ford Motor Co.; Reliance Universal, Inc.; Louisville Varnish Co.; George W. Whitesides Co.; and Kurfee's Coating, Inc. Following this removal, an estimated 4,200 drums remained.

In 1981, an EPA inspection revealed deteriorated and leaking drums, which were again discharging pollutants into Wilson Creek. EPA, responding under the emergency provisions of CERCLA, upgraded the existing treatment system and moved the remaining 4,200 drums from the site for recycling or disposal. The site was then regraded to promote positive drainage towards Wilson Creek, thus reducing the amount of ponded water and minimizing surface erosion. These measures eliminated the drummed waste from the surface, but left contaminated soils and buried drums on site.

Analytical data was collected during several site actions, including the two immediate removals and the remedial investigation. Hazardous substances detected on-site included the following classes of compounds: heavy metals; ketones; phthalates; polychlorinated biphenyls (PCBs); chlorinated alkanes and alkenes; aromatics; chlorinated aromatics; and polynuclear aromatics. In all, approximately 140 compounds were identified. The chemicals found most often and in the highest concentrations were:

xylene	methyl ethyl ketone	methylene chloride
acetone	vinyl chloride	anthracene
toluene	fluoranthene	alkyl benzene
phthalates	dichloroethylene	aliphatic acids

PCBs were detected in low concentrations and several metals, including barium, zinc, copper, strontium, magnesium, and chromium, were detected in concentrations exceeding background levels.

The highest concentrations of organic contaminants detected on-site, other than from drum samples, were from liquid samples collected in the test pits. Some of the same compounds were detected in water samples from borings located down-gradient of the test pits. It is significant to note that some water samples from the borings were collected immediately down gradient of the disposal cells, yet the analyses showed relatively low concentrations of contaminants when compared to the pit samples.

A Feasibility Study was completed in 1982 by Ecology and Environment, Inc. The Record of Decision (ROD) was finalized by EPA in June 1986, and identified groundwater and surface water (Wilson Creek) as potential routes of exposure to hazardous substances.

In April 1987, remedial measures commenced by Haztech, Inc. included the installation of a clay cap, a perimeter drainage system, monitoring wells, and a security fence. Water from a surface impoundment was discharged into Wilson Creek at this time, also. A groundwater monitoring schedule was implemented by Ebasco Services, Inc. to include quarterly sampling at the site.

In the fall of 1988, reseeding and regrading of the cap was found to be necessary due to erosion problems. In March 1989, all remedial construction was completed.

Operations and Maintenance (O&M) activities were performed by Ebasco Services, Inc., and included groundwater sampling over five quarters from September 1988, through February 1990. A five-year review site visit was performed by RAI in December 1991, with follow-up visits in January 1992, and March 1992. The Commonwealth of Kentucky has received funds from the cost recovery settlement with responsible parties for the site for 29 years of routine operations and maintenance (O&M). It is anticipated that these activities will begin soon.

The site is currently ranked 96 on the National Priorities List (NPL) in Group 2, sites with a Hazardous Ranking Score between 58.41 and 57.80.

1.2 REMEDIAL OBJECTIVES

The remedial alternatives evaluated at the A.L. Taylor Site were source control measures. The migration of hazardous substances from their original disposal area is minimal and the remedial alternatives considered were to control off-site migration.

The objectives of the remedial action were broad enough to address all routes of release, but focused on those areas with the greatest potential for having adverse effects on public health and the environment. The remedy also took into account cost-effective considerations. With these criteria, the following were the objectives for remedial action at the A.L. Taylor Site:

1. The air quality would be protected by the control of emissions of particulate matter, volatile organic compounds, and toxic gases.

2. The recreational users and biota of downstream surface waters (Wilson Creek) would be protected from leachate and contaminated runoff.

3. Groundwater, which is suitable for domestic, agricultural, or industrial water supply and contributes to surface water, would be protected by reducing aquifer recharge.

4. Local populations would be protected from direct contact with contaminated soils.

1.3 ARARs REVIEW

In site remediation, standards are to be met or certain goals are set to be reached at the completion of the project to protect human health and the environment. These standards, or Applicable or Relevant and Appropriate Standards, Limitations, Criteria, and Requirements (ARARs) are any federal, state, or local standards that apply to a given site or situation. ARARs identified in the 1986 EPA ROD were:

- The Clean Water Act (CWA) Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life
- The Clean Air Act (CAA)
- Toxic Substances Control Act (TSCA)
- Resource Conservation and Recovery Act (RCRA) landfill design standards
- National Primary Drinking Water Regulations Maximum Contaminant Levels

Since the time of the ROD, federal and state regulations have been updated. Listed below are the updated standards as they are at this time:

- National Safe Drinking Water Standards Maximum Contaminant Levels (MCL), November 1991

- National Primary and Secondary Ambient Air Quality Standards
- Clean Water Act Ambient Water Quality Criteria (AWQC) for the Protection of Freshwater Aquatic Life, October, 1991
- 401 Kentucky Administrative Register (KAR) 5:031 - Surface Water Standards Water Quality Criteria for Protection of Warm water Aquatic Habitat (WAH), January 27, 1992.

Groundwater data is compared with the MCL for each contaminant detected in each well. The MCL will apply to the site because there is still a remote possibility that the aquifers can be used as a drinking water supply. The surface waters in Wilson Creek are checked with the AWQC and the WAH since the protection of aquatic life is a concern at the A.L. Taylor Site. The MCL is eliminated here, since there is an even more remote chance that this creek will be used as a drinking water supply. The AWQC and WAH chronic values are used here, since the exposure for the aquatic life occurs continuously. Table 1.1 shows the MCLs and AWQC for contaminants at the time of the ROD, and their present values.

Air quality standards still apply to the site, however, the remedial alternative virtually eliminated the presence of hazardous gases and airborne particles at the site.

EPA has adopted a Sediment Screening Value using the National Oceanographic and Atmospheric Administration's (NOAA) technical Memorandum which establishes Effects Range-Low (ER-L) and Effects Range-Median (ER-M) values for contaminants in sediment. Levels of contaminants found between the ER-L and ER-M are considered to have possible effects on stream life, and values above the ER-M are considered to have probable effects on aquatic life. Further toxicity testing is required for sediments falling in these ranges.

Table 1.1 Comparison of Applicable or Relevant and Appropriate Regulations A.L. Taylor Site, Brooks, KY						
Contaminant	Drinking Water Standards Maximum Contaminant Level (MCL)		Clean Water Act Ambient Water Quality Criteria Protection of Freshwater Aquatic Life (AWQC)		Kentucky Administrative Register Warm water Aquatic Habitat Criteria (WAH)	
	1986	1992	1986	1992	1986	1992
Inorganics						
Aluminum	n/a	n/a	n/a	87	n/a	n/a
Antimony	n/a	5-10	n/a	n/a	n/a	n/a
Arsenic	50	50	190	190	50	50
Barium	1,000	2,000	n/a	n/a	n/a	n/a
Beryllium	n/a	1	n/a	n/a	11	11
Cadmium	10	5	0.66	0.66	4	**
Chromium (Total)	50	100	n/a	n/a	100	n/a
Copper	n/a	1,300*	6.54	6.54	n/a	**
Iron	300[SMCL]	n/a	1,000	1,000	1,000	1,000
Lead	50	15*	1.32	1.32	n/a	**
Manganese	50[SMCL]	n/a	n/a	n/a	n/a	n/a
Mercury	2	2	0.012	0.012	0.2	0.012
Nickel	n/a	100	n/a	87.71	n/a	**
Selenium	10	50	n/a	5	n/a	5
Zinc	5,000[SMCL]	n/a	n/a	58.91	47	**
Organics						
Benzene	n/a	5	n/a	n/a	n/a	n/a
Ethylbenzene	n/a	700	n/a	n/a	n/a	n/a
Tetrachloro-ethylene	n/a	5	n/a	n/a	n/a	n/a
Toluene	n/a	1,000	n/a	n/a	n/a	n/a
Trichloro-ethylene	n/a	5	n/a	n/a	n/a	n/a
Xylene	n/a	10,000	n/a	n/a	n/a	n/a
Pesticides/PCBs						
4,4'-DDT	n/a	n/a	0.001	0.001	n/a	0.001
PCB-1254	n/a	0.5	0.014	0.014	0.0014	0.0014

Notes:

n/a = ARAR not established
SMCL = Secondary Maximum Contaminant Level
** = WAH is a function of the hardness of the water

All values are in µg/l
* = MCL action level

2.0 SITE CONDITIONS

From December 9-15, 1991, RAI performed an initial site visit at the A.L. Taylor Site. The objective of the site visit was to inspect the site for any physical deterioration of the cap, for physical site security, and to implement the EPA approved Site Sampling and Analysis Plan (SAP). The field work included a site reconnaissance and implementation of the SAP. The site reconnaissance was performed using a checklist generated by previous contractors on the site. Upon completion of the field activities, it was determined by EPA and RAI that further field work was necessary to meet the objectives of the Five-Year Review. RAI performed an interim site reconnaissance in January 1992 for the purpose of furthering the site assessment. A third site visit was performed March 6-8, 1992 to complete all required field work. Table 2.1 lists all of the groundwater monitoring well parameters measured during the two sampling events.

2.1 SUMMARY OF SITE CONDITIONS

2.1.1 SITE CONDITIONS - DECEMBER 9-15, 1991

Upon arrival at the site on December 9, 1991, RAI observed the site to be secure, with padlocks intact on all three gates. The upper gate is adjacent to the paved road that runs past the golf course off of S.R. 1020; the front gate is at the entrance to the southeast end of the site; and the rear gate is at the end of the site access road at the north end of the site (see Figure 1.2). The rear gate has sustained some damage, however, it is still secure. During the course of the field work, RAI personnel noted that a medium sized dog had free access in and out of the site. After investigating, a small gap was found under the perimeter fence that would possibly allow access to the site by small animals or even small children.

TABLE 2.1 Groundwater Monitoring Well Parameters
A.L. Taylor Site, Brooks, KY

	TOWC elevation	WS* (FTWC)	WS* elevation	pH*	cond.* m mho/cm	temp.* °C
ALT-01	569.0	6.5	562.5	7.17	11.65	14.7
ALT-02	541.0	9.2	531.8	7.10	6.80	12.8
ALT-03	537.0	4.3	532.7	6.40	11.15	12.3
ALT-04	537.5	2.8	534.7	6.80	2.49	13.2
ALT-05	544.0	8.1	535.9	7.00	4.99	13.6
ALT-06	546.0	14.5	531.5	7.10	2.96	14.1
ALT-07	579.0	--	--	--	--	--
ALT-08	538.5	17.7	520.8	6.53	2.93	14.8
ALT-09	537.5	17.5	520.0	7.00	6.97	14.1
ALT-10	543.5	6.9	536.6	7.30	1.11	13.3
ALT-11	536.0	16.0	520.0	7.17	6.77	12.9
ALT-12	536.0	16.7	519.3	6.93	5.05	14.2

Notes:

TOWC = Top of well casing elevation in feet above mean sea level, estimated from contour map ground elevation plus two feet.
WS = Water surface from top of well casing in feet.
* = All values are averages from the December 1991 and March 1992 sampling events.
-- = parameter not available since ALT-07 contained no water during either sampling event.

The site access road is in satisfactory condition with two minor exceptions. The first exception is the area between the upper gate and the front gate. There are several potholes which have a tendency to hold water and create minor travel problems (see Figure 2.1). RAI was on site in both wet and dry periods and experienced no access problems. The second area of concern lies off site, immediately outside the rear gate on the north end of the site. This area is muddy in both wet and dry periods and can limit vehicular access to monitoring well ALT-01 to four-wheel drive vehicles only.

For the planned field work, 25 empty drums were placed on site by RAI for the collection of purge water and decontamination water. The drums were clean, 55-gallon capacity, with the DOT/17E/17H/R1022 classification. All drums have labels indicating their contents. The drums were placed inside the secured area.

The site appeared to be free from any major erosion, however, evidence of minor erosion was found in isolated areas. Flattened grass on the east side of the site, parallel to Wilson Creek, indicated recent high water.

Rip-rap terraces traversing the site act as an erosion control system. The terraces are intact and appear to be functioning properly. Vegetative growth in the rip-rap was noted, however it seems to have little or no effect on the integrity of the terraces themselves. The original remedial design used a perimeter drainage channel system to control the surface water run-off. This system is also lined with rip-rap to protect the channel bottom and side slopes from erosion. The channels are in good condition and appear to be functioning properly. Some areas of the channels are supporting vegetation (i.e. grasses, scrub trees, etc.); however, the vegetation does not appear to impede flow or threaten the integrity of the channel construction.

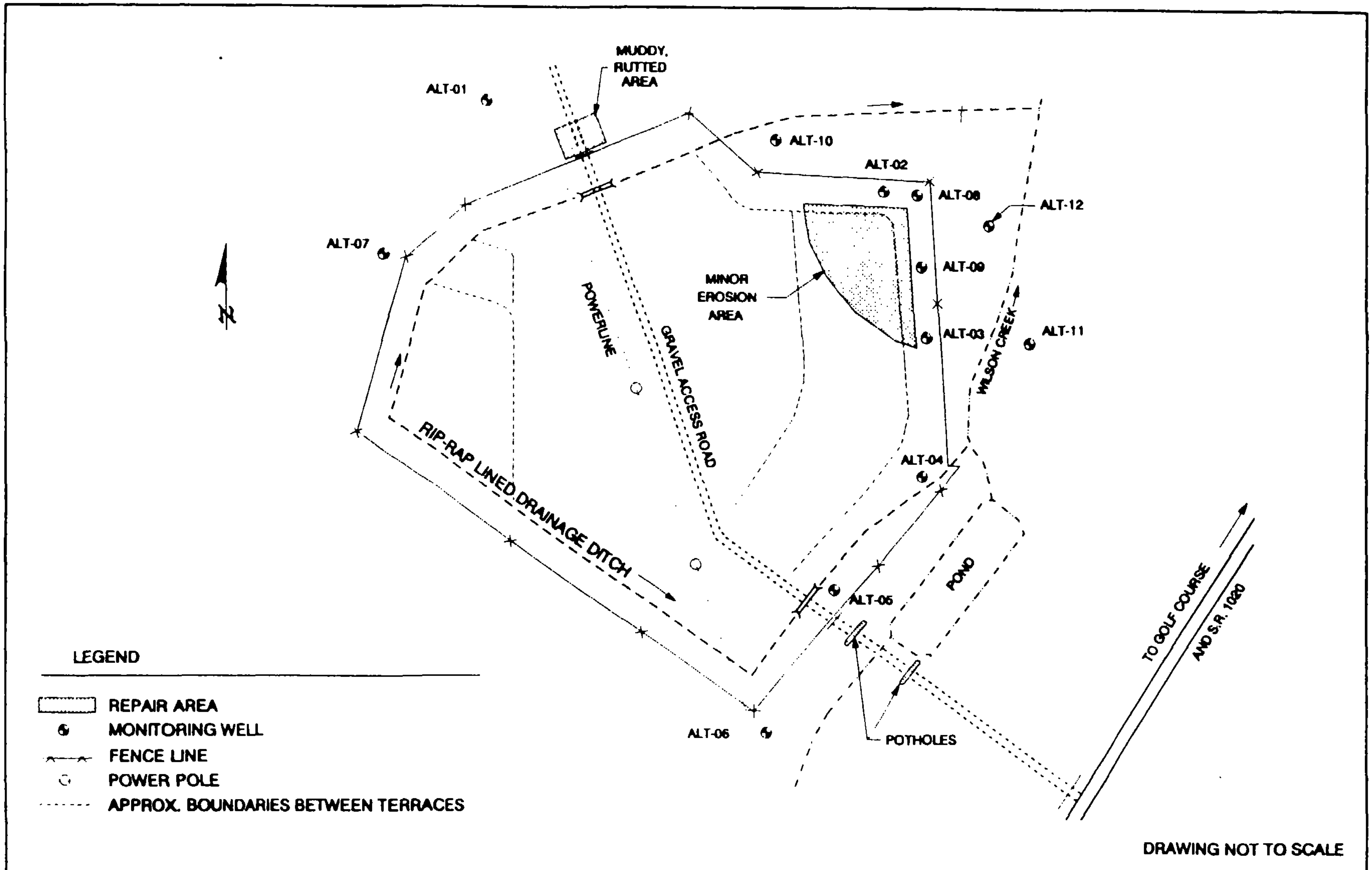

FIGURE 2.1
REPAIR AREAS

A.L. TAYLOR SITE
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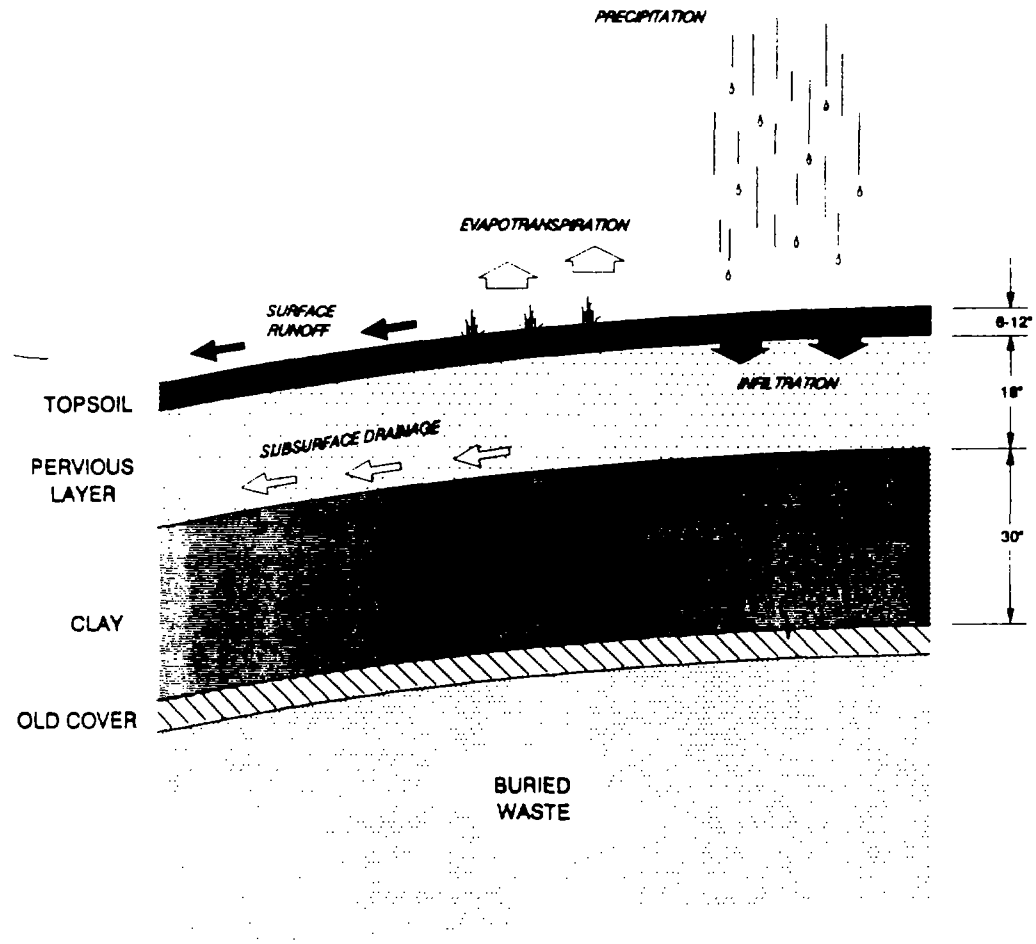
The site is covered with a compacted layer of clay to a thickness of no less than 30 inches, an 18 inch pervious drainage layer, and a 6 to 12-inch topsoil layer (see Figure 2.2). The site supports good vegetative growth in the form of grasses, with heights of 1 to 2 feet at the time of the site visit.

During the course of the field work, RAI observed that all monitoring wells, both on-site and off-site, were secured with padlocks. A few of the twelve wells appear to have sustained damage due to weather, tampering, or vandalism. Well ALT-07, situated off-site on the west side of the site just outside the security fence, had what appeared to be a bullet hole in the protective casing, but no damage to the actual well casing. Well ALT-05, situated next to the site entrance on the eastern side of the site, had an obstruction that prevented the use of a four-inch submersible pump normally used for purging. Well ALT-09, located along the eastern side of the site, had an obstruction at approximately 25 feet, which prevented the use of a four-inch submersible pump.

Only one of the twelve wells could not be sampled due to insufficient recovery. ALT-07 was dry at the time of the site visit, could not produce sufficient volumes of groundwater for sampling, and was showing evidence of algal/fungal growth on the inner surface of the well casing. A strong septic odor was also noted at the well head. A more detailed description of the field events can be found in the Site Trip Report (Appendix C).

2.1.2 SITE CONDITIONS - JANUARY 31, 1992

RAI walked the site both inside and outside the fence, and made several traverses across the capped area to inspect the general condition of the site and note any specific items.



DRAWING NOT TO SCALE

FIGURE 2.2
DETAIL OF CLAY CAP
A.L. TAYLOR SITE
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The site was secure upon arrival, with all gates secured and locked. The access road was generally in good condition, but some potholes were evident in several places. The road outside the rear gate was muddy and rutted, limiting vehicular access to well ALT-01. The perimeter fence appeared to be in good condition with a few areas where the fence did not meet the ground. As noted in the December trip, the gaps in the fence were large enough to possibly allow access to any number of animals including dogs and cats, or even a small child.

The terraces were inspected and found to have several small animal burrows in the rip-rap. No slumping or evidence of movement was noted on the rip-rap terraces. Some grass and low brush was noted growing in the rip-rap lined drainage channels. A dead tree was noted laying across the rip-rap drainage channel near ALT-10 along the northeast side of the site. The tree does not appear to inhibit flow in the channel.

The site is well vegetated with tall grass, mostly dormant (seasonal), as well as woody plants, brush, and a few small trees. No major erosion was noticed either on, or off-site.

The monitoring wells were inspected, per the field observation checklist, and found to be locked and in good condition. The well information labels were coming loose and needed re-attachment with screws. All of the concrete pads were in good condition.

2.1.3 SITE CONDITIONS - MARCH 6-8, 1992

During the March 1992 site visit, no significant changes were noted at the site. When RAI arrived, the upper gate was unlocked and was open. However, there did not appear to have been any trespassing or tampering with the site.

The physical site conditions were unchanged from the previous visits. RAI was on-site during some heavy rainfall and noted some collection of run-off along the east side of the site in the area of ALT-04 and ALT-09. A more detailed description of the field events can be found in the Site Trip Report (Appendix D).

2.2 AREAS OF POSSIBLE CONCERN

2.2.1 SURFACE/CAP CONDITIONS

An Operations and Maintenance (O&M) Plan was generated for the A.L. Taylor Site and attached to the EPA-KDNREPC State Superfund Contract (SSC) and dated July 19, 1989. According to the O&M Plan, the design intent of the topsoil/grass cover is to reduce erosion of the landfill surface due to wind and surface water. A schedule of maintenance was set up in the O&M Plan for frequency of observations of the topsoil/grass cover; the terrace slopes; the perimeter drainage channel; monitoring wells; the security fence; and the access road. Soil pH and nutrient tests and topographic surveys are to be performed on a regular basis.

As outlined in the O&M Plan, the topsoil/grass cover area, as well as the other areas around the site, are to be checked at regular intervals for a 30-year period. The O&M Plan points out that a visual inspection of the clay cap's slopes entails walking the site and noting any indications of localized settlement within a 20 foot diameter area. During RAI's site investigation, no settlement of the cap was noted.

Soil erosion is broken down into three erosional features in the O&M Plan: Swales greater than 1 ft. wide and 2 inches deep; cracks greater than 1/4 inch wide and 6 inches deep; and areas of erosional damage to grass. RAI noted erosional damage to grass in various places (See Figure 2.1). Areas of erosional damage around monitoring well ALT-08 consist of swales approximately 4-6 inches wide and approximately 1 inch deep. However, these swales are not large enough to be of concern at the present time and can be controlled with regular O&M activities to be performed by KDNREPC.

RAI did not note any leachate seeps at the site. Growth of grass cover throughout the site is adequate. No ponded water was observed, even during periods of heavy rainfall. The grass cover was approximately 1-2 feet tall in December 1991. According to the O&M Plan, the grass is to be mowed when it reaches 4 inches.

The perimeter drainage system is designed to control and direct the flow of surface water away from the landfill. It appears that the perimeter drainage system is operating according to its design. There is no apparent side slope sloughing, no apparent sedimentation, and all culverts remain unobstructed. There is some minor vegetative growth in some areas of the channel, but this does not appear to be affecting the system's capacity at this time.

The monitoring well network at the site is used to determine the long term impact of the landfill on the shallow and deep groundwater aquifers. Each well at the site was observed for the condition of the well padlock, the protective casing, the well casing, the protective posts surrounding the well, and the concrete pad.

All wells were padlocked and in good condition, with the following exceptions:

> ALT-05: An obstruction in the well casing that prevented the use of a 4-inch submersible pump. The well is functional and can be purged and sampled using a 2-inch bailer.

ALT-07: A bullet hole was noted in the protective casing lid. There is no damage to the well casing cap. This well contained no water and had insufficient recovery to allow sampling. A strong septic smell was noticed at the well head and algal/fungal growth was apparent within the well casing.

ALT-09: An obstruction approximately 25 feet below the top of the well prevents the use of the 4-inch submersible pump. The well is functional and can be purged and sampled using a 2-inch bailer.

The site is surrounded by an eight-foot security fence with gates at the north end and southeast end of the access road. The fence contains some minor gaps along the bottom of the fence that could possibly allow access to the site by small animals. The area outside the security fence, to the east of ALT-04, contained heavy vegetative growth. This growth consisted of vines and small scrub trees entangled in the fence. This condition can potentially cause damage to the fence and may visually obstruct any breach in site security. The upper gate blocks access to the site by vehicular traffic from the main road, but does not inhibit pedestrian traffic. The upper gate has been damaged but is still functional. The front gate, which is an integral part of the security fence itself, is in good working order. The rear gate has sustained some minor damage but still operates adequately.

The access road to the site consists of compacted dirt and gravel. Off-site conditions are generally good, with two exceptions. The first is a few minor potholes in the southeast portion of the road (See Figure 2.1). The second area of concern is at the rear gate. This area is extremely muddy, even in times of limited rainfall. The on-site access road is in good condition, allowing full access to the site.

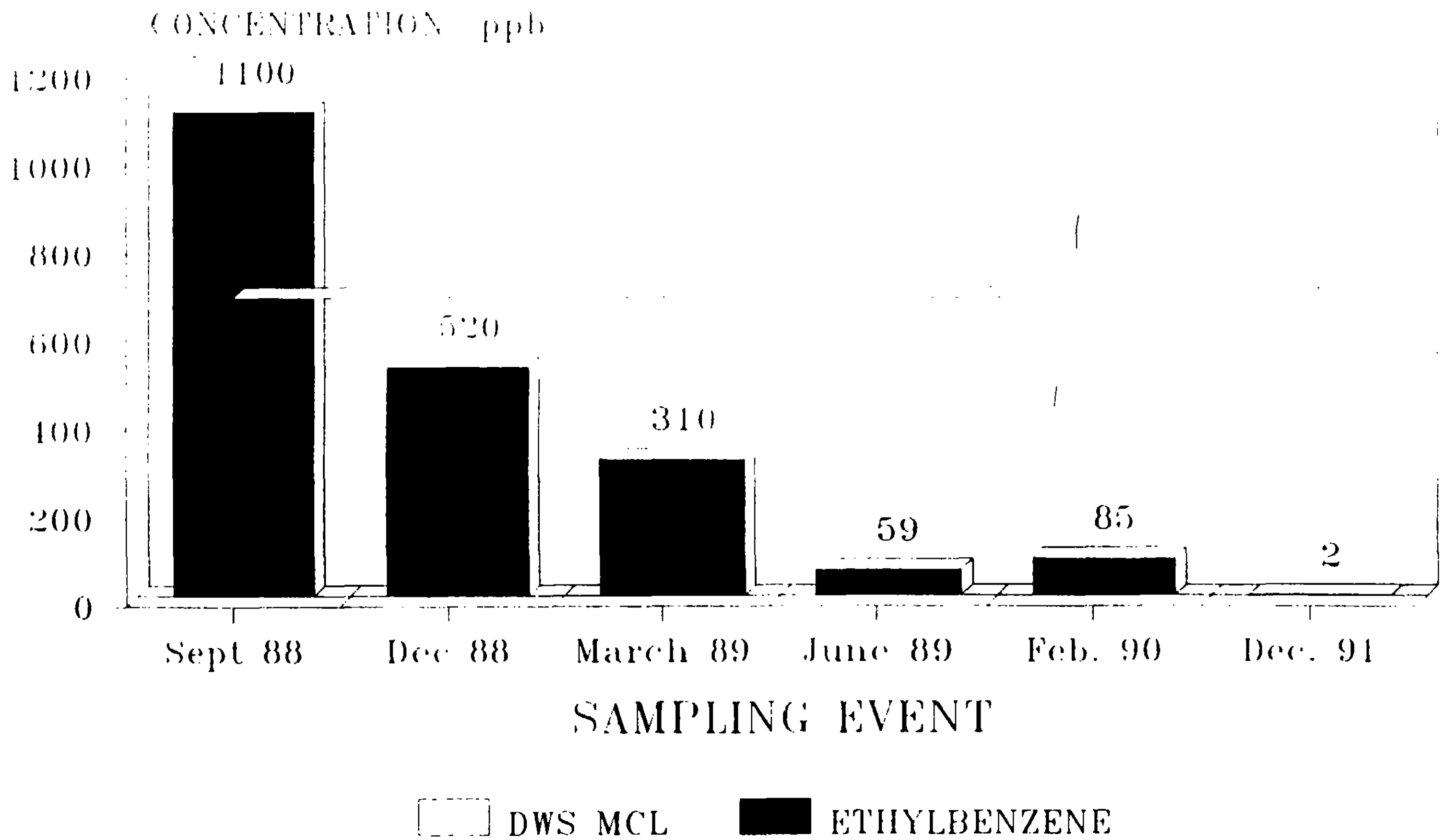
The O&M Plan states that a topographic survey be performed in years 1, 3 and 5 after the initiation of the remedial activities. The most recent survey made available for this review was dated December 1987 as part of the Draft Final Closure Plan.

2.2.2 GROUNDWATER/SURFACE WATER/SEDIMENT

Groundwater sampling was performed by Ebasco Services, Inc. over five quarterly sampling events from September 1988 to February 1990. Sampling was performed by RAI for the preparation of this review in December 1991, with a follow-up sampling visit in March 1992. The samples collected during the five-year sampling were analyzed for extractable and volatile organics, inorganics, and pesticides/PCBs. The quarterly sampling was tested for extractable and volatile organics, and pesticides/PCBs only. Inorganics were not analyzed due to the high background levels in the shale rock in the area and the fact that the pollutants of concern at the site were organics. The data collected from the sample analyses can be found in Tables A.1 through A.16 (Appendix A). Data for ALT-07 was not obtainable due to the inability of this well to produce adequate amounts of water for sampling. All groundwater data is compared to the Drinking Water Standards Maximum Contaminant Levels (MCL).

Few organic compounds were detected above the MCL in the groundwater sampling. Wells which contained no organic compound above it's MCL were: ALT-01; ALT-02; ALT-03; ALT-05, ALT-06; ALT-08; ALT-09; ALT-10; ALT-11; and ALT-12. ALT-04 contained ethylbenzene at 1,100 $\mu g/l$ in the first quarter; the MCL is 700 $\mu g/l$. The sampling data for ALT-04 shows decreasing ethylbenzene in the well over time. Figure 2.3 graphically depicts this decrease over time. Tetrachloroethylene was detected at the same level as the MCL, 5 $\mu g/l$, in ALT-04 during the second quarter, and trichloroethylene was present at 6 $\mu g/l$ in the five-year sampling data in ALT-04; the MCL is 5 $\mu g/l$. PCB-1254 was also detected in

FIGURE 2.3
CONCENTRATION OF ETHYLBENZENE IN ALT-04
A.L. TAYLOR SITE



ALT-04 in the first, second, and third quarters at 1.7 μg/l, 7.3 μg/l, and 3.4 μg/l, respectively; the MCL is 0.5 μg/l.

Inorganic elements were not analyzed for by Ebasco during the five quarters of sampling, however, they were analyzed for during the five-year review sampling event. The results of the inorganic groundwater analyses can be found in Table A.13 in Appendix A. Here again, the contaminant levels are compared to the MCL for compliance.

Several inorganics were detected above the MCL in nearly every well at the A.L. Taylor Site. Metals that were detected above the MCL were antimony, beryllium, cadmium, chromium, lead, mercury, and nickel. Well ALT-08 contained high levels of all of these contaminants except antimony. Off-site and up-gradient well ALT-01 contained antimony, chromium, and nickel above the MCL. On-site well ALT-04 contained chromium, lead, and nickel at levels above the MCL. ALT-02, ALT-03, and ALT-11 contained only antimony above the MCL. ALT-05 exceeded the MCL for antimony, chromium and nickel. ALT-09 contained lead and nickel at levels higher than the MCLs, and ALT-12 contained only mercury in excess of the MCL. Wells ALT-06 and ALT-10 did not exceed the MCL for any inorganic element.

Samples were taken of the surface water and sediment in Wilson Creek during the five quarters of groundwater sampling and during the five-year review sampling event. As with the groundwater, past analysis of the surface water and sediment did not include inorganics during the five quarters of sampling, but were included in the five-year review sampling event. The surface water was compared to the AWQC and Kentucky's Warm water Aquatic Habitat Criteria (WAH) for compliance, and the sediment data was compared to the ER-L and ER-M values mentioned in section 1.3. The organic data for the surface water and the sediment can be found in Tables A.14 and A.15, respectively. Table A.16 lists the inorganic contaminants found in the surface water and sediment during the five-year review.

The organic compounds docosanol, hexanedioic acid, dioctyl ester, octadecanal, and stigmastenone were all detected in the surface water upstream of the site in the fourth quarter of sampling. The levels appear to be high, however, there is no AWQC or WAH for these contaminants. Toluene was also detected downstream of the site in the five-year sampling event, but at a very low level.

Several inorganics were detected in the surface water during the five-year review sampling event. Aluminum was detected in all three surface water samples at levels above the AWQC. Iron was also detected in all three samples above the WAH and AWQC, (both are 1,000 μg/l).

Several polynuclear aromatic hydrocarbons (PAHs) were detected in the sediment samples upstream of the site in the five-year sampling event, with only pyrene detected at it's ER-L. Toluene was also detected upstream, but at a very low level. The Polychlorinated biphenyl PCB-1260 was detected at 430 μg/kg in the midstream sample and at 1,100 μg/kg in the downstream sample in the five-year sampling event; the ER-M is 400 μg/kg. Based upon the ER-M, the levels of PCBs in these locations in Wilson Creek could show probable effects on aquatic life, and further analysis of the impact of this contamination is required.

Two elements, nickel and zinc, were detected at levels higher than the ER-L, but lower than the ER-M in the five-year sampling. Nickel was present in all three samples above the ER-L, but zinc exceeded the ER-L in the upstream and midstream locations only. Sediment in these areas, with respect to these contaminants, falls into the effects possible range.

3.0 RECOMMENDATIONS

3.1 RECOMMENDED MEASURES

Based on the findings in this review it appears that the remedial actions that were performed at the A.L. Taylor Site remain protective of human health and the environment, and are effective. At this time, it is not recommended that the site be deleted from the NPL for several reasons. There is inadequate data available to determine the effects that PCBs in the sediment in Wilson Creek will have on aquatic life. The aquifers beneath the site have been tentatively been classified as undrinkable and contamination in them does not pose a significant health threat. However, significant quantities of metals were detected in the groundwater during this review, and further evaluation of the aquifers is necessary to determine if these levels are protective of human health and the environment.

Site Maintenance and Corrective Actions: The maintenance schedule outlined in the O&M Plan calls for the grass to be mowed at regular intervals or when the grass height reaches 4 inches. Keeping the grass short helps storm water to run off the cap, thus preventing seepage into the waste cells.

While there is no current problem, the erosion areas around ALT-08 should be repaired to prevent growth of erosion channels. If channels go un-checked, the integrity of the clay cap could be jeopardized, and the potential for an exposure pathway from exposed waste would increase. Possible corrective actions could include one or more of the following: reseeding of eroded areas, hay bales, or filling the areas with rip-rap.

As previously mentioned, it appears as though the perimeter drainage system is operating according to its design. There is little or no sloughing of the rip-rap banks and no erosion in the channel bottoms. However, the existing vegetation that exists in the channels can potentially cause problems in the future if not controlled. Vegetation can affect the stability of the channel side-slopes and channel bottoms, and if allowed to get extremely overgrown, can inhibit the capacity of the channel. It is recommended that the vegetation be removed using an EPA-approved herbicide. This will help prevent overgrowth of vegetation, thus maintaining the efficiency of the drainage system.

The monitoring well system at the site is in good condition with the exceptions noted in Section 2.2.1. All of the wells need to be cleaned and their protective casings repainted, and all weep-holes should be cleared to prevent build-up of stagnant water in the well casing. Wells ALT-05 and ALT-09 are functional, therefore, no action is recommended. Well ALT-07 is the only non-functional well at the site. The well appears to have been improperly developed and does not produce sufficient recovery to permit sampling. Since there is already one background well, ALT-01, there is no need to replace ALT-07.

As discussed in Section 2.2.1, the security fence has become entangled with vines and small scrub trees in the area near ALT-04. Since these conditions can cause damage to the fence if left uncontrolled, the fence should be cleared of all growth. The fence also contains small gaps and holes along the bottom edge that can possibly allow access to the site by small animals or children. These openings should be blocked off to prevent unauthorized access and reduce any liability that would arise from any injury sustained by a trespassing individual. The rear gate has been damaged and needs to be repaired.

The access road leading to the front gate is in need of repair in certain areas (See Figure 2.1). There are three potholes along the drive that have contained ponded water during every visit to the site. One of them is actually part of Wilson Creek and should be left alone. It is suggested that the other two be filled and compacted with fill material and a layer of gravel put on top of the fill areas to prevent them from washing out. The area immediately outside the rear gate is always muddy and rutted. This area should be regraded and stabilized with gravel to make access to ALT-01 easier.

The most recent site map showing site topography was dated in 1987. It is recommended that a topographic map be prepared and compared to the topography on the 1987 plat to show any settling or slope failure that has occurred since then.

Groundwater/Surface Water/Sediment Sampling: At this time it is adequate to say that the remedial actions are protective of human health and the environment, and effective since the levels of contamination in the groundwater have been reduced significantly since the initiation of the clean-up activities. However, there is still contamination present in the groundwater beneath the site. A routine groundwater monitoring program should be continued at the site on a quarterly basis to ensure that the conditions of the aquifers are consistent with remediation levels.

Several metals are present in the groundwater above the ARARs. The presence of aluminum, antimony, chromium, iron, nickel, and zinc in the off-site, up-gradient well ALT-01 indicates that the groundwater in the aquifers may naturally contain levels of these elements above the ARARs, or there is an off-site source of contamination. As previously mentioned, both aquifers have very low use, and an exposure risk associated with drinking the water is very low. Since there is no previous sampling data for these constituents, it is not possible to determine a trend of the concentrations of inorganics in the landfill. It is recommended that future sampling events include the analyses of inorganics to determine any changes in contaminant levels at the site. It is also recommended that further analysis of the aquifers be performed to verify that they are undrinkable. Should further evaluation of the aquifers reveal the need, ARARs will be revised accordingly.

One of the purposes of collecting groundwater samples over time is to determine if there is an increasing, decreasing, or consistent level of a particular contaminant in a particular area. The decreasing trend of ethylbenzene identified in well ALT-04 might be explained by two possible situations. One possibility might be the contaminant is breaking down into other compounds. However, this is unlikely, since no compound was detected in an increasing trend in the well. The second explanation is the adsorption of the ethylbenzene into either the subsurface soil or into the air trapped in the voids. Since the surrounding soils in the area have been described as highly impermeable, they have few voids, and it is more likely that the ethylbenzene has partitioned into the soil. However, the solubility of ethylbenzene in water (170,000 $\mu g/l$) is much greater than the highest value observed in the sampling (1,100 $\mu g/l$), which means that there was little incentive for the ethylbenzene to adsorb into the surrounding soil. At this time, it is very difficult to determine why ethylbenzene has decreased over time in ALT-04.

Contamination in the surface waters of Wilson Creek is minimal for organic compounds. The levels of aluminum and iron that exceeded the ARARs were detected upstream of the site, as well as adjacent to the site and downstream. These levels in the upstream sample indicate that, most likely, these elements were not contributed by the site.

Since the levels of nickel and zinc that exceeded the ER-L in the sediments were detected upstream of the site, it is likely that they are not attributable to the site remedy. The levels of PCBs detected in the Wilson Creek sediment during the five-year sampling event were greater than the ER-M, indicating a requirement for further testing of the sediments to determine the effects this contamination would have on aquatic life. It is recommended that a Total Organic Carbon (TOC) test be run on the sediments in Wilson Creek to determine the bioavailability of certain compounds in the sediment. A rapid bioassessment should also be performed on the stream using EPA protocol for performing a rapid bioassessment for macrobenthic and invertebrate species. The results of the rapid bioassessment will indicate the need for further toxicity testing at these locations.

It is difficult to determine if the PCBs in the Wilson Creek sediment at these locations were contributed by the selected remedy at the A.L. Taylor Site. There are other possible explanations for the presence of this contamination. Louisville Gas and Electric may have inadvertently spilled PCBs at the site when replacing the old power poles at the site. It is also possible that the PCBs are a result of dumping by uphill neighbors. It is recommended that sampling of soils and/or seeps from banks on both sides of the creek be collected to help determine the source of the PCB contamination. It is also recommended that more sediment and surface water samples be collected from Wilson Creek at the locations shown in Figure 3.1 to make a better determination of the extent of contamination in this creek. All samples should be analyzed for extractable and purgeable organics, pesticides and PCBs, and inorganics.

The abundance of vegetative growth at the site is evidence of adequate soil quality on the clay cap. Since adequate vegetation has been established on the clay cap, it is not necessary to perform the soil pH and nutrient tests every year. However, if future visits to the site reveal patches of dead or stressed vegetation, these tests should be performed and their results documented.

3.2 STATEMENT OF PROTECTIVENESS

Based on the findings in this review, it has been determined that the remedial actions that were performed on the A.L. Taylor Site remain protective of human health and the environment, and are effective. However, more sampling and testing data for Wilson Creek needs to be obtained to determine the extent of the PCB contamination in the stream, and

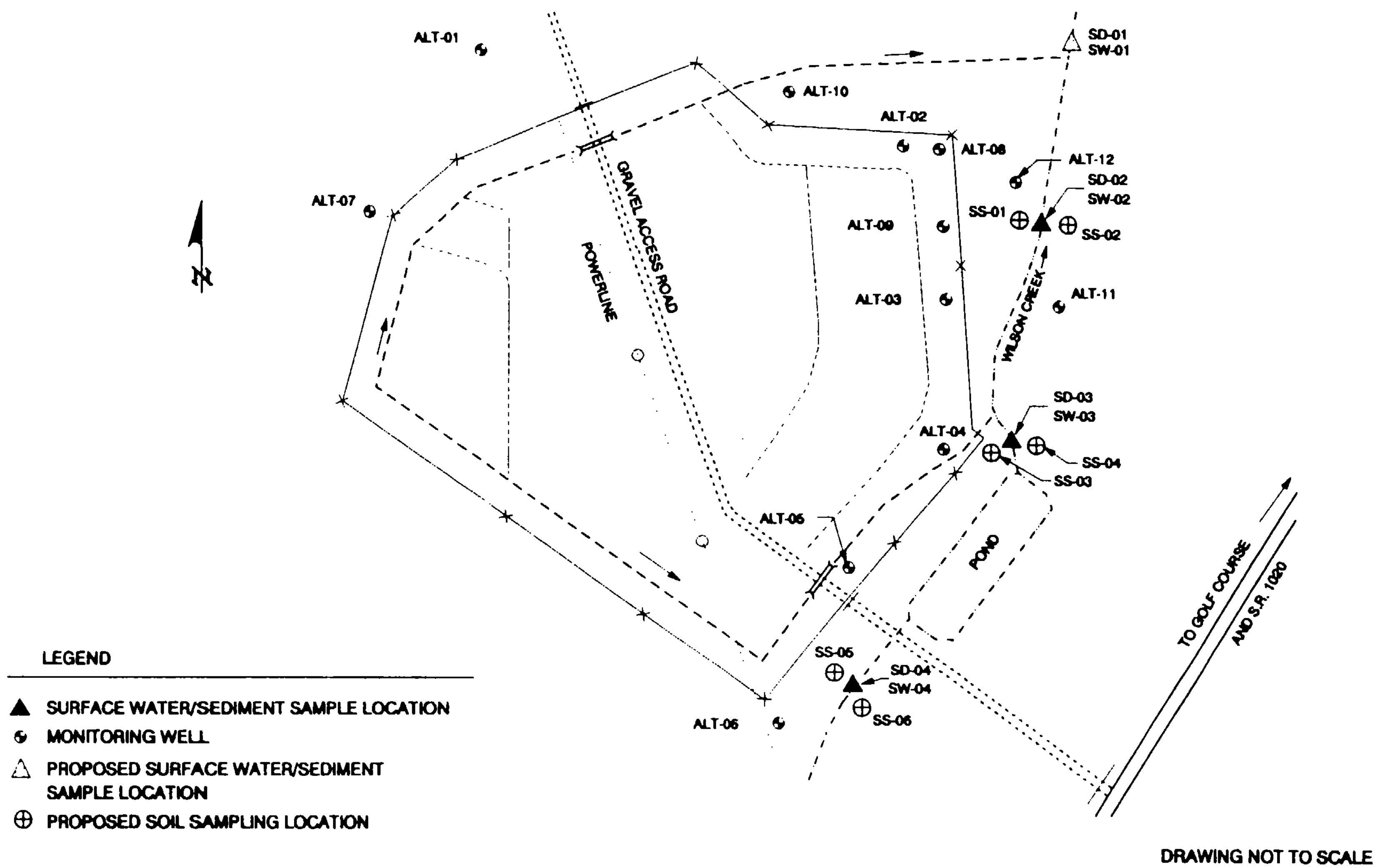


FIGURE 3.1
SAMPLING LOCATIONS

A.L. TAYLOR SITE
BROOKS, KENTUCKY

RESOURCE APPLICATIONS, INC.
ENGINEERS ■ SCIENTISTS ■ PLANNERS
1000 CAMBRIDGE SQUARE SUITE D
ALPHARETTA, GEORGIA

to determine the effects these PCBs may have on aquatic life in the stream. It is also necessary to make a more detailed evaluation of the aquifers beneath the site to ensure that the high levels of inorganics in the groundwater will not adversely effect human health or the environment.

The clay cap was designed to prevent the only active migration pathway: contact of storm water with the buried waste, and subsequently running off-site and polluting the surface waters in Wilson Creek. The cap also serves to prevent the storm water from seeping through the buried waste and contaminating the groundwater. Very low levels of organic compounds were detected in the surface waters in Wilson Creek downstream of the site. The levels of organics in the groundwater were significantly lower than those detected during the 1982 Feasibility Study (FS). An example of the contaminant reduction in the groundwater is found in phenol, which was detected during the FS up to 1,500μg/l, but was not detected at all in six events of post-remedial action sampling. These facts show that the clay cap appears to be serving it's purpose well.

3.3 NEXT REVIEW

It is recommended that a review of the protectiveness of the site remedial actions for the A.L. Taylor Site be performed after obtaining the following information:

- the results of the rapid bioassessment and any other necessary toxicity testing for the surface water and sediments in Wilson Creek (the toxicity study will be necessary if elevated levels persist at the additional stations that are added downstream and along both banks to show the source of contamination);
- the results of the Total Organic Carbon (TOC) tests; to show bioavailability of certain compounds;

- an official classification of the groundwater aquifers to confirm that they are Class III, or undrinkable; and
- the results of at least two more quarters of groundwater, surface water, sediment, and soil samples at the proposed locations in Figure 3.1.

After the completion of this study, and any necessary corrective actions identified in this study, it is recommended that the site be considered for deletion from the NPL list.

3.4 IMPLEMENTATION REQUIREMENTS

The implementation of the suggested activities requires the participation of the Commonwealth of Kentucky and/or any responsible parties in the maintenance and management of the A.L. Taylor Site. Adequate funding is now available to the Commonwealth of Kentucky for performing these measures. The O&M Plan should be reviewed and updated as necessary, and an O&M contract should be established. A public meeting should be held for interested parties in and away from the community.

REFERENCES

40 Code of Federal Regulations, February 1991, Part 300, Appendix B, National Priorities List (By Rank).

40 Code of Federal Regulations, July 1985, Subpart B, Maximum Contaminant Levels, Section 141.11, Inorganics; and Section 141.12, Organics.

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The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program, National Oceanographic and Atmospheric Administration Technical Memorandum NOSOMA 52, by Edward R. Long and Lee G. Morgan, Office of Oceanography and Marine Assessment, Seattle, WA, 1990.

LIST OF DOCUMENTS REVIEWED

Draft Field Operations Plan, prepared by Ebasco Services, Inc., August 1988.

Draft Final Closure Plan, prepared by Ebasco Services, Inc., June 1988.

Feasibility Study of Remedial Alternatives, prepared by Ecology and Environment, Inc., March 1982.

Operations and Maintenance Plan, prepared by ESE/Ebasco Services, Inc., May 1988.

Preliminary Drainage Ditch Basis of Design Report, prepared by Ebasco Services, Inc., July 1988.

Preliminary Remedial Construction Design, prepared by Conestoga-Rover & Associates, April 1986.

Remedial Action Site Investigation, prepared by Ecology and Environment, Inc., April 1982.

Record of Decision, prepared by EPA, June 1986.

Site Close Out Report prepared by U.S. EPA Region IV.

APPENDIX A

SAMPLING DATA TABLES

TABLE A.1 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-01 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
BENZENE	5	--	1J	--	--	0.51J	--
BIS(2-ETHYLHEXYL) PHTHALATE	n/a	--	--	--	--	--	23
BROMOCYCLOHEXANE	n/a	--	--	--	4JN	--	--
(BUTOXYETHOXY)ETHANOL	n/a	--	--	--	--	--	50JN
[(BUTOXYETHOXY)ETHOXY] ETHANOL	n/a	--	--	--	--	--	10JN
BUTYLMETHYLBENZENE SULFONAMIDE	n/a	--	--	--	2JN	--	--
DI-N-OCTYLPHTHALATE	n/a	16N	--	--	--	--	--
ETHYLMETHYLBENZENE SULFONAMIDE	n/a	--	--	8JN	--	--	--
ISOPROPANOL	n/a	--	--	--	6JN	--	--
PENTAOXANONADECANOL	n/a	--	--	--	--	--	50JN
UNIDENTIFIED COMPOUNDS	n/a	20J	--	--	--	--	--

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
All values are in µg/l
N = Presumptive evidence of presence of material
J = Estimated value

n/a = ARAR not available
-- = Not detected

TABLE A.2 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-02 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
HEXANEDIOIC ACID	n/a	--	8JN	--	--	--	--
PENTAOXANONADECANOL	n/a	--	--	--	--	--	40JN
PENTYNOL	n/a	70JN	--	--	--	--	--
TOLUENE	1,000	--	--	6	1.6J	9.6	--
UNIDENTIFIED COMPOUNDS	n/a	30J	--	--	--	--	--
PESTICIDES/PCBs							
4,4'-DDT (P,P'-DDT)	n/a	--	--	0.99JN	--	--	--

TABLE A.3 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-03 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
BROMOMETHANE	n/a	--	--	--	5.1J	--	--
CHLOROMETHANE	n/a	--	--	--	23J	--	--
ISOPROPANOL	n/a	--	--	--	600J	--	--
PENTAOXANONADECANOL	n/a	--	--	--	--	--	9JN
TOLUENE	1,000	--	--	--	--	1.2J	--

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
<u>All values are in µg/l</u>
N = Presumptive evidence of presence of material
J = Estimated value

n/a = ARAR not available
-- = Not detected

TABLE A.4 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-04 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
BENZENE	5	--	2J	--	--	--	--
BENZENEACETIC ACID	n/a	20JN	--	--	--	--	--
(BROMOCYCLOPROPYL) BENZENE	n/a	--	--	--	--	--	5JN
BUTYLBENZENE	n/a	--	--	--	--	--	10JN
CAMPHORSULFONIC ACID	n/a	--	--	--	--	--	3JN
DECADIENOL	n/a	--	--	--	2JN	--	--
DECAHYDRONAPTHALENE	n/a	--	--	--	--	--	10JN
1,1 DICHLOROETHANE	n/a	--	2J	--	2.1J	4J	5J
DIETHYLBENZENE	n/a	40JN	--	8JN	20JN	40JN	10JN
DIETHYLMETHYLBENZENE	n/a	--	--	4JN	10JN	10JN	--
DIHYDRODIMETHYL BENZENE	n/a	--	--	--	--	20JN	--
DIHYDRODIMETHYLINDENE	n/a	--	--	4JN	4JN	--	10JN
DIHYDROINDENE	n/a	--	--	8JN	6JN	--	--
DIHYDROINDENONE	n/a	--	--	--	3JN	--	--
DIHYDRONAPTHALENONE	n/a	--	--	--	3JN	--	--
DIMETHYLBENZOIC ACID	n/a	20JN	--	5JN	5JN	5JN	--
(DIMETHYLETHYL)BENZENE METHANOL	n/a	--	--	--	1JN	6JN	--
DIMETHYL HEPTANONE	n/a	--	--	--	--	20JN	--
DIMETHYL(METHYLETHYL) BENZENE	n/a	--	--	--	4JN	10JN	--
DIMETHYLOCTAHYDROPENTALENE	n/a	--	--	--	2JN	--	--
(DIMETHYLPROPYL)BENZENE	n/a	--	--	--	4JN	--	--
DI-N-BUTYLPHTHALATE	n/a	--	--	1J	--	--	--
ETHENYL BENZENEACETIC ACID	n/a	--	--	--	--	5JN	--
ETHENYLMETHYLBENZENE	n/a	30JN	--	--	--	--	--
ETHYLBENZENE	700	1,100	520	310	59	85	2J
ETHYLDIMETHYLBENZENE	n/a	100JN	--	20JN	40JN	20JN	--
(ETHYLPHENYL) ETHANONE	n/a	--	--	--	--	2JN	--
METHYLBENZENEACETIC ACID	n/a	--	--	--	8JN	6JN	--

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
<u>All values are in µg/l</u>
N = Presumptive evidence of presence of material
Shaded values exceeded the ARAR

n/a = ARAR not available
-- = Not detected
J = Estimated value

TABLE A.4 (cont.) CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-04 A.L. TAYLOR SITE, BROOKS, KY	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS (cont.)							
(METHYL BUTYL) BENZENE	n/a	--	--	--	--	5JN	--
METHYLDIHYDROINDENE	n/a	--	--	--	3JN	20JN	40JN
METHYLETHYLBENZENE	n/a	80JN	--	8JN	10JN	2JN	--
METHYLETHYLBENZOIC ACID	n/a	20JN	--	--	--	--	--
METHYL HEPTANONE	n/a	--	--	--	--	30JN	--
METHYL ISOBUTYL KETONE	n/a	370	260	85	38J	30J	--
METHYL(METHYLETHYL) BENZENE	n/a	--	--	--	9JN	--	--
(METHYLPROPENYL)BENZENE	n/a	--	--	--	6JN	--	--
METHYLPROPYLBENZENE	n/a	30JN	--	10JN	4JN	--	--
NAPTHALENE	n/a	7J	--	--	--	--	--
PENTYLBENZOIC ACID	n/a	--	--	--	2JN	--	--
PETROLEUM PRODUCT	n/a	--	--	--	N	N	--
PHENYLBUTENOIC ACID	n/a	20JN	--	--	3JN	--	--
PIPERIDINONE	n/a	100JN	--	--	--	--	--
PROPENYL BENZENE	n/a	--	--	--	--	20JN	--
TETRACHLOROETHYLENE	5	--	5	3J	3J	3.7J	2J
TETRAHYDRONAPTHALENE	n/a	20JN	--	4JN	5JN	--	--
TETRAMETHYLBENZENE	n/a	30JN	--	10JN	--	20JN	20JN
TETRAMETHYLPENTANE	n/a	10JN	--	--	--	--	--
TETRAMETHYLPENTANONE	n/a	40JN	--	--	--	--	--
TOLUENE	1,000	--	--	--	1.1J	2.6J	--
TRICHLOROETHYLENE	5	--	--	--	--	--	6J
TRIMETHYLBENZENE	n/a	30JN	--	--	--	--	--
TRIMETHYLBENZOIC ACID	n/a	10JN	--	--	7JN	10JN	--
UNIDENTIFIED COMPOUNDS	n/a	70J	--	--	--	50JN	60J
XYLENES	10,000	--	29*	--	4.1J**	--	--
PESTICIDES/PCBs							
PCB-1254 (AROCLOR-1254)	0.5	1.7JN	7.3	3.4	--	--	--

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
<u>All values are in µg/l</u>
N = Presumptive evidence of presence of material
Shaded values exceeded the ARAR
* = Total xylenes

n/a = ARAR not available
-- = Not detected
J = Estimated value
** = (m- and/or p-) xylenes only

TABLE A.5 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-05 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
ACETONE	n/a	--	--	--	--	220J	--
BENZOTHIAZOLE	n/a	--	--	--	--	1JN	--
ISOPROPANOL	n/a	--	--	--	--	50JN	--
TOLUENE	1,000	--	--	4J	0.98J	3J	--

TABLE A.6 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-06 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
ACETONE	n/a	--	--	--	--	780J	--
BENZENEMETHANE SULFONAMIDE	n/a	--	--	--	1JN	--	--
[(HYDROXYMETHYLETHYL) PHENYL]ETHANONE	n/a	--	--	--	--	--	5JN
ISOPROPANOL	n/a	--	--	--	--	200JN	--
PENTAOXANONADECANOL	n/a	--	--	--	--	--	100JN
TOLUENE	1,000	--	--	--	1J	1.2J	--

TABLE A.7 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-07 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ALL COMPOUNDS	n/a	NA	NA	NA	NA	NA	NA

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
All values are in µg/l
N = Presumptive evidence of presence of material
NA = Not analyzed

n/a = ARAR not available
-- = Not detected
J = Estimated value

TABLE A.8 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-08 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
BIS(2-ETHYLHEXYL) PHTHALATE	n/a	--	--	--	--	--	64
1,1 DICHLOROETHANE	n/a	5	2J	--	3.9J	3.8J	--
PENTYNOL	n/a	90JN	--	--	--	--	--
TOLUENE	1,000	--	--	--	0.85J	--	--

TABLE A.9 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-09 A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
BENZENE	5	3J	1J	--	1.4J	1.3J	--
BENZOTHIAZOLE	n/a	--	--	--	--	2JN	--
ISOPROPANOL	n/a	--	--	--	80JN	--	--
PENTYNOL	n/a	30JN	--	--	--	--	--
TOLUENE	1,000	--	--	--	0.85J	0.55J	--

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
All values are in µg/l
N = Presumptive evidence of presence of material
J = Estimated value

n/a = ARAR not available
-- = Not detected

TABLE A.10 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-10
A.L. TAYLOR SITE, BROOKS, KY

	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
BENZENE	5	--	1J	--	--	--	--
BENZOTHIAZOLE	n/a	--	--	--	--	1JN	--
PENTAOXANONADECANOL	n/a	--	--	--	--	--	50JN
PETROLEUM PRODUCT	n/a	--	--	--	--	--	N
TOLUENE	1,000	--	--	11	--	--	--
PESTICIDES/PCBs							
4,4'-DDT (P,P'-DDT)	n/a	--	--	--	--	--	0.16

TABLE A.11 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-11
A.L. TAYLOR SITE, BROOKS, KY

	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
ORGANICS							
BENZENE	5	2J	2J	--	1.3J	0.81J	--
BENZOTHIAZOLE	n/a	--	--	4JN	--	6JN	--
PENTAOXANONADECANOL	n/a	--	--	--	--	--	30JN
TOLUENE	1,000	--	--	3J	--	0.84J	--
UNIDENTIFIED COMPOUND	n/a	40J	--	--	--	--	--

TABLE A.12 CONTAMINANTS DETECTED IN GROUNDWATER MONITORING WELL ALT-12
A.L. TAYLOR SITE, BROOKS, KY

	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
BENZOTHIAZOLE	n/a	--	--	--	--	3JN	--

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
All values are in µg/l
N = Presumptive evidence of presence of material
J = Estimated value

n/a = ARAR not available
-- = Not detected

TABLE A.13 INORGANICS DETECTED IN DECEMBER 1991 GROUNDWATER SAMPLING
A.L. TAYLOR SITE, BROOKS, KY

	ARAR	ALT01	ALT02	ALT03	ALT04	ALT05	ALT06	ALT07	ALT08	ALT09	ALT10	ALT11	ALT12
METALS													
ALUMINUM	n/a	4,900J	16,000J	--	160,000J	1,400J	1,300J	NA	320,000J	68,000J	1,000J	--	2,800J
ANTIMONY	5-10	50J	66	110	--	59	--	NA	--	--	--	50	--
ARSENIC	50	12J	--	--	--	--	14	NA	--	15J	--	--	--
BARIUM	2,000	--	32	--	340	--	40	NA	680	260	--	--	86
BERYLLIUM	1	--	--	--	--	--	--	NA	12	--	--	--	--
CADMIUM	5	--	--	--	--	--	--	NA	10	--	--	--	--
CALCIUM	n/a	240,000	360,000	330,000	150,000	280,000	97,000	NA	71,000	84,000	390,000	210,000	55,000
CHROMIUM	100	160	23	--	280	190	61	NA	640	93	12	--	31
COBALT	n/a	--	--	--	280	--	--	NA	190	--	--	--	--
COPPER	1,300*	--	--	--	350	--	--	NA	310	--	--	--	--
IRON	n/a	4,900J	18,000J	--	290,000J	4,000J	1,900J	NA	280,000J	65,000J	960J	8,000J	9,000J
LEAD	15*	--	--	--	64J	--	--	NA	150J	18J	--	--	--
MAGNESIUM	n/a	390,000	520,000	460,000	240,000	290,000	150,000	NA	180,000	82,000	93,000	210,000	31,000
MANGANESE	n/a	220	390	84	4,000	200	140	NA	2,100	620	24	1,600	420
MERCURY	2	--	--	0.33	0.54	--	--	NA	5.7	0.65	0.39	--	2.8
NICKEL	100	250	99	--	1,100	100	84	NA	890	180	30	--	42
POTASSIUM	n/a	59,000	57,000	14,000	5,600	39,000	26,000	NA	140,000	55,000	7,000	42,000	24,000
SELENIUM	50	--	--	--	--	--	--	NA	21J	--	--	--	--
SODIUM	n/a	2.5×10^6	1.2×10^6	1.4×10^6	340,000	770,000	740,000	NA	430,000	1.2×10^6	52,000	1.7×10^6	1.1×10^6
VANADIUM	n/a	18	32	--	240	--	6	NA	1,300	210	7	7J	5J
ZINC	n/a	110	210	12	1,100	20J	13J	NA	2,200	390	18J	16J	23

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Drinking Water Standards Maximum Contaminant Level, November 1991
All values are in µg/l
NA = Not Analyzed
Shaded values exceeded the ARAR

n/a = ARAR not available
-- = Not detected
J = Estimated value
* = MCL Action Level

TABLE A.14 CONTAMINANTS DETECTED IN WILSON CREEK SURFACE WATER A.L. TAYLOR SITE, BROOKS, KY							
	ARAR	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
UPSTREAM :							
DOCOSANOL	n/a	--	NA	--	1,000JN	NA	--
HEXANEDIOIC ACID, DIOCTYL ESTER	n/a	--	NA	--	200JN	NA	--
OCTADECANAL	n/a	--	NA	--	2,000JN	NA	--
STIGMASTENONE	n/a	--	NA	--	1,000JN	NA	--
MIDSTREAM :							
ALL COMPOUNDS	n/a	NA	NA	NA	NA	NA	--
DOWNSTREAM :							
TOLUENE	n/a	--	NA	--	0.61J	NA	--

ARAR = Applicable or Relevant and Appropriate Regulations
ARAR = Clean Water Act Ambient Water Quality Criteria for the Protection of Freshwater Aquatic Life (AWQC), unless value is in ( )
( ) = Kentucky Administrative Regulations Warm water Aquatic Habitat Criteria (WAH)
All values are in µg/l
n/a = ARAR not available
NA = Not analyzed
N = Presumptive evidence of presence of material
-- = Not detected
J = Estimated value

TABLE A.15 CONTAMINANTS DETECTED IN WILSON CREEK SEDIMENT A.L. TAYLOR SITE, BROOKS, KY							
	ER-L	1ST Sept. 88	2ND Dec. 88	3RD March 89	4TH June 89	5TH Feb. 90	5YR Dec. 91
UPSTREAM :							
BENZO(A)ANTHRACENE	230	--	NA	--	--	--	150J
BENZO(B AND/OR K) FLUOROANTHENE	n/a	--	NA	--	--	--	230J
CHRYSENE	400	--	NA	--	--	--	170J
FLUOROANTHENE	600	--	NA	--	--	--	390J
HEXADECANOIC ACID	n/a	--	NA	--	--	--	200JN
METHYL(METHYLETHYL) BENZENE	n/a	--	NA	--	--	--	10JN
PETROLEUM PRODUCT	n/a	--	NA	--	--	N	--
PHENANTHRENE	225	--	NA	--	--	--	200J
PYRENE	350	--	NA	--	--	--	350J
TOLUENE	n/a	--	NA	160	--	--	--
MIDSTREAM :							
PCB-1260 (AROCLOR 1260)	50 [400]*	NA	NA	NA	NA	NA	430
DOWNSTREAM :							
HEXADECANOIC ACID	n/a	--	NA	--	--	--	200JN
PCB-1260 (AROCLOR 1260)	50 [400]*	--	NA	--	--	--	1,100

ER-L = Effects Range-Low
n/a = ER-L not available
-- = Not detected
NA = Not analyzed
* = Effects Range-Median

N = Presumptive evidence of presence of material
All values are in µg/kg
Shaded values exceeded the ER-L
J = Estimated value

TABLE A.16 INORGANICS DETECTED IN SEDIMENT AND SURFACE WATER SAMPLING
A.L. TAYLOR SITE, BROOKS, KY

	ARAR	SW-01 DOWN	SW-02 MID	SW-03 UP	ER-L	SD-01 DOWN	SD-02 MID	SD-03 UP
ALUMINUM	[87]	1,700J	2,300J	2,000J	n/a	19,000	18,000	20,000
ANTIMONY	n/a	--	--	--	2	--	--	--
ARSENIC	(50)	--	--	--	33	17J	6.9J	14J
BARIUM	n/a	36	41	40	n/a	85	88	85
CALCIUM	n/a	59,000	61,000	14,000	n/a	1,800	29,000	890
CHROMIUM	n/a	--	--	19	80	27J	20J	29J
COBALT	n/a	--	--	--	n/a	30	16	22
COPPER	[6.54]*	--	--	--	70	24	16	22
IRON	[(1,000)]	1,300J	2,300J	1,800J	n/a	36,000J	22,000J	37,000J
LEAD	[1.32]*	--	--	--	35	26J	16J	17J
MAGNESIUM	n/a	28,000	29,000	9,000	n/a	3,700	17,000	3,600
MANGANESE	n/a	85	290	110	n/a	940	1,100	790
NICKEL	[87.71]	--	--	--	30 / 50♦	45J	35J	43J
POTASSIUM	n/a	6,700	7,200	4,300	n/a	4,500J	4,900J	4,700J
SELENIUM	[(5)]	--	--	--	n/a	--	--	--
SODIUM	n/a	20,000	19,000	13,000	n/a	--	--	--
VANADIUM	n/a	--	--	--	n/a	47	39	48
ZINC	[58.91]*	18	34	27	120 / 270♦	100J	140J	170J

ARAR = Applicable or Relevant and Appropriate Regulations
[ ] = Clean Water Act Ambient Water Quality Criteria (AWQC) for the Protection of Freshwater Aquatic Life, October 1991
( ) = Kentucky Administrative Register Warm water Aquatic Habitat Criteria, January 1992
All surface water values and ARARs in µg/l
Shaded values exceeded the ARAR
n/a = ARAR not available
-- = Not detected
J = Estimated value
* = AWQC based on hardness equation

ER-L = Effects Range-Low
All sediment values and ER-L in mg/kg
Shaded values exceeded the ER-L
n/a = ER-L not available
-- = Not detected
J = Estimated value
♦ = Effects Range Median

APPENDIX B

PHOTOGRAPHS

Photo #1. Site Entrance - Well ALT05 to right of gate. (Facing west.)

Photo #2. Well ALT05 and drainage ditch by East side. (Facing north-east.)

A.L. Taylor

Photo #3. Decon train. (Facing south.)

Photo #4. Louisville Gas and Electric (LGE) power poles through cap. (Facing north.)

A.L. Taylor

Photo #5. Drainage ditch along Southern side of site entrance. (Facing west.)

Photo #6. Looking out from inside site: Neighbors at East side of entrance.

A.L. Taylor

Photo #7. Looking out from inside site: abandoned garage at southeast corner of site. (Facing southeast.)

Photo #8. Rip rap bank dividing the terraces behind a new LGE power pole and an old power pole stump. (Facing west.)

A.L. Taylor

Photo #9. New northern LGE pole with two old snipped off poles. (Facing north-west.)

Photo #10. Close-up of two snipped off poles Shown in photo #9. (Facing south.)

Photo #11. Close-up of one old LGE pole - northern location.

Photo #12. North gate to site with ALT01 in background. (Facing north.)

A.L. Taylor

Photo #13. ALT01 (Facing north.)

Photo #14. View of Site from North. (Facing south.)

A.L. Taylor

Photo #15. ALT07 - NW of Site gate. (Facing south.)

Photo #16. Drainage ditch along north gate - east side. (Facing east.)

A.L. Taylor

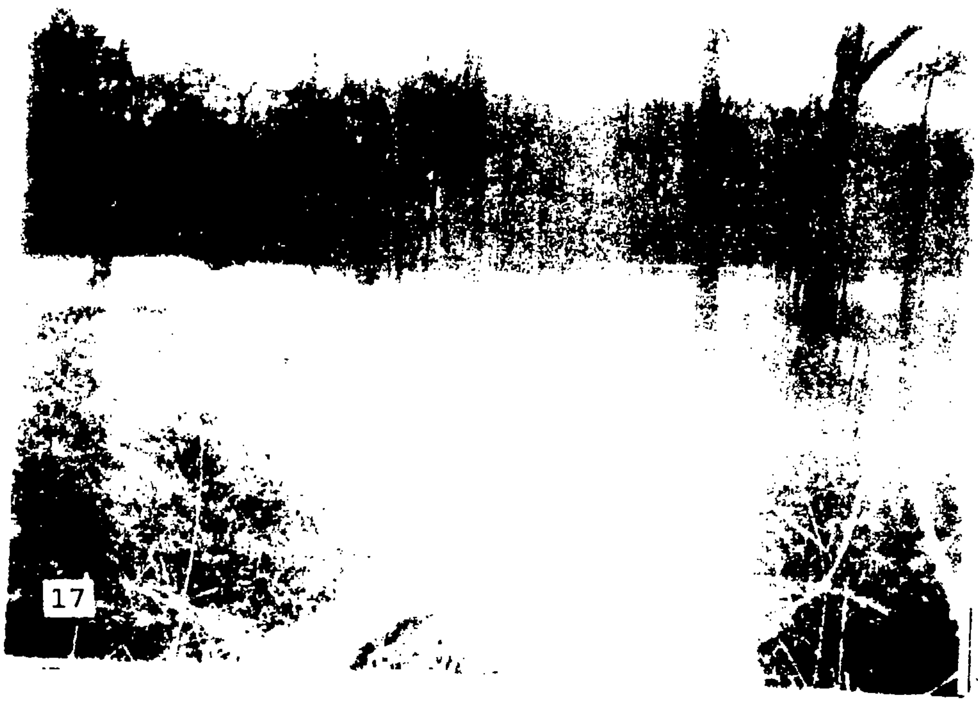

Photo #17. Drainage ditch outside northern boundary of site and ALT10. (Facing south-east.)

Photo #18. ALT02 with RAI personnel; ALT08 in background. (Facing south-east.)

A.L. Taylor

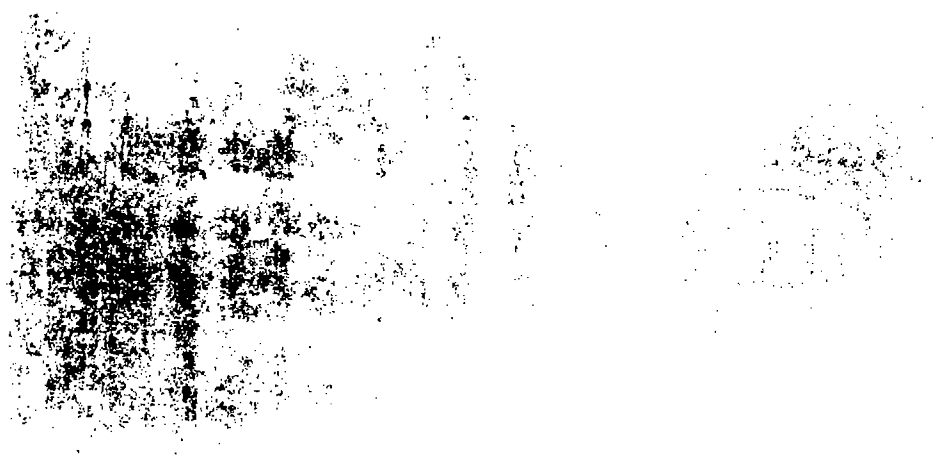

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Photo #19. ALT11 - East of site. (Facing east.)

Photo #20. Wilson Creek. (Facing south.)

A.L. Taylor

Photo #21. Wilson Creek. (Close-up.)

Photo #22. ALT12 - east side of site. (Facing east.)

A.J. Taylor

Photo #23. Wilson Creek. (Close-up.)

Photo #24. Wilson Creek - "midstream" - SW02 with ALT11. (Facing east.)

A.L. Tavlor

APPENDIX C

SITE TRIP REPORT
DECEMBER 1991

SITE TRIP REPORT
FOR THE
A.L. TAYLOR SITE
BROOKS, KENTUCKY

(Contract No. 68-W9-0029)
Work Assignment C04021B

Submitted to:

U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV

December 31, 1991

Submitted by:

RESOURCE APPLICATIONS, INC.
Engineers • Scientists • Planners
1000 Cambridge Square, Ste.D
Alpharetta, GA 30201
(404) 664-3618

A.L. TAYLOR SITE TRIP REPORT

The activities that took place during RAI's visit to the A.L. Taylor site in Brooks, Kentucky (12/9/91 - 12/15/91) are listed in chronological order below:

Monday, December 9, 1991: Weather: Clear, cool. Approximately 45°F
Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)

-RAI mobilized from Atlanta to the site.

-RAI met with Litchfield Transfer to accept a shipment of 25 empty drums (55 gal./DOT/17E/17H/R1022) to be used for the containment of purge water and decontamination water.

-The site was secure, and the gates were locked.

-RAI located eleven of the twelve groundwater monitoring wells both on and off site, and noted some conditions of the clay cap containing the waste.

-RAI observed new power line poles traversing the site. The original poles were cut off approximately two (2) feet from the surface.

-The grass was approximately 2.5 to 3.0 feet high.

-RAI observed evidence of high water off of Wilson Creek to the east of the site.

-RAI met with Steve Hall (ESD) at the hotel.

Tuesday, December 10, 1991: Weather: Clear, cool. Approx. 45°
Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)
Steve Hall (ESD)

-Set up decontamination area.

-Held Health and Safety meeting.

-ALT05: (east side, next to gate)

Water level: 7.2 feet
Total depth: 25.2 feet
Water column: 18 feet Purge volume: 35 gallons

Note: The purge volume was determined by the following formula as listed in the Environmental Compliance Branch Standard Operating Procedures and Quality Assurance Manual, Feb. 1991 (ECBSOPQAM):

$$V = 0.041\ d^2h \text{ (for one volume) } * 3 \text{ (for purge volume)}$$

Where h= depth of water in feet
d= diameter of well in inches
V= volume of water in gallons

-Started to purge ALT05 using a Fultz 2" submersible pump.

-The Fultz pump was not adequate to pump the well. RAI was able to purge ALT05 dry using a 2 inch Teflon bailor.

-A Gould 4-inch submersible pump was used to purge the remaining wells. A 4000-watt generator was used as a power source. The generator was set up as far from wells as possible to avoid any contamination problems.

-ALT04: (on-site, east side)

Water level: 3.2 feet
Total depth: 22.0 feet
Water column: 18.8 feet Purge volume: 36 gallons

-ALT04 pumped dry.

-ALT03 : (on-site, east side)

Water level: 5.1 feet
Total depth: 20.1 feet
Water column: 15.0 feet Purge volume: 29 gallons

-ALT03 pumped dry.

-Patricia Fremont (EPA) and Suzanne Durham (EPA) arrived on-site.

-ALT05 sampled.

-ALT04 sampled.

Wednesday, December 11, 1991: Weather: Clear, cold, 35°F.
Personnel on-site: Robert Smith
Mark Goldstein
Steve Hall

-ALT09: (on-site, eastern corner)

Water level: 17.9 feet
Total depth: 48.0 feet
Water column: 30.1 feet Purge Volume: 59 gallons

-ALT03 sampled.

-ALT09 sampled; RAI noticed a hydrogen sulfide smell, and the water was very turbid.

-ALT08: (, eastern corner)

Water level: 18.1 feet
Total depth: 44.5 feet
Water column: 26.4 feet Purge volume: 52 gallons

-ALT02: (, northeastern corner)

Water level: 10.3 feet
Total depth: 35.4 feet
Water column: 25.1 feet Purge volume: 49 gallons

-ALT08 sampled.

Thursday, December 12, 1991. Weather: Raining, cold, 40°
Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)
Steve Hall (ESD)
Patti Fremont (EPA)

-ALT07: off-site, west end.

Total depth: 70.5 feet. Due to growth on the inside of the well casing, the water level could not be obtained. The information plate on the well indicated a screened interval of 57.1 to 67.1 feet.

The protective case for ALT07 has what appears to be a bullet hole in the lid. However, the lid is still fully functional.

RAI attempted to utilize a 4-inch bailer to purge ALT07. However, due to the bacterial/fungal growth on the inside of the well casing, the bailer was too slick to handle. A two inch bailer was used. Approximately 0.5 liter of well water was recovered with the 2-inch bailer. The water was grey to black and had a strong septic smell.

After consulting with Steve Hall it was agreed that no samples could be taken from ALT07.

-ALT01: off-site, north end.

Water level: 6.0 feet
Total Depth 70.0 feet
Water column: 64.0 feet Purge Volume: 125 gallons

-While attempting to purge ALT01 the generator went down. RAI replaced it with a new one. RAI purchased 12 padlocks to replace the old rusted ones on the well casings. (Master Locks Model #3LF, Key code: 0464)

-ALT01 pumped dry.

-ALT02 pumped dry.

-ALT02 sampled.

Steve Hall (ESD) collected the surface water and sediment samples taken on Wilson Creek which runs along the east side (down gradient) of the site.

Locations sampled were: SW03-Surface Water-Upstream
SW02-Surface Water-Midstream
SW01-Surface Water-Downstream

SD03-Sediment-Upstream
SD02-Sediment-Midstream
SD01-Sediment-Downstream

Friday, December 13, 1991. Weather: Raining, cold, 40°F. The site was too muddy to move around with the truck. All equipment was moved by hand.
Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)

-ALT10 (off-site, north side)

Water level	6.5 feet	
Total depth	51.0 feet	
Water Column	44.5 feet	Purge Volume-87 gallons

-ALT11 (off-site, east side)

Water level	15.8 feet	
Total depth	38.0 feet	
Water Column	22.2 feet	Purge Volume-43 gallons

-ALT12 (off-site, northeast corner)

Water level	17.0 feet	
Total depth	40.0 feet	
Water Column	23.0 feet	Purge Volume-45 gallons

-ALT06 (off-site, southeast corner)

Water level	14.0 feet	
Total depth	30.0 feet	
Water Column	16.0 feet	Purge Volume-31 gallons

-When RAI attempted to calibrate the HNu, it calibrated at a span setting of 2.6, (normal is in the 9.8 to 8.8 range.) The readings obtained may be suspect, however, the safe readings on the CGI allowed RAI to proceed safely.

-ALT10 pumped dry.

Saturday, December 14, 1991. Weather: Occasional rain, 40°F expected to drop all day.
Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)

-ALT12 pumped dry.

-ALT11 pumped dry.

-RAI noticed a dog on site. The dog appeared to move freely in and out of the secured site. After checking, a gap was found in the fence over a ditch located between ALT08 and ALT09 along the east side of the site. However, the gap is not big enough for a person to gain access to the site.

-ALT06 pumped dry.

-ALT10 sampled. During the sampling process, the Teflon bailer disconnected from the rope and fell into the well. RAI attempted to retrieve the bailer with no success.

-ALT11 sampled.

-ALT06 sampled.

-A Matrix Spike was taken from ALT06. This well is located at the south-end of the site along the east side. This well is assumed to be free from contamination due to its location up-gradient of the site.

Sunday, December 15, 1991. Weather: Clear and cold, 30°F.
Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)

-In the morning ALT06 was frozen shut, RAI waited until the well casing thawed and retrieved the bailer.

-RAI decontaminated equipment using proper ESD approved procedures:
Alconox wash
Tap water rinse
Organic-free water rinse
Isopropanol rinse
Air dry

-A Rinsate Blank was taken from one Teflon bailer.

-RAI cleaned up around the wells and secured the site prior to leaving the site.

-RAI off-site.

All of the wells were purged into 55 gallon drums and all of these drums are located inside the fence bounding the site. The water and isopropanol used for decontamination is also stored inside the fence in 55-gallon drums. All drums are labeled and dated. All wells were checked with a Combustible Gas Indicator and a photoionization detector immediately after being opened. The temperature, conductivity, and pH were noted for each well sampled. All wells were purged with the Gould four inch submersible pump (except at ALT05 and ALT07) and all wells were sampled with a two inch Teflon bailor.

The clay cap seems to be in very good condition. There is well established vegetation on most of the cap. The perimeter drainage ditches are also in good shape. However, some of the ditches have quite a bit of vegetation in them. RAI did not notice any standing water on the site. The groundwater monitoring wells are all in good condition and are easily accessible.

APPENDIX D

SITE TRIP REPORT
MARCH 1992

SITE TRIP REPORT
FOR THE
A.L. TAYLOR SITE
BROOKS, KENTUCKY

(Contract No. 68-W9-0029)
Work Assignment C04021B

Submitted to:

U. S. ENVIRONMENTAL PROTECTION AGENCY
REGION IV

March 11, 1992

Submitted by:

RESOURCE APPLICATIONS, INC.
Engineers • Scientists • Planners
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Alpharetta, GA 30201
(404) 664-3618

SITE TRIP REPORT - A.L. TAYLOR - BROOKS, KENTUCKY

The following events took place during RAI's recent field work at the A.L. Taylor Dump Site in Brooks, Kentucky. The field work took place from Friday, March 6, 1992 to Sunday, March 8, 1992. The events are listed in chronological order below:

Friday, March 6, 1992: Weather: Clear and warm. Temperatures in mid 70's.

-RAI mobilized from Newport, Kentucky to A.L. Taylor Dump Site.

Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)
Randal MacKay (RAI)
C.R. Maise (RAI)

-Outer Gate open, lower gate secured. Does not appear to have been any trespassing on the site.

-RAI began prepping to purge ALT01 (monitoring well).
Water Level: 7.00 ft. from top of casing.
Temperature: 12.7° C
Conductivity: 7.58 m mho/cm
HNu: No readings
CGI: No readings

-RAI began prepping to purge ALT06 (monitoring well).
Water Level: 15.00 ft. from top of casing.
Temperature: 14.3° C
Conductivity: 1.62 m mho/cm
HNu: No readings
CGI: No Readings

-RAI attempted to pump ALT01, however, due to either a generator or pump malfunction, we were unsuccessful. RAI then attempted to pump ALT06 using a different pump with no success. R. Smith off site to get another generator.

-Surface water and sediment samples were taken by R. MacKay at previously sampled locations.

-ALT05:
Water Level: 9.00 ft. from top of casing.
Temp: 10.1° C
Cond.: 2.40 m mho/cm
HNu: No readings
CGI: No readings

-New generator is used at ALT01, it was determined that the pump previously used at ALT01 was defective. RAI decontaminated the pump used at ALT06 and purged ALT01 dry.

-Strong thunderstorm with heavy rains encountered while purging ALT01. After rains, RAI decontaminated pump and hoses in preparation for Saturday.

Saturday, March 7, 1992: Weather: Foggy and cool, temperature in mid 50's expected to clear with temperature in upper 60's.

Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)
Randal MacKay (RAI)
C.R. Maise (RAI)

-ALT01 sampled.

-ALT06 sampled.

-ALT05 rechecked:
Water Level: 8.2 ft. from top of casing.
Total depth: 25.20 ft. from top of casing.
Temperature: 13.7° C
Conductivity: 4.52 m mho/cm
HNu: No readings
CGI: No readings

-ALT05 was purged using a 2-in. Teflon bailer.

-ALT10:
Water Level: 7.30 ft. from top of casing.
Temperature: 12.0° C
Conductivity: 0.787 m mho/cm
HNu: No Readings
CGI: No Readings

-C.R. Maise off-site, returning to Atlanta.

-ALT05 purged dry with bailer (approx. 30 gallons).

-ALT10: Most of water column purged with pump. Due to mechanical difficulties with the pump, the remainder of the water column was removed using a bailer. ALT10 purged dry.

-ALT05 sampled.

-ALT10 sampled.

-RAI observed evidence of washout in the ALT02/ALT08 area. Water appeared to be flowing in shallow channels running west to east.

-ALT08:

Water Level: 17.2 ft. from top of casing
Temperature: 14.0° C
Conductivity: 2.50 m mho/cm
HNu: 4 ppm
CGI: No Readings

-ALT02:

Water Level: 8.00 ft. from top of casing.
Temperature: 10.6° C
Conductivity: No Data
HNu: 2 ppm
CGI: No Readings

-ALT08 purged dry.

-ALT02 purged dry.

-ALT09:

Water Level: 17.1 ft. from top of casing
Temperature: 14.3° C
Conductivity: 2.05 m mho/cm
HNu: No Readings
CGI: No Readings

-ALT04:

Water Level: 2.8 ft. from top of casing
Temperature: 11.4°C
Conductivity: 1.30 m mho/cm
HNu: 2 ppm
CGI: No Readings

-ALT08 sampled.

-ALT02 sampled.

-ALT04 purged dry.

-ALT03:

Water Level: 4.32 ft. from top of casing
Temperature: 10.5° C
Conductivity: 6.55 m mho/cm
HNu: 2 ppm
CGI: No Readings

-ALT03 purged dry.

Sunday, March 8, 1992: Weather: Cloudy, expected to clear. Temperature expected to reach upper 70's.

Personnel on-site: Robert Smith (RAI)
Mark Goldstein (RAI)
Randal MacKay (RAI)

-ALT11:
Water Level: 16.15 ft. from top of casing
Temperature: 12.8° C
Conductivity: 6.45 m mho/cm
HNu: No Readings
CGI: No Readings

-ALT12:
Water Level: 16.33 ft. from top of casing
Temperature: 13.5° C
Conductivity: Conductivity meter not operating properly.
HNu: No Readings
CGI: 6% LEL

-ALT11 purged dry.

-ALT12 purged dry. Strong H_2S smell towards bottom of water column.

-ALT09 was determined to have an obstruction that prevented purging of the well with the pump. The well was purged using a 2" bailer (3 volumes = 60 gallons).

-ALT03 sampled.

-ALT04 sampled.

-ALT12 sampled.

-ALT11 sampled.

-Strong H_2S smell from ALT09. ALT09 sampled. Grey water.

-RAI off-site.

Monday, March 9, 1992:

Robert Smith (RAI)
Mark Goldstein (RAI)
Randal MacKay (RAI)

-RAI shipped samples to ESD in Athens.

-RAI to Atlanta.

SUMMARY

The field event went well with the exception of various minor equipment problems. All planned activities were completed one (1) day ahead of schedule. All sampling points from previous field activities were sampled. The samples taken were sent to U.S. EPA Region IV, Environmental Services Division in Athens, Georgia for analysis. Analysis for extractables only will be performed in-house at the Athens laboratory. The results will be forwarded to the RPM (Patricia Fremont) and to RAI upon completion of analysis. The ESD Project Code for the field work is 92-0324.

At the conclusion of the field work, there remains fifteen (15) drums containing purge water from the December, 1991 trip as well as the March, 1992 trip. One (1) drum containing decon water remains as well.