UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

ENVIRONMENTAL INDICATOR MEMORANDUM

DATE: November 11, 2009

SUBJECT: Third Evaluation of the **former LWD, Inc. incineration facility** status under the RCRAInfo Corrective Action Environmental Indicator Event Codes (CA725 and CA750)
EPA I.D. Number: KYD 088 438 817 NCAPS Ranking: HI

FROM: Leo J. Romanowski Jr.
Sr. Corrective Action Specialist, Corrective Action Section
RUST Branch, RCRA Division
LJR 11/11/09

THRU: D. Karen Knight, CHMM 11/13/09
Chief, Corrective Action Section
RUST Branch, RCRA Division

TO: Jeff T. Pallas 1/9/2010
Chief, RUST Branch
RCRA Division

Concur: 1/09/2010
RCRA Info Date

I. PURPOSE OF MEMO

This memo is written to formalize an evaluation of the **former LWD, Inc. incineration facility located in Calvert City, Kentucky** and its facility status in relation to the following corrective action event codes defined in the Resource Conservation and Recovery Information System (RCRAInfo):

1. Current Human Exposures Under Control (CA725), and

2. Migration of Contaminated Groundwater Under Control (CA750).

Concurrence by the EPA Restoration and Underground Storage Tank (RUST) Branch Chief is required prior to entering these event codes into RCRAInfo. Your concurrence with the interpretations provided in the following paragraphs and the subsequent recommendations is satisfied by dating and signing this memorandum.

II. HISTORY OF ENVIRONMENTAL INDICATOR EVALUATIONS AT THE FACILITY AND REFERENCE DOCUMENTS

This particular evaluation is the third evaluation performed for the **former LWD, Inc., (Calvert City, Kentucky)** facility. The evaluation, and associated interpretation and conclusions on contamination, exposures and contaminant migration at the facility, are based on information obtained from the following documents:

1. RCRA Facility Investigation (RFI) Phase I Report (final August 1998)

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1. RCRA Facility Investigation (RFI) Phase I Report (final August 1998)

2. LWD Monthly Progress Reports (2000-2003)
3. RFI Phase II Workplan (August 18, 2000)
4. OSHA Employee Air Monitoring Report (TWA/PEL conducted December 20, 2001)
5. Groundwater Monitoring Plan (June 11, 2002)
6. Supplemental EI Guidance: Evaluation of Vapor Intrusion to Indoor Air Pathway (March 27, 2002)
7. RFI Phase II: Conceptual Site Model (February 7, 2003)
8. RFI Phase II: Qualitative Risk Assessment (April 29, 2003)
9. Draft Final Characterization (Phase 4) Report (May 2009) (aka EnSafe Inc. report for EPA CERCLA AOC signed February 28, 2007)

The previous EI status codes are:

First Evaluation (9/25/98):	CA725: NO	CA750: NO
Second Evaluation (7/25/03)	CA725: YES	CA750: NO

III. FACILITY SUMMARY

The former LWD operated as an interim-status RCRA facility that stored, treated, disposed and commercially incinerated bulk and containerized hazardous waste. The 31.8 acre facility is located on a terrace area about 3000' south of the Tennessee River and is surrounded by a heavily industrialized complex (Carbide Graphite, former BFGoodrich, Westlake Monomers, Air Products) and agricultural property (see Figure 1 - Calvert City (KY) Industrial Complex-2007). Industrial activity as a landfill dates back to the mid-1950s. However, landfilling of incineration residues (along with other permitted municipal solid wastes) commenced on site in 1970 (under a previous owner- IPC/Petrolite) and ended in 1985 with the closure of the 7-acre landfill. This closed landfill unit (SWMU 34) included 3 feet of compacted clay soil/vegetative cap above a 6-mil HDPE cover with gas vent system.

The LWD facility operated under RCRA interim status from approximately 1980 thru mid-2004. Records indicate that the 3-incinerators burned a mixture of complex organic chemicals (liquids and solids) including furans and polyvinyl chloride derivatives. As a result of multiple EPA/Kentucky inspection violations as well as consistently inadequate and deficient Part B RCRA permit applications and trial burn workplans and reports, EPA issued a 3013 Order in 1987 and a RCRA 3008(h) Administrative Order on Consent (AOC) in 1991 to addresses corrective action for the site. Several corrective action investigations have generated much environmental site knowledge and a RFI Phase II (2000) was in progress prior to bankruptcy notification. Since about 2002, LWD was undergoing major management and financial restructuring. However, in January 2004 on-site incineration of wastes ceased, and the last owner (Bluegrass Incineration Services, LLC) abandoned the site in October 2005, leaving behind hazardous and non-hazardous wastes.

In February 2006, at Kentucky's request, EPA CERCLA (Emergency Response & Removal Branch) conducted a removal site evaluation and determined that a time-critical removal action was necessary to stabilize the abandoned site due to dozens of unsecured leaking roll-offs full of incinerator ash, potentially leaking hazardous waste drums and the threat of releases from a large tank farm and containment berm area. The EPA time-critical removal activities were completed from March 2006 to February 2007 and eliminated the urgent release threats. Subsequently, EPA Region 4 entered into a settlement agreement with a group of former LWD customers to complete the remaining removal actions and totally characterize the site (see Figure 3. Phase 4 Sample Locations). EPA signed the CERCLA AOC on February 28, 2007 and it became effective on March 1, 2007 (USEPA Region 4; CERCLA Docket No. CERCLA-04-2007-3759).

During the 1989-RFA, EPA and KDEP identified thirty-four (34) SWMUs at the facility (see Figure 2 - Facility Site Map with SWMUs, RFI MWs and Soil Boring Locations). All but four of these SWMUs have been effectively capped by buildings, pavement and/or clay soil cap. The four SWMUs which are not beneath buildings or pavement are SWMUs 13, 21, 22 and 34. Over the years, areas of the LWD site have been filled with 10 feet or more of fill. Because of the extensive former use of coal bottom ash cinders as inert fill, road stabilizer as well as for solidification of media, the on-site surficial soil conditions vary considerably from the deeper subsurface soils.

Analytical soil data revealed deep soil contamination (9-27 feet bgs) for two less-toxic congeners of the dioxin/furan chemical family (OCDD and total HpCDD) and methane gas. Using EPA's TEF approach for normalizing the toxicity of numerous dioxin/furan congeners, the dioxin concentrations in the deep soils ranged from 1 to 5.6 times the EPA soil action levels [EPA industrial Regional Screening Levels (RSLs) = 1.8E-05 mg/kg = 0.018 ppb]. Most of the deep soil boring locations which detected dioxin/furan contamination appear to be contained within the closed landfill SWMU 34 or under the incinerator buildings. All dioxin soil contamination is well below the current EPA policy soil cleanup values of 5-20 ppb industrial and 1 ppb residential soil.

Soil gas contamination is substantial but not unexpected from a site whose areal footprint contains a capped 7-acre former municipal solid waste landfill (SWMU 34). At depths of 17-23 feet (about 5 feet above the water table), soil gas levels are substantial, particularly for methane gas (due to the natural bioremediation). Benzene, toluene, xylene, TCE, 1,1-DCA and other VOCs are also detected in the soil gas but at much lower concentrations. Fortunately, due to landfill venting system and ongoing natural bioremediation, these elevated methane soil gas concentrations have decreased orders-of-magnitude (700,000 ppb to 100-70,000 ppb) from the time of the RFI Phase 1 to the RFI Phase 2 sampling events. Due to LWD operations, no significant or statistically significant contamination above the EPA action levels (EPA industrial Regional screening levels (RSLs)) has been reported for the shallow soil, sediment and surface water. However, due to the industrialized location of the site, there are noticeable offsite sources of minor contamination from neighboring facilities (e.g.; a large carbide lime tailings pile/pond).

Between 1990 and 1991, LWD installed 22 monitoring wells (11 two-well clusters) and by 1999 had sampled these wells at least 6 times. However, man-made influences (industrial and municipal pumping wells) on adjacent properties reversed the historical groundwater flow directions; and in 2002, additional statistical groundwater contaminant flow delineation studies were proposed. Specifically, the relocation of the Calvert City Municipal Well field and the increased pumping volumes at the BF Goodrich RCRA correction action site caused the groundwater flow reversal. Since about 2000, the predominant groundwater flow direction in the uppermost alluvial aquifer continues to be from the southwest to the northeast. Fortunately, the multiple extraction well networks at the BF Goodrich site (across the street and to the north–northeast) continue to contain and remove contaminated groundwater migrating from the natural bioremediation zone at the LWD site. OSHA employee air monitoring as well as RCRA EI indoor air vapor intrusion studies of VOCs were also completed in 2002 and no issues were identified at this time.

Analytical groundwater data indicate VOCs [benzene, 1,2-dichloroethane (EDC) and vinyl chloride) and metals (arsenic and thallium) are the most widespread contaminants and occur at the highest concentrations across the site. Generally, these groundwater contaminants are limited to the shallow portion of the aquifer with the highest concentrations detected in the northern-most portion of the site. VOC contaminant levels are normally below 1 ppm but these levels do exceed the EPA drinking water standards (MCLs). Recent groundwater sampling, conducted during the Phase 4 characterization under the CERCLA AOC, utilized the 22 monitoring wells installed during the RFI. These MWs were

redeveloped in October 2007, initially sampled in December 2007 for a full suite of analytical parameters; and a subset of these wells were sampled again in October 2008 for parameters selected to evaluate the documented natural attenuation processes. Depth to groundwater ranged from 21 – 35 feet.

IV. CONCLUSION FOR CA725: CA725 YES (Third EI Evaluation)

A CA 725, Yes, for "Current Human Exposures Under Control" has been verified and a sufficient body of evidence exists in support of this decision which is documented in Attachment 1. The site is currently inactive, unoccupied and will remain for future industrial use. Hazardous waste incineration ceased in January 2004 and the last owner (Bluegrass Incineration Services, LLC) abandoned the site in October 2005. The USEPA implemented a CERCLA time-critical removal from March 2006 to February 2007 and all hazardous wastes and much contaminated media has been removed from the site. Based on the historical RFI data and additional environmental data collected and evaluated within the Phase 4 Site Characterization Report of 2009, the exposure potential to COPCs are within EPA's acceptable risk range for an industrial future use scenario (i.e., acceptable cancer risk range of 1E-06 to 1E-04 and a HQ < 3). Access Control Measures (concrete pavement, fencing and locked security gate) are currently controlling human exposures to all environmental media of concern at the former LWD, Inc. Because these measures will continue to control human exposures to all unacceptable contamination, and the anticipated future use will remain industrial, and no drinking water wells are nearby, it is recommended that CA725 YES remain unchanged in RCRAInfo from the previous Second EI Evaluation made in 7/23/2003.

V. CONCLUSION FOR CA750: CA750 YES (Third EI Evaluation)

A CA 750, Yes, for "Migration of Contaminated Groundwater Is Under Control" is based on the analysis documented in Attachment 2. The groundwater beneath the northern end of the site has been impacted more than any other area of the site. And historical groundwater flow patterns have been influenced by several adjacent man-made activities. Beginning in 1992 with the expansion of the pump and treat system at the adjacent former BF Goodrich RCRA facility (aka Westlake Vinyls) (PCAP groundwater extraction rates = 500 - 850 GPM) and later the closure of the Calvert City municipal well field (less than 1-mile to SW); the historical groundwater flow directions at the former LWD site has been favorably reversed. The RFI 3-D Conceptual Site Model and subsequent monitoring well analyses have demonstrated that the VOC contaminant plume is now predominantly migrating northward into the capture zones of the massive pump and treat network (PCAP) operated pursuant the RCRA permit for the adjacent former BF Goodrich facility. Additionally, recent spatial and temporal trend analysis of the major COPCs indicates that anaerobic biodegradation is occurring in both the shallow and deeper groundwater at the site. There are no private water wells in the immediate vicinity; and the risk of human exposure to contaminated groundwater is negligible within the industrial complex. Multiple lines of evidence have been established to support the conclusion that contaminated groundwater is under control. Since major VOC source areas (i.e.; tank farm and drum storage) have been eliminated, natural VOC biodegradation has been demonstrated, contaminant concentration trends are decreasing and potential off-site groundwater migration is contained and captured, it is recommended that CA 750 YES be entered into RCRAInfo.

VI. SUMMARY OF FOLLOW-UP ACTIONS

A. CA725: Not applicable — as long as current human exposures (industrial) remain under control**.**

B. CA750: Not applicable — as long as Migration of Contaminated Groundwater is under control**.**

The table below is a "corrective action place marker" for future activities necessary to get to a final remedy and maintain the current EI recommendations:

Former LWD, Inc. EI/Final Remedy SCHEDULE				
Activity(ies) (As defined by RCRIS)	**CA RCRIS Event Code**	**Scheduled Date** (FY)	**Associated CA RCRIS Code**	**Remarks** (Include units and description of action(s))
Evaluate LUCs and deed notification for 7-acre landfill (SWMU 34) and maybe entire 31.8 acre site	CA400/550	2010		Site is bankrupt and KDEP holds the approx. $3 million financial assurance closure costs.
Complete Final Remedy documentation and terminate 3008(h) Order and 2007 CERCLA AOC for site	CA400/550	2011/2012	CA800	EPA makes Order modifications and Ready–for Reuse determination. Turnover to KDEP for implementing the state's final corrective action for continued industrial reuse.

VII. LEVEL OF CONFIDENCE IN REACHING A POSITIVE EI EVALUATION AND MAJOR ISSUES REGARDING A FINAL REMEDY

Confidence is high that both "current human exposures to contamination" and "migration of contaminated ground water" are under control at the Former LWD, Inc. site. This is due to:

1. extensive source removal and no current ongoing releases from closed facility,

2. limited shallow groundwater contamination at the N-NE portion of the site,

3. documented ongoing natural biodegradation of the VOCs in the groundwater,

4. no nearby drinking water wells in the area, and

5. contaminated groundwater (potentially migrating off-site) is being stabilized and captured by the extensive downgradient extraction well networks (PCAP) at the adjacent BF Goodrich RCRA corrective action site.

Attachments:
1. CA725 — Current Human Exposures Under Control
2. CA750 — Migration of Contaminated Ground Water Under Control
3. Figure 1 - Calvert City (KY) Industrial Complex- 2007
4. Figure 2 - Facility Site Map with Major SWMUs, RFI MWs and Soil Boring Locations
5. Figure 3 - Phase 4 Sample Locations
6. Figure 4 - Benzene in Shallow Groundwater 1990, 1992 and 2007
7. Figure 5 - Aerial Well Map View of Former LWD site and PCAP Extraction Well Network at Former BF Goodrich Site to the N-NE and the Tennessee River

cc: Bart Shaffer, Chief, Corrective Action Section, KYDEP
April Webb, Chief, Hazardous Waste Branch, KYDEP

ATTACHMENT 1

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Code (CA725)
Current Human Exposures Under Control

Facility Name: **Former LWD, Inc., (aka Bluegrass Incineration Services, LLC)**
Facility Address: **2475 Industrial Parkway, Calvert City, KY 42029**
Facility EPA ID No.: **KYD 088 438 817**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

_X_ If yes - check here and continue with #2 below,

___ If no - re-evaluate existing data, or

___ If data are not available skip to #6 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater.

Definition of "Current Human Exposures Under Control" EI

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program, the EIs are near-term objectives that are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Current Human Exposures Under Control" EI is for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and does not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be "**contaminated"** [1] above appropriately protective risk-based "levels" (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs, or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			Benzene, EDC, vinyl chloride, arsenic, thallium (max conc. of 140, 28, 16, 311, 59 ppb > MCLs)
Air (indoors) [2]		X		Not contaminated.
Surface Soil (e.g., < 2 ft)	X			Only inorganic (arsenic) occasionally >RSL industrial; but average As << 1-3 x KY background
Surface Water		X		Not contaminated. Levels < RSLs and/or MCLs and ecological screening values
Sediment		X		Not contaminated. Arsenic levels < background arsenic levels and ecological screening values
Subsurface Soil (e.g., > 2 ft)	X			Isolated hot spots of inorganic (arsenic, lead, manganese) and VOCs (benzene, chloroform, ethylbenzene and xylene) > industrial RSLs; but average conc. are comparable to site–wide background and/or <<< RALs
Air (outdoors)		X		Not contaminated.

___ If no (for all media) - skip to #6, and enter "YE" status code after providing or citing appropriate "levels" and referencing sufficient supporting documentation demonstrating that these "levels" are not exceeded.

_X_ If yes (for any media) - continue after identifying key contaminants in each "contaminated" medium, citing appropriate "levels" (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

___ If unknown (for any media) - skip to #6 and enter "IN" status code.

RATIONALE AND REFERENCE(S)

As previously mentioned, the analytical data collected during the historical RFI phases resulted in an EI CA 725 Yes for EPA's 2nd EI Evaluation of the then-operating LWD, Inc. facility in July 25, 2003. This

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based "levels" (for the media, that identify risks within the acceptable risk range).

[2] Recent Evidence (from the Colorado Dept. of Public Health and Environment, and others) suggests that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants that previously believed. This a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

3rd EI Evaluation is an update which focuses on the environmental data collected during the CERCLA Phase 4 Site Characterization of current (bankrupt and abandoned) conditions in 2006-2008.

The Phase 4 Site Characterization activities included the following:

- Sampling and characterizing surface soils, surface waters and sediment throughout the site; including the surface of the known landfill area (SWMU 34), drainage ditches and pathways.
- Evaluating subsurface conditions for buried drums, tanks, and containers via geophysical methods.
- Sampling soil and sediment beneath concrete slabs and structures of the Former Incinerator Building, tank farms and drum storage areas.
- Re-sampling the onsite monitoring wells for groundwater conditions
- Collecting sufficient upgradient and background samples to evaluate the extent of any impacts originating from the site.
- Collection of over 160 environmental media samples (i.e.; surface and subsurface soils, sediment, surface water, perched water and groundwater),

All soil and sediment data were compared to EPA Regional Screening Levels (RSLs of September 2008) for industrial land use and the direct contact pathway. Groundwater was compared to the EPA MCLs and the RSLs for tap water. Surface water was compared to EPA Region 4 WMD Freshwater Surface Water Chronic Screening Values. As a second tier of risk management, COPCs were compared to the Removal Action Levels (RALs) and background concentrations. RALs are screening values that have been adjusted to correspond with EPA's upper bound acceptable risk range of 1E-04 and a HQ of 3. Given the long history of industrial use at the site (incineration and multiple landfills) and its location in an established Calvert City industrial complex consisting of thousands of surrounding acreage, the industrial use scenario is appropriate to assess the potential for current and future risks.

Surface Soils and Subsurface Soils

The unpaved 22.5-acre portion of the site was characterized using a grid-based approach. Results from 51 surface soil samples indicated that only the maximum arsenic (14.1 mg/kg) concentrations exceeded the RSLs for industrial soils (RSL industrial for As = 1.6 mg/kg). Because the average concentration calculated for arsenic (5.36 mg/kg) was much lower than the corresponding RAL (160 mg/kg), arsenic contamination is not expected to present unacceptable risk levels from site–wide surface soil exposure. Additionally, these arsenic concentrations were determined to be representative of statewide background conditions. The arsenic background for Kentucky soils has been documented around 7.8 to 9.4 mg/kg.

A total of 35 subsurface soils samples (excluding the borings collected to characterize the former Incinerator Building footprint) were collected at depths ranging from 0.5 to 27 feet bgs. Seven constituents in the subsurface soils exceeded their respective RSLs. However, none of these subsurface COPCs appear to present unacceptable human risk under an industrial use scenario for the following reasons:

* Arsenic concentrations ranged from 1.8 to 15.6 mg/kg which is greater than the industrial RSL of 1.6 mg/kg but the average arsenic levels (5.36 mg/kg) are within the background levels (7.8 – 9.4 mg/kg) and definitely below the RAL of 160 mg/kg.

* Lead concentrations ranged from 6 to 961 mg/kg with an average site-wide lead concentration in subsurface soils of 40 mg/kg which is much less than the industrial RSL and RAL of 800 -1000 mg/kg.

* Manganese ranged form 65 to 25,000 mg/kg with an average concentration of 1,430 mg/kg. Only three of the 35 samples had manganese levels greater than the industrial RSL of 2,300 mg/kg and none exceeded the RAL of 69,000 mg/kg. Also, physical barriers were in place to prevent potential human exposure.

* BTEX and chloroform were detected at concentrations exceeding the RSLs beneath the former North Tank Farm berm. In addition to an existing concrete physical barrier to prevent potential human exposure, these subsurface soil levels were at least an order of magnitude less than the respective RAL.

Perched Water and Surface Water

A shallow perched water-bearing zone was recently identified beneath the eastern portion of the site across an area extending from the former North Tank Farm southward. During the early years of property development, this portion of the site was filled with coal ash cinders to elevate the surface grade and prevent flooding. The coal ash cinders are generally saturated between 5 and 15 feet bgs. Beneath this perched zone is a low permeable clay layer, approximately 5 to 15 feet thick which separates the perched zone from the top of the uppermost portion of the alluvial aquifer. Generally, this perched zone intermittently releases surface water to a low-lying area (east of the former North Tank Farm) primarily following prolonged rain events. These perched surface waters were sampled and no COPCs were identified. Additionally, EPA determined that the surface water discharges have not adversely affected sediments along the off-site drainage pathway from the culvert on the east side of the facility.

Groundwater

Twenty-two (22) on-site monitoring wells (11 shallow and deep well pairs) were installed to characterize the upper and lower portions of the alluvial aquifer. Multiple sampling events have occurred from 1990 to 2008.

Analytical groundwater data indicate VOCs (benzene, 1,2-dichloroethane (EDC) and vinyl chloride) and metals (arsenic and thallium) are the most widespread contaminants and occur at the highest concentrations across the site. Generally, these groundwater contaminants are limited to the shallow portion of the aquifer with the highest concentrations detected in the northern-most portion of the site. To be more specific, approx. 85% of the maximum detected concentrations of all contaminants were reported from only 5 monitoring wells across the northern end of the site (i.e., MW-1A, MW-6A, MW-7A, MW-8A and MW-10A). Additionally, over 90% of the maximum detected concentrations of VOCs were associated with only 3 MWs (i.e., MW-1A, MW-7A and MW-10A).

In 2007-8, the groundwater contaminants which exceeded the EPA drinking water standards (MCLs) are:

Groundwater Contaminant	MCL (ppb)	Max. Conc. (ppb)	Ave. Conc. (ppb) of 11 shallow wells	Ave. Conc./MCL Ratio
benzene	5	140	14	3
EDC	5	28	5	1
VC	2	16	4	2
arsenic	10	311	45	5
thallium	2	59	24	12

Temporal trend analysis indicates a consistent reduction in VOC groundwater concentrations over the past 7 years. VOC contaminant levels significantly decreased from 800-1000 ppb in 2002 to below 400 ppb as measured during the recent 2007 CERCLA characterization. As seen in above table, the average concentration for the five (5) main groundwater contaminants generally exceeded the MCLs by an order of 2 to 3 times for VOCs and 5 to 12 times for the metals. These levels are generally low enough to be amenable to natural attenuation.

PCBs were not detected in the groundwater. Dioxins were basically non-detect in the groundwater from 19 of 22 MWs with the exception of three minor detections of OCDD (the least harmful of the dioxin congeners) in MWs 3A, 4A and 7A. These OCDD levels were at 6E-05, 8E-05 and 45E-05 ppb which is slightly above the EPA Method Detection Limits (MDL) of 3E-05 ppb and at least 1000 times lower than the TEQ equivalent dioxin MCL for 2,3,7,8-TCDD.

3. Are there **complete pathways** between "contamination" and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table
Potential **Human Receptors** (Under Current Conditions)

"Contaminated" Media	**Residents**	**Workers**	**Day-Care**	**Con-struction**	**Trespassers**	**Recreation**	**Food**[3]
Groundwater	N/L	No	N/L	No	No	N/L	N/L
Air (indoors)	NC	NC	NC	NC	NC	NC	NC
Surface Soil (e.g., < 2 ft)	N/L	No	N/L	No	No	N/L	N/L
Surface Water	NC	NC	NC	NC	NC	NC	NC
Sediment	NC	NC	NC	NC	NC	NC	NC
Subsurface Soil (e.g., > 2 ft)	N/L	No	N/L	No	No	N/L	N/L
Air (outdoors)	NC	NC	NC	NC	NC	NC	NC

Instructions for Summary Exposure Pathway Evaluation Table:

1. For Media which are not "contaminated" as identified in #2, please strike-out specific Media, including Human Receptors' spaces, or enter "N/C" for not contaminated.

2. Enter "yes" or "no" for potential "completeness" under each "Contaminated" Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations, some potential "Contaminated" Media - Human Receptor combinations (Pathways) are not assigned spaces in the above table (i.e., **N/L - not likely**). While these combinations may not be probable in most situations, they may be possible in some settings and **should be added as necessary**.

_X_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter "YE" status code, after explaining and/or referencing

[3] Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.).

condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).

___ If yes (pathways are complete for any "Contaminated" Media - Human Receptor combination) - continue after providing supporting explanation.

___ If unknown (for any "Contaminated" Media - Human Receptor combination) - skip to #6 and enter "IN" status code

RATIONALE AND REFERENCE(S):

The evaluation of the groundwater temporal trends strongly suggests that concentration levels are being influenced by natural attenuation processes. Specifically, the groundwater data show a decline in chlorinated solvent parent compounds (TCE, 1,2-DCA, 1,1-DCA) along with the formation of various daughter products (chloroethane, cis-1,2-DCE, VC, ethane and ethane) typically associated with anaerobic biodegradation and reductive dechlorination. BTEX is also attenuating (likely due to co-metabolic activity). However, arsenic concentrations have increased in wells where anaerobic biodegradation is occurring and the reducing environment appears to have mobilized naturally occurring arsenic from the aquifer matrix.

Currently, there are no groundwater users on or near the site and the groundwater exposure pathway is incomplete. Institutional controls will be necessary as part of the final remedy to prohibit the future use of groundwater for potable or domestic use and to ensure this potential exposure pathway remains incomplete under all future land use scenarios.

The data presented in the Phase 4 Characterization Report (dated May 2009) also documents the presence of residual levels of COPCs in the subsurface soils which are contained in place by the existing engineering controls (ECs) such as building foundations, concrete pavement and gravel backfill. These ECs prevent potential human exposure to the impacted soil.

Although much contaminated media was removed during the EPA removal action of 2006, residual levels of COPCs remain at the site in soil and groundwater. Fortunately, the recent characterization data indicate that the levels are within EPA's acceptable risk range (E-04 to E-06) for a future industrial use. Also, with the proposed ECs and ICs in place, no further investigation or remedial action is warranted to protect human health and the environment. A final remedy can be established by EPA and KDEP.

4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be "**significant"** [4] (i.e., potentially "unacceptable" because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable "levels" (used to identify the "contamination"); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable "levels") could result in greater than acceptable risks)?

[4] If there is any question on whether the identified exposures are "significant" (i.e., potentially "unacceptable") consult a human health Risk Assessment specialist with appropriate education, training and experience.

___ If no (exposures can not be reasonably expected to be significant (i.e., potentially "unacceptable") for any complete exposure pathway) - skip to #6 and enter "YE" status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

___ If yes (exposures could be reasonably expected to be "significant" (i.e., potentially "unacceptable") for any complete exposure pathway) - continue after providing a description (of each potentially "unacceptable" exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to "contamination" (identified in #3) are not expected to be "significant."

___ If unknown (for any complete pathway) - skip to #6 and enter "IN" status code

RATIONALE AND REFERENCE(S): Skipped to Question #6

5. Can the "significant" **exposures** (identified in #4) be shown to be within **acceptable** limits?

___ If yes (all "significant" exposures have been shown to be within acceptable limits) - continue and enter "YE" after summarizing and referencing documentation justifying why all "significant" exposures to "contamination" are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).

___ If no (there are current exposures that can be reasonably expected to be "unacceptable")- continue and enter "NO" status code after providing a description of each potentially "unacceptable" exposure.

___ If unknown (for any potentially "unacceptable" exposure) - continue and enter "IN" status code

RATIONALE AND REFERENCE(S): Skipped to Question #6

6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

_X_ YE - Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **Former LWD, Inc., (aka Bluegrass Incineration Services, LLC) facility, EPA ID No.: KYD 088 438 817, located at 2475 Industrial Parkway, Calvert City, KY 42029** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

___ NO - "Current Human Exposures" are NOT "Under Control."

___ IN - More information is needed to make a determination.

Completed by: _____ Date: _____
Leo J. Romanowski Jr.,
Senior Corrective Action Specialist, Corrective Action Section
RUST Branch, RCRA Division
USEPA Region 4

Supervisor: _____ Date: _____
D. Karen Knight, CHMM
Chief, Corrective Action Section
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Locations where References may be found:

US EPA Region 4 RUST Branch, RCRA Division SNAFC 61 Forsyth Street Atlanta, GA 30303	Kentucky Department for Environmental Protection Division of Waste Management 200 Fair Oaks Frankfort, KY 40601

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(email): Romanowski.leo@epa.gov

ATTACHMENT 2

DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION
RCRA Corrective Action
Environmental Indicator (EI) RCRIS Event Code (CA750)
Migration of Contaminated Groundwater Under Control

Facility Name: **Former LWD Inc. (aka Bluegrass Incineration Services, LLC)**
Facility Address: **2475 Industrial Parkway, Calvert City, Kentucky 42029**
Facility EPA ID No.: **KYD 088 438 817**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

_X_ If yes - check here and continue with #2 below,

___ If no - re-evaluate existing data, or

___ If data are not available, skip to #8 and enter "IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EIs) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EIs developed to date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EIs are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be "**contaminated"** [5] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

_X_ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

___ If unknown - skip to #8 and enter "IN" status code.

RATIONALE AND REFERENCE(S):

Between 1990 and 1991 (during the RFI), LWD installed 22 monitoring wells (11 two-well clusters) and by 1999 had sampled these wells at least 6 times. However, man-made influences (industrial and municipal pumping wells) on adjacent properties changed the historical groundwater flow directions resulting in additional statistical groundwater flow delineation studies being recommended in 2002. Then, after the bankruptcy, EPA utilized these MWs during the Phase 4 characterization under the CERCLA Administrative Order on Consent (AOC). Since these wells had not been sampled for several years, they were redeveloped in October 2007 to remove any sediment that had accumulated in the well sumps. In December 2007, these MWs were initially sampled for a full suite of analytical parameters; and a subset of these wells were sampled again in October 2008 for parameters selected to evaluate the natural attenuation processes. Well depths ranged from 28 to 88 feet. In 2008, depth to groundwater ranged from 14 to 30 feet.

In 2007, the predominant groundwater flow direction in the uppermost portion of the alluvial aquifer continued to be from the SW to the NE. This direction confirmed the flow reversal observed in 2002 due to the relocation of the Calvert City Municipal Well field and the expansion of the massive pump and treat system operated by the adjacent BF Goodrich/Westlake Monomers site (about 52 extraction wells at 700-850 GPM total). Fortunately, all contaminated groundwater migrating from the Former LWD site must pass thru the extraction zones at the BF Goodrich/Westlake Monomers site.

Groundwater concentrations are compared to the EPA MCLs and the EPA Regional Screening Levels (RSLs) for tap water. As a second tier of risk screening, any COCs are compared to Removal Action Levels (RALs) and background concentrations.

Analytical groundwater data indicate VOCs (benzene, 1,2-dichloroethane (EDC) and vinyl chloride) and metals (arsenic and thallium) are the most widespread contaminants and occur at the highest concentrations across the site. Generally, these groundwater contaminants are limited to the shallow portion of the aquifer with the highest concentrations detected in the northern-most portion of the site. To be more specific, approx. 85% of the maximum detected concentrations of all contaminants were reported from only 5 monitoring wells across the northern end of the site (i.e., MW-1A, MW-6A, MW-7A, MW-8A and MW-10A). Additionally, over 90% of the maximum detected concentrations of VOCs were

[5] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

associated with only 3 MWs (i.e., MW-1A, MW-7A and MW-10A). See Figure 4 to readily observe the spatial and temporal trends for the benzene plume.

In 2007-8, the contaminants which exceeded the EPA drinking water standards (MCLs) are:

Groundwater Contaminant	MCL (ppb)	Max. Conc. (ppb)	Ave. Conc. (ppb) of 11 shallow wells	Ave. Conc./MCL Ratio
benzene	5	140	14	3
EDC	5	28	5	1
VC	2	16	4	2
arsenic	10	311	45	5
thallium	2	59	24	12

Temporal trend analysis indicates a consistent reduction in VOC groundwater concentrations over the past 7 years. VOC contaminant levels significantly decreased from 800-1000 ppb in 2002 to below 400 ppb as measured during the recent 2007 CERCLA characterization. As seen in above table, the average concentration for the five (5) main groundwater contaminants generally exceeded the MCLs by an order of 2 to 3 times for VOCs and 5 to 12 times for the metals. These levels are generally low enough to be amenable to natural attenuation.

PCBs were not detected in the groundwater. Dioxins were basically non-detect in the groundwater from the 22 MWs with the exception of three minor detections of OCDD (the least harmful of the dioxin congeners) in MWs 3A, 4A and 7A. These OCDD levels were at 6E-05, 8E-05 and 45E-05 ppb which is slightly above the EPA Method Detection Limits (MDL) of 3E-05 ppb and at least 1000 times lower than the TEQ equivalent dioxin MCL for 2,3,7,8-TCDD.

3. Has the **migration** of contaminated groundwater **stabilized** such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater" as defined by the monitoring locations designated at the time of this determination?

_X_ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination" [6]).

[6] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

___ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination") - skip to #8 and enter "NO" status code, after providing an explanation.

___ If unknown - skip to #8 and enter "IN" status code.

RATIONALE AND REFERENCE(S):

The benzene and vinyl chloride isoconcentration maps from the early 1990s to 2007 illustrate the localized areas of elevated concentrations within the northern and northwestern portion of the site (See Figure 4). As expected, between 1993 and 2007, the spatial distribution of these VOCs increased due to diffusion and natural (as well as man-made) dispersion; however, the concentrations above the MCLs have also significantly decreased through a combination of biodegradation and source depletion. This was particularly noticeable at MW-6A (near the Former North Tank Farm). Co-mingling of BTEX and chlorinated solvents within the shallow groundwater zone had beneficial effects with regard to the sites documented natural attenuation processes. Industry research, as well as many case remediation studies, has demonstrated that petroleum hydrocarbons (and BTEX) serve as electron donors which help fuel natural microbial processes that can result in the biodegradation of chlorinated solvents.

Within the deeper aquifer wells, vinyl chloride was the only VOC whose average concentration of 5 ppb exceeded its MCLs of 2 ppb. Also, detections of arsenic in the deeper aquifer for the northern and incinerator building footprint did not exceed the MCL of 10 ppb. The distribution of COPCs within the deeper aquifer is basically a subset of the COPCs in the shallow groundwater. This suggests that the presence of COPCs in the deep aquifer is likely due to vertical migration rather than separate sources.

Recent data provides evidence that natural biodegradation of the VOCs is occurring in both the shallow and deeper groundwater at the site. Specifically, the MW data and isoconcentration contours indicate a decline in chlorinated solvent parent compounds (TCE, 1,2-DCA, 1,1-DCA) along with the formation of various daughter products (chloroethane, cis-1,2-DCE, VC, ethene, and ethane). This is indicative of anaerobic biodegradation and reductive dechlorination. BTEX is also attenuating, likely due to co-metabolic activity. Also, the supporting geochemical data provide evidence to indicate anaerobic biodegradation (reducing environment) is occurring. In 2008, groundwater samples from seven (7) well pairs were analyzed for the following geochemical parameters: hydrogen, methane, ethane, ethane, nitrate, ferrous iron, sulfate, sulfide, phosphorous and ammonia- N, major cations, TOC, alkalinity, DO, ORP, pH and temperature.

Because of the spatial distribution of arsenic and the ORP data, there is a strong possibility that the elevated arsenic concentrations reflect the geochemical conditions associated with the onsite 7-acre landfill (SWMU 34) and/or natural attenuation processes; both of which can create a reducing environment in which arsenic tends to be mobilized. The highest arsenic concentrations are downgradient of the landfill (SWMU 34) and co-located with the chlorinated solvents and petroleum hydrocarbons.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

___ If yes - continue after identifying potentially affected surface water bodies.

_X_ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

___ If unknown - skip to #8 and enter "IN" status code.

RATIONALE AND REFERENCE(S): Skipped to Question # 7

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be "**insignificant"** (i.e., the maximum concentration [7] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature and number of discharging contaminants, or environmental setting) which significantly increase the potential for unacceptable impacts to surface water, sediments, or ecosystems at these concentrations)?

___ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) providing a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or ecosystem.

___ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[7] greater than 100 times their appropriate groundwater "levels," providing the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identifying if there is evidence that the amount of discharging contaminants is increasing.

___ If unknown - enter "IN" status code in #8.

RATIONALE AND REFERENCE(S): Skipped to Question # 7

[7] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be **"currently acceptable"** (i.e., not cause impacts to surface water, sediments or ecosystems that should not be allowed to continue until a final remedy decision can be made and implemented [8])?

___ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and ecosystems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[9] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and ecosystems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels" . as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

___ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable"**) - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or ecosystems.

___ If unknown - skip to 8 and enter "IN" status code.

RATIONALE AND REFERENCE(S): Skipped to Question # 7

[8] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[9] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or ecosystems.

7. Will groundwater monitoring / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

_X_ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

___ If no - enter "NO" status code in #8.

___ If unknown - enter "IN" status code in #8.

RATIONALE AND REFERENCE(S):

Due to the facility bankruptcy and abandonment, future groundwater assessments and institutional control (IC) maintenance at the Former LWD site will more than likely be implemented by the State. Specifically, the State of Kentucky has possession of the estimated $3 million in RCRA closure/post-closure costs established by the Former LWD Inc., as a condition of their RCRA Part B permit application.

Additionally, off-site groundwater monitoring will continue at the adjacent RCRA-permitted BF Goodrich site as part of their regulatory-required Plant-wide Corrective Action Program (PCAP). BF Goodrich is required to submit semi-annual RCRA Corrective Action Effectiveness Reports to both EPA and the State. These reports contain analytical data from several MWs which border the Former LWD site. As previously mentioned, any off-site migrating groundwater contamination from the Former LWD site is contained by the extraction well networks at the adjacent BF Goodrich (See Figure 5).

Sediment samples have been collected at the site and adjacent properties on three previous occasions: 1993 RFI sampling events, an April 2008 EPA sampling event and recently, the October 2008 Phase 4 ecological sampling event. The RFI analysis concluded that downstream locations were generally no different from upstream locations; therefore, it is unlikely that LWD operations had any impact on the chemical characteristics of the sediments. The purpose of the April 2008 sediment sampling was to fill data gaps and to generate a Hazard Ranking System (HRS) documentation record and determine NPL ranking and eligibility. Sediment samples were analyzed for the TCL/TAL list parameters plus dioxins and PCB homologues. EPA results supported a "no further remedial action planned (NFRAP) decision" for the site in August 2008. Five ecological sediment samples were collected by EPA in October 2008 from the onsite emergent marsh wetlands in the southwestern corner of the site. The average concentrations in the sediment samples for arsenic, copper, 2-methylnaphthalene and toluene were less than the corresponding Region 4 Ecological Screening Levels (ESV). Therefore, the calculated ecological hazard quotient for these compounds is less than 1.0. Thus, none of these compounds are expected to cause ecological effects across the wetlands on either the organism or community level.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

_X_ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the **Former LWD, Inc., (aka Bluegrass Incineration Services, LLC) facility, EPA ID No.: KYD 088 438 817, located at 2475 Industrial Parkway, Calvert City, KY 42029.** Specifically, this determination indicates that decreasing contaminant trends are occurring, natural geochemical conditions exist at the site to support continued bioremediation and reductive dechlorination of chlorinated solvents and capture of off-site contaminate migration will continue at the downgradient BF Goodrich PCAP facility. This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

___ NO - Unacceptable migration of contaminated groundwater is observed or expected.

___ IN - More information is needed to make a determination.

Completed by: _____ Date: _____
Leo J. Romanowski Jr.
Sr. Corrective Action Specialist, Corrective Action Section
RUST Branch, RCRA Division
USEPA Region 4

Supervisor: _____ Date: _____
D. Karen Knight, CHMM
Chief, Corrective Action Section
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Locations where References may be found:

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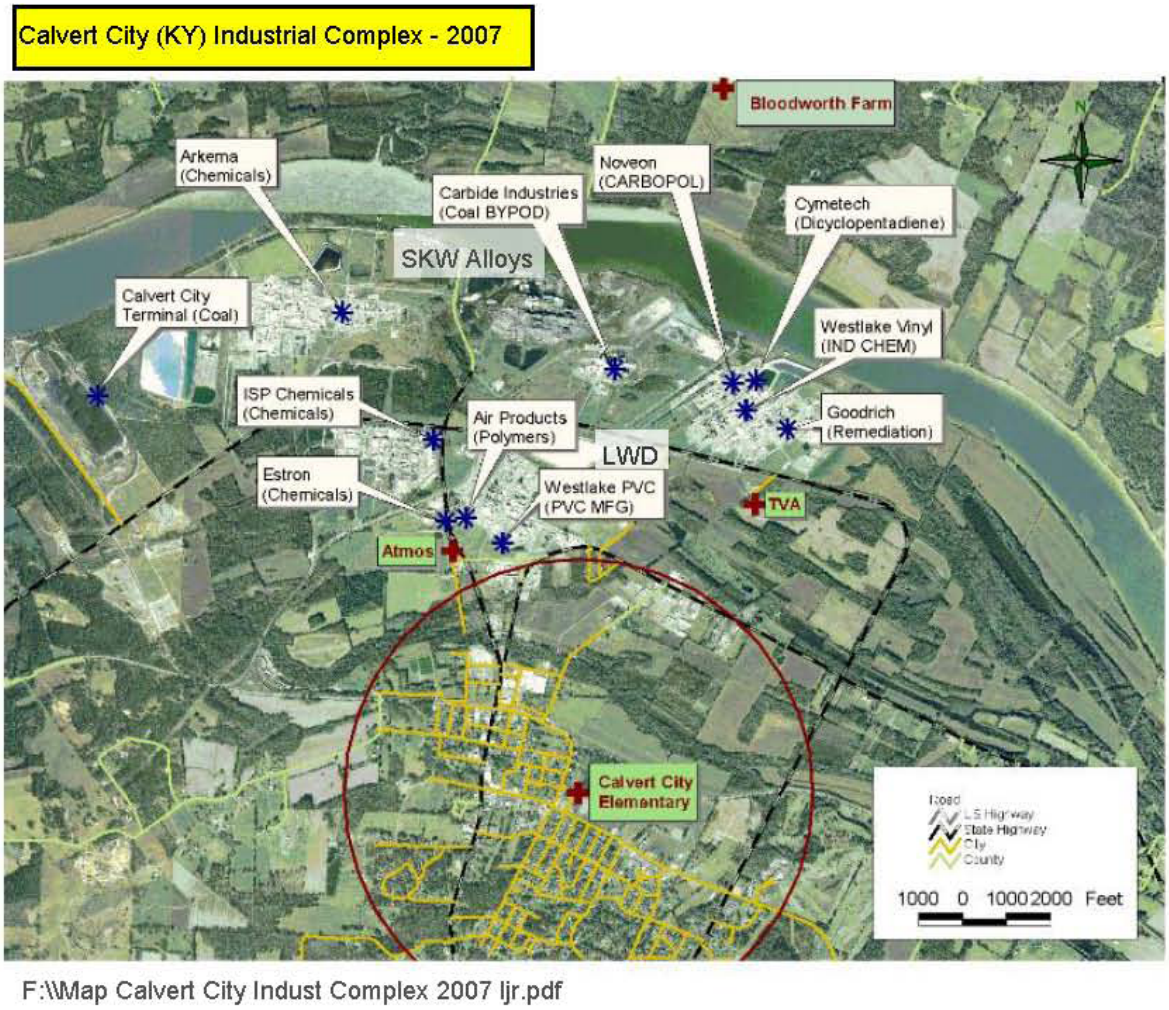

Figure 1. Calvert City (KY) Industrial Complex - 2007

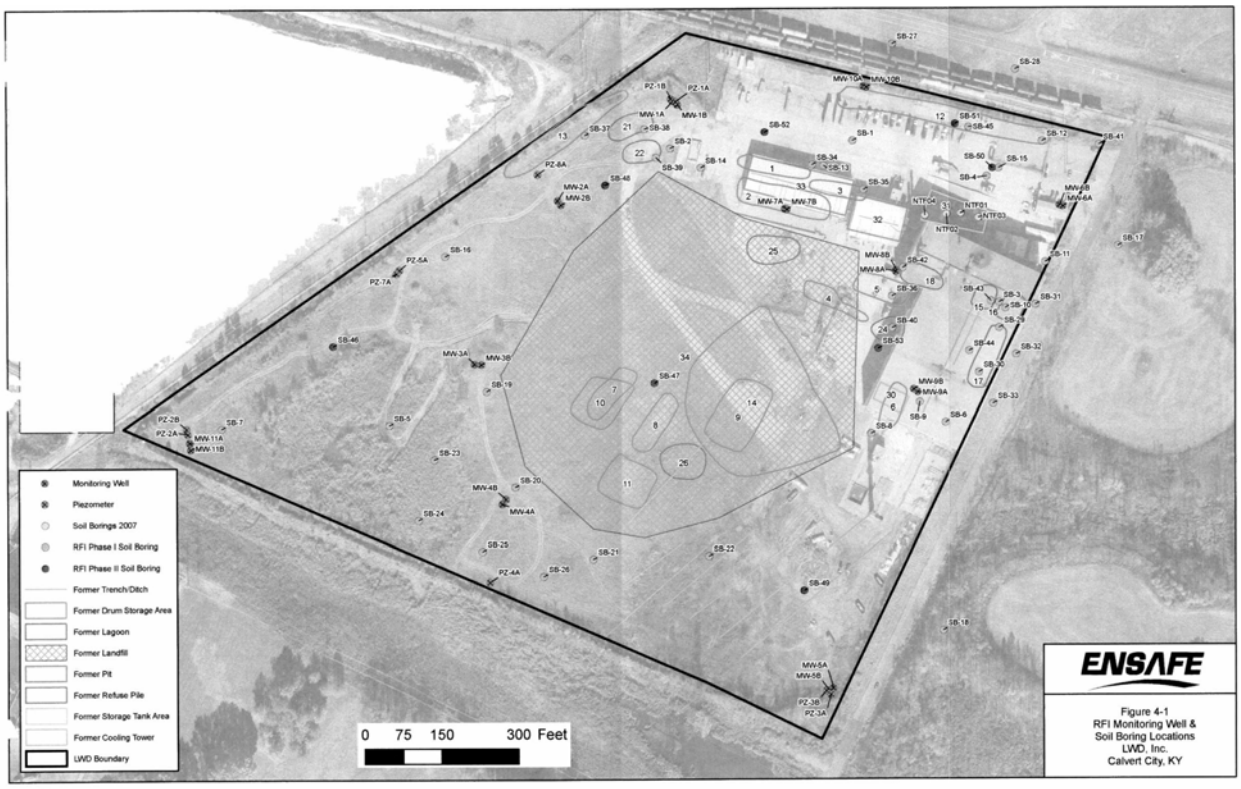

Figure 2. Facility Site Map with Major SWMUs , RFI MWs and Soil Boring Locations (Former LWD Inc., Calvert City, KY)

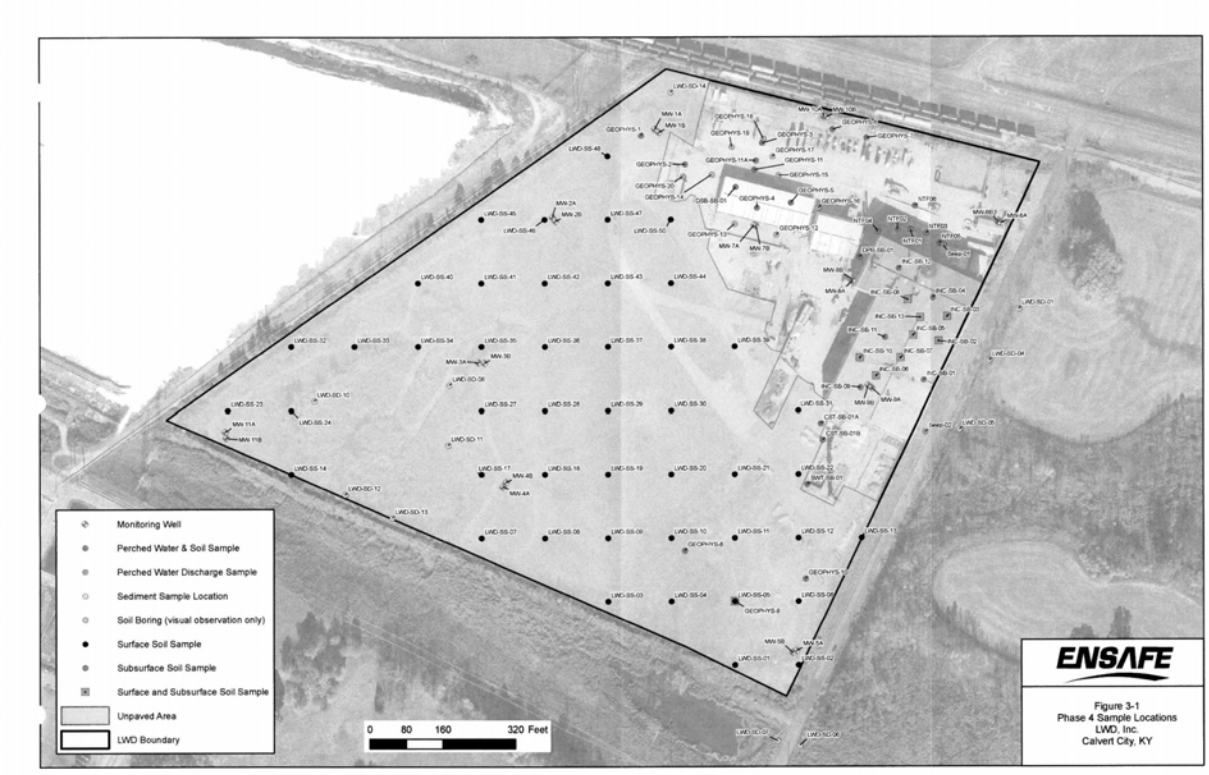

Figure 3. Phase 4 Sample Locations (Former LWD Inc.)

Figure 4. Benzene in Shallow Groundwater 1990, 1992 and 2007 (LWD Inc., Calvert City, KY)

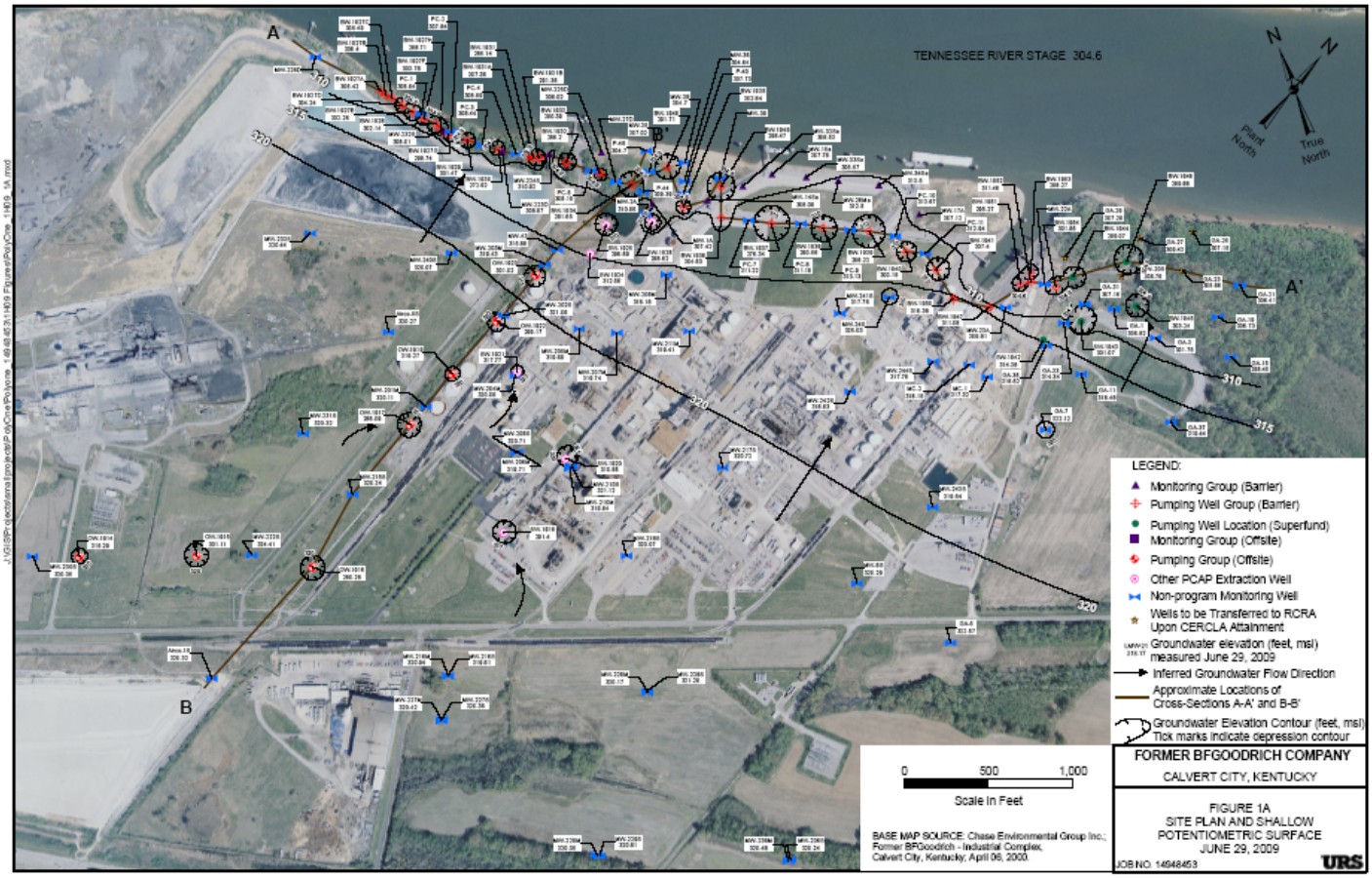

Figure 5. Aerial Well Map View of Former LWD site and PCAP Extraction Well Network at Former BF Goodrich Site to the N-NE and the Tennessee River