



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Michael R. Pence
Governor

Thomas W. Easterly
Commissioner

May 6, 2015

Rudy Fields
Brownfields IV, LLC
220 East Wylie Road
Bloomington, Indiana 47408

Re: **No Further Action Determination
Pursuant to Remediation Closure Guide**
Monroe Oil Company
229 West 1st Street
Bloomington, Monroe County
State Cleanup #200306062
Brownfield Site #4121209

Dear Mr. Fields:

Indiana Department of Environmental Management (IDEM) Brownfields staff has reviewed the following reports documenting environmental activities conducted at the subject property located at 229 West 1st Street in Bloomington, Monroe County (Site):

- *Site Spill Remediation Report*, prepared by Spill Recovery of Indiana, Inc. (SRI) dated June 2003
- *Subsurface Investigation Report*, prepared by Astbury Environmental Engineering, Inc. (Astbury) dated February 1, 2008
- *Further Site Investigation Report*, prepared by Astbury dated January 30, 2009
- *Geophysical Survey Report*, prepared by Prism Geolmaging, Inc. (Prism) dated September 12, 2011
- *Further Site Investigation II*, prepared by Astbury dated September 16, 2011
- *Additional Site Characterization*, prepared by Acuity Environmental Solutions (Acuity) dated August 24, 2012
- *Further Site Investigation and Proposed Further Site Investigation*, prepared by Fields dated April 29, 2014
- *Response to Comments*, prepared by Fields dated July 7, 2014
- *Further Site Investigation and Request for No Further Action*, prepared by Fields dated November 21, 2014



Site Description and History

The approximate 0.98-acre Site is comprised of two rectangle shaped parcels identified by the county by parcel numbers #53-08-04-200-112.000-009 and #53-08-04-200-113.000-009. The Site contains one 12,060 square foot building which was built in the late 1920s. The Site was used for residential purposes from at least 1907 and was developed into a bulk oil storage/distribution facility by Standard Oil of Indiana in the early 1920s. The Site operated as a bulk oil/distribution facility with numerous owners until 2005 and contained at least sixteen aboveground storage tanks (ASTs) and two underground storage tanks (USTs), identified below in Table 1, which have been removed from the Site. The Site contains gravel parking areas, with the remaining areas occupied by undeveloped land and landscaped areas. The Site has been vacant since 2005 and was purchased by Brownfields IV, LLC in 2011. Preliminary redevelopment plans include commercial uses.

**TABLE 1
 Former Storage Tank Summary**

Tank	Size (Gallons)	Contents	Date Installed	Date Last Used	Date Removed	Location	
AST	1	20,000	1922	4/1/2005	6/2012	Northern Tank Farm Area	
	2	20,000					
	3	20,000					
	4	20,000					
	5	20,000					
	6	20,000					
	7	15,000					Stoddard Solvent
	8	12,000	Unknown	Unknown	4/1/2005	6/2012	Northern Tank Farm Area
	9	20,000	Motor Oil/Fuel Oil	Unknown	4/1/2005	6/2012	Inside Building
	10	20,000					
	11	550	Heating Oil	Unknown	4/1/2005	Unknown	NE Corner of Building
	12	550	Motor Oil				
	13	550	Kerosene				
	14	1,000	Diesel	Unknown	Unknown	Unknown	South of AST Loading Rack
	15	1,000	Diesel				
	16	1,000	Diesel	Unknown	Unknown	Unknown	North of Concrete Pad
UST	1	Gasoline	Unknown	4/1/2005	10/ 2013	South of AST Loading Rack	
	2	1,000	Diesel, Gasoline, and/or Kerosene	Unknown	4/1/2005	10/2013	North of Former Pump House

Notes: AST = Aboveground Storage Tank UST = Underground Storage Tank

The Site is bound immediately to the north by West 1st Street followed by followed by a Kroger grocery store and a restaurant; to the west by the B-Line recreational trail followed by South Morton Street and commercial/residential properties; to the east by a commercial building (Bloomington Podiatry Center) followed by South College Avenue; and, to the south by a commercial building followed by commercial properties.

Historical Site Investigations

For purposes of determining closure, sample analytical results were compared to IDEM's Remediation Closure Guide (RCG) (March 22, 2012 and applicable revisions) screening levels as follows: soil samples collected at depths between 0 and 10 feet below ground surface (bgs) were compared to RCG residential and commercial/industrial direct contact screening levels (RDCSLs and IDCSLs, respectively); soil samples collected between 0 and 18 feet bgs were compared to the excavation worker direct contact screening level (EX DC SL); and, soil samples collected at depths greater than 18 feet were not evaluated for purposes of closure because of the unlikely risk of exposure to soil at that depth. Ground water samples were compared to both residential tap ground water screening levels (Res TAP GWSLs) and residential/commercial industrial vapor exposure ground water screening levels (Res VE GWSLs and Indus VE GWSLs).

In June 2003, a diesel fuel release was reported to IDEM (incident #2003-06-062). A fuel hose failure occurred during petroleum loading operations and the spill was estimated at approximately 40 to 50 gallons. The spill was contained with absorbent material and the contaminated gravel/soils were excavated and disposed off-Site. Three soil samples were collected and submitted for laboratory analysis of total petroleum hydrocarbons (TPH).¹ Soil samples taken subsequent to remedial activities indicated that petroleum contamination existed on the Site prior to the documented spill.

Between January 2008 and June 2011, Astbury conducted several subsurface investigations at the Site, which consisted of advancing 26 soil borings (B-1 through B-26), two hand auger borings (HA-1 and HA-2), and installing nine monitoring wells (MW-1 through MW-9) to a maximum depth of 21 feet bgs across the Site. Soil and ground water samples were collected and submitted for laboratory analysis of one or more of the following: TPH, benzene, toluene, ethylbenzene, total xylenes/methyl tertiary butyl ether (BTEX/MTBE), polynuclear aromatic hydrocarbons (PAHs), and lead.

All of the soil analytical results were below their respective RDCSLs. Benzene, MTBE, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and 2-methylnaphthalene were detected in ground water at

¹ As of March 22, 2012, IDEM no longer evaluates TPH contamination in soil when determining closure of environmental conditions on the Site under the RCG. Therefore, data on TPH detected in soil is presented for informational purposes only.

levels above their respective Res TAP GWSLs. All other ground water analytical results were below their respective Res TAP GWSLs. Refer to Table 2, below, for the ground water analytical results above applicable RCG screening levels during Astbury's sampling events.

TABLE 2
Ground Water Samples Exceeding Applicable RCG Screening Levels

Sample Location ID	Sample Date	Contaminant & Results (parts per billion (ppb))					
		Benzene	MTBE	Benzo(a)pyrene	2-Methyl-naphthalene	Benzo(a)fluoranthene	Dibenz(a,h)anthracene
B-1	1/16/2008	<u>1,600</u>	220	NA	NA	NA	NA
B-2	1/16/2008	84	<5				
MW-2	6/30/2011	<u>171*</u>	<40*	0.44*	959*	0.32*	<0.11*
		<u>173</u>	<40	0.64	1,240	0.46	0.11
Res Tap GWSL (ppb)		5	120	0.21	27	0.29	0.029
RCG Res VE GWSL		24	NE				
RCG Indus VE GWSL		120					

Notes: *italic* = RCG Residential Tap Ground Water Screening Level
bold = RCG Residential Ground Water Vapor Intrusion Screening Level
Underlined = RCG Industrial Ground Water Vapor Intrusion Screening Level
 NE = Not Established
 NA = Not Analyzed
 * = Duplicate

A geophysical survey was conducted by Prism at the Site in 2011 and 2014, which estimated the bedrock depths from 10 to 25 feet bgs. Based on resistivity anomalies, Prism identified seven possible subsurface anomalies and/or UST locations as well as several regions where bedrock fractures and/or voids may exist. The second subsurface survey identified an additional four subsurface anomalies as well as locations where subsurface product piping may still have been present.

In July 2012, Acuity advanced 14 soil borings (AB-1 through AB-14) to a maximum depth of 16 feet below ground surface (bgs) across the Site. Boring locations were selected based on historical soil and ground water data and the evaluation of the

geophysical survey data. Soil samples were collected and submitted for laboratory analysis of BTEX/MTBE and PAHs. Ground water samples were collected from borings ABW-1, ABW-2, AB-7/ABW-7, and AB-10/ABW-10 and monitoring wells MW-1, MW-3, MW-5, and MW-9 and analyzed for BTEX/MTBE, naphthalene, and PAHs. The remaining monitoring wells were dry and therefore not sampled.

All of the soil analytical results were below their respective RDCSLs. Refer to Table 3, below, for the ground water analytical results above applicable RCG screening levels during the July 2012 sampling event. All other ground water analytical results were below applicable RCG screening levels.

TABLE 3
Ground Water Samples Exceeding Applicable RCG Screening Levels

Sample Location ID	Sample Date	Contaminant & Results (parts per billion (ppb))						
		Benzene	Naphthalene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	1-Methyl-naphthalene	2-Methyl-naphthalene
ABW-2	7/17/2012	<u>260</u>	<5	<0.05	<0.05	<0.05	<0.25	<0.25
ABW-7	7/17/2012	<u>160</u>	12	0.96	0.36	0.43	830	1,200
Res Tap GWSL		5	1.4	0.29	0.2	0.29	9.7	27
RCG Res VE GWSL		24	61	NE				
RCG Indus VE GWSL		120	460					

Notes: *italic* = RCG Residential Tap Ground Water Screening Level
bold = RCG Residential Ground Water Vapor Intrusion Screening Level
Underlined = RCG Industrial Ground Water Vapor Intrusion Screening Level
 NE = Not Established

Acuity also conducted exploratory test trenching to investigate the geophysical anomalies identified during the various geophysical surveys. The extent of product piping runs, utility conduits, and suspect UST locations were identified and excavated to confirm the contents and depth. One UST, associated product piping, and two damaged 55-gallon drums were identified in the northwest corner of the Site. The two drums were excavated and disposed off-Site while the UST and piping were left in place.

Fields Environmental Site Investigations & Remedial Activities

Site investigation activities were initiated in October 2013 by Fields in order to further investigate and potentially remediate the unknown geophysical anomalies, three of which were identified as containing subsurface material. Anomaly BF-1 contained sheet metal and a log, anomaly BF-2 contained a 1,000-gallon UST (UST #1), anomaly BF-3 contained a 1,000-gallon UST (UST #2), and the suspected product piping runs were excavated and identified. All of the product piping and USTs were removed and approximately 252 tons of petroleum contaminated soil were excavated and disposed off-Site. Soil samples were collected from each anomaly area and submitted for laboratory analysis of VOCs, PAHs, and lead. Naphthalene was detected above its RDCSL of 50 ppm in soil sample BF-10 at a concentration of 59 ppm. The remaining soil analytical results were below their respective RDCSLs.

Fields conducted three groundwater sampling events of the monitoring well network (MW-1 through MW-9) in December 2013, March 2014, and June 2014. Several wells were dry during each sampling event and were unable to be sampled. Benzene and 1-methylnaphthalene were detected above their respective Res TAP GWSL in monitoring well MW-2 during the June 2014 sampling event. Fields proposed additional quarterly monitoring and the collection of additional soil samples through 14 test trenches in areas of the Site which had not been adequately investigated. Based on a review of the investigations to date, IDEM requested additional soil and groundwater samples be collected including a bedrock groundwater investigation in areas identified as having possible fractures and/or voids during the geophysical surveys.

The October 2014 investigations included the advancement of eight test pits (HA-3 to HA-10) to four feet bgs, eight soil borings (FB-1 to FB-8) to the bedrock interface, and the installation of four epikarst monitoring wells (FB-1/MW-10 to FB-4/MW-13) within the fractured bedrock at depths of 21 feet, 20 feet, 29.7 feet, and 18 feet bgs respectively across the Site. The test trenches were dug along the southern portions of the former AST area and near the former concrete loading dock area to approximately four feet bgs. Soil and ground water samples were collected and analyzed for VOCs, PAHs, and lead. The sample results showed benzo(a)pyrene detections in soil above its RDCSL of 0.21 ppm at HA-8 at a concentration of 0.38 ppm. The remaining soil analytical results were below their respective RDCSLs.

In October 2014, after a storm/rainfall event, the monitoring well network was sampled. Benzene, 1-methylnaphthalene, and 2-methylnaphthalene were detected at levels above their respective Res TAP GWSLs. Benzene was detected at levels above its respective RCG Indus VE GWSL. All other ground water analytical results were below their respective Res TAP GWSLs. Refer to Table 4, below, for ground water analytical results from the October 2014 sampling event that exceeded RCG screening levels.

TABLE 4
October 2014 Ground Water Samples
Exceeding Applicable RCG Screening Levels

Sample Location ID	Sample Date	Contaminant & Results (parts per billion (ppb))		
		Benzene	1-Methyl naphthalene	2-Methyl naphthalene
MW-2	10/14/2014	<u>200</u>	43	<0.36
MW-12	10/15/2014	<u>700</u>	150	160
MW-13	10/15/2014	<u>30</u>	39	12
Res Tap GWSL (ppb)		5	9.7	27
RCG Res VE GWSL		24	NE	
RCG Indus VE GWSL		120		

Notes: *italic* = RCG Residential Tap Ground Water Screening Level
bold = RCG Residential Ground Water Vapor Intrusion Screening Level
Underlined = RCG Industrial Ground Water Vapor Intrusion Screening Level
 NE = Not Established

Fields has proposed the installation of a sub-slab depressurization system (SSDS) on any building constructed in the vicinity of monitoring wells MW-2 and MW-12. Please note that in RCG Section 5.4.3- *Preliminary Screening Process: Petroleum Chemicals*, IDEM recognizes that the presence of five feet (in the horizontal and vertical directions) of clean, unsaturated soil with an oxygen content greater than five percent between the petroleum contamination and a building generally rules out the intrusion of petroleum vapors into indoor air. A SSDS may be required if new development contains a subsurface structure, such as a basement, which would bring a building vertically within five feet of the ground water petroleum contamination exceeding the Indus VE GWSL. As building construction with a basement in the area in which contaminated ground water was detected is still highly speculative, Fields may elect to voluntarily install a SSDS on any building constructed in the future in the vicinity of monitoring wells MW-2 and MW-12 as has been proposed.

Conclusion

Notwithstanding the contaminants detected in Site soil and groundwater samples above applicable RCG screening levels, IDEM can approve a conditional commercial/industrial closure of environmental conditions at the Site under the RCG because:

- Benzene-contaminated groundwater, although above the Indus VE GWSL in five locations, was detected approximately 10 feet bgs and not located within five feet horizontally or vertically of the building foundation on the Site.

- Groundwater contamination has been delineated and determined not to go off-Site.
- The exposure pathway to groundwater is not complete because drinking water at the Site is municipally-supplied and groundwater access can be controlled through land use controls.
- While naphthalene and benzo(a)pyrene were detected in two soil sample locations at levels above their respective RCG RDCSLs, soil contamination has been delineated on-Site and contaminant concentrations detected in all other soil samples were below their respective RCG RDCSLs. The two soil sample locations containing naphthalene and benzo(a)pyrene above their respective RDCSLs are immediately adjacent to the building on the Site and will be covered with pavement. Therefore, the detected contamination is not considered to be an exposure risk.
- Planned site reuse remains commercial in nature.

So long as the Site is maintained to uphold the land use controls discussed below, current Site conditions satisfy the RCG for commercial/industrial land use.

Since levels of contaminants in soil and groundwater on-Site were detected above their respective residential RCG screening levels, an environmental restrictive covenant (ERC) is required to be recorded on the deed for the Site. IDEM is requiring a deed restriction via the enclosed ERC with the following provisions, summarized below:

- Prohibit the potable use of groundwater at the Site.
- Not use or allow the use of the Site for residential purposes, including, but not limited to, daily child care facilities or educational facilities for children (e.g., daycare centers or K-12 schools).

Based on the information of known contaminant levels submitted to or otherwise reviewed by IDEM, IDEM concludes that current Site conditions do not warrant a response action at this time and does not plan to take a response action at the Site at this time. If IDEM later discovers that the above-referenced reports or other information submitted to IDEM was inaccurate, or if any activities undertaken by an owner or operator exacerbate the Site contamination, then IDEM reserves the right to revoke this letter and pursue any responsible parties. Additionally, this letter does not constitute an assurance that the Site is safe or fit for any particular use.

Please be advised that any work performed at the Site must be done in accordance with all applicable environmental laws. Operation and redevelopment of this Site in a manner consistent with the restrictions discussed above will lessen the possibility that environmental conditions at the Site could deteriorate in the future.

Monroe Oil - Bloomington, No Further Action Letter
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In order for IDEM to consider this letter effective, the enclosed ERC, which includes a copy of this No Further Action letter, must be recorded on the deed for the Site in the Monroe County Recorder's Office. Please return a certified copy of the filed document to the address listed below:

Indiana Brownfields Program
100 North Senate Avenue, Room 1275
Indianapolis, Indiana, 46204
ATTN: John Morris

IDEM and the Indiana Brownfields Program are pleased to assist Brownfields IV, LLC with a determination regarding environmental conditions at this Site. Should you have any questions, please contact John Morris of the Indiana Brownfields Program at 317-234-8099 or toll-free at 1(800) 451-6027, extension 4-8099 or by e-mail at jomorris1@ifa.in.gov.

Sincerely,



Kevin D. Davis
Technical Review Coordinator
Indiana Brownfields Program

Enclosure

cc: Jan Pels, U.S. EPA Region 5 (*electronic*)
Meredith Gramelspacher, Indiana Brownfields Program (*electronic*)
John Morris, Indiana Brownfields Program (*electronic*)
Tim Veatch, IDEM Leaking Underground Storage Tank Program (*electronic*)
Dave Gillay, Barnes & Thornburg, LLP (*electronic*)