



WSP ref.: 1009008.0111

March 09, 2023

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2300 South Dirksen Parkway
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IDOT Job No.: C-99-022-20
District: 9
County: Saline
Municipality: Harrisburg
Route: FAP 332/FAP 132
Marked: US 45/Poplar
Street: US 45/Poplar
From To/At: Intersection of US 45
and Poplar Street

PTB: 172-027 (WSP 8)
Work Order No.: 111
BDE Sequence No.: 24726
Requesting Agency: DOH
Contract No.: 78771
Section No.: 101R5-5 & 101CR
ISGS PESA No.: 3761V
Anticipated Letting Date: August 4, 2023
Target PSI Completion: March 17, 2023
IDOT Project Manager: Douglas Liniger

Dear Mr. Curtis:

Attached to this letter is the final preliminary site investigation (PSI) prepared by WSP USA, Inc. for Work Order 111. If you have any questions regarding this submittal, please contact me at (630) 728-0934.

Kind regards,

Dean Tiebout
Program Manager
DT

Encl.

cc: Jeff Hughes, WSP

ILLINOIS DEPARTMENT OF TRANSPORTATION

PRELIMINARY SITE INVESTIGATION REPORT

FAP 332/FAP 132 (US 45/POPLAR STREET)
HARRISBURG, SALINE COUNTY, ILLINOIS

March 09, 2023





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POPLAR STREET)
HARRISBURG, SALINE
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ILLINOIS DEPARTMENT OF TRANSPORTATION

CONTRACT NO.: 172-027

WORK ORDER NO. 111

IDOT JOB NO.: C-99-022-20

BDE SEQUENCE NO.: 24726

SECTION NO.: (29,8)N-1, TS-1

ROUTE: FAP 332/FAP 132

ISGS PESA NO.: 4338

ANTICIPATED LETTING DATE: AUGUST 4, 2023

CONTRACT NO.: 78771

FINAL

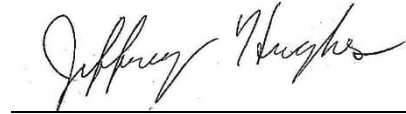
DATE: MARCH 2023

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PREPARED BY



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LIST OF ACRONYMS

bgs	below ground surface
CCDD	clean construction or demolition debris
CD-ROM	compact disk-read-only memory
COCs	contaminants of concern
GCGIER	groundwater component of the groundwater ingestion exposure route
GPS	global positioning system
IAC	Illinois Administrative Code
IDOT	Illinois Department of Transportation
ISGS	Illinois State Geological Survey
MACs	Maximum Allowable Concentrations of Chemical Constituents in Uncontaminated Soil Used as Fill Material at Regulated Fill Operations
MSA	metropolitan statistical area
NELAP	National Environmental Laboratory Accreditation Program
NRCS	Natural Resources Conservation Service
OSDs	Official Soil Series Descriptions
OSHA	Occupational Safety and Health Administration
PAHs	polyaromatic hydrocarbons
PESA	Preliminary Environmental Site Assessment
PID	photoionization detector
PSI	preliminary site investigation
PVLR	PESA Validation Letter Report
QC	quality control
RECs	recognized environmental conditions
ROs	remediation objectives



LIST OF ACRONYMS (CONT.)

ROW	right-of-way
SCGIER	soil component of the groundwater ingestion exposure route
SILR	Site Inspection Letter Report
SOPs	standard operating procedures
SPLP	synthetic precipitation leaching procedure
SU	standard units
SVOCs	semi-volatile organic compounds
TACO	Tiered Approach to Corrective Action Objectives
TCLP	toxicity characteristic leaching procedure
US 45	US Route 45
USFO	uncontaminated soil fill operation
UST	underground storage tank
VOCs	volatile organic compounds
WSP	WSP USA, Inc.
WSS	Web Soil Survey

1 INTRODUCTION

This preliminary site investigation (PSI) report was prepared for the Illinois Department of Transportation (IDOT) pursuant to Work Order 111 issued to WSP USA, Inc., (WSP) under the IDOT Work Order Agreement for Consultant Services, PTB No. 172-027— Various Statewide Waste Assessments, Studies and Designs. WSP was tasked by IDOT to conduct the PSI for proposed construction in IDOT right-of-way (ROW) along US Route 45 (US 45) in Harrisburg, Saline County, Illinois.

Field investigation activities were conducted by WSP in January 2023. The objectives of the investigation as defined in the IDOT-approved work plan dated November 15, 2022 (WSP 2022) are as follows:

- Determine the magnitude and the lateral and vertical extent of potential soil contamination within existing and proposed IDOT ROW in the planned construction area.
- Prepare a site investigation report with findings, conclusions, and recommendations as well as a remediation scope of work, based upon the results of chemical analysis of soil samples. The remediation scope of work will include an estimate of contaminated soil excavation quantities and an associated estimated cost for remediation.
- Assess the potential for surrounding IDOT ROW within the project area to be affected by contaminants migrating from affected areas and present recommendations to mitigate contaminant migration when the potential for migration is determined to be high.

This report presents the findings of WSP's investigation and consists of six sections. Section 2 provides pertinent site background information. Section 3 describes the procedures and sampling rationale used during the field investigation. Section 4 summarizes WSP's field investigation results, including observations, field measurements, sampling rationale, analytical results, and comparisons of the analytical results with regulatory standards. Section 5 provides conclusions of the investigation and recommendations for further investigation and contaminant migration reduction techniques, if necessary. Section 6 lists the references cited in this report.

2 SITE BACKGROUND

IDOT construction plans provided to WSP indicate that roadway improvements include subbase replacement, pavement replacement, sidewalk replacement, and earth excavation. Excavation associated with the improvements is estimated to extend to a maximum depth of approximately 2.0 feet below ground surface (bgs). ROW acquisition is not proposed for this project.

The Illinois State Geological Survey (ISGS) prepared Preliminary Environmental Site Assessment (PESA) number 4338 for the project area to identify sites with recognized environmental conditions (RECs) that may potentially affect the project. Table 2-1 presents the site identified by ISGS, along with PESA findings and the proposed construction activities. Applicable background information about the site, taken directly from ISGS PESA #4338, is included in Appendix A. The site investigation area is shown on Figure 2-1.

3 FIELD INVESTIGATION PROCEDURES

WSP followed a project-specific investigative work plan (WSP 2022) in accordance with IDOT-approved standard operating procedures (SOPs) to achieve the objectives stated in Section 1 for the project area. The field investigation for this project included screening and sampling soil at the sites identified in Section 2. This section describes the procedures used for screening, sample collection, equipment decontamination, quality assurance, and sample custody.

3.1 SOIL BORING AND SAMPLING PROCEDURES

WSP advanced 14 borings in the proposed construction area. A summary of the sampling and analysis program for this PSI is presented in Table 3-1. Individual boring locations are identified with a unique alpha-numeric identification code. The first part of the boring identification is the site number designated by ISGS in the PESA (e.g., ISGS site #4338-3 [Tunnel Hill State Trail]). Following the ISGS site number is the boring identification number. Borings are numbered sequentially, with the initial boring designated -B01 (e.g., the initial boring at ISGS #4338-3 is designated 4338-03-B01).

Before advancing the borings, WSP personnel marked the proposed boring locations at the site and completed utility clearance. WSP used a global positioning system (GPS) receiver to record the actual location of each boring upon its completion.

WSP's Geoprobe® was equipped with a 4-foot-long, 2-inch diameter Macro-Core® sampler. Soil cores were collected from each boring by hydraulically pushing the Macro-Core® in 4-foot increments. WSP used a new PVC Macro-Core® liner for each sample interval and decontaminated the Macro-Core® sampler with an Alconox® and potable water solution between borings.

WSP used a calibrated photoionization detector (PID) to conduct headspace screening for volatile organic compounds (VOCs) on an aliquot of soil from each soil sample. The depth interval, recovery, soil description, headspace screening results, and any observations of staining and/or odors indicative of contamination were recorded for each Macro-Core® sample. Boring logs for this project are presented in Appendix B.

The field team collected 15 soil samples from the project area for laboratory analysis, including one duplicate sample. The samples were delivered to Eurofins Laboratories in University Park, Illinois (National Environmental Laboratory Accreditation Program [NELAP] number 100201) at the completion of sampling. Sample identification, documentation, and chain-of-custody were conducted in accordance with the approved SOPs during collection, transportation, storage, and analysis of samples.

3.2 GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were not proposed for this project due to the shallow excavation depth. Consequently, groundwater samples were not collected, and project area groundwater is not assessed in this report.

4 FIELD INVESTIGATION RESULTS

This section presents the results of WSP's field investigation and includes a discussion of project area geology and topography, significant field observations, sampling rationale, and laboratory analytical results relative to applicable criteria.

WSP's field observations and sample selection rationale are summarized by boring in Table 4-1. Soil samples collected for laboratory analysis were analyzed for VOCs, semi-volatile organic compounds (SVOCs), and total and toxicity characteristic leaching procedure (TCLP) metals listed in 35 Illinois Administrative Code (IAC) 1100, Subpart F. Selected samples were analyzed for individual metals by synthetic precipitation leaching procedure (SPLP) analysis, based on TCLP analysis results, as discussed below.

Laboratory results were reviewed by WSP for field and laboratory precision, accuracy, and completeness in accordance with procedures and quality control (QC) limits. A discussion of the analytical results is presented below, and a summary of detected analytes is presented in Appendix C. Laboratory data packages, including WSP's data review, are included as Appendix D.

The maximum detected concentrations of analytes in soil and a comparison with applicable reference concentrations are presented by site in Table 4-2. The detected analyte concentrations in soil are compared with the Maximum Allowable Concentrations of Chemical Constituents in Uncontaminated Soil Used as Fill Material at Regulated Fill Operations (MACs) presented in 35 IAC 1100, Subpart F and TACO Tier 1 Remediation Objectives (ROs) for residential ingestion and inhalation exposure presented in 35 IAC 742, Appendix B, Table A. When the MAC for an inorganic analyte is based on the Tiered Approach to Corrective Action Objectives (TACO) Class I soil component of the groundwater ingestion exposure route (SCGIER) presented in 35 IAC 742, Appendix B, Table C, the total concentration for the analyte is compared with the MAC, and the results of TCLP and SPLP analyses are independently compared with the TACO Class I SCGIER for the analyte found in 35 IAC 742, Appendix B, Table A. The analyte is considered to exceed the MAC if the total, TCLP, and SPLP results all exceed the applicable criteria.

When the MAC for a constituent is location-specific, the detected constituent concentration is also compared with the MAC for a metropolitan statistical area (MSA). Location-specific MACs have been established for arsenic, iron, manganese, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Analytes detected at concentrations above applicable reference concentrations are considered contaminants of concern (COCs). Table 4-3 presents a summary of COCs identified by boring and sample.

WSP also evaluated sample pH levels and the results of PID headspace screening pursuant to 35 IAC 1100.201(g) and 205(b)(1), respectively. Soil pH must be between 6.25 and 9.0 standard units (SU) for the soil to be accepted at a CCDD facility or USFO. In addition, loads of soil exhibiting PID readings above background cannot be accepted by a CCDD facility or USFO.

When one or more COCs are detected in a boring, aggregate areas of impacted soil are delineated without regard for property boundaries or planned excavation activities. The areal extent of impacted soil at an

individual boring is represented by a rectangle centered on the boring and extending from the centerline of the roadway to the construction limit. The rectangle will extend laterally one-half the distance between the affected boring and the next adjacent boring that does not contain a COC. If no adjacent borings are present, the impacted area will extend laterally a minimum of 50 feet in each direction.

When the estimated impacted area at a boring extends to an adjacent site, the impacts are also assumed for the applicable area of the adjacent site in the calculation of impacted construction quantities. The impacted soil excavation quantities for construction are calculated based on the assumption that the impacted soil extends from the ground surface to the proposed excavation depth for the construction feature within the impacted area.

WSP's field investigation was designed to provide an initial characterization of site conditions at pre-designated boring locations. The investigation was limited in terms of analytical parameters and the number of samples collected, based on the site information presented in ISGS PESA 4338. Consequently, the findings and conclusions of this investigation are subject to revision if more site data become available.

4.1 PROJECT AREA GEOLOGY AND TOPOGRAPHY

WSP advanced 14 soil borings for this project to depth to a depth 2 feet bgs. Observations of subsurface materials in the project area are described for each of the soil borings in Appendix B. The following information was provided by ISGS PESA #4338:

The topmost bedrock unit in the western third of the project area has been mapped as the Pennsylvanian-age Shelburn-Patoka Formation, which is primarily composed of shales, limestones, sandstones, and coal.

The project is in the driftless region of Illinois, where there are little to no surficial deposits and bedrock is at or near the surface. In the project area, the topmost unit has been mapped as less than 20 feet of the Equality formation, underlain by bedrock. The Equality formation consists of fine-grained silts and clays.

All the project ROW, the NRCS has classified the Zipp silty clay loam, 0 to 2% slopes occasionally flooded, as containing 33% to 100% hydric components. None of the soils along the project ROW have been classified as containing more than 33% hydric components. None of the other soils in the project area have been classified by NRCS as containing more than 33% hydric components. The NRCS has classified the Orthents, 5% to 15% slopes, as non-prime farmland.

Surficial drainage in the project area is generally toward the southeast, in the direction of Pankey Branch. However, since the project area is urbanized, and storm drains and sewers are present, most surficial runoff will be controlled by the storm sewer system; such system typically are designed to follow natural drainage patterns.

The stratigraphy of the boreholes advanced during WSP's investigation revealed fill materials including asphalt, sandy gravel, and reworked native materials in seven of the 14 soil borings, ranging in thickness from 6 inches to 2 feet. Native materials encountered during the investigation consisted of brown and red silty clays with trace gravel and seams of fine sand, consistent with lake-deposited fine sediments of the Equality Formation. Black mottles were observed in native materials in six of the 14 borings. WSP did not encounter groundwater in any of the site borings.

4.2 ISGS #4338-3 (TUNNEL HILL STATE TRAIL)

4.2.1 FIELD OBSERVATIONS AT ISGS #4338-3

WSP advanced one boring (4338-03-B01) at ISGS #4338-3 (Tunnel Hill State Trail) (see Table 4-1 and Figure 4-2). PID headspace screening did not reveal the presence of VOCs in site soil, and sampling personnel did not observe odors or discoloration indicative of chemical contamination. WSP collected one sample from the boring for laboratory analysis.

4.2.2 ANALYTICAL RESULTS FOR ISGS #4338-3

VOCs were not detected in site soil (see Table 4-2). Fifteen SVOCs, all polyaromatic hydrocarbons (PAHs) were detected in site soil. Twenty metals were detected in site soils, and barium was detected by TCLP analysis. Based on the TCLP analysis results, SPLP analysis was not conducted. The sample pH was 7.7 SU.

4.2.3 NATURE AND EXTENT OF CONTAMINATION ABOVE APPLICABLE CRITERIA AT ISGS #4338-3

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene were identified as COCs in soil at the site (see Table 4-3). Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene were detected in the sample at concentrations above their most stringent MACs, but below the MSA and Chicago MACs.

No other COCs were identified at the site based on the evaluation criteria presented in Section 4.0. VOCs were not detected during headspace screening of site soil, and the sample pH was within the target range of 6.25 to 9.0 SU.

4.2.4 IDOT CONSTRUCTION ACTIVITIES AT ISGS #4338-3

Construction activity anticipated at this site includes pavement and subbase replacement, sidewalk replacement, and earth excavation. Excavation associated with the improvements is estimated to extend to a maximum depth of approximately 2 feet bgs. The assumed areas of impact and COCs are depicted on Figures 4-2 and 4-3. Table 4-4 presents an estimated volume of impacted soil within proposed construction excavation area that will require proper handling and disposal if removed from the site. The estimated volume of impacted soil was determined based on excavation dimensions provided by IDOT.

4.3 ISGS #4338-6 (ROW)

4.3.1 FIELD OBSERVATIONS AT ISGS #4338-6

WSP advanced 13 borings (4338-06-B01 through 4338-06-B13) at ISGS #4338-6 (ROW) (see Table 4-1 and Figure 4-2). A slight gasoline odor was noted at borings 4338-06-B04 and 4338-06-B07 from 6 inches to 2 feet bgs, and a

reading of 0.3 meter units was detected during PID headspace screening of soil from boring 4338-06-B07. WSP collected one sample from each boring for laboratory analysis. A duplicate sample was collected from boring 4338-06-B12.

4.3.2 ANALYTICAL RESULTS FOR ISGS #4338-6

Benzene, detected at boring 4338-06-B08 was the only VOC detected in site soil (see Table 4-2). Nineteen SVOCs, primarily PAHs, were detected in the soil. Twenty-three metals were detected, and eight metals were detected by TCLP analysis. Based on the TCLP metals results, one sample was analyzed for SPLP barium, and one sample was analyzed for SPLP lead. Both analytes were detected in the respective samples. The sample pH levels ranged from 6.9 to 8.4 SU.

4.3.3 NATURE AND EXTENT OF CONTAMINATION ABOVE APPLICABLE CRITERIA AT ISGS #4338-6

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, arsenic, lead, and manganese were identified as COCs in soil at the site (see Table 4-3). Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene were detected in sample 4338-06-B02 (0-2) at concentrations above their most stringent MACs, but below the MSA and Chicago MACs. Benzo(a)pyrene was also detected in the following samples at concentrations above the most stringent MAC, but below the MSA and Chicago MACs:

- 4338-06-B06 (0-2)
- 4338-06-B08 (0-2)
- 4338-06-B09 (0-2)
- 4338-06-B11 (0-2)
- 4338-06-B12 (0-2)D

Arsenic was detected above the MSA MAC and the TACO Tier 1 RO for residential soil exposure in samples 4338-06-B02 (0-2) and 4338-06-B09 (0-2). The total manganese concentrations detected in samples 4338-06-B01 (0-2) and 4338-06-B12 (0-2)D exceeded the TACO Tier 1 RO for residential soil exposure. Lead was detected above applicable reference concentrations by total, TCLP, and SPLP analyses in sample 4338-06-B02 (0-2).

No other COCs were identified at the site based on the evaluation criteria presented in Section 4.0. Total chromium was detected in one sample and cobalt was detected in two samples at concentrations above the respective MACs, but the analytes were not detected in the samples by TCLP analysis. Iron was detected at concentrations above MACs in six samples; however, TCLP iron was not detected above the TACO Class 1 SCGIER in any of the samples. The pH levels associated with the samples were within the target range of 6.25 to 9.0 SU.

4.3.4 IDOT CONSTRUCTION ACTIVITIES AT ISGS #4338-6

Construction activity anticipated at this site includes pavement and subbase replacement, and earth excavation. Excavation associated with the improvements is estimated to extend to a maximum depth of approximately 2 feet bgs. The assumed areas of impact and COCs are depicted on Figures 4-2 and 4-3,

respectively. Table 4-4 presents an estimated volume of impacted soil within proposed construction excavation areas that will require proper management if removed from the site. The estimated volume of impacted soil was determined based on excavation dimensions provided by IDOT.

5 CONCLUSIONS AND RECOMMENDATIONS

WSP's investigation has identified COCs in project area soils. The following sections summarize WSP's investigation findings and recommendation for classification and management of impacted soil based on the comparison with MACs and TACO Tier 1 ROs. WSP has included an uncontaminated soil certification form in Appendix E for each site where soil was found to meet the criteria for off-site management at a CCDD facility or USFO.

The field investigation was designed to provide an initial characterization of site conditions at pre-designated boring locations. The investigation was limited in terms of analytical parameters and the number of samples collected, based on the known history of the property. Consequently, the findings and conclusion of this investigation are subject to revision if more site data becomes available. Soil removed from outside the investigation area that exhibits discoloration or odor indicative of contamination should be sampled to determine the proper disposal classification.

WSP performed a desktop evaluation for natural and anthropogenic sources of manganese in the project area as part of the work plan for the project (WSP 2022). The site histories do not indicate current or past industrial processes associated with manganese. WSP reviewed the native soil types within the proposed construction area using the NRCS Web Soil Survey (WSS) and the NRCS Official Soil Series Descriptions (OSDs). The WSS area of interest and applicable OSDs area included in Appendix A.

The primary soil types identified at the sites are the Hosmer silt loam, 2 to 5 and 5 to 10 percent slopes, the McGary silt loam 0 to 2 percent slopes, Darwin silt clay 0 to 2 percent slopes, and Zipp silty clay loam, 0 to 2 percent slopes (NRCS 2022).

The Hosmer series is moderately well drained and formed in loess. The other three primary soil types formed lake plains or flood plains. Of these, the typical pedons for the McGary and Darwin series describe few fine iron-manganese accumulations or nodules from 15 to 22 inches and 24 to 26, respectively.

Based on the review of the soil profiles, manganese concentrations detected in PSI samples appear to be naturally occurring and manganese is not considered to be a site-related contaminant of concern for the project.

5.1 ESTIMATED SOIL MANAGEMENT VOLUMES AND COSTS

5.1.1 ISGS #4338-3 (TUNNEL HILL STATE PARK)

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene were identified as COCs in soil at ISGS #4338-03 (Tunnel Hill State Park). VOCs were not detected during headspace screening of site soil and the soil pH was within the acceptable range for management at a CCDD facility or USFO.

Soil associated with boring 4338-03-B01 (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene) may be managed on-site as fill. If it cannot be managed on-site, soil associated with the boring may be managed off-site as uncontaminated soil at a CCDD facility or USFO within an MSA.

Costs estimated for the off-site disposal of soil are presented in Table 5-1. Based on the estimated construction excavation quantities presented in Table 4-4, WSP estimates that approximately 9 cubic yards of soil at the site may be managed off-site as uncontaminated soil to a CCDD facility or USFO if it cannot be managed on-site. The estimated soil management cost of \$3,375.00 includes costs associated with project construction reports, daily monitoring, and laboratory analysis.

5.1.2 ISGS #4338-6 (ROW)

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, arsenic, lead, and manganese were identified as COCs in soil at ISGS #4338-06 (ROW). COCs associated with ISGS #4338-3 are also assumed to extend to this site. The soil pH levels were within the acceptable range for management at a CCDD facility or USFO. WSP observed odors indicative of gasoline contamination at borings 4338-06-B04 and 4338-06-B07, and a soil headspace reading of 0.3 MU at boring 4338-06-B07. Laboratory analysis did not detect VOCs or any other COCs in the borings. A review of PESA information indicates that site #4338-5 (adjacent to the location of boring 4338-06-B04), is a former LUST site, and petroleum-related COCs were detected in soil at the site at depths of approximately 6 feet bgs. Although VOCs and headspace readings were not detected sample 4338-06-B04 (0-2), it is possible that detectable PID readings may be observed at the boring during construction excavation. Boring 4338-06-B07 was also advanced adjacent to a current gasoline station with a documented release.

Soil associated with borings 4338-06-B01 (manganese), 4338-06-B02 (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, arsenic, lead), 4338-06-B09 (arsenic, benzo(a)pyrene), and 4338-06-B12 (manganese, benzo(a)pyrene) must be managed off-site as non-special waste, providing that a non-special waste certification is submitted by the generator according to the conditions set forth in 415 ILCS 5/22.48 and 415 ILCS 5/3.475. The property history and available analytical data indicate a non-special waste certification can be applied to soil associated with the borings.

Soil associated with borings 4338-03-B01 (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene), 4338-06-B06 (benzo(a)pyrene), 4338-06-B08 (benzo(a)pyrene), and 4338-06-B011 (benzo(a)pyrene) may be managed on-site as fill. If it cannot be managed on-site, soil associated with the borings may be managed off-site as uncontaminated soil at a CCDD facility or USFO within an MSA.

COCs were not identified in soil associated with borings 4338-06-B04 and 4338-06-B07; however, odors indicative of contamination were detected in the borings during field activities and headspace screening detected VOCs in soil at boring 4338-06-B07 at 0.3 MU. Soil associated with the borings may be managed within IDOT ROW as "uncontaminated soil" according to Article 203.03, but it cannot be taken to a CCDD or USFO.

COCs were not identified in soil associated with borings 4338-06-B03, 4338-06-B04, 4338-06-B05, 4338-06-B10, and 4338-06-B13. Soil associated with these borings may be managed without restriction.

Costs estimated for the off-site disposal of soil are presented in Table 5-1. Based on the estimated construction excavation quantities presented in Table 4-4, WSP estimates that approximately 341 cubic yards of soil at the

site must be disposed off-site as non-special waste, 205 cubic yards of soil at the site may be managed off-site as uncontaminated soil to a CCDD facility or USFO if it cannot be managed on-site, and 225 cubic yards of soil at the site may be managed off-site as uncontaminated soil, but cannot go to a CCDD facility or USFO. The estimated soil management cost of \$31,450.00 includes costs associated with project construction reports, daily monitoring, off-site soil disposal, and laboratory analysis.

5.2 SOIL MANAGEMENT AREAS AND APPLICABLE REGULATIONS

The following soil excavation areas should be managed in accordance with Article 669 of IDOT's Supplemental Specifications and Recurring Special Provisions as shown below.

5.2.1 ISGS #4338-3 (TUNNEL HILL STATE PARK)

ISGS Site 4338-3 (Tunnel Hill State Park, 500-700 blocks of E. Poplar Street, Harrisburg, Saline County, Illinois)

Station 1073+72 to Station 1073+83 (Poplar St.) 0 to 35 feet RT and Station 1073+95 to Station 1074+06 (Poplar St.) 0 to 33 feet LT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(3). COC sampling parameters: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene.

5.2.2 ISGS #4338-6 (ROW)

ISGS Site 4338-6 (ROW, 700-800 blocks of E. Poplar Street, Harrisburg, Saline County, Illinois)

Station 27+50 to Station 28+20 (US 45) 0 to 33 feet RT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(5). COC sampling parameters: manganese, benzo(a)pyrene.

Station 28+20 to Station 29+45 (US 45) 0 to 34 feet RT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(3). COC sampling parameter: benzo(a)pyrene.

Station 28+77 to Station 30+15 (US 45) 0 to 125 feet LT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(5). COC sampling parameter: manganese.

Station 30+15 to Station 31+35 (US 45) 0 to 132 feet RT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(b)(2). COC sampling parameter: VOCs.

Station 30+70 to Station 31+45 (US 45) 0 to 45 feet LT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(b)(2). COC sampling parameters: VOCs.

Station 31+35 to Station 32+20 (US 45) 0 to 34 feet LT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(3). COC sampling parameter: benzo(a)pyrene.

Station 1073+83 to Station 1074+28 (Poplar St.) 0 to 34 feet RT and Station 1074+06 to Station 1074+28 (Poplar St.) 0 to 33 feet LT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(3). COC sampling parameters: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene.

Station 1074+28 to Station 1074+95 (Poplar St.) 0 to 31 feet LT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(5). COC sampling parameters: arsenic, lead, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene.

Station 1077+00 to Station 1078+25 (Poplar St.) 0 to 20 feet RT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(5). COC sampling parameters: arsenic, benzo(a)pyrene.

Station 1077+10 to Station 1078+25 (Poplar St.) 0 to 20 feet LT: The Engineer has determined this material meets the criteria of, and shall be managed in accordance with Article 669.05(a)(3). COC sampling parameters: benzo(a)pyrene.

5.3 RECOMMENDATIONS

5.3.1 *ADDITIONAL INVESTIGATIONS*

WSP does not recommend further investigation for this project. Soil in the project area has been characterized with regard to IDOT construction activities. Additional sampling may be required if soil is encountered that exhibits odor or discoloration indicative of contamination during construction excavation activities, or if activities extend beyond the previously investigated area. It is not anticipated that groundwater will be encountered during construction, but if any groundwater exhibiting odor or discoloration is encountered during construction activities, the water should be sampled to determine proper management requirements.

5.3.2 *PREVENTION OF ACCELERATED CONTAMINATED MIGRATION*

Soil containment and storm water runoff control measures are recommended to mitigate the migration of contaminants from any impacted soils that are stockpiled at the sites. If soil must be stockpiled, it should be stored in lined and covered roll-off boxes or segregated from other soils on storage pads designed to prevent migration of contaminants to unimpacted areas.

5.3.3 *COMPARISON OF DETECTED SOIL CONCENTRATIONS WITH TACO TIER 1 REMEDIATION OBJECTIVES FOR CONSTRUCTION WORKER EXPOSURE*

The COCs detected in site soil were compared with TACO Tier 1 ROs for construction worker exposure. COCs were not detected at concentrations above TACO Tier 1 ROs for construction worker exposure; however, gasoline odors were detected at two locations at ISGS Site #4338-6 (ROW), and a low headspace reading was detected in one boring. WSP recommends air monitoring during soil excavation at ISGS Site #4338-6 (ROW). If soil unearthed during excavation activities exhibits PID readings, odors, or discoloration indicative of contamination, WSP recommends that the soil be sampled to determine appropriate worker protection

measures during construction activities. The health and safety of construction workers is the sole responsibility of the construction contractor, and Occupational Safety and Health Administration (OSHA) regulations should be adhered to during construction activities.

6 REFERENCES

Illinois State Geological Survey (ISGS), October 6, 2022, *Preliminary Environmental Site Assessment*, FAP 332/ FAP 132 (US 45) at Poplar Street, Harrisburg, Saline County.

WSP USA, Inc., (WSP), November 15, 2022, *Work Plan Preliminary Site Investigation*, FAP 332/FAP 132 (US 45/Poplar Street) Harrisburg, Saline County, Illinois, prepared by WSP USA, Inc., Chicago, Illinois

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at the following link: <https://websoilsurvey.sc.egov.usda.gov/>. Accessed November 1, 2022.

_____. Official Soil Series Descriptions. Available online at the following link: <https://soilseries.sc.egov.usda.gov/osdname.aspx>. Accessed November 1, 2022.

TABLES

TABLE 2-1 SUMMARY OF SITES AND PROPOSED CONSTRUCTION ACTIVITIES
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Site	Recognized Environmental Conditions (RECs)	Planned Construction Activities	Planned Property Acquisition ^a
ISGS #4338-3 (Tunnel Hill State Trail)	Presence on the Archived SEMS list. No <i>de minimis</i> conditions were identified.	Pavement and subbase replacement, sidewalk replacement, and earth excavation. Maximum proposed excavation depth is 2.0 feet bgs.	None
ISGS #4338-6 (ROW)	Potential UST; HAA. No <i>de minimis</i> conditions were identified.	Pavement and subbase replacement, and earth excavation. Maximum proposed excavation depth is 2.0 feet bgs.	None

Key:

- bgs = Below ground surface.
- ISGS = Illinois State Geological Survey.
- ROW = Right-of-way.
- UST = Underground storage tank.

TABLE 3-1 SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
 FAP 332/ FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Boring ID	Offset from Proposed Location ^a	Boring Depth (feet)	Matrix	Sample(s)	Parameters (Method) ^b				
					VOCs (8260B/5035)	SVOCs (8270D)	Total Metals (6010B/6020A/7471B)	TCLP Metals (1311/6010B/6020A/7470A) ^b	SPLP Metals (1312/6010B/6020A/7470A)
ISGS #4338-3 (Tunnel Hill State Trail)									
4338-03-B01	--	2	Soil	4338-03-B01 (0-2)	•	•	•	•	
ISGS #4338-6 (ROW)									
4338-06-B01	--	2	Soil	4338-06-B01 (0-2)	•	•	•	•	
4338-06-B02	--	2	Soil	4338-06-B02 (0-2)	•	•	•	•	•
4338-06-B03	--	2	Soil	4338-06-B03 (0-2)	•	•	•	•	
4338-06-B04	--	2	Soil	4338-06-B04 (0-2)	•	•	•	•	
4338-06-B05	--	2	Soil	4338-06-B05 (0-2)	•	•	•	•	
4338-06-B06	--	2	Soil	4338-06-B06 (0-2)	•	•	•	•	
4338-06-B07	--	2	Soil	4338-06-B07 (0-2)	•	•	•	•	
4338-06-B08	--	2	Soil	4338-06-B08 (0-2)	•	•	•	•	
4338-06-B09	--	2	Soil	4338-06-B09 (0-2)	•	•	•	•	
4338-06-B10	--	2	Soil	4338-06-B10 (0-2)	•	•	•	•	
4338-06-B11	--	2	Soil	4338-06-B11 (0-2)	•	•	•	•	
4338-06-B12	--	2	Soil	4338-06-B12 (0-2)	•	•	•	•	
				4338-06-B12 (0-2)D	•	•	•	•	•
4338-06-B13	--	2	Soil	4338-06-B13 (0-2)	•	•	•	•	

Notes:

^a Offsets are shown for borings moved a distance of 10 feet or greater from the proposed location.

^b All of the samples were analyzed for pH and percent solids.

Key:

IDOT = Illinois Department of Transportation.
 ISGS = Illinois State Geological Survey.
 ROW = Right-of-way.
 SPLP = Synthetic precipitation leaching procedure.

SVOCs = Semivolatile organic compounds.
 TCLP = Toxicity characteristic leaching procedure.
 VOCs = Volatile organic compounds.

TABLE 4-1 FIELD OBSERVATIONS AND SAMPLING RATIONALE
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Boring ID	Depth to Groundwater (feet)	Range of PID Readings (meter units)	Observed Evidence of Potential Contamination	Depth Interval(s) Sampled (feet)	Rationale
ISGS #4338-3 (Tunnel Hill State Trail)					
4338-O3-B01	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
ISGS #4338-6 (ROW)					
4338-O6-B01	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B02	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B03	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B04	--	None	Slight gasoline odor	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B05	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B06	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B07	--	0.3	Slight gasoline odor	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B08	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B09	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B10	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B11	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B12	--	None	None	0 - 2	Sample was collected within the proposed construction depth.
4338-O6-B13	--	None	None	0 - 2	Sample was collected within the proposed construction depth.

Key:

bgs = Below ground surface.

ISGS = Illinois State Geological Survey.

NA = Not applicable.

PID = Photoionization detector.

-- = Groundwater was not encountered in the boring.

Table 4-2 Detected Soil Analytes and Comparison with Applicable Criteria
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Chemical	Maximum Detected Concentration	Maximum Allowable Concentrations		TACO Remediation Objectives	
		Most Stringent	Within an MSA	Construction Worker Exposure	Groundwater Protection (TCLP/SPLP)
ISGS #4338-3 (Tunnel Hill State Trail)					
SVOCs (mg/Kg)					
2-Methylnaphthalene	0.13	--	--	--	--
Acenaphthylene	0.38	--	--	--	--
Anthracene	0.17	12,000	--	610,000	--
Benzo(a)anthracene	1.	0.9	1.8	170	--
Benzo(a)pyrene	1.2	0.09	2.1	17	--
Benzo(b)fluoranthene	2.	0.9	2.1	170	--
Benzo(g,h,i)perylene	0.31	--	--	--	--
Benzo(k)fluoranthene	0.67	9.0	--	1,700	--
Chrysene	1.2	88	--	17,000	--
Dibenz(a,h)anthracene	0.12	0.09	0.42	17	--
Fluoranthene	1.8	3,100	--	82,000	--
Indeno(1,2,3-cd)pyrene	0.36	0.9	1.6	170	--
Naphthalene	0.066	1.8	--	1.8	--
Phenanthrene	0.52	--	--	--	--
Pyrene	1.7	2,300	--	61,000	--
Inorganics (mg/Kg)					
Arsenic	6.5	11.3	13	61	--
Barium	100	1,500	--	14,000	--
Beryllium	0.64	22	--	410	--
Boron	2.6	40	--	41,000	--
Cadmium	0.24	5.2	--	200	--
Calcium	20,000	--	--	--	--
Chromium	9.9	21	--	690	--
Cobalt	7.8	20	--	12,000	--
Copper	15.0	2,900	--	8,200	--
Iron	13,000	15,000	15,900	--	--
Lead	49.0	107	--	700	--
Magnesium	1,900	325,000	--	730,000	--
Manganese	330	630	636	4,100	--
Mercury	0.045	0.89	--	0.1	--
Nickel	15.0	100	--	4,100	--
Potassium	580	--	--	--	--
Silver	0.32	4.4	--	1,000	--
Sodium	74.0	--	--	--	--
Vanadium	16.0	550	--	1,400	--
Zinc	63.0	5,100	--	61,000	--
TCLP Metals (mg/L)					
Barium	1.1	--	--	--	2.0
ISGS #4338-6 (ROW)					
VOCs (mg/Kg)					
Benzene	0.0064	0.03	--	2.2	--
SVOCs (mg/Kg)					
2-Methylnaphthalene	0.37	--	--	--	--
Acenaphthene	0.053	570	--	120,000	--
Acenaphthylene	0.4	--	--	--	--

Table 4-2 Detected Soil Analytes and Comparison with Applicable Criteria
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Chemical	Maximum Detected Concentration	Maximum Allowable Concentrations		TACO Remediation Objectives	
		Most Stringent	Within an MSA	Construction Worker Exposure	Groundwater Protection (TCLP/SPLP)
ISGS #4338-6 (ROW)					
SVOCs (mg/Kg)					
Anthracene	0.23	12,000	--	610,000	--
Benzo(a)anthracene	1.2	0.9	1.8	170	--
Benzo(a)pyrene	1.2	0.09	2.1	17	--
Benzo(b)fluoranthene	1.8	0.9	2.1	170	--
Benzo(g,h,i)perylene	0.21	--	--	--	--
Benzo(k)fluoranthene	0.7	9.0	--	1,700	--
Bis(2-ethylhexyl) phthalate	0.12	46	--	4,100	--
Chrysene	1.3	88	--	17,000	--
Dibenz(a,h)anthracene	0.093	0.09	0.42	17	--
Dibenzofuran	0.14	--	--	--	--
Fluoranthene	1.9	3,100	--	82,000	--
Fluorene	0.05	560	--	82,000	--
Indeno(1,2,3-cd)pyrene	0.28	0.9	1.6	170	--
Naphthalene	0.36	1.8	--	1.8	--
Phenanthrene	1.	--	--	--	--
Pyrene	1.9	2,300	--	61,000	--
Inorganics (mg/Kg)					
Antimony	0.94	5.0	--	82	--
Arsenic	18.0	11.3	13	61	--
Barium	400	1,500	--	14,000	--
Beryllium	0.91	22	--	410	--
Boron	4.2	40	--	41,000	--
Cadmium	0.66	5.2	--	200	--
Calcium	65,000	--	--	--	--
Chromium	22.0	21	--	690	--
Cobalt	25.0	20	--	12,000	--
Copper	110	2,900	--	8,200	--
Iron	20,000	15,000	15,900	--	--
Lead	270	107	--	700	--
Magnesium	8,400	325,000	--	730,000	--
Manganese	3,400	630	636	4,100	--
Mercury	0.38	0.89	--	0.1	--
Nickel	74.0	100	--	4,100	--
Potassium	2,200	--	--	--	--
Selenium	0.44	1.3	--	1,000	--
Silver	0.55	4.4	--	1,000	--
Sodium	470	--	--	--	--
Thallium	0.48	2.6	--	160	--
Vanadium	31.0	550	--	1,400	--
Zinc	260	5,100	--	61,000	--
TCLP Metals (mg/L)					
Barium	2.1	--	--	--	2.0
Boron	0.052	--	--	--	2.0
Cadmium	0.004	--	--	--	0.005
Cobalt	0.069	--	--	--	1.0
Iron	0.39	--	--	--	5.0

Table 4-2 Detected Soil Analytes and Comparison with Applicable Criteria
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Chemical	Maximum Detected Concentration	Maximum Allowable Concentrations		TACO Remediation Objectives	
		Most Stringent	Within an MSA	Construction Worker Exposure	Groundwater Protection (TCLP/SPLP)
ISGS #4338-6 (ROW)					
TCLP Metals (mg/L)					
Lead	0.065	--	--	--	0.0075
Nickel	0.042	--	--	--	0.1
Zinc	0.15	--	--	--	5.0
SPLP Metals (mg/L)					
Barium	1.1	--	--	--	2.0
Lead	0.59	--	--	--	0.0075

Maximum detected concentrations above the most stringent Maximum Allowable Concentration are shaded.

NOTE: Maximum Allowable Concentration refers to the values listed in the Summary of Maximum Allowable Concentrations of Chemical Constituents in Uncontaminated Soil Used as Fill Material at Regulated Fill Operations, 35 Ill. Adm. Code 1100.Subpart F dated 8/27/12. Total COC concentrations exceeding a MAC are highlighted; however, further evaluation is required to determine if the detected metals concentrations exceed the applicable MAC. For metals, total, TCLP and SPLP results are also evaluated to determine compliance with MACs.

Key:

ISGS = Illinois State Geological Survey.

MAC = Maximum Allowable Concentrations of Chemical Constituents in Uncontaminated Soil.

mg/L = Milligrams per liter.

mg/kg = Milligrams per kilogram.

MSA = Metropolitan Statistical Area.

-- = Not applicable or not specified. Groundwater protection objectives are shown for inorganics via TCLP/SPLP analyses.

SPLP = Synthetic precipitation leaching procedure.

SVOCs = Semi-volatile organic compounds.

TACO = Tiered Approach to Corrective Action Objectives.

TCLP = Toxicity characteristic leaching procedure.

VOCs = Volatile organic compounds.

TABLE 4-3 SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Boring ID	Range of PID Readings (meter units)	Sample(s)	pH	Contaminants of Concern ^a		Off-Site Management ^b	
				Above MSA MAC and/or TACO Tier 1 Soil Remediation Objective	Above Most Stringent MAC, Chicago MAC, or SCGIER Criteria Only	Eligible for CCDD or USFO?	Classification 669.05.*
ISGS #4338-3 (Tunnel Hill State Trail)							
4338-03-B01	No detections	4338-03-B01 (0-2)	7.7	None	Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene	Yes, within an MSA	(a)(3)
ISGS #4338-6 (ROW)							
4338-06-B01	No detections	4338-06-B01 (0-2)	7.6	Manganese ^c	None	No	(a)(5)
4338-06-B02	No detections	4338-06-B02 (0-2)	7.9	Arsenic ^c , lead	Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene	No	(a)(5)
4338-06-B03	No detections	4338-06-B03 (0-2)	8.1	None	None	Yes	Unrestricted
4338-06-B04	No detections	4338-06-B04 (0-2)	7.8	VOCs ^d	None	No	(b)(2)
4338-06-B05	No detections	4338-06-B05 (0-2)	8.4	None	None	Yes	Unrestricted
4338-06-B06	No detections	4338-06-B06 (0-2)	8.0	None	Benzo(a)pyrene	Yes, within an MSA	(a)(3)
4338-06-B07	0.0 -0.3	4338-06-B07 (0-2)	6.9	VOCs ^d	None	No	(b)(2)
4338-06-B08	No detections	4338-06-B08 (0-2)	8.2	None	Benzo(a)pyrene	Yes, within an MSA	(a)(3)
4338-06-B09	No detections	4338-06-B09 (0-2)	7.7	Arsenic ^c	Benzo(a)pyrene	No	(a)(5)
4338-06-B10	No detections	4338-06-B10 (0-2)	7.1	None	None	Yes	Unrestricted
4338-06-B11	No detections	4338-06-B11 (0-2)	8.2	None	Benzo(a)pyrene	Yes, within an MSA	(a)(3)

TABLE 4-3 SUMMARY OF SAMPLING AND ANALYSIS PROGRAM
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Boring ID	Range of PID Readings (meter units)	Sample(s)	pH	Contaminants of Concern ^a		Off-Site Management ^b	
				Above MSA MAC and/or TACO Tier 1 Soil Remediation Objective	Above Most Stringent MAC, Chicago MAC, or SCGIER Criteria Only	Eligible for CCDD or USFO?	Classification 669.05.*
4338-O6-B12	No detections	4338-O6-B12 (O-2)	7.5	None	None	No	(a)(5)
		4338-O6-B12 (O-2)D	8.2	Manganese ^c	Benzo(a)pyrene		
4338-O6-B13	No detections	4338-O6-B13 (O-2)	7.5	None	None	Yes	Unrestricted

Notes:

^a Contaminants of concern are defined as analytes that were detected at a concentration above one or more reference criteria. The following compounds and analytes have MACs for both

^b Soils that contain constituent concentrations below the most stringent MACs may be managed off site as "uncontaminated soil" pursuant to 35 IAC 11. Uncontaminated soil with a pH range

^c The analyte concentration exceeds a TACO Tier 1 soil remediation objective for residential properties.

^d PID headspace screening and/or observations indicate potential VOC contamination in soil at the boring.

Key:

CCDD = Clean Construction and Demolition Debris.

ISGS = Illinois State Geological Survey.

MAC = Maximum Allowable Concentrations of Chemical Constituents in Uncontaminated Soil Used as Fill at Regulated Fill Operations.

MSA = Metropolitan Statistical Area.

PID = Photoionization detector.

SCGIER = Soil component of the groundwater ingestion exposure route.

SPLP = Synthetic precipitation leaching procedure.

TACO = Tiered Approach to Corrective Action Objectives.

TCLP = Toxicity characteristic leaching procedure.

TABLE 4-4 ESTIMATE OF IMPACTED SOIL WITHIN IDOT CONSTRUCTION AREAS
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Boring ID	Impacted Stationing	Contaminants of Concern		Construction Feature Within Impacted Soil Area	Excavation Dimension Assumption ^b	Estimated Volume and Classification of Impacted Soil (cubic yards) ^a						
		Above MSA MAC and/or TACO Tier 1 Soil Remediation Objective	Above Most Stringent MAC, Chicago MAC, or SCGIER Criteria Only			Standard Specifications, Article 669.05						
						(a)(1)	(a)(2)	(a)(3)	(a)(4)	(a)(5)	(b)(1)	(b)(2)
ISGS #4338-3 (Tunnel Hill State Trail)												
4338-03-B01	Station 1073+72 to Station 1073+83 (Poplar St.), 0 to 35 feet RT and Station 1073+95 to Station 1074+06 (Poplar St.), 0 to 33 feet LT	None	Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	8.5	--	--	--	--
Total Volume of Impacted Soil in Construction Zone:						0.0	0.0	9.0	0.0	0.0	0.0	0.0
ISGS #4338-6 (ROW)												
4338-03-B01 ^a	Station 1073+83 to Station 1074+28 (Poplar St.), 0 to 34 feet RT and Station 1074+06 to Station 1074+28 (Poplar St.), 0 to 33 feet LT	None	Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	50.6	--	--	--	--
4338-06-B01	Station 28+77 to Station 30+15 (US 45), 0 to 125 feet LT	Manganese	None	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	--	--	191.5	--	--
4338-06-B02	Station 1074+28 to Station 1074+95 (Poplar St.), 0 to 31 feet LT	Arsenic, lead	Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	--	--	45.8	--	--
4338-06-B04	Station 30+70 to Station 31+45 (US 45), 0 to 45 feet LT	VOCs	None	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	--	--	--	--	73.5
4338-06-B06	Station 31+35 to Station 32+20 (US 45), 0 to 34 feet LT	None	Benzo(a)pyrene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	62.6	--	--	--	--

TABLE 4-4 ESTIMATE OF IMPACTED SOIL WITHIN IDOT CONSTRUCTION AREAS
 FAP 332/FAP 132 (US 45/Poplar Street)
 Harrisburg, Saline County, Illinois

Boring ID	Impacted Stationing	Contaminants of Concern		Construction Feature Within Impacted Soil Area	Excavation Dimension Assumption ^b	Estimated Volume and Classification of Impacted Soil (cubic yards) ^a						
		Above MSA MAC and/or TACO Tier 1 Soil Remediation Objective	Above Most Stringent MAC, Chicago MAC, or SCGIER Criteria Only			Standard Specifications, Article 669.05						
						(a)(1)	(a)(2)	(a)(3)	(a)(4)	(a)(5)	(b)(1)	(b)(2)
4338-06-B07	Station 30+15 to Station 31+35 (US 45), 0 to 132 feet RT	VOCs	None	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	--	--	--	--	151.8
4338-06-B08	Station 1077+10 to Station 1078+25 (Poplar St.), 0 to 20 feet LT	None	Benzo(a)pyrene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	54.2	--	--	--	--
4338-06-B09	Station 1077+00 to Station 1078+25 (Poplar St.), 0 to 20 feet RT	Arsenic	Benzo(a)pyrene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	--	--	53.0	--	--
4338-06-B11	Station 28+20 to Station 29+45 (US 45), 0 to 34 feet RT	None	Benzo(a)pyrene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	87.9	--	--	--	--
4338-06-B12	Station 27+50 to Station 28+20 (US 45), 0 to 33 feet RT	Manganese	Benzo(a)pyrene	Road Reconstruction	Estimated using volumes and plan drawings provided by IDOT	--	--	--	--	50.6	--	--
Total Volume of Impacted Soil in Construction Zone:						0.0	0.0	205.0	0.0	341.0	0.0	225.0

Notes:

^a Estimated excavation volumes are based on information in the PESA Response memo (Form BDE2735) and plan drawings provided by IDOT. Impacts at Site #4338-3 are assumed to extend to Site #4338-6 based on results at boring 4338-03-B01.

Key:

IDOT = Illinois Department of Transportation.

ISGS = Illinois State Geological Survey.

MAC = Maximum allowable concentration of chemical constituents in uncontaminated soil used as fill material at regulated fill operations.

SCGIER = Soil component of the groundwater ingestion exposure route.

TACO = Tiered Approach to Corrective Action Objectives

Table 5-1 ESTIMATED DISPOSAL COSTS FOR IMPACTED SOIL WITHIN IDOT CONSTRUCTION AREAS
GENERAL COST BREAKDOWN FOR CONSTRUCTION ACTIVITIES
FAP 332/FAP 132 (US 45/Poplar Street)
Harrisburg, Saline County, Illinois

Site	Pay Item/Cost per Unit																Total Cost (Rounded to nearest dollar)
	PRE-CONSTRUCTION REPORT ^a \$1,500.00 lump sum		CONSTRUCTION REPORT ^b \$1,500.00 lump sum		MONITORING ^c \$1,000.00 Per Day		NON-SPECIAL WASTE DISPOSAL ^d \$75.00 per cubic yard				NON-SPECIAL WASTE DISPOSAL ^e \$60.00 per cubic yard		EARTH EXCAVATION ^f --		SOIL DISPOSAL ANALYSIS ^g \$875.00 each		
	Quantity	Cost	Quantity	Cost	Quantity	Cost	669.05(a)(1)		669.05(a)(5)		669.05(a)(2),(a)(3),(a)(4)		669.05(b)(1),(b)(2),(c)		each		
	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	
ISGS #4338-3 (Tunnel Hill State Trail)																	
Subtotal for ISGS #4338-3	0.50	\$750.00	0.50	\$750.00	1.0	\$1,000.00	0	\$0.00	0	\$0.00	9	\$540.00	0	--	1	\$875.00	\$3,375.00
ISGS #4338-6 (ROW)																	
Subtotal for ISGS #4338-6	0.50	\$750.00	0.50	\$750.00	3.5	\$3,500.00	0	\$0.00	341	\$25,575.00	205	\$12,300.00	225	--	1	\$875.00	\$31,450.00
PROJECT TOTALS	1	\$1,500.00	1	\$1,500.00	5	\$4,500.00	0	\$0.00	341	\$25,575.00	214	\$12,840.00	225	\$0.00	2	\$1,750.00	\$34,825.00

Notes:

^a Costs for the Regulated Substances Pre-Construction Report are apportioned equally between the project sites.

^b Costs for the Final Construction Report are apportioned equally between the project sites.

^c Monitoring costs include labor (port-to-port), expenses, and equipment for air monitoring field oversight. The estimated number of days of field oversight were provided by IDOT.

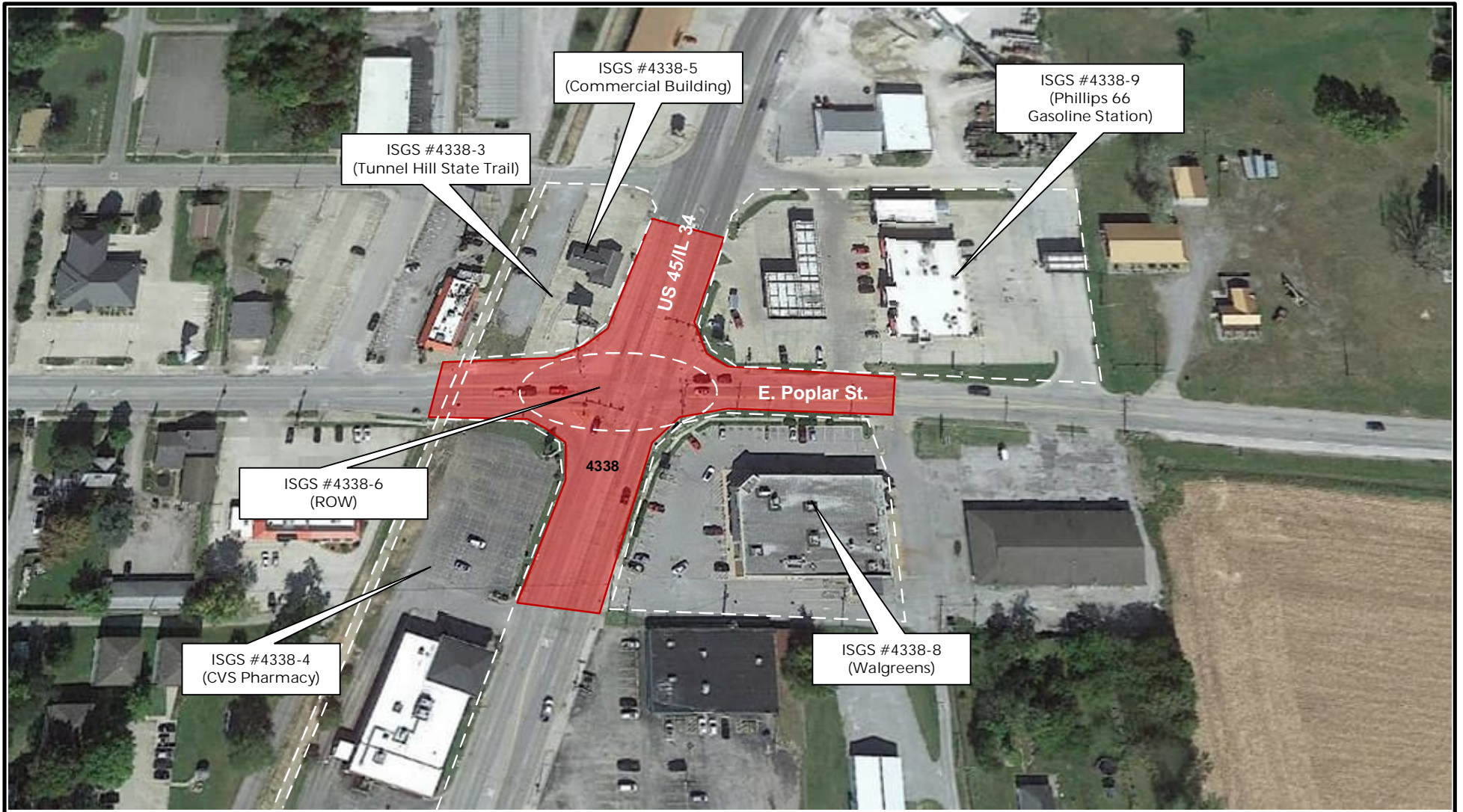
^d Material must be managed to a non-special waste disposal facility if disposed off-site. Transportation costs are based on a generic 100-mile distance to the facility and a truck capacity of 14 cubic yards.

^e Soil in this category includes soil that may be managed to a CCDD facility or USFO. The disposal costs are estimated as a non-special waste in the event that a CCDD or USFO facility is not located in the project area.



^f Soil classified as 669.05(b)(1), (b)(2), and 669.05(c) can be utilized within the ROW as embankment or fill, when suitable, or managed and disposed of off-site according to Article 202.03, but not to a CCDD or USFO facility. Costs are not included for off-site disposal of these soils; however, the soil is included in the estimate of monitoring costs for the project.

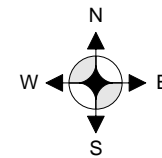
^g Disposal Analysis Methods: EPA Methods 1311, 8260B, 8270C, 8081, 8151A, 9045C, 1030, and 9095A.

FIGURES



LEGEND

-  - APPROXIMATE PESA SITE BOUNDARY
-  - ISGS PESA AREA



SITE INVESTIGATION AREA



ROUTE: FAP 332/FAP132
(US 45/Poplar Street)
CITY: Harrisburg
COUNTY: Saline


SCALE:

0 Feet 2,000

FIGURE NO:
2-1



ALIGNMENT & WAY ITEMS	EXISTING	PROPOSED
ROAD		
SIDEWALK		
CENTERLINES		
BIKEPATH		
CURB AND GUTTER		
RIGHT OF WAY ITEMS		
LIMITS OF CONSTRUCTION		
ROW		
PERMANENT EASEMENT		
TEMPORARY EASEMENT		
APPROXIMATE PESA SITE		
DRAINAGE ITEMS		
STORM SEWER		
STORM SEWER REMOVAL		
MANHOLE		
CATCH BASIN		
FLOWLINE		
DITCH CHECK		
HEADWALL		
INLET		
SUMMIT		
ROADWAY DITCH FLOW		
SWALE		
CULVERT SECTION		
RIPRAP		
TRAFFIC SIGNAL ITEMS		
DOUBLE HANDHOLE		
CONTROLLER		
HEAVY-DUTY HANDHOLE		
HANDHOLE		
LIGHTING & CONDUIT		
LIGHT POST		
MAST ARM		
PUSHBUTTON POST		
PED. PUSHBUTTON DETECTOR		
PED. SIGNAL HEAD		
POWER POLE SERVICE		
PRIORITY VEH. DETECTOR		
SIGNAL HEAD		
SIGNAL HEAD W/BACKPLATE		
SIGNAL POST		

LIGHTING	EXISTING	PROPOSED
LIGHT UNIT COMB.		
ELECTRICAL GROUND		
HIGH MAST POLE (HALF SIZE)		
LIGHT UNIT-1		
LIGHT TOWER		
LIGHT POLE		
LIGHT POLE		

INVESTIGATION ITEMS
BORING LOCATION (DEPTH PID pH)
1860-46-B01 (2-4' 25.2 8.8)

**PTB# 176-001 WORK ORDER 111
FAP 332/FAP 132 (US 45/ POPLAR ST.)
CITY OF HARRISBURG,
SALINE COUNTY, ILLINOIS**

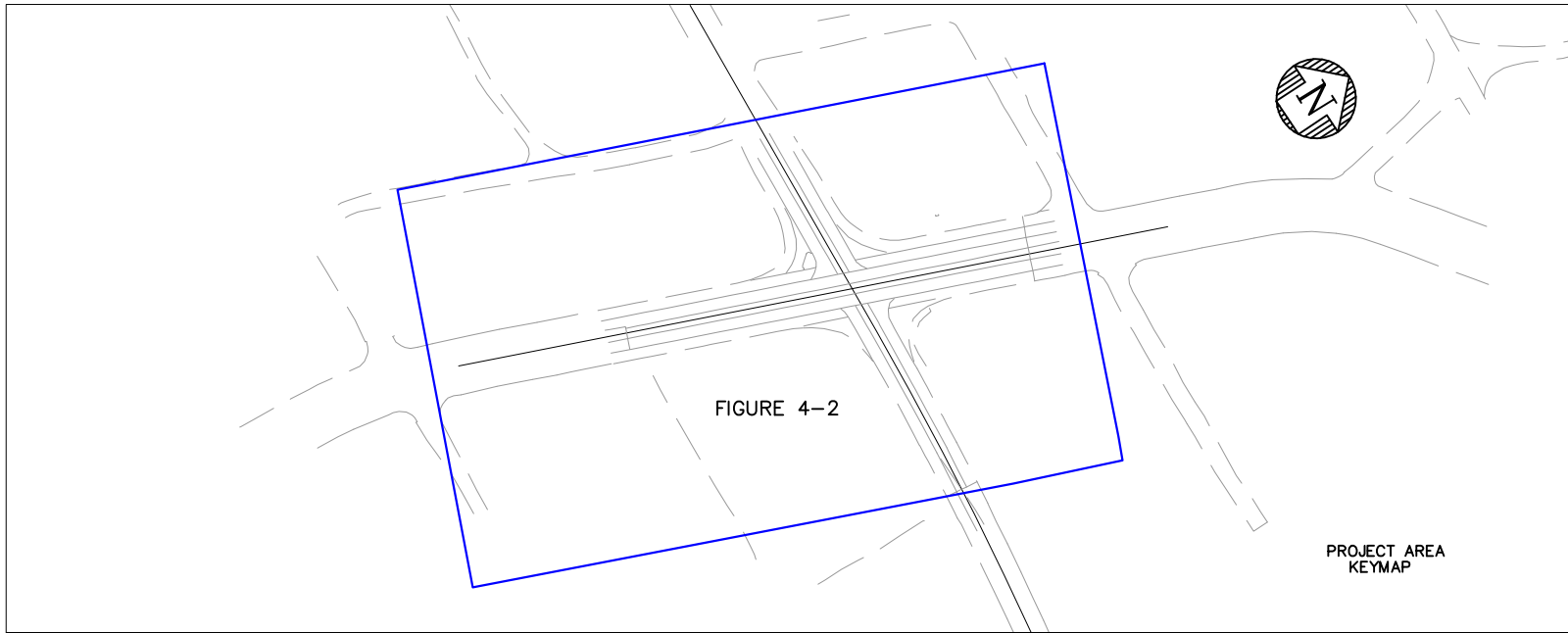
**ISGS #4338
INVESTIGATION SITES**
ISGS #4338-3(TUNNEL HILL STATE TRAIL)
ISGS #4338-6 (ROW)

REGULATED SUBSTANCES CLASSIFICATION

PID pH Red Box around the text to indicates PID Exceeds background value or pH outside acceptable range for CCDD disposal

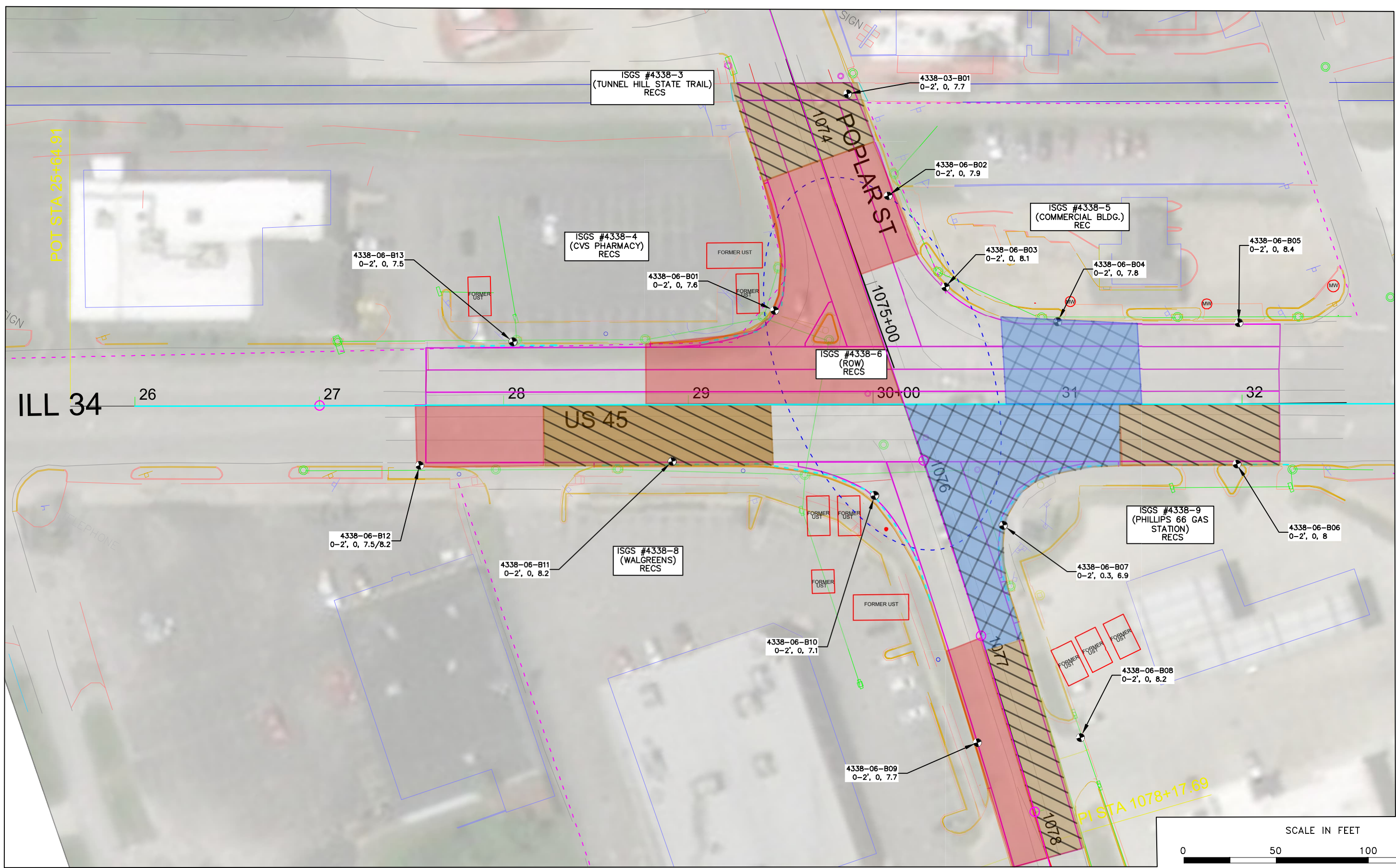
	669.05(a)(1)
	669.05(a)(2)
	669.05(a)(3)
	669.05(a)(4)
	669.05(a)(5)
	669.05(a)(6)
	669.05(b)(1)
	669.05(b)(2)
	669.05(c)
	669.05(d)
	WORK ZONE

NOTE:
1. Additional detail and information regarding regulated substances management and disposal classifications can be found in the Standard Specifications for Road and Bridge Construction (SSRBC) Section 669.05
2. This figure relies on color code depictions for soil management, please contact the DESU or AE for assistance.



ASSIGNED COORDINATE SYSTEM: NAD 83 STATE PLANE EAST U.S. FT.

	DRAWN BY: V. GEE	DESIGNED BY: J. HUGHES	PTB/JOB: 172-027/ P-30-010-14	GENERAL NOTES & LEGEND FAP 332 (US 45)	IDOT PROJECT #: C-99-022-20	BDE SEQ. #: 24726	CITY: HARRISBURG	DATE: 02/15/23	FIGURE 4-1 REVISION 0
	CHECKED BY: D. TIEBOUT	APPROVED BY: D. TIEBOUT	WORK ORDER: 111		ROUTE: FAP 332/FAP 132	CONTRACT #: 78771	COUNTY: SALINE	SCALE: N/A	



DRAWN BY: V. GEE	DESIGNED BY: J HUGHES	PTB/JOB: 172-027/ P-30-010-14
CHECKED BY: D. TIEBOUT	APPROVED BY: D. TIEBOUT	WORK ORDER: 111

INVESTIGATION DATA SUMMARY
FAP 332 (US 45)
STA. 27+00 TO 33+00

IDOT PROJECT #: C-99-022-20	BDE SEQ. #: 24726
ROUTE: FAP 332/FAP 132	CONTRACT #: 78771

CITY: HARRISBURG	DATE: 02/14/23
COUNTY: SALINE	SCALE: 1" = 50'

FIGURE
4-2
REVISION 0

APPENDIX

A ISGS PESA EXCERPTS AND SOIL DESCRIPTIONS

IDOT Sequence #: 24726
IDOT Job #: C99-022-20

ISGS: 4338
IDOT District #: 9

PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT

FINAL REPORT

DATE: October 6, 2022

IDOT DESIGN DATE: November 1, 2022

SURVEY TARGET DATE: November 1, 2022

DATE REQUEST RECEIVED: April 26, 2022

LOCATION: FAP 332/FAP 132/FAS 899 (US 45) at Poplar Street,
Harrisburg, Saline County; Harrisburg quadrangle (USGS
7.5-minute topographic map), T9S, R6E, Section 15.



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GLOSSARY OF ACRONYMS

AAI	-	All Appropriate Inquiries	MTBE	-	methyl tertiary butyl ether
ACM	-	asbestos-containing material	NFR	-	No Further Remediation
AST	-	aboveground storage tank	NPL	-	National Priorities List
ASTM	-	American Society for Testing and Materials	NRCS	-	Natural Resources Conservation Service
AUL	-	activity and use limitation (includes institutional controls, engineered barriers, and HAAs)	OER	-	Office of Emergency Response (IEPA)
bgs	-	below ground surface	OSFM	-	Office of the State Fire Marshal
BOL	-	Bureau of Land (IEPA)	PAA	-	Permit Access Agreement
BTEX	-	benzene, toluene, ethylbenzene, and total xylene	PAH/PNA-	-	polynuclear aromatic hydrocarbon
CCDD	-	Clean construction and demolition debris	PCB	-	polychlorinated biphenyl
CDPH	-	Chicago Department of Public Health	PESA	-	Preliminary Environmental Site Assessment
CERCLIS-	-	Comprehensive Environmental Response, Compensation, and Liability Information System	P.G.	-	Professional Geologist
CTA	-	Chicago Transit Authority	ppb	-	parts per billion (equivalent to µg/kg for solids, and µg/l in liquids)
ERNS	-	Emergency Response Notification System	ppm	-	parts per million (equivalent to mg/kg in solids, and mg/l in liquids)
FEMA	-	Federal Emergency Management Agency	PRP	-	Potentially Responsible Party
FHWA	-	Federal Highway Administration	PSI	-	Preliminary Site Investigation
FOIA	-	Freedom of Information Act	RCRA	-	Resource Conservation and Recovery Act
GIS	-	Geographic Information System	REC	-	recognized environmental condition
GRO	-	Groundwater Remediation Objective	ROW	-	right-of-way
HAA	-	Highway Authority Agreement	SEMS	-	Superfund Enterprise Management System
IDNR	-	Illinois Department of Natural Resources	SGRO	-	Soil Gas Remediation Objective
IDOT	-	Illinois Department of Transportation	SIC	-	Standard Industrial Classification
IEMA	-	Illinois Emergency Management Agency	SPLP	-	synthetic precipitation leaching procedure
IEPA	-	Illinois Environmental Protection Agency	SRO	-	Soil Remediation Objective
IMD	-	Illinois Manufacturers Directory	SRP	-	Site Remediation Program
ISGS	-	Illinois State Geological Survey	SSTS	-	Section Seven Tracking System (USEPA)
ISWS	-	Illinois State Water Survey	SVOC	-	semi-volatile organic compound
LUST	-	leaking underground storage tank	TACO	-	Tiered Approach to Corrective Action Objectives (IEPA)
µg/kg	-	micrograms per kilogram (ppb)	TCLP	-	toxicity characteristic leaching procedure
µg/l	-	micrograms per liter (ppb)	TPH	-	total petroleum hydrocarbons
mg/kg	-	milligrams per kilogram (ppm)	TRI	-	Toxics Release Inventory
mg/l	-	milligrams per liter (ppm)	UIC	-	Underground Injection Control (IEPA)
M.M.	-	mile marker	USDA	-	United States Department of Agriculture
MOU	-	memorandum of understanding	USEPA	-	United States Environmental Protection Agency
M.P.	-	mile post	USGS	-	United States Geological Survey
MSSA	-	Mahomet Sole Source Aquifer	UST	-	underground storage tank
			VOC	-	volatile organic compound

EXECUTIVE SUMMARY

This report presents the results of an environmental site assessment for the improvements to US 45 at Poplar Street, Harrisburg, Saline County. This report was prepared on behalf of the Illinois Department of Transportation (IDOT) by the Illinois State Geological Survey (ISGS).

The following sites were examined for this project. The tables below list sites along the project for which recognized environmental conditions (RECs)* were identified for each address or address range (Table 1); sites along the project for which only de minimis conditions were identified (Table 2); sites along the project for which no RECs or de minimis conditions were identified (Table 3); and sites adjoining but not on the project that were identified on environmental databases (Table 4). Further investigation of sites with RECs may be desired.

Table 1. The following sites along the project were determined to contain RECs:

Property name IDOT parcel #	ISGS site #	REC(s), including de minimis conditions	Regulatory database(s)	Land use
Pizza Hut NA	4338-1	Potential UST(s); presence on the Archived SEMS list; potential former chemical use; transformer; potential ACM and lead paint	Archived SEMS	Commercial
Hardee's NA	4338-2	Potential UST(s); presence on the Archived SEMS list; evidence of chemical use; potential ACM and lead paint	Archived SEMS, BOL	Commercial
Tunnel Hill State Trail NA	4338-3	Presence on the Archived SEMS list	Archived SEMS	Recreational
CVS Pharmacy NA	4338-4	Former USTs with a documented release; potential UST(s); presence on the Archived SEMS list; former monitoring wells; evidence of chemical use; VOCs; HAA; transformer; potential ACM and lead paint	Archived SEMS, RCRA, LUST, UST, BOL, IEMA, HAA, AUL, municipal	Commercial

Commercial building NA	4338-5	Potential UST(s); former monitoring wells; potential former chemical use; impacted soil and groundwater; VOCs; HAA; potential ACM and lead paint	HAA, AUL	Commercial
ROW NA	4338-6	Potential UST; HAA	HAA, AUL	Transportation
Commercial building NA	4338-7	Potential UST(s); presence on the Archived SEMS list; protruding pipe; former monitoring wells; potential former chemical use; impacted soil; potentially impacted groundwater; VOCs; transformers; potential ACM and lead paint	Archived SEMS	Commercial
Walgreens NA	4338-8	Former USTs with a documented release; potential UST(s); presence on the Archived SEMS list; former monitoring wells; evidence of former chemical use; impacted soil and groundwater; VOCs; HAA; potential ACM and lead paint	Archived SEMS, LUST, UST, SRP, BOL, IEMA, HAA, AUL, municipal	Commercial
Phillips 66 gasoline station NA	4338-9	USTs; former USTs with a documented release; potential UST(s); former ASTs; monitoring wells; former monitoring wells; potential former chemical use; impacted soil and groundwater; VOCs; HAA; transformer; potential ACM and lead paint	LUST, UST, BOL, IEMA, HAA, AULs	Commercial

Commercial building NA	4338-10	Potential UST(s); presence on the Archived SEMS list; potential former chemical use; mounding; transformers; potential ACM and lead paint	Archived SEMS	Commercial
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Table 2. The following sites along the project were determined to contain de minimis conditions only:

Property name IDOT parcel #	ISGS site #	De minimis condition(s)	Land use
None			

Table 3. The following sites along the project were determined not to contain RECs or de minimis conditions:

Property name IDOT parcel #	ISGS site #	Land use
None		

Table 4. The following additional sites, adjoining but not on the project, were identified on environmental databases:

Property name	ISGS site #	Regulatory database(s)	Land use
Uptown Motel	4338-A	Archived SEMS	Commercial
Commercial building	4338-B	Archived SEMS	Commercial
Harrisburg Park Apartments	4338-C	Archived SEMS	Residential
Tunnel Hill State Trail	4338-D	Archived SEMS	Recreational
Commercial building	4338-E	Archived SEMS	Commercial
Coastal Mart Inc.	4338-F	Archived SEMS, LUST, UST, BOL, IEMA	Commercial
Commercial building	4338-G	Archived SEMS	Commercial
Recovery Resource Center	4338-H	Archived SEMS	Commercial
Commercial building	4338-I	Archived SEMS	Commercial

Wilson's Door Company	4338-J	Archived SEMS	Commercial
Residence	4338-K	Archived SEMS	Residential
Sahara Coal Co. Machine Shop	4338-L	RCRA, federal brownfields, UST, SRP, BOL	Industrial
Sorado Mugge	4338-M	LUST, UST, BOL, IEMA, HAA, AULs	Commercial
IKT Auto Parts	4338-N	UST, BOL, HAA, AUL, municipal	Commercial
Tison & Hall Concrete	4338-O	UST, HAA, AUL	Industrial

* For all sites:

Where REC(s) are indicated as present, a condition was noted that may be indicative of releases or potential releases of hazardous substances on, at, in, or to the site, as discussed in the text. Potential hazards were not verified by ISGS testing. Radon, biological hazards (such as mold, medical waste, or septic waste), and non-agricultural pesticides and/or herbicides may also be of concern. No further investigation concerning the presence or use of these factors was conducted for this PESA.

Where RECs are not indicated as present, radon, biological hazards (such as mold, medical waste, or septic waste), and non-agricultural pesticides and/or herbicides may still be of concern. No further investigation concerning the presence or use of these factors was conducted for this PESA.

For the purposes of this report, the following are considered to be de minimis conditions:

- Normal use of lead-based paint on exteriors and interiors of buildings and structures.
- Use of asbestos-containing materials in building construction.
- Transformers in normal use, unless the transformers were observed to be leaking, appear on an environmental regulatory list, or were otherwise determined to pose a hazard not related to normal use.
- Agricultural use of pesticides and herbicides. In addition, most land in Illinois was under agricultural use prior to its conversion to residential, industrial, or commercial development. Pesticides, both regulated and otherwise, may have been used throughout the project area at any time. Unless specifically discussed elsewhere in this report, no information regarding past pesticide use that would be subject to enforcement action was located for this project, and such use is considered a de minimis condition.

The following data gaps exist for all PESAs:

- For residences, only areas visible from public roads are inspected.
- Interiors of buildings are not inspected.
- Interiors of agricultural areas are not inspected during growing seasons.

Radon and biological hazards are not considered in this PESA unless specifically noted.

NA = No parcel number was supplied by IDOT for this site.

Although potential natural hazards and undermining, if present, are described in this report, they are not considered as RECs or de minimis conditions for the purposes of this report, and are therefore not listed in the tables above. Wetlands and flooding hazards are not evaluated as part of this report.

INTRODUCTION

This is the **Final Report** of a preliminary environmental assessment by the ISGS of natural and man-made hazards that may be encountered for the improvements to US 45 at Poplar Street, Harrisburg, Saline County (Attachment 1). Project features include excavation or subsurface utility relocation. No acquisition of additional ROW or easements, in-stream work, or railroad ROW involvement are anticipated. US 45 and IL 34 are known as Commercial Street in the project area, and will be referred to as such in this report. Poplar Street was formerly known as IL 13 in the project area, and IL 13 was occasionally used in regulatory listings and on maps taken from regulatory files. Stationing information was provided by IDOT in feet, and is presented as such in this report. All stationing information is approximate, and refers to the approximate midpoint of the site's frontage along the ROW. This report identifies and evaluates recognized environmental conditions (RECs) that may be indicative of releases or potential releases of hazardous substances on, at, in, or to the proposed project.

This assessment has been prepared using historical and geological information including aerial photographs, U.S. Geological Survey topographic maps, plat maps, file information of the ISGS, regulatory file information from federal, state, and other agencies, and various other sources of information. An on-site investigation has been completed. The specific methods used to conduct the assessment are contained in "A Manual for Conducting Preliminary Environmental Site Assessments for Illinois Department of Transportation Infrastructure Projects" (Erdmann et al., 2014).

This Preliminary Environmental Site Assessment (PESA) was performed in compliance with the IDOT-ISGS PESA Manual (Erdmann et al., 2014) and not with the All Appropriate Inquiries environmental assessment standard (40 CFR Part 312) that took effect on November 1, 2006, or with the ASTM standard E1527-05 or E1527-13.

GEOLOGY

Bedrock geology. The topmost bedrock unit in the project area has been mapped as the Pennsylvanian-age rocks of the Shelburn-Patoka Formation, which consists primarily of sandstones, shales, limestones, and coal units.

Surficial geology. This project is in the driftless region of Illinois, where there are little to no surficial deposits and bedrock is at or near the surface. In the project area, the topmost unit has been mapped as less than 6 m (20 ft) of the Equality Formation, underlain by bedrock. The Equality Formation consists of fine-grained silts and clays.

Soils. Along the project ROW, the NRCS has classified the Zipp silty clay loam, 0 to 2% slopes, occasionally flooded, as containing 33% to 100% hydric components. None of the other soils in the project area have been classified by NRCS as containing more than 33% hydric components. The NRCS has classified the Orthents, 5 to 15% slopes, as non-prime farmland.

Coal mining. Illinois Coal Mine Maps of Saline County and the Harrisburg quadrangle indicate that coal mining has taken place in the area. However, these maps indicate that the project area itself is not undermined. Mined-out area maps indicate that the nearest former mine is located east of

the project area. This mine, operated by the O’Gara Coal Company (Mine #3275), worked the Springfield coal seam at a depth of 46-75 m (150-245 ft). The shaft for this mine is located approximately 220 m (720 ft) northeast of the project ROW (Site 4338-L).

HYDROGEOLOGY

Due to project type or IDOT internal procedure, the sections on surficial public water supplies, groundwater recharge, groundwater protection areas, potential for contamination of shallow aquifers, and well log information are not included in this report.

Drainage direction. Surficial drainage in the project area is generally toward the southeast, in the direction of Pankey Branch. However, since the project area is urbanized and storm drains and sewers are present, most surficial runoff will be controlled by the storm sewer system; such systems typically are designed to follow natural drainage patterns.

Neither the near-surface nor the shallow unconfined groundwater flow direction was specifically determined for this project, but they generally mimic local topography.

NATURAL FEATURES AND HAZARDS

Seismic risk. According to the U.S. Geological Survey, the project is located in an area where the peak horizontal ground accelerations on bedrock (expressed as a percentage of the gravitational acceleration, g) that have a 2% probability of being exceeded in 50 years are between 20% and 80% g. These accelerations are from the USGS 2014 national seismic hazard maps that incorporate the earthquake magnitudes and rates of return from historical events and expected maximum magnitudes from all known fault zones and background events for the general geologic setting. These accelerations on bedrock may be modified by the soils and be greater on the ground surface.

No other observed or known natural hazards were identified for this project.

PROJECT SITES

Project sites will be described generally from west to east along Poplar Street below. Attachment 1 contains a project location map. Attachment 2 contains a map of all sites discussed in this report. Attachments 3 through 21 contain site-specific maps and an NFR letter for selected sites and adjoining sites on this project. The versions of the OSFM's UST database, IEPA's LUST database, IEPA's Bureau of Land database, and USEPA's SEMS database utilized for this report were dated September 28, 2022. OSFM files were received on September 6, 2022. IEPA files were received on September 6, 13, and 22, 2022. USEPA files were received on September 7, 2022. Fieldwork for this project was conducted on September 19, 2022.

This project intersects previous ISGS PESAs and a PSI as follows:

ISGS #	Date submitted to IDOT	Intersects	PSI
656	August 17, 1995	Along Poplar Street to the west of Commercial Street	None
710	September 20, 1996	Along the entire project	Ecology and Environment #3, work order #046

Information from these earlier PESAs will be summarized in geographic order below. No sites in this project were covered in PSI Ecology and Environment #3, work order #046.

This project does not intersect or overlap ISGS #1573, which was submitted to IDOT on May 26, 2005; however, because of the extent of the project limits and the size of Sites 4338-4, 4338-7, 4338-E, and 4338-F, this PESA included information for these sites. PSI Andrews Engineering #1, work order #086, was completed in association with ISGS #1573. No sites in this project were covered in PSI Andrews Engineering #1, work order #086.

Data gaps applicable to the entire project area

The following data gaps applicable to the entire project area were noted for this project. Data gaps specific to individual sites are discussed in the site writeups below.

- Although Sanborn fire insurance maps were present for Harrisburg from prior to 1900, they did not extend far enough east to cover the project area. The 1900 Sanborn map will be the earliest Sanborn map discussed in individual site writeups, below.
- Aerial photographs for 1952 and 1980 were missing from the University of Illinois collection for the entire project area. Aerial photograph indices were used for these years, which have lower resolution than individual photographs.
- Aerial photographs provided information only for those specific times covered by the photographs, as noted in the Information Sources section. No records were available for intervening years, and other land uses could have occurred in these years.
- The earliest available resources, the 1900 Sanborn map or the 1908 plat map, showed all of the sites as developed or as part of undifferentiated Harrisburg. For all sites in this report, a data gap exists regarding the date of first development. This data gap will not be listed individually under each site below.
- Data gaps in city directory coverage exist for this area between the years 1930 and 1959, and 2002 and 2008. The 2008 city directory was the most recent year available at the Harrisburg District Library. The complete histories of all commercial site on this project are unknown.
- Areas which were under transportation or recreational use throughout all aerial photographs were not researched in city directories.

Site 4338-1. Pizza Hut, 509 E. Poplar Street, Harrisburg (south side of Poplar Street at Gum Street; approximate Poplar Street station 1072+75 RT; Attachment 2). This site is occupied by a restaurant. One pole-mounted transformer was observed near the midpoint of the site's frontage along Poplar Street.

Plat maps from 1908 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg. No buildings were depicted on any of the plat maps. On the 1900 Sanborn map, two residences were present. On the 1907 and 1913 Sanborn maps, one of the previous residences was present, and was labeled at a boarding house. On the 1925 and 1949 Sanborn maps, and on the 1939 through 1983 aerial photographs, a new residence and a commercial building (different from the current building) were present. On both of the Sanborn maps, the commercial building was labeled as unspecified stores. On the 1988 through 2005 aerial photographs, the previous commercial building was present. On the 2006 and 2007 aerial photographs, this site was occupied by a vacant concrete-covered lot. On the 2009 through 2021 aerial photographs, the current building was present. In the 1916-17 through 2008 city directories, various sales and service businesses and individual names were listed within this site's historic address range, including an ambulance service (1970), a gasoline station (1974), a motorcycle dealership (1982), and a paint business (1996-1998). No potential hazards were identified in association with any of the other former occupants.

The City of Harrisburg did not have any information regarding USTs at this location.

Under the name "Sahara Coal Co #03", the address "Sw1/4 Of Sec15 T9S R6East" appears on the Archived SEMS list (USEPA #ILD981197114). A review of regulatory files indicated that this listing pertains to the southwest quarter of T9S, R6E, Section 15 and additional areas to the southwest, including this site and Sites 4338-3, 4338-4, 4338-7, 4338-8, 4338-10, 4338-A, and 4338-C through 4338-K. According to USEPA files, in 1986, Sahara Coal Company Mine #03 was placed on the SEMS list due to potential impacts from the former coal mining activities, and a Potential Hazardous Waste Site Preliminary Assessment was completed under the direction of Ecology & Environment, Inc (E&E). Because E&E had limited information regarding the location of this mine, the SEMS site was established across the entire southwest quarter of T9S, R6E, Section 15; however, the approximate location of the former mine, as mapped by E&E, was only partially located in this section. See Attachment 3 for the location of the SEMS site, which is shown as the blue shaded area, and see Attachment 4 for the approximate location of the mine, which is shown as a hatched circle. According to the Illinois Coal Mine Maps of Saline County and Harrisburg quadrangle, which shows a more detailed extent of the former mine, none of the sites on or adjoining this project were mapped as part of the undermined area for Sahara Coal Company Mine #03. No further information was available in USEPA files regarding USEPA #ILD981197114.

Under the name "James Robert Aka Saxton Coal Co (Sia)", the address "Corner Of Poplar & Gum" appears on the Archived SEMS list (USEPA #ILD980899132). A review of regulatory files indicated that this listing pertains to parts of T10S, R7E, Sections 8 and 9, and an unspecified corner of Poplar Street and Gum Street, including this site or Sites 4338-2 or 4338-B. According to IEPA files, the Saxton Coal Company SEMS site was established for a former coal mine located in a different township than the project area (T10S, R7E). The corner of Poplar Street and Gum Street was listed as the mailing address for the responsible party for this mine. No further information pertaining to this site was available in USEPA files for USEPA #ILD980899132.

Historic gas stations, vehicle dealerships, and transportation businesses commonly conducted

vehicle repair on the premises. Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented UST(s). Potential hazards associated with paint businesses include VOCs and metals.

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gap was identified at this site:

- The status and locations of any undocumented UST(s) at this site are unknown.

The building on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in this building.

The following RECs were identified at this site: Potential UST(s); presence on the Archived SEMS list (however, see discussion above); potential former chemical use.

The following de minimis conditions were identified at this site: Transformer; potential ACM and lead paint.

Site 4338-2. Hardee's, 700 E. Poplar Street, Harrisburg (northeast corner of Poplar Street and Gum Street; approximate Poplar Street station 1073+50 LT; Attachment 2). This site is occupied by a restaurant.

The plat map from 1908 showed this site as a railroad depot with two buildings. Plat maps from 1920 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg. No buildings were depicted on any of the other plat maps. On the 1900 Sanborn map, a commercial building (different from the current building), labeled as a passenger station and a coal shed, were present. On the 1907 and 1913 Sanborn maps, three new commercial buildings (all different from the current building), labeled as a freight depot, a dining room, and a passenger station, were present. On the 1925 and 1947 Sanborn maps, and on the 1938 through 1970 aerial photographs, a new commercial building (different from the current building) was present. On both of these Sanborn maps, this building was labeled as a passenger station and brokerage. The resolution of the 1980 aerial index was insufficient to determine if any buildings were present. On the 1983 through 2021 aerial photographs, the current building was present. In the 1916-1917 city directory, no listings were found. In the 1922 through 1930 city directories, a railroad passenger station was listed. In the 1959 city directory, no listings were found. In the 1964 through 2008 city directories, various sales and service businesses were listed, including a used car dealership (1964-1966). No potential hazards were identified in association with any of the other former occupants.

Under the name "James Robert Aka Saxton Coal Co (Sia)", the address "Corner Of Poplar & Gum"

appears on the Archived SEMS list (USEPA #ILD980899132). A review of regulatory files indicated that this listing pertains to parts of T10S, R7E, Sections 8 and 9, and an unspecified corner of Poplar Street and Gum Street, including this site or Sites 4338-1 or 4338-B. According to IEPA files, the Saxton Coal Company SEMS site was established for a former coal mine located in a different township than the project area (T10S, R7E). The corner of Poplar Street and Gum Street was listed as the mailing address for the responsible party for this mine. No further information pertaining to this site was available in USEPA files for USEPA #ILD980899132.

Under the name “Hardees Food Systems Inc” and the address “700 E Poplar St”, this site appears on the BOL list (IEPA #1650205010). According to IEPA files, in October 1990, Hardee’s Food Systems Inc. registered with IEPA as a generator of unspecified types of wastes. No further information was available in IEPA files regarding IEPA #1650205010.

Vehicle dealerships commonly conduct vehicle repair on the premises. Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented UST(s).

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, transformers, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gaps were identified at this site:

- The resolution of the 1980 aerial index was insufficient to determine if any buildings were present.
- The status and locations of any undocumented UST(s) at this site are unknown.

The building on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in this building.

The following RECs were identified at this site: Potential UST(s); presence on the Archived SEMS list (however, see discussion above); evidence of chemical use.

The following de minimis conditions were identified at this site: Potential ACM and lead paint.

Site 4338-3. Tunnel Hill State Trail, 500-700 blocks of E. Poplar Street, Harrisburg (north and south sides of Poplar Street between Commercial Street and Gum Street; approximate Poplar Street station 1073+75 LT and RT; Attachment 2). This site is occupied by a bike path.

Plat maps from 1908 through 1988 showed railroad tracks at this site. Plat maps from 1993 through

2003 showed this site as part of undifferentiated Harrisburg. On the 1900 through 1945 Sanborn maps, and on the 1938 through 1993 aerial photographs, railroad tracks were present. On the 1998 through 2021 aerial photographs, the current path was present.

Under the name "Sahara Coal Co #03", the address "Sw1/4 Of Sec15 T9S R6East" appears on the Archived SEMS list (USEPA #ILD981197114). A review of regulatory files indicated that this listing pertains to the southwest quarter of T9S, R6E, Section 15 and additional areas to the southwest, including this site and Sites 4338-1, 4338-4, 4338-7, 4338-8, 4338-10, 4338-A, and 4338-C through 4338-K. According to USEPA files, in 1986, Sahara Coal Company Mine #03 was placed on the SEMS list due to potential impacts from the former coal mining activities, and a Potential Hazardous Waste Site Preliminary Assessment was completed under the direction of Ecology & Environment, Inc (E&E). Because E&E had limited information regarding the location of this mine, the SEMS site was established across the entire southwest quarter of T9S, R6E, Section 15; however, the approximate location of the former mine, as mapped by E&E, was only partially located in this section. See Attachment 3 for the location of the SEMS site, which is shown as the blue shaded area, and see Attachment 4 for the approximate location of the mine, which is shown as a hatched circle. According to the Illinois Coal Mine Maps of Saline County and Harrisburg quadrangle, which shows a more detailed extent of the former mine, none of the sites on or adjoining this project were mapped as part of the undermined area for Sahara Coal Company Mine #03. No further information was available in USEPA files regarding USEPA #ILD981197114.

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, transformers, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

No data gaps were identified at this site.

Because there are no buildings present and no evidence of fill or demolition debris was observed, asbestos-containing materials and lead paint are unlikely to be present at this site.

The following REC was identified at this site: Presence on the Archived SEMS list (however, see discussion above).

No de minimis conditions were identified at this site.

Site 4338-4 (656-1, 710-37, 710-40, 1573-A). CVS Pharmacy, 1 S. Commercial Street, Harrisburg (southwest corner of Poplar Street and Commercial Street; approximate Commercial Street station 27+00 LT; Attachment 2). This site is occupied by a pharmacy. One pad-mounted transformer was observed near the southwest corner of the site. Neither of the monitoring wells (MW-104 and MW-105) depicted on this site on Attachment 6 were present.

During fieldwork for ISGS #656 in 1995, and ISGS #710 in 1996, three USTs were observed in the north part of the site. These USTs are consistent with the former USTs documented in OSFM files (see OSFM #7015255, below), and were not present during fieldwork for this project.

Plat maps from 1908 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg, with a building depicted on the 1908 map. No buildings were depicted on any of the other plat maps. On the 1900 through 1947 Sanborn maps, and on the 1938 through 1993 aerial photographs, various residential and commercial buildings (all different from the current buildings) were present. On the Sanborn maps, the buildings were labeled as railroad tie storage (1900), various animal pens and coops (1900-1913), a grain warehouse (1900), wood storage (1900), a hay, grain, and cattle business (1907-1913), a meat shop (1907-1913), a grain mill (1907), unspecified stores (1907-1913 and 1947), a grocery warehouse (1913-1947), filling stations (1925-1947), storage (1925), and a railroad freight house (1947). The 1900 Sanborn map did not cover the south part of this site. On the 1925 Sanborn map, no USTs were depicted on this site; however, one gasoline UST associated with the gasoline station at this site was depicted in the Poplar Street ROW (Site 4338-6; see that site for details). On the 1947 Sanborn map, five gasoline USTs were depicted at this site, three approximately 20 m (70 ft) south of the Poplar Street centerline and 20 m (60 ft) west of the Commercial Street centerline, and two approximately 50 m (160 ft) south of the Poplar Street centerline and 20 m (60 ft) west of the Commercial Street centerline. The status of the USTs depicted on the 1947 Sanborn map is unknown. On the 1998 through 2021 aerial photographs, the current building was present. In the 1916-17 through 2008 city directories, various sales and service businesses and individual names were listed within this site's historic address range, including a meat and coal business (1927), various gasoline stations (1959-1991), a monument works (1964), a paint business (1964-1966), and an auto repair business (1986). No potential hazards were identified in association with any of the other former occupants. During fieldwork for ISGS #656 in 1995 and ISGS #710 in 1996, vacant commercial buildings (different from the current building) were present. During fieldwork for ISGS #1573 in 2005, the current occupant was present.

Under the name "Sahara Coal Co #03", the address "Sw1/4 Of Sec15 T9S R6East" appears on the Archived SEMS list (USEPA #ILD981197114). A review of regulatory files indicated that this listing pertains to the southwest quarter of T9S, R6E, Section 15 and additional areas to the southwest, including this site and Sites 4338-1, 4338-3, 4338-7, 4338-8, 4338-10, 4338-A, and 4338-C through 4338-K. According to USEPA files, in 1986, Sahara Coal Company Mine #03 was placed on the SEMS list due to potential impacts from the former coal mining activities, and a Potential Hazardous Waste Site Preliminary Assessment was completed under the direction of Ecology & Environment, Inc (E&E). Because E&E had limited information regarding the location of this mine, the SEMS site was established across the entire southwest quarter of T9S, R6E, Section 15; however, the approximate location of the former mine, as mapped by E&E, was only partially located in this section. See Attachment 3 for the location of the SEMS site, which is shown as the blue shaded area, and see Attachment 4 for the approximate location of the mine, which is shown as a hatched circle. According to the Illinois Coal Mine Maps of Saline County and Harrisburg quadrangle, which shows a more detailed extent of the former mine, none of the sites on or adjoining this project were mapped as part of the undermined area for Sahara Coal Company Mine #03. No further information was available in USEPA files regarding USEPA #ILD981197114.

Under the name "CVS Pharmacy 3188" and the address "1 S Commercial St", this site appears on the active RCRA list (USEPA #ILR000172965). Under the name "CVS Pharmacy 3188" and the address "1 S Commercial St", this site appears on the BOL list (IEPA #1650205048). Under the name "Platolene 500 Inc." and the address "1 South Commercial St.", this site appears on the LUST list (IEMA #970530). Under the name "Platolene 500 Inc", the address "Rts 13 & 45" appears on the UST list (OSFM #7015255) with three registered USTs. A review of regulatory files indicated that all of these listings pertain to this site. According to OSFM files, one gasoline UST and two

diesel USTs were removed in January 1998 (see IEMA #970530, below, for a discussion of these USTs). There was a discrepancy between IEPA and OSFM files regarding the contents of one of the former USTs. It is unknown if one of the former USTs contained diesel or gasoline. No further information was available in OSFM files regarding OSFM #7015255.

According to IEPA files, in April 2012, and again in May 2013, September 2014, and December 2020, CVS Pharmacy #3188 registered with USEPA and IEPA as a generator of either less than 100 kg/mo (220 lb/mo) or between 100-1,000 kg/mo (220-2,200 lb/mo) of ignitable and corrosive wastes, and wastes containing arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, 2,4-D, benzene, m-cresol, 1,4-dichlorobenzene, methyl ethyl ketone, tetrachloroethylene, warfarin and salts, epinephrine, nitroglycerine, arsenic trioxide, nicotine and salts, physostigmine salicylate, acetone, mitomycin C, 1-butanol, chloral, chlorambucil, chloroform, cyclophosphamide, daunomycin, o-dichlorobenzene, p-dichlorobenzene, diethylstilbesterol, formaldehyde, lindane, hexachlorophene, melphalan, methanol, naphthalene, phenol, reserpine, resorcinol, selenium dioxide, selenium sulfide, streptozotocin, carbaryl, and propoxur. Not all of these wastes were listed in all years. For the calendar years 2012 through 2017, CVS reported as a generator of the same wastes listed above, and wastes containing strychnine and salts. In August 2014, IEPA completed a RCRA inspection at this site. No violations were issued. No further information was available in IEPA files regarding this site's status as a waste generator.

In March 1997, evidence of a release from two gasoline USTs and one diesel UST was observed, and IEMA #970530 was issued. No information regarding the events that lead to this reporting was present in IEPA files. The site consultant, Envirotek Consultants, indicated that permits were being obtained to remove these USTs, and that no soil or groundwater sampling had been completed. According to information in OSFM files, the USTs were removed in January 1998. See Attachment 5 for the locations of these USTs. No further information was available in IEPA files regarding IEPA #1650205048 or IEMA #970530.

According to information received for ISGS #656 in 1995, the Harrisburg Fire Department documented the same three USTs in OSFM files. These USTs were present in the north part of the site at that time (however, see discussion of OSFM #7015255 above). According to information received for ISGS #1573, the Harrisburg Fire Department indicated that an unspecified number of USTs were removed from the south part of the site on an unspecified date, prior to the construction of the current pharmacy. The number, exact locations, and contents of these former USTs are unknown.

Information in IEPA files reviewed for Site 4338-8 (IEPA #1650205100) pertained to this site. As part of SRP investigations at that site, two monitoring wells (MW-104 and MW-105) were installed on this site in December 2006. See Attachment 6 for the locations of the monitoring wells. Neither of these monitoring wells were present during fieldwork for this project. Soil and groundwater samples were collected and analyzed for BTEX and MTBE. No compounds were detected above Tier 1 residential SROs and Class I GROs. See Site 4338-8 for further information.

HAA #934 was executed on May 2, 2006, with IDOT for Site 4338-9 (see Attachment 15, page 9, for the area of the HAA). The agreement area for HAA #934 adjoins this site. See Site 4338-9 for further information.

In both of the boreholes completed at this site for ISGS #656 in 1995, VOCs were detected. See ISGS #656 for details. In both of the boreholes completed at this site for ISGS #710 in 1996, VOCs

were detected. See ISGS #710 for details.

During fieldwork for ISGS #710 in 1996, a magnetic anomaly, approximately 2.4 by 2.4 m (8 by 8 ft) in size, was detected in the south part of the site. The center of the anomaly was 14 m (46 ft) west of the Commercial Street centerline, and the distance from Church Street was not specified. See ISGS #710 for details.

Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented UST(s). Potential hazards associated with coal businesses, meat-related industries, stone-working, and paint businesses include VOCs, SVOCs, acids, metals, and pesticides.

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gaps were identified at this site:

- The 1900 Sanborn map did not cover the south part of this site.
- The status of the USTs depicted on the 1947 Sanborn map is unknown.
- It is unknown if one of the former USTs contained diesel or gasoline.
- The number, exact locations, and contents of the former USTs in fire department files received for ISGS #1573 are unknown.
- The status and locations of any undocumented UST(s) at this site are unknown.

The building on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in this building.

The following RECs were identified at this site: Former USTs with a documented release; potential UST(s); presence on the Archived SEMS list (however, see discussion above); former monitoring wells; evidence of chemical use; VOCs detected in previous ISGS testing; HAA.

The following de minimis conditions were identified at this site: Transformer; potential ACM and lead paint.

Site 4338-5 (656-2, 710-34). Commercial building, 3 N. Commercial Street, Harrisburg (northwest corner of Poplar Street and Commercial Street; approximate Commercial Street station 31+50 LT; Attachment 2). This site is occupied by a vacant commercial building. None

of the monitoring wells (MW-10 through MW-13) depicted on this site on Attachment 11 were present. This site did not appear on any of the regulatory lists checked for this project.

Plat maps from 1908 and 1920 showed this site as part of undifferentiated Harrisburg. The plat map from 1939 showed ownership by a coal company. Plat maps from 1952 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg. No buildings were depicted on any of the plat maps. On the 1900 through 1947 Sanborn maps, and on the 1938 through 1970 aerial photographs, various residential and commercial buildings (all different from the current building) were present and railroad tracks crossed the west part of the site. On the Sanborn maps, the buildings were labeled as railroad tie storage (1900), agricultural implements (1900), sheds (1907), grocery stores (1907-1913), wholesale produce (1907-1913), vacant (1913), restaurants (1913 and 1947), a grain elevator (1925), unspecified stores (1925-1947), a fruit warehouse (1925), filling stations (1947), and oil storage (1947). No USTs were depicted on the Sanborn maps. The resolution of the 1980 aerial index was insufficient to determine if any buildings were present. On the 1983 aerial photograph, this site was occupied by a vacant paved lot. On the 1988 through 2021 aerial photographs, the current building was present.

In the 1916-17 through 1991 city directories, various sales and service businesses and individual names were listed within this site's historic address range, including various gasoline stations (1930-1982), and an upholstery business (1964). No potential hazards were identified in association with any of the other former occupants. In the 1996 and 1998 city directories, no listings were found. In the 2002 city directory, a gasoline station was listed. In the 2008 city directory, a loan business was listed. During fieldwork for ISGS #656 in 1995 and ISGS #710 in 1996, this site was occupied by a bank.

According to information received for ISGS #656, the Harrisburg Fire Department did not have any information regarding USTs at this location.

Information in IEPA files reviewed for Site 4338-9 (IEPA #1650205069) pertained to this site. In response to LUST events at that site, four monitoring wells (MW-10 through MW-13) were installed on this site in 2003. See Attachment 11 for the locations of the monitoring wells. None of these monitoring wells were present during fieldwork for this project. Soil and groundwater samples were collected and analyzed for BTEX and MTBE. Benzene exceeded Tier 1 migration to Class I groundwater SROs and Class I GROs. United Science Industries, Inc. compared the concentrations of impacted soil and groundwater at this site and Site 4338-9, and determined that the impact at this site was not attributable to the LUST release at Site 4338-9; for this reason, Attachments 12 and 13 do not show impacts at this site, and no Tier 2 investigations were completed for this site. HAA #934 was executed on May 2, 2006, with IDOT for Site 4338-9 (see Attachment 15, page 9, for the area of the HAA). The agreement area for HAA #934 adjoins this site. See Site 4338-9 for further information.

In one borehole completed at this site for ISGS #656 in 1995, VOCs were detected. See ISGS #656 for details. In one borehole completed at this site for ISGS #710 in 1996, VOCs were detected. See ISGS #710 for details.

Equipment dealerships and historic gas stations commonly conducted vehicle repair on the premises. Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented

UST(s). Potential hazards associated with upholstery businesses include VOCs.

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, transformers, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gaps were identified at this site:

- The resolution of the 1980 aerial index was insufficient to determine if any buildings were present.
- The status and locations of any undocumented UST(s) at this site are unknown.

The building on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in this building.

The following RECs were identified at this site: Potential UST(s); former monitoring wells; potential former chemical use; impacted soil and groundwater; VOCs detected in previous ISGS testing; HAA.

The following de minimis conditions were identified at this site: Potential ACM and lead paint.

Site 4338-6. ROW, 700-800 blocks of E. Poplar Street, Harrisburg (intersection of Poplar Street and Commercial Street; approximate Commercial Street station 30+00 LT and RT; Attachment 2). This site is occupied by the intersection of Poplar Street and Commercial Street. This site did not appear on any of the regulatory lists checked for this project.

Plat maps from 1908 through 2003 showed the current intersection. On the 1900 through 1947 Sanborn maps, and on the 1938 through 2021 aerial photographs, the current intersection was present. On the 1925 Sanborn map, one gasoline UST that was associated with a filling station on Site 4338-4 was depicted in the Poplar Street ROW, approximately 6 m (20 ft) south of the Poplar Street centerline and 20 m (60 ft) west of the Commercial Street centerline. The status of the UST depicted on the Sanborn map is unknown.

The City of Harrisburg did not have any information regarding USTs at this location.

HAA #934 was executed on May 2, 2006, with IDOT for Site 4338-9 (see Attachment 15, page 9, for the area of the HAA). The agreement area for HAA #934 includes this site. See Site 4338-9 for further information.

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or

underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, transformers, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gap was identified at this site:

- The status of the UST depicted on the 1925 Sanborn map is unknown.

Because there are no buildings present and no evidence of fill or demolition debris was observed, asbestos-containing materials and lead paint are unlikely to be present at this site.

The following RECs were identified at this site: Potential UST; HAA.

No de minimis conditions were identified at this site.

Site 4338-7 (710-38, 1573-B). Commercial building, 12 S. Commercial Street, Harrisburg (northeast corner of Church Street and Commercial Street; approximate Commercial Street station 27+00 RT; Attachment 2). This site is occupied by a commercial building. Occupants included a restaurant and a vacant unit (see address table for listings). No address was posted on the vacant unit, and the same address was used for both units in the address table. A PVC protruding pipe with an unknown function was observed near the midpoint of the site's frontage along Church Street. Six pole-mounted transformers were observed, three near the southeast corner of the building and three near the midpoint of the north side of the building.

During fieldwork for ISGS #1573 in 2005, two monitoring wells (MW-9 and MW-10 on Attachment 16) were observed. These monitoring wells were not present during fieldwork for this project.

Plat maps from 1908 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg. No buildings were depicted on any of the plat maps. On the 1900 and 1907 Sanborn maps, various residences were present. The 1900 Sanborn map did not cover the south part of this site. On the 1913 through 1947 Sanborn maps, and on the 1938 through 1983 aerial photographs, various residential and commercial buildings (all different from the current building) were present. On the Sanborn maps, the buildings were labeled as vacant (1913-1925), a grocery store (1913), unspecified stores (1925), an auto repair shop (1947), and a filling station (1947). No USTs were depicted at the filling station. The resolution of the 1988 aerial photograph was insufficient to determine if any buildings were present. On the 1993 through 2021 aerial photographs, the current building was present. In the 1916-17 through 1930 city directories, individual names were listed within this site's historic address range. In the 1959 and 1964 city directories, a gasoline station was listed. In the 1966 through 1991 city directories, no listings were found. In the 1996 through 2008 city directories, various sales and service businesses were listed. No potential hazards were identified in association with any of these former occupants. During fieldwork for ISGS #710 in 1996, this site was occupied by a video rental store. During fieldwork for ISGS #1573 in 2005, this site was occupied by a video rental store and a tanning salon.

According to information received for ISGS #1573, the Harrisburg Fire Department did not have any information regarding USTs at this location.

Under the name “Sahara Coal Co #03”, the address “Sw1/4 Of Sec15 T9S R6East” appears on the Archived SEMS list (USEPA #ILD981197114). A review of regulatory files indicated that this listing pertains to the southwest quarter of T9S, R6E, Section 15 and additional areas to the southwest, including this site and Sites 4338-1, 4338-3, 4338-4, 4338-8, 4338-10, 4338-A, and 4338-C through 4338-K. According to USEPA files, in 1986, Sahara Coal Company Mine #03 was placed on the SEMS list due to potential impacts from the former coal mining activities, and a Potential Hazardous Waste Site Preliminary Assessment was completed under the direction of Ecology & Environment, Inc (E&E). Because E&E had limited information regarding the location of this mine, the SEMS site was established across the entire southwest quarter of T9S, R6E, Section 15; however, the approximate location of the former mine, as mapped by E&E, was only partially located in this section. See Attachment 3 for the location of the SEMS site, which is shown as the blue shaded area, and see Attachment 4 for the approximate location of the mine, which is shown as a hatched circle. According to the Illinois Coal Mine Maps of Saline County and Harrisburg quadrangle, which shows a more detailed extent of the former mine, none of the sites on or adjoining this project were mapped as part of the undermined area for Sahara Coal Company Mine #03. No further information was available in USEPA files regarding USEPA #ILD981197114.

Information in IEPA files reviewed for Site 4338-F (IEPA #1650205052) pertained to this site. In response to LUST events at that site, two monitoring wells (MW-9 and MW-10 on Attachment 16) were installed on this site in October 2002, and several soil borings were completed on this site between 2002 and 2009. These monitoring wells were not present during fieldwork for this project. Soil and groundwater samples were collected and analyzed for BTEX and MTBE. Various BTEX compounds exceeded Tier 1 construction worker and migration to Class I groundwater SROs. No compounds were detected above Class I GROs. See Attachment 16 for the estimated extent of impacted soil. Chase Environmental Group completed Tier 2 modeling for soil migration to groundwater, and groundwater impact was predicted on the southwest part of the site. See Attachment 17 for the modeled extent of soil migration to groundwater. The property owner at this site subsequently denied access for further groundwater sampling or corrective action. No groundwater testing was completed in the west part of the site, and the status of the impacted groundwater is unknown. On March 1, 2022, IEPA issued an NFR letter for LUST incidents at Site 4338-F, which specified that the UST operator was not required to address the impact at this site or in the Church Street ROW due to access denial by the property owner at this site and by the City of Harrisburg, respectively. No further information pertaining to this site was available in IEPA files for IEPA #1650205052.

In one borehole completed at this site for ISGS #710 in 1996, VOCs were detected. See ISGS #710 for details.

Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented UST(s).

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, pipelines, drums, chemical containers, monitoring wells, solid waste, chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gaps were identified at this site:

- The function of the protruding pipe is unknown.
- The 1900 Sanborn map did not cover the south part of this site.
- The resolution of the 1988 aerial photograph was insufficient to determine if any buildings were present.
- The status of the impacted groundwater is unknown.
- The status and locations of any undocumented UST(s) at this site are unknown.

The building on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in this building.

The following RECs were identified at this site: Potential UST(s); presence on the Archived SEMs list (however, see discussion above); protruding pipe; former monitoring wells; potential former chemical use; impacted soil; potentially impacted groundwater; VOCs detected in previous ISGS testing.

The following de minimis conditions were identified at this site: Transformers; potential ACM and lead paint.

Site 4338-8 (656-no site number, 710-36). Walgreens, 4 S. Commercial Street, Harrisburg (southeast corner of Poplar Street and Commercial Street; approximate Commercial Street station 29+00 RT; Attachment 2). This site is occupied by a pharmacy. None of the monitoring wells depicted on this site on Attachment 6 (MW-1 and MW-101 through MW-103) or on Attachment 11 (MW-8 and MW-9) were present.

During fieldwork for ISGS #656 in 1995, and ISGS #710 in 1996, one UST was observed to the north of the former building, approximately 30 m (100 ft) east of the east edge of Commercial Street and 20 m (70 ft) south of the south edge of Poplar Street. The location of this UST was not consistent with the former USTs documented in OSFM files. This UST was not present during fieldwork for this project.

Plat maps from 1908 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg. No buildings were depicted on any of the plat maps. On the 1900 Sanborn map, a cord wood business with several sheds and a residence were present. The 1900 Sanborn map did not cover the east part of this site. On the 1907 and 1913 Sanborn maps, eight new residences were present. On the 1925 and 1947 Sanborn maps, and on the 1938 through 2006 aerial photographs, various residences and commercial buildings (all different from the current building) were present, including several of the previous residences. On the Sanborn maps, the buildings were labeled as an unspecified store (1925), a church (1925-1947), an automotive greasing and service business (1947), and a filling station (1947). On the 1947 Sanborn map, four gasoline USTs were depicted, two approximately 20 m (60 ft) south of the Poplar Street centerline and 20 m (70 ft) east of the Commercial Street centerline, and two approximately 20 m (80 ft) south of the Poplar Street

centerline and 20 m (50 ft) east of the Commercial Street centerline. The status of the USTs depicted on the 1947 Sanborn map is unknown. On the 2007 aerial photograph, this site was occupied by a vacant lot with a disturbed surface. On the 2009 through 2021 aerial photographs, the current building was present. In the 1916-17 and 1922 city directories, individual names were listed within this site's historic address range. In the 1927 through 2008 city directories, various sales and service businesses and individual names were listed, including a gasoline station (1959-1982), a monument works (1966-1991 and 2002), and automotive repair businesses (1986-1991). No potential hazards were identified in association with any of the other former occupants. During fieldwork for ISGS #656 in 1995, and ISGS #710 in 1996, this site was occupied by a muffler and radiator shop.

Under the name "Sahara Coal Co #03", the address "Sw1/4 Of Sec15 T9S R6East" appears on the Archived SEMS list (USEPA #ILD981197114). A review of regulatory files indicated that this listing pertains to the southwest quarter of T9S, R6E, Section 15 and additional areas to the southwest, including this site and Sites 4338-1, 4338-3, 4338-4, 4338-7, 4338-10, 4338-A, and 4338-C through 4338-K. According to USEPA files, in 1986, Sahara Coal Company Mine #03 was placed on the SEMS list due to potential impacts from the former coal mining activities, and a Potential Hazardous Waste Site Preliminary Assessment was completed under the direction of Ecology & Environment, Inc (E&E). Because E&E had limited information regarding the location of this mine, the SEMS site was established across the entire southwest quarter of T9S, R6E, Section 15; however, the approximate location of the former mine, as mapped by E&E, was only partially located in this section. See Attachment 3 for the location of the SEMS site, which is shown as the blue shaded area, and see Attachment 4 for the approximate location of the mine, which is shown as a hatched circle. According to the Illinois Coal Mine Maps of Saline County and Harrisburg quadrangle, which shows a more detailed extent of the former mine, none of the sites on or adjoining this project were mapped as part of the undermined area for Sahara Coal Company Mine #03. No further information was available in USEPA files regarding USEPA #ILD981197114.

Under the name "Wilson Distribution Inc", the address "819 Poplar" appears on the BOL list (IEPA #1650205099). Under the name "Wilson Distribution, Inc.", the address "819 Poplar Street" appears on the LUST list (IEMA #20070474). Under the name "Wilson Distribution, Inc.", the address "Hwy 45 & Rt 13" appears on the UST list (OSFM #7043620) with four registered USTs. A review of regulatory files indicated that all of these listings pertain to this site. According to OSFM files, two gasoline USTs, one diesel UST, and one UST of unknown contents were removed in April 2007 (see IEMA #20070474, below, for a discussion of these USTs). No further information was available in OSFM files regarding OSFM #7043620.

According to IEPA files, in April 2007, one gasoline UST, one diesel UST, one heating-oil UST, and one UST of unknown contents were removed from this site (see Attachment 6 for the locations of these USTs). There was a discrepancy between IEPA and OSFM files regarding the contents of one of the former USTs, and it is unknown if one of the former USTs contained gasoline or heating oil. During the UST removal, evidence of a release was observed, and IEMA #20070474 was issued. Under the direction of Bureau Veritas North America, Inc., one soil sample each was collected from the floor of the diesel UST and heating-oil UST excavations and analyzed for PNAs. Various PNA compounds exceeded Tier 1 residential and construction worker SROs.

In July 2007, Wilson Distribution elected to proceed under the SRP to address IEMA #20070474. See IEPA #1650205102, below, for details regarding the SRP investigation. No further information was available in IEPA files regarding IEPA #1650205099 or IEMA #20070474.

Under the name "Wilson Distribution Inc", the address "2 S Commercial St" appears on the BOL list (IEPA #1650205100). A review of regulatory files indicated that this listing pertains to this site. According to IEPA files, in April 2007, Wilson Distribution applied for an IEPA inventory number in response to IEMA #20070474 (see above for details). No further information was available in IEPA files regarding IEPA #1650205100.

Under the name "Walgreens 09922" and the address "4 S Commercial St", this site appears on the BOL list (IEPA #1650205102). Under the name "Walgreens Store #09922" and the address "4 South Commercial Street", this site appears on the SRP list under the same IEPA number. According to IEPA files, in August 2007, Walgreens Store #09922 enrolled in the SRP to obtain a focused NFR letter for BTEX and PNAs and to address IEMA #20070474 (see above for details). See Attachment 6 for the SRP remediation boundary. Prior to enrollment, in 2006, soil and groundwater sampling was completed under the direction of Bureau Veritas North America, Inc. (BVNA) in preparation for redevelopment. These investigations included the completion of several soil borings, the installation of three on-site monitoring wells (MW-101 through MW-103), collecting groundwater samples from one preexisting monitoring well (MW-1) and soil borings without monitoring wells, and the installation of two off-site monitoring wells. See Attachment 6 for the locations of the monitoring wells. None of the on-site monitoring wells were present during fieldwork for this project. Both of the off-site monitoring wells (MW-104 and MW-105) were installed to the west on Site 4338-4. In May 2007, impacted soil was excavated under the direction of BVNA, and soil samples were collected from the excavation. Soil and groundwater samples were analyzed for BTEX, MTBE, PNAs, and PCBs; not all of the samples were analyzed for all of these constituents.

During these rounds of soil and groundwater sampling, BTEX and naphthalene exceeded Tier 1 construction worker and migration to Class I groundwater SROs, and benzene exceeded Class I GROs. No compounds were detected above Tier 1 residential SROs or Class I GROs in any of the off-site samples from Site 4338-4. See Attachments 7, 8, and 9 for the soil analytical results for benzene, xylene, and naphthalene, respectively, and Attachment 10 for the groundwater analytical results. The depth to groundwater ranged from 0.84 to 1.23 m (2.76 to 4.05 ft), and the groundwater flow direction was estimated to be toward the northeast. BVNA calculated site-specific Tier 2 SROs for xylene and naphthalene, and completed Tier 2 modeling. No compounds exceeded the Tier 2 SROs. Impacted groundwater was modeled to extend offsite. The location of the potential off-site impact was not discussed, and no maps showing the modeled extent of impacted groundwater were present in IEPA files. In November 2011, IEPA terminated the SRP agreement due to inactivity. No further information was available in IEPA files regarding IEPA #1650205100.

According to information received for ISGS #656, the Harrisburg Fire Department indicated that an unspecified number of USTs associated with the former gas station at this site were present but no longer in use in 1995. These USTs were consistent with the former USTs documented in OSFM files (see above).

Information in IEPA files reviewed for Site 4338-9 (IEPA #1650205069) pertained to this site. In response to LUST events at that site, two monitoring wells (MW-8 and MW-9) were installed on this site in 2003. See Attachment 11 for the locations of the monitoring wells. These monitoring wells were not present during fieldwork for this project. Soil and groundwater samples were collected and analyzed for BTEX and MTBE. No compounds were detected above Tier 1 residential SROs and Class I GROs. HAA #934 was executed on May 2, 2006, with IDOT for Site 4338-9 (see Attachment 15, page 9, for the area of the HAA). The agreement area for HAA #934 adjoins this site. See Site 4338-9 for further information.

In one borehole completed at this site for ISGS #710 in 1996, VOCs were detected. See ISGS #710 for details.

Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented UST(s). Potential hazards associated with stone-working include VOCs, metals, and acids.

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, transformers, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gaps were identified at this site:

- The 1900 Sanborn map did not cover the east part of this site.
- The status of the USTs depicted on the 1947 Sanborn map is unknown.
- The contents of one of the former USTs is unknown.
- It is unknown if one of the former USTs contained gasoline or heating oil.
- The status and locations of any undocumented UST(s) at this site are unknown.

The building on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in this building.

The following RECs were identified at this site: Former USTs with a documented release; potential UST(s); presence on the Archived SEMS list (however, see discussion above); former monitoring wells; evidence of former chemical use; impacted soil and groundwater; VOCs detected in previous ISGS testing; HAA.

The following de minimis conditions were identified at this site: Potential ACM and lead paint.

Site 4338-9 (656-no site number, 710-35). Phillips 66 gasoline station, 44 N. Commercial Street, Harrisburg (northeast corner of Poplar Street and Commercial Street; approximate Commercial Street station 32+00 RT; Attachment 2). This site is occupied by a gasoline station, with a convenience store and car wash in two separate buildings. Nine dispensers were observed, six under the canopy to the west of the building and three under the canopy to the east of the building. One dual-compartment UST and three USTs were observed approximately 30 m (100 ft) north of the north edge of Poplar Street and 90 m (300 ft) east of the east edge of Commercial Street. OSFM files refer to the dual-compartment UST as two separate USTs. Two monitoring wells

that were not depicted on any maps in regulatory files were observed, one each near the southwest and northeast corners of the UST pit. Five vent pipes were observed on the easternmost canopy. None of the monitoring wells (MW-1 through MW-7 and MW-14 through MW-16) depicted on this site on Attachment 11 were present. One pad-mounted transformer was observed near the southeast corner of the building.

During fieldwork for ISGS #656 in 1995, and ISGS #710 in 1996, four USTs were observed. These USTs were consistent with the former USTs that were removed in August 2002 (see OSFM #7011744, below), and were not present during fieldwork for this project.

Plat maps from 1908 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg. No buildings were depicted on any of the plat maps. The 1900 Sanborn map did not cover this site. On the 1907 and 1913 Sanborn maps, six residences were present. The 1907 and 1913 Sanborn maps did not cover the east part of this site. On the 1925 and 1947 Sanborn maps, and on the 1938 through 2011 aerial photographs, various residences and commercial buildings (all different from the current buildings) were present, including several of the previous residences. On the Sanborn maps, the buildings were labeled as a shed (1925), a filling station (1925-1947), a restaurant (1947), and storage (1947). On the 1925 Sanborn map, one gasoline UST was depicted approximately 20 m (60 ft) north of the Poplar Street centerline and 20 m (50 ft) east of the Commercial Street centerline. On the 1947 Sanborn map, the previous UST was not depicted. Four gasoline USTs were depicted, one approximately 20 m (60 ft) north of the Poplar Street centerline and 20 m (70 ft) east of the Commercial Street centerline, and three approximately 20 m (50 ft) north of the Poplar Street centerline and 30 m (110 ft) east of the Commercial Street centerline. The status of the USTs depicted on Sanborn maps is unknown. On the 2013 aerial photograph, the current buildings were under construction, and the site had a disturbed surface. On the 2015 through 2021 aerial photographs, the current buildings and canopies were present.

In the 1916-17 and 1922 city directories, individual names were listed within this site's historic address range. In the 1927 through 2008 city directories, various sales and service businesses and individual names were listed, including various gasoline stations (1927, 1959-1970, 1982-1991, 2002), a machinery dealer (1964-1966), a taxi service (2002), and a photography business (2008). No potential hazards were identified in association with any of the other former occupants. During fieldwork for ISGS #656 in 1995, and ISGS #710 in 1996, this site was occupied by a gasoline station.

Under the name "Mach I" and the address "44 N. Commercial St.", this site appears on the UST list (OSFM #7045481) with five registered USTs. According to OSFM files, one 30,283-liter (8,000-gallon) diesel UST and one 45,425-liter (12,000-gallon) diesel UST are currently in use as a dual-compartment UST. One 37,854-liter (10,000-gallon) gasoline UST and one 75,708-liter (20,000-gallon) gasoline UST are currently in use. One non-regulated 30,283-liter (8,000-gallon) diesel-exhaust-fluid UST was listed with a status of "unknown"; this UST was present during fieldwork for this project. See above for the locations of all of these USTs. No further information was available in OSFM files regarding OSFM #7045481.

Under the name "Peoples National Bank", the address "4 N Commercial St" appears on the BOL list (IEPA #1650205069). Under the name "Peoples National Bank", the address "4 North Commerical [sic] St." appears on the LUST list (IEMA #20020958). Under the name "People's National Bank", the address "4 North Commercial" appears on the UST list (OSFM #7011744) with nine registered USTs. A review of regulatory files indicated that all of these listings pertain to this

site. According to OSFM files, three gasoline USTs were removed in December 1988. The locations of these former USTs were not included in OSFM files and are unknown. Three gasoline USTs and one diesel UST were removed in August 2002, and two gasoline USTs were removed in June 2005 (see IEMA #20020958, below, for a discussion of these USTs). OSFM files also documented a diesel AST that was removed in December 1988. No further information was available in OSFM files regarding OSFM #7011744.

According to IEPA files, in July 2002, several soil borings were completed in preparation for UST removal under the direction of United Science Industries, Inc. (USI). Evidence of a release was observed near the gasoline USTs, and IEMA #20020958 was issued. In August 2002, three gasoline USTs and one diesel UST were removed from this site. See Attachment 11 for the locations of these USTs, which were located within the areas labeled “former gasoline USTs” and “diesel UST”. This map also shows a kerosene AST to the north of the former building. Under the direction of USI, several rounds of soil and groundwater sampling took place between 2002 and 2005. These investigations included the completion of numerous soil borings and the installation of ten on-site monitoring wells (MW-1 through MW-7 and MW-14 through MW-16) and six off-site monitoring wells. See Attachment 11 for the locations of the monitoring wells. None of the on-site monitoring wells were present during fieldwork for this project. Four of the off-site monitoring wells (MW-10 through MW-13) were installed to the west on Site 4338-5. Two of the off-site monitoring wells (MW-8 and MW-9) were installed to the south on Site 4338-8. Soil and groundwater samples were collected and analyzed for BTEX and MTBE.

In 2005, impacted soil was excavated from the west part of this site under the direction of USI. During these activities, two gasoline USTs were discovered and removed in June 2005. See Attachment 12 for the locations of these USTs, which were both located within the area labeled “550 gal. UST”. Soil samples were collected from the walls and floor of the excavation and analyzed for BTEX and MTBE.

During the most recent round of on-site soil sampling in 2005, and off-site soil sampling in 2003, various BTEX and PNA compounds exceeded Tier 1 residential and migration to Class I groundwater SROs onsite. Benzene exceeded Tier 1 migration to Class I groundwater SROs on Site 4338-5. No compounds were detected above Tier 1 residential SROs in soil samples collected from Site 4338-8. See Attachment 12 for the estimated extent of impacted soil.

During the most recent rounds of groundwater sampling in 2003 and 2005, MTBE and various BTEX compounds exceeded Class I GROs onsite. Benzene exceeded Class I GROs on Site 4338-5. No compounds were detected above Class I GROs in any of the groundwater samples collected from Site 4338-8. See Attachment 13 for the estimated extent of impacted groundwater. The depth to groundwater ranged from 1.22 to 2.09 m (4.00 to 6.85 ft), and the groundwater flow direction was estimated to be toward the north.

USI compared the concentrations of impacted soil and groundwater at this site and Site 4338-5, and determined that the impact at Site 4338-5 was not attributable to the LUST release at this site; for this reason, Attachments 12 and 13 do not show impacts at Site 4338-5, and no Tier 2 investigations were completed for Site 4338-5. USI completed Tier 2 modeling for groundwater migration and for soil migration to groundwater. Impacted groundwater was modeled to extend into the Commercial Street ROW. See Attachment 14 for the modeled extent of soil migration to groundwater impact. No maps were present in IEPA files showing the modeled extent of impacted groundwater. At the time of these LUST investigations, the southeast part of this site was a

separate property (814 E. Poplar Street, as shown on Attachment 11), and the owner of 814 E. Poplar Street denied access to complete further investigations or manage residual impacts at that property.

USI proposed to manage residual impact through the use of AULs, including an HAA with IDOT. HAA #934 was executed on May 2, 2006, with IDOT for Commercial Street and Poplar Street (see Attachment 15, page 9, for the location of the HAA). The agreement area for this HAA adjoins Sites 4338-4, 4338-5, 4338-6, and 4338-8. Based on this information, IEPA issued an NFR letter for IEMA #20020958 on November 30, 2006, with the following AULs: groundwater use restriction; engineering controls in the form of an asphalt barrier; and maintenance of HAA #934 with IDOT (Attachment 15). This NFR letter also indicated that the LUST owner or operator was not required to perform corrective action for the southeast part of this site, formerly 814 E. Poplar Street, due to access denial by that property owner. In March 2021, IEPA completed an inspection regarding the site's compliance with the terms of the NFR letter. The site was in compliance. No further information was available in IEPA files regarding IEPA #1650205069 or IEMA #20020958. The kerosene AST was not present during fieldwork for this project.

In one borehole completed at this site for ISGS #710 in 1996, VOCs were detected. See ISGS #710 for details.

Historic gas stations, equipment dealerships, and transportation companies commonly conducted vehicle repair on the premises. Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented UST(s). Potential hazards associated with photography businesses include VOCs and metals.

No visual evidence of stressed vegetation, pits or depressions, mounding or soil piles, lagoons or surface impoundments, stained soil or pavement, water discoloration, fill, pipelines, drums, chemical containers, solid waste, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gaps were identified at this site:

- The 1900 Sanborn map did not cover this site.
- The 1907 and 1913 Sanborn maps did not cover the east part of this site.
- The status of the USTs depicted on the 1925 and 1947 Sanborn maps is unknown.
- The locations of the former USTs removed in 1988 are unknown.
- The status and locations of any undocumented UST(s) at this site are unknown.

The buildings on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in these buildings.

The following RECs were identified at this site: USTs; former USTs with a documented release; potential UST(s); former ASTs; monitoring wells; former monitoring wells; potential former chemical use; impacted soil and groundwater; VOCs detected in previous ISGS testing; HAA.

The following de minimis conditions were identified at this site: Transformer; potential ACM and lead paint.

Site 4338-10. Commercial building, 835 E. Poplar Street, Harrisburg (southeast corner of Poplar Street and Creighton Street; approximate Poplar Street station 1079+00 RT; Attachment 2). This site is occupied by a commercial building. Occupants included a consignment store, a nail and spa business, and a salon (see address table for listings). No suite number was posted at one of the units. Two pole-mounted transformers were observed, one near the southwest corner of the site and one near the midpoint of the site's frontage along Poplar Street. A gravel mound was observed along the west side of the site.

Plat maps from 1908 through 2003 showed this site as part of a subdivision or undifferentiated Harrisburg. No buildings were depicted on any of the plat maps. The 1900 through 1913 Sanborn maps did not cover this site. On the 1925 and 1947 Sanborn maps, and on the 1938 through 1993 aerial photographs, various residences were present. On the 1998 through 2021 aerial photographs, the current building was present. In the 1916-17 through 1982 city directories, individual names were listed within this site's historic address range, with a truck sales business also listed in 1964 and 1966. In the 1986 through 1998 city directories, no listings were found. In the 2002 and 2008 city directories, various sales and service businesses were listed. No potential hazards were identified in association with any of these former occupants.

Under the name "Sahara Coal Co #03", the address "Sw1/4 Of Sec15 T9S R6East" appears on the Archived SEMS list (USEPA #ILD981197114). A review of regulatory files indicated that this listing pertains to the southwest quarter of T9S, R6E, Section 15 and additional areas to the southwest, including this site and Sites 4338-1, 4338-3, 4338-4, 4338-7, 4338-8, 4338-A, and 4338-C through 4338-K. According to USEPA files, in 1986, Sahara Coal Company Mine #03 was placed on the SEMS list due to potential impacts from the former coal mining activities, and a Potential Hazardous Waste Site Preliminary Assessment was completed under the direction of Ecology & Environment, Inc (E&E). Because E&E had limited information regarding the location of this mine, the SEMS site was established across the entire southwest quarter of T9S, R6E, Section 15; however, the approximate location of the former mine, as mapped by E&E, was only partially located in this section. See Attachment 3 for the location of the SEMS site, which is shown as the blue shaded area, and see Attachment 4 for the approximate location of the mine, which is shown as a hatched circle. According to the Illinois Coal Mine Maps of Saline County and Harrisburg quadrangle, which shows a more detailed extent of the former mine, none of the sites on or adjoining this project were mapped as part of the undermined area for Sahara Coal Company Mine #03. No further information was available in USEPA files regarding USEPA #ILD981197114.

Vehicle dealerships commonly conduct vehicle repair on the premises. Potential hazards associated with vehicle repair facilities include waste oil, lubricants, and transmission fluids; spent solvents; waste paints and thinners; sludge from parts-cleaning tanks; oily sludge from floor sumps; used antifreeze; used lead-acid batteries; and undocumented UST(s).

No visual evidence of stressed vegetation, pits or depressions, lagoons or surface impoundments,

stained soil or pavement, water discoloration, fill, storage tanks (above or underground), pumps or dispensers, protruding pipes, pipelines, drums, chemical containers, monitoring wells, solid waste, non-petroleum chemical use or storage, or unusual or noxious odors was observed at this site during a site inspection by the ISGS on September 19, 2022.

The following data gaps were identified at this site:

- The 1900 through 1913 Sanborn maps did not cover this site.
- The status and locations of any undocumented UST(s) at this site are unknown.

The building on this site may contain friable asbestos-containing materials as a component of floor tiles, wall and pipe insulation, roof materials, patching or painting compounds, ceiling materials, or stove and furnace insulation. Lead paint was banned for residential use in the United States in 1978, but has not been banned for industrial and commercial use. Therefore lead paint may be present in this building.

The following RECs were identified at this site: Potential UST(s); presence on the Archived SEMS list (however, see discussion above); potential former chemical use.

The following de minimis conditions were identified at this site: Mounding; transformers; potential ACM and lead paint.

ADJOINING SITES

The ISGS conducted a search of federal, state, and other environmental databases for reported environmental concerns on sites adjoining the project. For certain resources, the search distances may have been expanded when deemed applicable in the judgment of the project manager. Refer to the Appendix for complete citations for these databases and the date of update of each database. Sites along the project are listed in the preceding section. Sites adjoining the project that do not appear on regulatory databases are not included. The following sites adjoining, but not along, the project were identified.

Federal records

SEMS: NPL, Active, and Archived

Site 4338-A. Uptown Motel, 605 E. Poplar Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the west of Site 4338-1 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-B. Commercial building, 608 E. Poplar Street, Harrisburg. USEPA #ILD980899132. (Archived SEMS site.) Adjoining property to the north of Site 4338-1 and to the west of Site 4338-2 (Attachment 2).

Site 4338-C. Harrisburg Park Apartments, 514-520 E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the south of Site 4338-1 and

to the southwest of Site 4338-3 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-D. Tunnel Hill State Trail, 500-600 blocks of E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the southeast of Site 4338-1, to the south of Site 4338-3, and to the west of Site 4338-4 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-E (1573-1). Commercial building, 105 S. Commercial Street and 617 E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the south of Site 4338-4 and to the southwest of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-F (710-39, 1573-2). Coastal Mart Inc., 100 S. Commercial Street, Harrisburg. USEPA #ILD981197114; IEPA #1650205020 and #1650205052; OSFM #7013025; IEMA #990027 and #20110426. (Archived SEMS site.) Adjoining property to the southeast of Site 4338-4 and to the south of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle. Attachment 16 depicts the monitoring well locations and estimated extent of impacted soil. Attachment 17 depicts the modeled extent of soil migration to groundwater.

Site 4338-G. Commercial building, 713 E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the south of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-H. Recovery Resource Center, 715 E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the south of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-I. Commercial building, 700 block of E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the southeast of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-J. Wilson's Door Company, 770 E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the east of Site 4338-7, to the south of Site 4338-8, and to the southwest of Site 4338-10 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and

Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

Site 4338-K. Residence, 818 E. Church Street, Harrisburg. USEPA #ILD981197114. (Archived SEMS site.) Adjoining property to the southeast of Site 4338-8 and to the south of Site 4338-10 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle.

RCRA sites subject to corrective action (CORRACTS)

None.

RCRA sites – non-CORRACTS TSD

None.

RCRA sites – other

Site 4338-L. Sahara Coal Co. Machine Shop, IL 13 and US 45, Harrisburg. USEPA #ILD025519471; IEPA #1650205002; federal brownfields #125261; OSFM #7023216. Adjoining property to the east of Site 4338-9 and to the northeast of Site 4338-10 (Attachment 2). Attachment 18 depicts the estimated extent of impacted soil and groundwater.

Brownfields

Site 4338-L. Sahara Coal Co. Machine Shop, IL 13 and US 45, Harrisburg. USEPA #ILD025519471; IEPA #1650205002; federal brownfields #125261; OSFM #7023216. Adjoining property to the east of Site 4338-9 and to the northeast of Site 4338-10 (Attachment 2). Attachment 18 depicts the estimated extent of impacted soil and groundwater.

Non-LUST releases

None.

State records

Leaking underground storage tanks (LUST)

Site 4338-F (710-39, 1573-2). Coastal Mart Inc., 100 S. Commercial Street, Harrisburg. USEPA #ILD981197114; IEPA #1650205020 and #1650205052; OSFM #7013025; IEMA #990027 and #20110426. (Archived SEMS site.) Adjoining property to the southeast of Site 4338-4 and to the south of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle. Attachment 16 depicts the monitoring well locations and estimated extent of impacted soil. Attachment 17 depicts the modeled extent of soil migration to groundwater.

Site 4338-M (656-3, 710-33). Sorado Mugge, 105 N. Commercial Street, Harrisburg. IEPA #1650205015; IEMA #920498; OSFM #7023218; HAA #1117. Adjoining property to the north of Site 4338-5 and to the northwest of Site 4338-9 (Attachment 2). Attachments 19 and 20 depict the estimated extent of impacted soil and groundwater, respectively. Attachment 21 depicts the area of HAA #1117.

Registered underground storage tanks (UST)

Site 4338-F (710-39, 1573-2). Coastal Mart Inc., 100 S. Commercial Street, Harrisburg. USEPA #ILD981197114; IEPA #1650205020 and #1650205052; OSFM #7013025; IEMA #990027 and #20110426. (Archived SEMS site.) Adjoining property to the southeast of Site 4338-4 and to the south of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle. Attachment 16 depicts the monitoring well locations and estimated extent of impacted soil. Attachment 17 depicts the modeled extent of soil migration to groundwater.

Site 4338-L. Sahara Coal Co. Machine Shop, IL 13 and US 45, Harrisburg. USEPA #ILD025519471; IEPA #1650205002; federal brownfields #125261; OSFM #7023216. Adjoining property to the east of Site 4338-9 and to the northeast of Site 4338-10 (Attachment 2). Attachment 18 depicts the estimated extent of impacted soil and groundwater.

Site 4338-M (656-3, 710-33). Sorado Mugge, 105 N. Commercial Street, Harrisburg. IEPA #1650205015; IEMA #920498; OSFM #7023218; HAA #1117. Adjoining property to the north of Site 4338-5 and to the northwest of Site 4338-9 (Attachment 2). Attachments 19 and 20 depict the estimated extent of impacted soil and groundwater, respectively. Attachment 21 depicts the area of HAA #1117.

Site 4338-N (710-31). IKT Auto Parts, 100 N. Commercial Street, Harrisburg. IEPA #1650205016; OSFM #7022641; HAA associated with Site 4338-M. Adjoining property to the northeast of Site 4338-5 and to the north of Site 4338-9 (Attachment 2). Attachment 21 depicts the area of HAA #1117.

Site 4338-O. Tison & Hall Concrete, 210 N. Commercial Street, Harrisburg. OSFM #7009609; HAA associated with Site 4338-M. Adjoining property to the north of Site 4338-9 (Attachment 2). Attachment 21 depicts the area of HAA #1117.

IEPA Site Remediation Program

Site 4338-L. Sahara Coal Co. Machine Shop, IL 13 and US 45, Harrisburg. USEPA #ILD025519471; IEPA #1650205002; federal brownfields #125261; OSFM #7023216. Adjoining property to the east of Site 4338-9 and to the northeast of Site 4338-10 (Attachment 2). Attachment 18 depicts the estimated extent of impacted soil and groundwater.

IEPA Bureau of Land Inventory

Site 4338-F (710-39, 1573-2). Coastal Mart Inc., 100 S. Commercial Street, Harrisburg. USEPA #ILD981197114; IEPA #1650205020 and #1650205052; OSFM #7013025; IEMA #990027 and #20110426. (Archived SEMS site.) Adjoining property to the southeast of Site 4338-4 and to the south of Site 4338-7 (Attachment 2). Attachment 3 depicts the location of the SEMS site, which is shown as the blue shaded area, and Attachment 4 depicts the approximate location of the mine, which is shown as a hatched circle. Attachment 16 depicts the monitoring well locations and estimated extent of impacted soil. Attachment 17 depicts the modeled extent of soil migration to groundwater.

Site 4338-L. Sahara Coal Co. Machine Shop, IL 13 and US 45, Harrisburg. USEPA

#ILD025519471; IEPA #1650205002; federal brownfields #125261; OSFM #7023216. Adjoining property to the east of Site 4338-9 and to the northeast of Site 4338-10 (Attachment 2). Attachment 18 depicts the estimated extent of impacted soil and groundwater.

Site 4338-M (656-3, 710-33). Sorado Mugge, 105 N. Commercial Street, Harrisburg. IEPA #1650205015; IEMA #920498; OSFM #7023218; HAA #1117. Adjoining property to the north of Site 4338-5 and to the northwest of Site 4338-9 (Attachment 2). Attachments 19 and 20 depict the estimated extent of impacted soil and groundwater, respectively. Attachment 21 depicts the area of HAA #1117.

Site 4338-N (710-31). IKT Auto Parts, 100 N. Commercial Street, Harrisburg. IEPA #1650205016; OSFM #7022641; HAA associated with Site 4338-M. Adjoining property to the northeast of Site 4338-5 and to the north of Site 4338-9 (Attachment 2). Attachment 21 depicts the area of HAA #1117.

Brownfields

None.

Non-LUST releases

None.

Activity and Use Limitations (including institutional controls, engineered barriers, and Highway Authority Agreements)

Site 4338-M (656-3, 710-33). Sorado Mugge, 105 N. Commercial Street, Harrisburg. IEPA #1650205015; IEMA #920498; OSFM #7023218; HAA #1117. Adjoining property to the north of Site 4338-5 and to the northwest of Site 4338-9 (Attachment 2). Attachments 19 and 20 depict the estimated extent of impacted soil and groundwater, respectively. Attachment 21 depicts the area of HAA #1117.

Site 4338-N (710-31). IKT Auto Parts, 100 N. Commercial Street, Harrisburg. IEPA #1650205016; OSFM #7022641; HAA associated with Site 4338-M. Adjoining property to the northeast of Site 4338-5 and to the north of Site 4338-9 (Attachment 2). Attachment 21 depicts the area of HAA #1117.

Site 4338-O. Tison & Hall Concrete, 210 N. Commercial Street, Harrisburg. OSFM #7009609; HAA associated with Site 4338-M. Adjoining property to the north of Site 4338-9 (Attachment 2). Attachment 21 depicts the area of HAA #1117.

Municipal records

Site 4338-N (710-31). IKT Auto Parts, 100 N. Commercial Street, Harrisburg. IEPA #1650205016; OSFM #7022641; HAA associated with Site 4338-M. Adjoining property to the northeast of Site 4338-5 and to the north of Site 4338-9 (Attachment 2). Attachment 21 depicts the area of HAA #1117.

Tribal records

There are no tribally owned lands in the state of Illinois; therefore, the checking of tribal records is not applicable for this report.

ORPHAN SITES

The following sites that may be in the project area appear on regulatory databases, and regulatory information was reviewed for these sites, but these sites could not be located. Regulatory records did not contain sufficient information to determine the incident location. Regulatory files for orphan sites were only reviewed if, in the judgment of the project manager, the site had a reasonable probability of being in the project area. Other orphan sites, not listed below, may be present in the project area as well.

<u>Name</u>	<u>Address</u>	<u>Data source</u>
Saxton Coal Co New Saxon (AMS)	Surface, Harrisburg	Archived SEMS (USEPA #ILD980900062)
Big Ridge Coal Co (SIA)	Rte 45S, Harrisburg	Archived SEMS (USEPA #ILD000913731)
Equality Mining Co Inc	Rte 45 S, Harrisburg	BOL (IEPA #1650205006)
Jakes Tire Co	Rte 45 S, Harrisburg	BOL (IEPA #1650205028)
Bishops Ser Station	Rt 34 N, Harrisburg	UST (OSFM #7022638)
Harrisburg Pepsi Cola	Hwy 34 North, Harrisburg	UST (OSFM #7020880)
Unknown	Near Harrisburg	IEMA (IEMA #830136)
Ellis Brothers Farm	IL Route 34, about 150 yards, Harrisburg	ERNS (ERNS #1250490); IEMA (IEMA #H-2019-0667)

CONCLUSIONS

- (1) RECs were identified at the following sites along the project:
- Site 4338-1: Pizza Hut. Potential UST(s); presence on the Archived SEMS list; potential former chemical use; transformer; potential ACM and lead paint.
 - Site 4338-2: Hardee's. Potential UST(s); presence on the Archived SEMS list; evidence of chemical use; potential ACM and lead paint.
 - Site 4338-3: Tunnel Hill State Trail. Presence on the Archived SEMS list.
 - Site 4338-4: CVS Pharmacy. Former USTs with a documented release; potential UST(s); presence on the Archived SEMS list; former monitoring wells; evidence of chemical use; VOCs; HAA; transformer; potential ACM and lead paint.
 - Site 4338-5: Commercial building. Potential UST(s); former monitoring wells; potential former chemical use; impacted soil and groundwater; VOCs; HAA; potential ACM and lead paint.
 - Site 4338-6: ROW. Potential UST; HAA.
 - Site 4338-7: Commercial building. Potential UST(s); presence on the Archived SEMS list; protruding pipe; former monitoring wells; potential former chemical use; impacted soil; potentially impacted groundwater; VOCs; transformers; potential ACM and lead paint.
 - Site 4338-8: Walgreens. Former USTs with a documented release; potential UST(s); presence on the Archived SEMS list; former monitoring wells; evidence of former chemical use; impacted soil and groundwater; VOCs; HAA; potential ACM and lead paint.
 - Site 4338-9: Phillips 66 gasoline station. USTs; former USTs with a documented release; potential UST(s); former ASTs; monitoring wells; former monitoring wells; potential former chemical use; impacted soil and groundwater; VOCs; HAA; transformer; potential ACM and lead paint.
 - Site 4338-10: Commercial building. Potential UST(s); presence on the Archived SEMS list; potential former chemical use; mounding; transformers; potential ACM and lead paint.
- (2) No sites with de minimis conditions only were identified for this project.
- (3) The following properties were identified that appear on environmental databases and that are adjoining, but not along, the project:
- Site 4338-A: Uptown Motel. Archived SEMS.
 - Site 4338-B: Commercial building. Archived SEMS.
 - Site 4338-C: Harrisburg Park Apartments. Archived SEMS.
 - Site 4338-D: Tunnel Hill State Trail. Archived SEMS.
 - Site 4338-E: Commercial building. Archived SEMS.
 - Site 4338-F: Coastal Mart Inc. Archived SEMS, LUST, UST, BOL, IEMA.
 - Site 4338-G: Commercial building. Archived SEMS.
 - Site 4338-H: Recovery Resource Center. Archived SEMS.
 - Site 4338-I: Commercial building. Archived SEMS.
 - Site 4338-J: Wilson's Door Company. Archived SEMS.
 - Site 4338-K: Residence. Archived SEMS.
 - Site 4338-L: Sahara Coal Co. Machine Shop. RCRA, federal brownfields, UST, SRP, BOL.
 - Site 4338-M: Sorado Mugge. LUST, UST, BOL, IEMA, HAA, AULs.
 - Site 4338-N: IKT Auto Parts. UST, BOL, HAA, AUL, municipal.
 - Site 4338-O: Tison & Hall Concrete. UST, HAA, AUL.

- (4) Illinois Coal Mine Maps of Saline County and the Harrisburg quadrangle indicate that coal mining has taken place in the area. However, these maps indicate that the project area itself is not undermined. Mined-out area maps indicate that the nearest former mine is located east of the project area. See text for details.
- (5) According to the U.S. Geological Survey, the project is located in an area where the peak horizontal ground accelerations on bedrock (expressed as a percentage of the gravitational acceleration, g) that have a 2% probability of being exceeded in 50 years are between 20% and 80% g. These accelerations on bedrock may be modified by the soils and be greater on the ground surface.
- (6) For the purposes of this report, the following are considered to be de minimis conditions:
 - Normal use of lead-based paint on exteriors and interiors of buildings and structures.
 - Use of asbestos-containing materials in building construction.
 - Transformers in normal use, unless the transformers were observed to be leaking, appear on an environmental regulatory list, or were otherwise determined to pose a hazard not related to normal use.
 - Agricultural use of pesticides and herbicides. In addition, most land in Illinois was under agricultural use prior to its conversion to residential, industrial, or commercial development. Pesticides, both regulated and otherwise, may have been used throughout the project area at any time. Unless specifically discussed elsewhere in this report, no information regarding past pesticide use that would be subject to enforcement action was located for this project, and such use is considered a de minimis condition.

ENDORSEMENTS



Project Manager: _____
Stephanie Wagner

Date: October 6, 2022



Approved: _____
Tiffany Vlahopoulos

Date: October 6, 2022

ADDRESS LISTINGS

The following addresses along the project were evaluated for this project. Addresses of sites, if any, adjoining but not along the project are not listed here; see text for discussion of these sites.

Property name and address	ISGS site #	Parcel #
Pizza Hut 509 E. Poplar Street, Harrisburg	4338-1	NA
Hardee's 700 E. Poplar Street, Harrisburg	4338-2	NA
Tunnel Hill State Trail 500-700 blocks of E. Poplar Street, Harrisburg	4338-3	NA
CVS Pharmacy 1 S. Commercial Street, Harrisburg	4338-4	NA
Commercial building 3 N. Commercial Street, Harrisburg	4338-5	NA
ROW 700-800 blocks of E. Poplar Street, Harrisburg	4338-6	NA
Subway 12 S. Commercial Street, Harrisburg	4338-7	NA
Vacant unit 12 S. Commercial Street, Harrisburg	4338-7	NA
Walgreens 4 S. Commercial Street, Harrisburg	4338-8	NA
Phillips 66 gasoline station 44 N. Commercial Street, Harrisburg	4338-9	NA
Willow Tree Consignments 835 E. Poplar Street, Suite 1, Harrisburg	4338-10	NA
Fancy Nails & Spa 835 E. Poplar Street, Suite 2, Harrisburg	4338-10	NA
Fringe Salon 835 E. Poplar Street, Harrisburg	4338-10	NA

INFORMATION SOURCES

Website addresses listed below were accurate and active as of the date viewed or cited in the Appendix; however, websites change frequently and web addresses may be different in the future or may cease to exist entirely.

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Illinois Department of Transportation Site Assessment Tracking System: <https://isats.dot.illinois.gov/Default.asp>.

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- Illinois Environmental Protection Agency, Bureau of Land (September 28, 2022). BOL database: <http://epadata.epa.state.il.us/land/inventory/>.
- Illinois Environmental Protection Agency, Bureau of Land (February 11, 2010). Brownfields database: <http://epadata.epa.state.il.us/land/brownfields>.
- Illinois Environmental Protection Agency, Bureau of Land (September 28, 2022). Groundwater ordinance: <http://epadata.epa.state.il.us/land/gwordinance/municipality.asp>.
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- Illinois Environmental Protection Agency, Bureau of Water (2022). Illinois Integrated Water Quality Report and Section 303(d) List: <https://www2.illinois.gov/epa/topics/water-quality/watershed-management/tmdls/Pages/303d-list.aspx>.
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APPENDIX

ISGS PRELIMINARY ENVIRONMENTAL SITE ASSESSMENT CHECKLIST

IDOT: C99-022-20
 City: Harrisburg
 County: Saline
 Location Coordinates: T9S, R6E, Section 15
 ISGS Lead: S. Wagner

ISGS: 4338

Task	Status*	Date	By
Original Material Copied	MF	04/26/22	MRC
<i>IDOT Project Location Database - (All other projects/IDOT sites in the vicinity of the project)</i>			
▶ Other Preliminary Environmental Site Assessments	MF	09/01/22	SAW
▶ Preliminary Site Investigations/Phase II Reports	MF	09/01/22	SAW
▶ Maintenance Facilities	NF	09/01/22	SAW
▶ Permit-Access Agreements	MF	09/01/22	SAW
▶ Draft Highway Authority Agreements/Highway Authority Agreements	MF	09/01/22	SAW
▶ Miscellaneous Sites	NF	09/01/22	SAW
<i>Local Collections</i>			
▶ County	MF	09/01/22	SAW
▶ City	MF	09/01/22	SAW
<i>Geologic Information</i>			
▶ ISGS Stack-Unit Map (GIS)	MF	09/01/22	SAW
▶ ISGS Glacial Drift in Illinois (GIS)	MF	09/01/22	SAW
▶ ISGS Bedrock Geology of Illinois (GIS)	MF	09/01/22	SAW
▶ USDA NRCS Soil Survey Maps	MF	09/01/22	SAW
▶ USDA NRCS Hydric Soils	MF	09/01/22	SAW
▶ USDA NRCS Prime Farmland Soils	MF	09/01/22	SAW
<i>Hydrogeologic Information (non-CE projects only)</i>			
▶ IEPA Restricted Status List	NA	09/01/22	SAW
▶ IEPA SWAP-IL Public Water Supplies	NA	09/01/22	SAW
▶ ISGS Wells (GIS)	NA	09/01/22	SAW
▶ ISWS Public Water Supply Surface Water Intakes in Illinois (GIS)	NA	09/01/22	SAW
▶ Potential for Aquifer Contamination Map	NA	09/01/22	SAW
▶ Potential for Aquifer Recharge Map	NA	09/01/22	SAW
<i>Hydrogeologic Information (all projects)</i>			
▶ IEPA SWAP Wellhead Protection	NF	09/01/22	SAW
▶ IEPA SWAP Fact Sheets /IEPA Well Site Survey Reports	NF	09/01/22	SAW
▶ Sole Source Aquifer Protection Program	NF	09/01/22	SAW
<i>Historical Records</i>			
▶ Aerial Photographs	MF	09/08/22	SAW
▶ USGS Topographic Maps	MF	09/08/22	SAW
▶ Plat Maps	MF	09/08/22	SAW
▶ Sanborn Fire Insurance Maps: Chadwyck-Healey Inc.	MF	09/08/22	SAW
▶ Sanborn Fire Insurance Maps: University Publications of America	NF	09/08/22	SAW
▶ Sanborn Fire Insurance Maps: Rascher Publishing Company	NA	09/08/22	SAW
▶ Sanborn Fire Insurance Maps: Greeley-Carlson	NA	09/08/22	SAW
▶ City Directories	MF	09/20/22	SAW
▶ Industrial Directories (optional)	NA	09/20/22	SAW
▶ IEPA-ISGS Summary of Former Manufactured Gas Plant Sites (GIS)	NF	09/01/22	SAW
▶ ISGS Draft SEMS Site Coverage (GIS)	NF	09/01/22	SAW
▶ ISGS Draft LUST Site Coverage (GIS)	MF	09/01/22	SAW
▶ ISGS Draft Landfill Site Coverage (GIS)	NF	09/01/22	SAW

Task	Status*	Date	By
<i>Federal Records</i>			
▸ SEMS (NPL, Active, Archived)	MF	09/28/22	SAW
▸ Mercury Site Lists	NF	09/01/22	SAW
▸ RCRA CORRACTS	NF	09/28/22	SAW
▸ RCRA Non-CORRACTS TSD Facilities	NF	09/28/22	SAW
▸ RCRA (Other)	MF	09/28/22	SAW
▸ ERNS	MF	09/28/22	SAW
▸ Brownfields Sites	MF	09/28/22	SAW
▸ Toxics Release Inventory	NF	09/01/22	SAW
▸ SSTS	NF	09/28/22	SAW
▸ PCB Transformer Registration Database	NF	09/01/22	SAW
<i>USEPA Information Request</i>			
▸ Sent	MF	08/23/22	SAW
▸ Received	MF	09/07/22	SAW
<i>State Records</i>			
▸ IEPA Brownfields	NF	09/02/22	SAW
▸ IEPA Bureau of Land Inventory	MF	09/28/22	SAW
▸ IEPA Illinois Water Quality Reports	NA	09/02/22	SAW
▸ IEPA LUST	MF	09/28/22	SAW
▸ IEPA Site Remediation Program	MF	09/28/22	SAW
▸ OSFM UST	MF	09/28/22	SAW
▸ IEMA non-LUST Incidents/IEPA OER lists	MF	09/28/22	SAW
▸ Activity and Use Limitations (AULs)	MF	09/28/22	SAW
▸ Groundwater Ordinances	NF	09/28/22	SAW
▸ Cook County Bridge List	NA	09/01/22	SAW
▸ IDOT Bridge List	NA	09/01/22	SAW
▸ Landfills (GIS)	NF	09/01/22	SAW
▸ State Underground Injection Control Inventory	NF	09/01/22	SAW
<i>IEPA BOL Information Request</i>			
▸ Sent	MF	09/02/22	SAW
	MF	09/06/22	SAW
▸ Received	MF	09/06/22	TVV
	MF	09/13/22	BLH
	MF	09/22/22	LMQ
<i>OSFM Information Request</i>			
▸ Sent	MF	09/06/22	SAW
▸ Received	MF	09/06/22	SAW
<i>Local Records</i>			
▸ Municipal Records (optional)	MF	09/13/22	SAW
	MF	09/26/22	SAW
<i>Mining Maps and Publications</i>			
▸ ISGS Quadrangle/County On-Line Coal Maps and Directories	MF	09/01/22	SAW
▸ ISGS Non-Coal Underground Mines	NF	09/01/22	SAW
▸ Lead Mining	NA	09/01/22	SAW
<i>Oil and Gas Information</i>			
▸ ISGS Oil and Gas Fields/Oil Wells (ILOIL GIS)	NF	09/01/22	SAW
▸ USDOT OPS Pipeline Integrity Management Mapping Application	NF	09/01/22	SAW
<i>Natural Hazards</i>			
▸ USGS Seismic Risk Map	MF	09/01/22	SAW
▸ ISGS Landslide Inventory (GIS)	NF	09/01/22	SAW
▸ Karst Terrains and Carbonate Rocks of Illinois Maps	NF	09/01/22	SAW

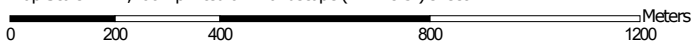
* MF = Material found within search radius; NF = Nothing found within search radius; NA = Not applicable

Date of Records Review Completion: September 28, 2022

Soil Map—Saline County, Illinois




Map Scale: 1:14,400 if printed on A landscape (11" x 8.5") sheet.




Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)




















Soils







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features


Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Saline County, Illinois
 Survey Area Data: Version 17, Aug 31, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 11, 2012—Mar 9, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
122B	Colp silt loam, 2 to 5 percent slopes	9.9	1.3%
173A	McGary silt loam, 0 to 2 percent slope	96.2	12.7%
214B	Hosmer silt loam, 2 to 5 percent slopes	44.5	5.9%
214C2	Hosmer silt loam, 5 to 10 percent slopes, eroded	59.0	7.8%
214C3	Hosmer silt loam, 5 to 10 percent slopes, severely eroded	23.0	3.0%
337	Creal silt loam	76.1	10.1%
803C	Orthents, 5 to 15 percent slopes	112.6	14.9%
3071A	Darwin silty clay, 0 to 2 percent slopes, frequently flooded	158.4	21.0%
3108A	Bonnie silt loam, 0 to 2 percent slopes, frequently flooded	13.8	1.8%
7787A	Banlic silt loam, 0 to 2 percent slopes, rarely flooded	1.5	0.2%
8524A	Zipp silty clay loam, 0 to 2 percent slopes, occasionally flooded	159.6	21.2%
8524A+	Zipp silt loam, 0 to 2 percent slopes, occasionally flooded, overwash	0.0	0.0%
Totals for Area of Interest		754.7	100.0%

LOCATION BONNIE

IL+IN KY OH

Established Series

Rev. TJE-JCD-BGN-RDC-BCF-GRS

07/2009

BONNIE SERIES

The Bonnie series consists of very deep, poorly drained and very poorly drained soils formed in silty alluvium on flood plains. Slope ranges from 0 to 2 percent. Mean annual precipitation is about 1092 mm (43 inches) and mean annual air temperature is about 14 degrees C (57 degrees F).

TAXONOMIC CLASS: Fine-silty, mixed, active, acid, mesic Typic Fluvaquents

TYPICAL PEDON: Bonnie silt loam - on a nearly level flood plain in a cultivated field at an elevation of about 128 meters (419 feet) above MSL. (Colors are for moist soil unless otherwise stated.)

Ap1--0 to 13 cm (0 to 5 inches); brown (10YR 5/3) silt loam; weak fine granular structure; friable; common fine and medium roots throughout; common fine spherical extremely weakly cemented iron-manganese accumulations; slightly acid; abrupt smooth boundary.

Ap2--13 to 25 cm (5 to 10 inches); light brownish gray (10YR 6/2) and dark grayish brown (10YR 4/2) silt loam; weak medium angular blocky structure parting to weak medium platy; friable; common fine and medium roots throughout; common fine and medium faint brown (10YR 4/3) masses of oxidized iron and manganese; common fine spherical masses of oxidized iron; moderately acid; abrupt smooth boundary. [Combined thickness of the Ap horizons is (6 to 10 inches).]

Cg1--25 to 69 cm (10 to 27 inches); gray (10YR 6/1) and light gray (10YR 7/1) silt loam; massive; friable; few very fine roots throughout; common fine and medium prominent yellowish brown (10YR 5/4 and 5/6) masses of oxidized iron and common medium faint grayish brown (10YR 5/2) iron depletions; common fine spherical extremely weakly cemented iron-manganese accumulations; very strongly acid; clear smooth boundary.

Cg2--69 to 203 cm (27 to 80 inches); gray (10YR 6/1) silt loam; massive; friable; common fine and medium prominent yellowish brown (10YR 5/4 and 5/6) masses of oxidized iron; common fine spherical extremely weakly cemented iron-manganese accumulations; very strongly acid.

TYPE LOCATION: Franklin County, Illinois; about 4 miles northwest of Macedonia; 2,660 feet north and 1,920 feet east of the southwest corner of sec. 21, T 5 S., R. 4 E.; USGS Ewing, Illinois topographic quadrangle; lat. 38 degrees 04 minutes 32 seconds N. and long. 88 degrees 46 minutes 17 seconds W.; UTM Zone 16, 344630 Easting, 4215680 Northing; NAD 83.

RANGE IN CHARACTERISTICS:

Particle-size control section: Averages 18 to 27 percent clay and less than 10 percent sand

Other characteristics: An irregular decrease in organic carbon with increasing depth, but in some pedons it is barely detectable

Ap or A horizon:

Hue: 10YR or 2.5Y

Value: 3 to 6

Chroma: 1 to 3

Texture: Commonly silt loam and less commonly silty clay loam

Reaction: Very strongly acid to neutral

Cg horizon to depth of 102 cm (40 inches):

Hue: 10YR, 2.5Y, 5Y, or is neutral

Value: 5 to 7

Chroma: 0 to 2

Texture: Silt loam

Reaction: Strongly acid or very strongly acid

Cg horizon below a depth of 102 cm (40 inches):

Hue: 10YR, 2.5Y, 5Y, or is neutral

Value: 5 to 7

Chroma: 0 to 2

Texture: Silt loam or silty clay loam

Reaction: Very strongly acid to slightly alkaline

COMPETING SERIES: There are no competing series in this family. The Piopolis series is in a closely related family. Piopolis soils average more than 27 percent clay in the particle-size control section.

GEOGRAPHIC SETTING: Bonnie soils are on nearly level flood plains and, in some places, on flood-plain steps. Slope gradient ranges from 0 to 2 percent. They formed in light colored, recently deposited, acid, silty alluvium. Mean annual air temperature ranges from 12 to 14 degrees C (53 to 57 degrees F.), mean annual precipitation ranges from 965 to 1168 mm (38 to 46 inches), frost free period ranges from 170 to 210 days, and elevation ranges from 104 to 213 meters (340 to 700 feet) above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Belknap, Birds, Petrolia, Piopolis, and Racoon soils. The somewhat poorly drained Belknap soils are on adjacent slightly higher parts of the flood plains. The poorly drained Birds and Petrolia soils are on similar positions, but formed in alluvium that is less acid. The poorly drained and very poorly drained Piopolis soils are in similar parts of flood plains nearby and contain more clay throughout. The poorly drained Racoon soils are on adjacent or nearby stream terraces. In Indiana, Bonnie soils are associated with the somewhat poorly drained Stendal and moderately well drained Steff soils. These soils are on higher lying parts of flood plains.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Poorly drained and very poorly drained. Saturated hydraulic conductivity is moderately high (1.41 to 4.23 micrometers/sec). Permeability is moderately slow (0.2 to 0.6 inches per hour). Flooding from stream overflow ranges from frequent to rare periods, and commonly occurs in the winter and spring. In the undrained condition, these soils have an intermittent apparent water

table from as much as 2.0 feet above the surface to 0.5 foot below the surface, typically between October and July in most years. Where drained, an intermittent water table is within 1 foot of the surface, typically between December and May in most years. The potential for surface water runoff is low or medium.

USE AND VEGETATION: Most areas are used to grow corn and soybeans. Some areas are in woodland, or are used for pasture. Native vegetation is hardwood forest.

DISTRIBUTION AND EXTENT: Southern Illinois, southern Indiana, Kentucky and Ohio. Bonnie soils are of large extent (more than 300,000 acres correlated). They are mainly in flood plains within MLRA's 113, 114A, 114B, 115A, 115B, 120A, 120B, 122 124 and 125.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana

SERIES ESTABLISHED: Washington County, Illinois, 1927.

REMARKS: In the update of the Wayne County, Illinois Soil Survey it was determined that the previous type location classified as Fine-silty, mixed, active, acid, mesic Sodic Vermaquepts. Thus, the type location is being moved until the series can be evaluated throughout the full extent of the series. In some areas these soils have been described as having weak or moderate blocky structure through the middle part of the control section. These soils will be evaluated during MLRA updating to determine if placement in the order of Entisols is correct or a new series in the order of Inceptisols is needed.

Diagnostic horizons and features recognized in this pedon are:
Ochric epipedon - the zone from the surface to a depth of 25 cm (10 inches) (Ap1 and Ap2 horizons); irregular decrease in organic carbon; aquic conditions - chroma 1 or 2 matrix and redox accumulations in all layers below the Ap horizon.

ADDITIONAL DATA: Characterization data is on file at the East Central Glaciated Regional Office (MLRA NO. 11) at Indianapolis, and at the Illinois State Office.

National Cooperative Soil Survey
U.S.A.

LOCATION COLP

IL+KY

Established Series

Rev. JWS-RAL-GRS

5/98

COLP SERIES

The Colp series consists of very deep, moderately well drained, slowly permeable soils on terraces along major streams. They formed in fine or moderately fine textured lacustrine sediments or alluvium and have a thin surface mantle of loess or other silty material. Slopes range from 0 to 25 percent. Mean annual temperature is about 55 degrees F, and mean annual precipitation is about 40 inches.

TAXONOMIC CLASS: Fine, smectitic, mesic Aquertic Chromic Hapludalfs

TYPICAL PEDON: Colp silt loam - on a gently sloping convex tread of a lacustrine terrace in a cultivated field at an elevation of about 420 feet above mean sea level. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 8 inches; brown (10YR 4/3) silt loam, pale brown (10YR 6/3) dry; moderate fine granular structure; friable; common very fine roots; few fine continuous tubular pores; few fine and medium rounded black (5YR 2.5/1) iron-manganese nodules with strong boundaries; 21 percent clay; neutral; abrupt smooth boundary. (4 to 10 inches thick)

E--8 to 12 inches; light brownish gray (10YR 6/2) silt loam, white (10YR 8/2) dry; weak fine subangular blocky structure parting to moderate fine granular; friable; few very fine roots; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine and medium rounded black (5YR 2.5/1) iron-manganese nodules with sharp boundaries; 14 percent clay; moderately acid; abrupt smooth boundary. (3 to 10 inches thick)

2Bt1--12 to 17 inches; yellowish brown (10YR 5/4) silty clay; weak fine prismatic structure parting to moderate fine angular blocky; firm; few very fine roots; common prominent very pale brown (10YR 8/2, dry) clay depletions on faces of peds; many faint brown (10YR 5/3) clay films on faces of peds; few fine distinct yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few fine and medium rounded black (5YR 2.5/1) iron-manganese nodules with sharp boundaries; 46 percent clay; very strongly acid; clear smooth boundary.

2Bt2--17 to 23 inches; yellowish brown (10YR 5/4) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; very firm; few very fine roots; many faint brown (10YR 5/3) clay films on faces of peds; few fine distinct light brownish gray (10YR 6/2) iron depletions; common fine and medium rounded black (5YR 2.5/1) iron-manganese nodules with sharp boundaries; 48 percent clay; very strongly acid; gradual smooth boundary.

2Bt3--23 to 30 inches; yellowish brown (10YR 5/4) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; very firm; few very fine roots; common faint brown (10YR 5/3) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions and few fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium rounded black (5YR 2.5/1) iron-manganese nodules with sharp boundaries; 47 percent clay; very strongly acid; gradual smooth boundary.

2Bt4--30 to 37 inches; yellowish brown (10YR 5/4) clay; moderate medium prismatic structure parting to moderate medium angular blocky; very firm; few very fine roots; common faint brown (10YR 5/3) clay films on faces of peds; common fine distinct light brownish gray (10YR 6/2) iron depletions and common fine prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium rounded dark reddish brown (5YR 2.5/2) iron-manganese nodules with clear yellowish red (5YR 4/6) boundaries; 61 percent clay; very strongly acid; clear smooth boundary.

2Bt5--37 to 48 inches; brown (10YR 5/3) silty clay loam; moderate medium prismatic structure parting to moderate medium angular blocky; firm; few very fine roots; common distinct grayish brown (10YR 5/2) clay films on faces of peds; few prominent black (N 2.5/0) iron-manganese coatings lining root channels; common medium faint light brownish gray (10YR 6/2) iron depletions and many medium prominent strong brown (7.5 5/6) masses of iron accumulation in the matrix; common fine and medium rounded dark reddish brown (5YR 2.5/2) iron-manganese nodules with clear yellowish red (5YR 4/6) boundaries; 37 percent clay; very strongly acid; abrupt smooth boundary.

2Btg1--48 to 55 inches; light brownish gray (2.5Y 6/2) silty clay loam; weak medium prismatic structure parting to moderate medium angular blocky; friable; few very fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds and lining root channels; few prominent black (N 2.5/0) iron-manganese coats lining root channels; common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; common fine and medium irregular black (5YR 2.5/1) iron-manganese nodules with clear yellowish red (5YR 4/6) boundaries on vertical faces of peds; 36 percent clay; moderately acid; abrupt smooth boundary.

2Btg2--55 to 70 inches; light brownish gray (2.5Y 6/2) silty clay; weak medium prismatic structure parting to moderate medium angular blocky; firm; few very fine roots; many distinct grayish brown (10YR 5/2) clay films on faces of peds and lining root channels; common fine and medium prominent strong brown (7.5YR 5/6) masses of iron accumulation in the matrix; many fine and medium irregular black (5YR 2.5/1) iron-manganese nodules with clear yellowish red (5YR 4/6) boundaries on vertical faces of peds; 43 percent clay; moderately acid; clear smooth boundary.

2Bctkg--70 to 80 inches; grayish brown (2.5YR 5/2) silty clay; weak medium prismatic structure parting to moderate fine and medium angular blocky; very firm; common distinct dark grayish brown (2.5Y 4/2) clay

films on faces of peds; common prominent reddish brown (5YR 4/4) iron-manganese coatings lining channels and pores; few fine and medium irregular black (5YR 2.5/1) iron-manganese nodules with clear yellowish red (5YR 4/6) boundaries; common fine and medium irregular white (10YR 8/1) carbonate nodules with sharp boundaries; slightly effervescent in the matrix; slightly alkaline.

TYPE LOCATION: Monroe County, Illinois; about 4 miles south and 2 miles east of Hecker; 1,095 feet east and 110 feet north of the center of sec. 27, T. 3 S., R. 8 W.; USGS Red Bud, IL. topographic quadrangle; lat. 38 degrees 14 minutes 38 seconds N. and long. 89 degrees 58 minutes 2 seconds W.

RANGE IN CHARACTERISTICS: The depth to the base of the argillic is more than 50 inches and the solum depth is 50 to more than 80 inches. Depth to free carbonates typically is more than 50 inches, but is as shallow as 42 inches in some pedons. Depth to the 2 material ranges from 0 to 20 inches. The particle-size control section averages between 35 and 50 percent clay and less than 15 percent sand.

The upper part of the series control section (A or Ap horizon) has hue of 10YR, value of 4 or 5 (6 or 7 dry), and chroma of 1 to 4. Some pedons have an A horizon as much as 5 inches in thickness with color value of 3. The Ap or A horizon typically is silt loam, but some eroded areas are silty clay loam. Sand content is less than 15 percent. Reaction is strongly acid or moderately acid except pedons that have been limed range to neutral.

The second part of the series control section (E horizon) has hue of 10YR, value of 5 or 6 (6 through 8 dry), and chroma of 2 to 4. Clay content averages 18 to 25 percent and sand content is less than 15 percent. Reaction is strongly acid or moderately acid, but pedons that have been limed range to neutral. Some pedons that are eroded or cultivated deeply do not have an E horizon.

Some pedons have a BE horizon as much as 8 inches in thickness that is silt loam or silty clay loam.

The third part of the series control section (2Bt horizon) typically has hue of 10YR, and less commonly 7.5YR or 2.5Y; value of 4 to 6; and chroma of 3 to 6. Some pedons have thin strata or redoximorphic concentrations that have hue of 5YR or 2.5YR. The 2Bt horizon typically is silty clay loam or silty clay but some subhorizons are clay. Reaction is very strongly acid to neutral, and ranges to slightly alkaline in the lower part. Some pedons contain carbonates.

The fourth part of the series control section (2Btg horizon) has hue of 10YR, 2.5Y, or 5Y, value of 4 to 6, and chroma of 1 or 2. Some pedons have variegated colors with chroma of 3 or 4 and some pedons have thin subhorizons or redoximorphic concentrations that have hue of 2.5YR, 5YR, or 7.5YR. The 2Btg horizon has textures in the same range as stated for the 2Bt horizon. Reaction is very strongly acid to neutral, and ranges to slightly alkaline in the lower part. Some pedons contain carbonates.

The lower part of the series control section has properties as follows: The 2BCtkg, 2BC, or 2BCg horizon, where present, has colors and textures similar to those previously stated for the 2Bt and 2Btg horizon. Reaction typically ranges from very strongly acid to neutral, and less commonly ranges to moderately alkaline. In some pedons it is stratified with layers of silt loam or fine sandy loam. Carbonates are common, but are not everywhere present. The 2C or 2Cg horizon, where present, has hue of 7.5YR, 10YR or 2.5Y, value of 4 to 6, and chroma of 1 to 8 and has redoximorphic features. It typically is silt clay loam or silty clay and is stratified in some pedons with layers of silt loam or fine sandy loam. Reaction ranges from strongly acid to moderately alkaline. Carbonates are common, but are not everywhere present.

COMPETING SERIES: These are the Galland, Gorin, Keswick, Marion and Weller series. Galland soils formed in alluvium that contains a paleosol on high structural benches; they contain more than 15 percent sand throughout the soil and have redder colors dominating the matrix or the mottles in some part of the Bt horizon. Gorin soils have more than 30 inches of loess and contain more sand in the lower part of the solum. Keswick soils formed mostly in glacial till that contains a paleosol and have hue of 5YR or redder dominating the matrix or the mottles in the Bt horizon. Marion soils have less than 35 percent clay in some horizon in the lower part of the series control section. Weller soils formed entirely in loess and contain less than 5 percent sand throughout and less than 35 percent clay in the lower part of the solum.

GEOGRAPHIC SETTING: Colp soils are on convex treads and sloping risers of lacustrine terraces and lake plains; mainly along major tributaries of the Mississippi River. Some areas are subject to rare or occasional flooding during high flood events. Slope ranges from 0 to 25 percent. Colp soils formed in the dominantly clayey lacustrine sediments and have a mantle of loess or other silty material less than 20 inches in thickness. The lacustrine sediments in and underlying the Colp series are weathered to depths of 10 or 12 feet. Below 80 inches the stratified lacustrine sediments have coarse structure and widely-spaced cleavage planes, slickensides and pressure faces, clay films on faces of structural units and in channels, segregation of iron-manganese oxides, accumulation of secondary carbonates, and the presence of dark strata. Mean annual temperature is 54 to 57 degrees F., mean annual precipitation is 36 to 44 inches, frost-free period is 180 to 210 days, and elevation is 340 to 450 feet above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Geff, Hurst, Okaw, Ridgway, Redbud, and Wagner series. The somewhat poorly drained Hurst soils are on less sloping parts of the same landform. The somewhat poorly drained Geff soils and the well drained Ridgway soils contain less clay and more sand in the control section and are on high flood plains and stream terraces nearby. The poorly drained Okaw and Wagner soils are on nearly level or slightly depressional parts of the same landform. Okaw and Hurst soils form a hydrosequence with Colp soils in similar materials. The moderately well drained Redbud soils occur on loess-covered lacustrine terraces nearby.

DRAINAGE AND PERMEABILITY: Moderately well drained. The potential for surface water runoff is medium on gently sloping areas and high on sloping and moderately steep areas. Permeability is slow. Depth to an intermittent perched high water table is 1.0 to 2.5 feet from December to April in most years.

USE AND VEGETATION: Most areas that are cleared are cultivated. Corn, soybeans, and wheat are the principal crops. Other areas are used for pasture or woodland. Native vegetation is mixed hardwood forest.

DISTRIBUTION AND EXTENT: Colp soils are in southern Illinois and northwest Kentucky. The extent is moderate, mainly in MLRA(s) 113, 114, and 115.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana

SERIES ESTABLISHED: Williamson County, Illinois, 1952.

REMARKS: The type location was moved with the previous update. The old location was in an exposure of a borrow pit and did not have an Ap horizon. The present type location was resampled and described to 80 inches for this revision.

Diagnostic horizons and features in this pedon include:

Ochric epipedon - from the surface of the soil to a depth of 12 inches (Ap and E horizons).

Argillic horizon - from a depth of approximately 12 inches to 70 inches (2Bt1, 2Bt2, 2Bt3, 2Bt4, 2Bt5, 2Btg1, and 2Btg2 horizons).

Redoximorphic features - from the surface of the soil to a depth of 80 inches, including iron depletions below a depth of 17 inches.

ADDITIONAL DATA: Data for the typical pedon (81IL-133-006) and data from other pedons in Randolph and Perry Counties are on file at the NRCS state office in Champaign, Illinois.

National Cooperative Soil Survey
U.S.A.

LOCATION CREAL

IL+IA

Established Series

Rev. DLW-JCD

07/2011

CREAL SERIES

The Creal series consists of very deep, somewhat poorly drained soils that formed in a mixture of loess and silty local alluvium on uplands and terraces. Slope ranges from 0 to 7 percent. Mean annual precipitation is about 1067 mm (42 inches), and mean annual temperature is about 13 degrees C (55 degrees F).

TAXONOMIC CLASS: Fine-silty, mixed, superactive, mesic Aeric Endoaqualfs

TYPICAL PEDON: Creal silt loam, on a nearly level area in a cultivated field at an elevation of about 125 meters (412 feet) above mean sea level (Colors are for moist soil unless otherwise stated.)

Ap--0 to 22 cm (0 to 9 inches); dark grayish brown (10YR 4/2) silt loam, pale brown (10YR 6/3) dry; moderate medium granular structure; friable; slightly acid; abrupt smooth boundary. [15 to 25 cm (6 to 10 inches) thick]

E--22 to 46 cm (9 to 18 inches); brown (10YR 5/3) silt loam; weak thick platy structure; friable; few thin dark grayish brown (10YR 4/2) organic coatings on faces of peds; few medium distinct yellowish brown (10YR 5/6) masses of oxidized iron; common medium faint dark yellowish brown (10YR 4/4) iron and manganese masses; few fine distinct black (10YR 2/1) iron-manganese nodules; moderately acid; clear smooth boundary.

Eg--46 to 69 cm (18 to 27 inches); light brownish gray (10YR 6/2) silt loam; weak thick platy structure; friable; common medium vesicular pores; common medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; common coarse prominent black (10YR 2/1) iron-manganese nodules; very strongly acid; clear smooth boundary. [Combined thickness of the E and Eg horizon is 36 to 66 cm (14 to 26 inches).]

Btg1--69 to 81 cm (27 to 32 inches); light brownish gray (10YR 6/2) silty clay loam; moderate medium angular and subangular blocky structure; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; common medium prominent strong brown (7.5YR 5/6) masses of oxidized iron; very strongly acid; clear smooth boundary.

Btg2--81 to 104 cm (32 to 41 inches); light brownish gray (10YR 6/2) silty clay loam; moderate medium prismatic structure parting to moderate medium subangular blocky; firm; many distinct grayish brown (10YR 5/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; many medium prominent black (10YR 2/1) iron-manganese nodules; very strongly acid; clear smooth boundary.

Btg3--104 to 140 cm (41 to 55 inches); light brownish gray (10YR 6/2) silty clay loam; weak coarse prismatic structure; firm; few faint grayish

brown (10YR 5/2) clay films on faces of peds; many medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; common medium prominent black (10YR 2/1) iron-manganese nodules; strongly acid; clear smooth boundary. [Combined thickness of the Bt horizon is 25 to 91 cm (10 to 36 inches).]

BCg--140 to 152 cm (55 to 60 inches); light brownish gray (10YR 6/2) silt loam; weak coarse prismatic structure; friable; many medium prominent yellowish brown (10YR 5/6) masses of oxidized iron; slightly acid.

TYPE LOCATION: Hamilton County, Illinois; about 2 miles west of Belle Prairie City; 2,244 feet north and 110 feet west of the southeast corner of sec. 36, T. 3 S., R. 5 E.; USGS Belle Prairie City, IL topographic quadrangle; lat. 38 degrees 13 minutes 07 seconds N. and long. 88 degrees 35 minutes 37 seconds W.; UTM Zone 16, 360500 easting and 4231284 northing, NAD 83.

RANGE IN CHARACTERISTICS:

Depth to the top of the argillic horizon: 61 to 91cm (24 to 36 inches)
Particle-size control section: averages 25 to 35 percent clay and less than 15 percent sand

Ap horizon:

Hue: 10YR
Value: 4 or 5
Chroma: 2 or 3
Texture: silt loam
Clay content: 20 to 27 percent
Sand content: less than 15 percent
Rock fragment content: 0 to 2 percent
Reaction: strongly acid to neutral

A horizon, where present:

Thickness: less than 13 cm (5 inches)
Value: 3 or 4, 5 or 6 dry
Chroma: 2 or 3

E or Eg horizon:

Hue: 10YR
Value: 4 to 6
Chroma: 2 to 4
Texture: silt loam
Clay content: averages 18 and 25 percent
Sand content: less than 15 percent
Rock fragment content: 0 to 2 percent
Reaction: extremely acid to strongly acid; ranges to neutral in the upper part in some pedons in areas that have been limed

Btg or Bt horizon:

Hue: 10YR or 2.5Y
Value: 4 to 6
Chroma: 2 to 4
Texture: silty clay loam or silt loam

Clay content: averages 25 to 35 percent
Sand content: less than 10 percent
Redoximorphic features: hue of 10YR or 7.5YR; value of 4 to 7; and chroma of 1 to 8
Other features: Clay films have value of 4 or 5, and chroma of 1 to 3
Rock fragment content: 0 to 2 percent
Reaction: very strongly acid to slightly acid

BCg, 2Btg, or 2BCg horizon, where present
Hue: 10YR or 2.5Y
Value: 4 to 6
Chroma: 2 to 4
Texture: silt loam or silty clay loam
Clay content: 20 to 30 percent
Sand content: 3 to 20 percent
Redoximorphic features: hue of 7.5YR or 10YR, value of 4 to 7, and chroma of 1 to 8
Rock fragment content: 0 to 5 percent
Reaction: very strongly acid to neutral

COMPETING SERIES: These are the Aptakisic, Caseyville, Fitchville, Iva, Kendall, Starks, Stronghurst, Waynetown and Yeddo soils in the same family. All of these soils are less than 61 cm (24 inches) to the top of the argillic horizon.

GEOGRAPHIC SETTING: Creal soils are on uplands and terrace treads. Slope ranges from 0 to 7 percent. Creal soils formed in a mixture of loess and silty local alluvium. Mean annual precipitation ranges from 965 to 1143 mm (38 to 45 inches). Mean annual temperature ranges from 11 to 14 degrees C (52 to 57 degrees F). Frost-free period is 180 to 210 days. Elevation is 107 to 183 meters (350 to 600 feet) above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Ava, Banlic, Belknap, Bluford, Parke, and Racoon soils. The moderately well drained Ava soils have a fragipan horizon and are on adjacent or nearby similar or steeper slopes in the uplands. Banlic soils average less than 18 percent clay in the particle-size control section and are on adjacent or nearby low terraces or elevated positions on flood plains typically at lower elevations than Creal soils. Belknap soils are on flood plains below Creal soils. Bluford soils contain more clay in the control section and are on broad upland ridges and knolls typically above Creal soils. The well drained Parke soils contain more sand in the lower part of the solum and typically are above Creal soils on loess-mantled ridges nearby. The poorly drained Racoon soils are on low terraces or elevated positions on the flood plains below Creal soils.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Somewhat poorly drained. Depth to the top of an intermittent perched high water table ranges from 31 to 91cm (1.0 to 3.0 feet) between February and May in normal years. Potential for surface runoff is low to high depending on slope gradient. Saturated hydraulic conductivity is moderately high. Permeability is moderately slow.

USE AND VEGETATION: Most areas are cropped to corn, soybeans, small grain, or meadow. Native vegetation is hardwood forest.

DISTRIBUTION AND EXTENT: MLRAs 113, 114B, 115A, and 115C in southern Illinois and southeast Iowa. The series is of moderate extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana

SERIES ESTABLISHED: Williamson County, Illinois, 1952.

REMARKS: Diagnostic horizons and features recognized in this pedon are:
Ochric epipedon: from the surface to a depth of 67 cm (27 inches) (Ap, E, and Eg horizons).

Albic horizon: from a depth of 46 to 69 cm (18 to 27 inches) (Eg horizon).

Argillic horizon: from a depth of 69 to 139 cm (27 to 55 inches) (Btg horizon).

National Cooperative Soil Survey
U.S.A.

LOCATION DARWIN

IL+IA MO

Established Series

Rev. WRK-RDC-RJB

06/2015

DARWIN SERIES

The Darwin series consists of very deep, poorly and very poorly drained, very slowly permeable soils formed in clayey alluvium on flood plains of large streams. Slopes range from 0 to 2 percent. Mean annual temperature is about 55 degrees F., and mean annual precipitation is about 42 inches.

TAXONOMIC CLASS: Fine, smectitic, mesic Fluvaquentic Vertic Endoaquolls

TYPICAL PEDON: Darwin silty clay - on a slope of less than 1 percent in a cultivated field at an elevation of about 433 feet above MSL. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 7 inches; very dark gray (10YR 3/1) silty clay, dark gray (10YR 4/1) dry; weak very fine granular structure in the upper part and moderate fine and medium angular blocky structure in the lower part; very firm; slightly acid; abrupt smooth boundary.

A--7 to 14 inches very dark gray (N 3/0) silty clay, dark gray (10YR 4/1) dry; weak medium prismatic structure parting to moderate medium angular blocky; firm; few fine distinct dark yellowish brown (10YR 3/4) masses of iron and manganese accumulation in the matrix; neutral; gradual smooth boundary. (The combined thickness of the A horizon is 10 to 20 inches.)

Bg1--14 to 24 inches; dark gray (5Y 4/1) silty clay; weak medium prismatic structure parting to moderate medium and coarse angular blocky; firm; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; neutral; gradual smooth boundary.

Bg2--24 to 33 inches; dark gray (5Y 4/1) silty clay; weak coarse prismatic structure parting to moderate medium angular blocky; firm; common fine and medium prominent yellowish brown (10YR 5/4 and 5/6) masses of iron accumulation in the matrix; few fine dark iron and manganese concretions throughout; neutral; gradual smooth boundary.

Bg3--33 to 46 inches; gray (5Y 5/1) silty clay; weak coarse prismatic structure parting to weak medium angular blocky; firm; few medium carbonate concretions increasing in number in the lower part of the horizon; common fine and medium prominent yellowish brown (10YR 5/6) masses of iron accumulation in the matrix; few dark iron and manganese concretions throughout; slightly alkaline; abrupt wavy boundary. (The combined thickness of the Bg horizon is 18 to 52 inches.)

BCg--46 to 56 inches; gray (5Y 5/1) silty clay loam; weak medium and coarse angular blocky structure; very firm; many fine prominent brown (7.5YR 4/4) and strong brown (7.5YR 5/6) masses of iron accumulation in

the matrix; slightly alkaline; gradual smooth boundary. (0 to 24 inches thick)

Cg--56 to 68 inches; gray (5Y 5/1) silty clay loam; massive; firm; many fine and medium prominent yellowish brown (10YR 5/6 and 5/8) masses of iron accumulation in the matrix; slightly alkaline.

TYPE LOCATION: Lawrence County, Illinois; about 2.5 miles west of Russellville; 2,320 feet north and 110 feet east of the center sec. 6, T. 4 N., R. 10 W. USGS Russellville, IL topographic quadrangle; latitude 38 degrees, 49 minutes, 14.5 seconds North and longitude 87 degrees, 33 minutes, 59.5 seconds West; NAD 27.

RANGE IN CHARACTERISTICS: The depth to the base of the cambic horizon ranges from 40 to 60 inches. The mollic epipedon ranges between 10 and 24 inches in thickness and includes the upper part of the Bg horizon in some pedons. The particle size control section averages between 45 and 60 percent clay. The series control section averages less than 5 percent sand.

The Ap or A horizon has hue of 10YR, 2.5Y, or is neutral; value of 2 or 3; and chroma of 0 to 2. It typically is silty clay, but some pedons are silty clay loam or clay. Clay content ranges from 35 to 60 percent. A silt loam overwash phase is recognized. Reaction ranges from slightly acid to slightly alkaline.

The Bg horizon has hue of 10YR, 2.5Y, 5Y, or is neutral; value of 3 to 6; and chroma of 0 to 2. It typically is silty clay, but some pedons contain subhorizons of clay. Also, some pedons have subhorizons in the lower part that are silty clay loam. Clay content averages between 45 and 55 percent and ranges from 38 to 65 percent in subhorizons. Many of the faces of the peds have shiny pressure faces and some pedons have slickensides. Reaction ranges from slightly acid to slightly alkaline. Some pedons contain carbonates in the lower part.

The Cg horizon has hue of 10YR, 2.5Y, 5Y, or is neutral; value of 4 to 6; and chroma of 0 to 2. It is silty clay loam, silty clay, or clay. Clay content ranges from 27 to 60 percent. Reaction ranges from neutral to moderately alkaline and some pedons contain carbonates.

COMPETING SERIES: These are the Saddlerock (T), Stillwater, and Waldo series. Saddlerock soils have one or more buried A horizons in the series control section, have a MAP of 10 inches, and formed in alluvium from basalt, andesite and tuff at elevations between 4400 to 5500 above MSL. Stillwater soils do not have a cambic horizon and are more alkaline than slightly alkaline in the cambic horizon. Waldo soils are more acid than slightly acid in the cambic horizon.

GEOGRAPHIC SETTING: Darwin soils are on nearly level flood plains of large streams. Slope gradients commonly are less than 1 percent but range from 0 to 2 percent. Darwin soils formed in fine-textured alluvium. Mean annual temperature ranges from 45 to 57 degrees F., mean annual precipitation ranges from 30 to 48 inches, frost free days range from 140 to 200 days, and elevation ranges from 340 to 1250 feet above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Beaucoup, Cairo, Dupo, Fults, Karnak, Petrolia, Titus, and Wabash soils. The poorly drained Beaucoup and Petrolia and somewhat poorly drained Tice soils contain less clay in the control section and are on similar or slightly higher parts of the flood plain. In addition, Petrolia soils do not have a mollic epipedon. The poorly drained Cairo soils have strongly contrasting particle-size class of clayey over sandy or sandy-skeletal and are in similar positions nearby. The poorly drained Karnak soils lack mollic epipedons and are on similar parts of flood plains. The somewhat poorly drained Dupo soils have strongly contrasting particle-size classes and are on higher parts of the flood plain nearby. Fults and Titus soils are nearby on similar or slightly higher parts of the flood plain. Wabash soils are nearby on similar or slightly lower parts of the flood plain.

DRAINAGE AND PERMEABILITY: Poorly drained and very poorly drained. The potential for surface runoff is negligible to very high. Permeability is slow or very slow. Flooding typically occurs occasionally or frequently on Darwin soils. Levees provide protection from frequent flooding in many areas of Darwin soils. The seasonal high water table is within 18 inches of the surface during the spring of normal years. Undrained areas have water at or above the surface for long or very long periods in most years.

USE AND VEGETATION: Most areas that are cleared are cultivated. Soybeans and grain sorghum are the principal crops. Native vegetation is mixed deciduous trees, grasses, and sedges. See Additional Data section for native vegetative cover in Iowa.

DISTRIBUTION AND EXTENT: Darwin soils are in Illinois, Missouri and Iowa. MLRAS 108, 113, 114, 115, 120, 131, 134. The extent is moderate.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana

SERIES ESTABLISHED: Lawrence County, Illinois, 1952.

REMARKS: Diagnostic horizons and features recognized in this pedon are: mollic epipedon - the zone from the surface to a depth of 14 inches (Ap and A horizons); cambic horizon -- the zone from 14 to 56 inches (Bg and BCg horizons); aquic conditions -- redox accumulations in the lower part of the mollic epipedon and gray matrix in all horizons below the Ap; fluvaquentic feature - organic carbon greater than .3 percent at 125 cm.

ADDITIONAL DATA: Data for the type location are published in SSIR No. 19, page 91.

In Iowa, the native vegetative cover is a herbaceous wetland community commonly inhabited with Bluejoint Grasses, White Cutgrasses, Fox Sedges, Oval Sedges, Inland Rushes, Torreys Rushes, Dark Green Bulrushes, Flatstem Spikerushes, Blue Vervains, Indian Hemps, Winged Loosestrifes, Wild Mints, and Water Horehounds. Source: Iowa State Office, Natural Resources Conservation Service, Des Moines, IA.

National Cooperative Soil Survey

U.S.A.

LOCATION HOSMER

IN+IL KY

Established Series

Rev. SWN-BGN

03/2011

HOSMER SERIES

The Hosmer series consists of very deep, moderately well drained soils formed in loess on hills. They are moderately deep to a fragipan. Slopes are commonly 2 to 12 percent, but range from 0 to 30 percent. Mean annual precipitation is about 1068 mm (42 inches) and mean annual temperature is about 14 degrees C (57 degrees F).

TAXONOMIC CLASS: Fine-silty, mixed, active, mesic Oxyaquic Fragiudalfs

TYPICAL PEDON: Hosmer silt loam on a 4 percent convex west-facing slope in a cultivated field at an elevation of about 158 meters (520 feet) above mean sea level (MSL). (Colors are for moist soil unless otherwise stated.)

Ap--0 to 15 cm (0 to 6 inches); brown (10YR 4/3) silt loam; weak medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary. [15 to 25 cm (6 to 10 inches) thick]

BE--15 to 33 cm (6 to 13 inches); yellowish brown (10YR 5/4) silt loam; weak fine subangular blocky structure; friable; common fine roots; moderately acid; clear smooth boundary. [0 to 25 cm (0 to 10 inches) thick]

Bt1--33 to 53 cm (13 to 21 inches); yellowish brown (10YR 5/6) silty clay loam; moderate medium subangular blocky structure; firm; common fine roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; many distinct pale brown (10YR 6/3) clay depletions on faces of peds; very strongly acid; clear smooth boundary.

Bt2--53 to 71 cm (21 to 28 inches); yellowish brown (10YR 5/6) silty clay loam; weak medium prismatic structure parting to moderate medium subangular blocky; firm; common fine roots; many distinct brown (7.5YR 4/4) clay films on faces of peds; many distinct pale brown (10YR 6/3) and common light brownish gray (10YR 6/2) clay depletions on vertical faces of peds; few fine prominent black (10YR 2/1) manganese coatings on faces of peds; very strongly acid; clear wavy boundary. [Combined thickness of the Bt horizons is 30 to 66 cm (12 to 26 inches.)]

Btx/E--71 to 76 cm (28 to 30 inches); yellowish brown (10YR 5/6) silt loam (Btx); weak coarse prismatic structure parting to moderate medium subangular blocky; firm; few fine roots; many fine vesicular pores; many distinct and prominent light brownish gray (10YR 6/2) and light gray (10YR 7/1) clay depletions on faces of peds and filling voids comprising 10 to 15 percent of the horizon by volume (E); very strongly acid; abrupt irregular boundary. [0 to 10 cm (0 to 4 inches) thick]

Btx1--76 to 114 cm (30 to 45 inches); yellowish brown (10YR 5/6) silt loam; strong very coarse prismatic structure; very firm; few fine flattened roots between peds; many distinct brown (7.5YR 4/4) clay films on faces of peds; many distinct light brownish gray (10YR 6/2) clay depletions in pores and on faces of peds; brittle; very strongly acid; gradual wavy boundary.

Btx2--114 to 163 cm (45 to 64 inches); yellowish brown (10YR 5/6) silt loam; strong very coarse prismatic structure; very firm; many fine vesicular pores; few distinct brown (7.5YR 4/4) clay films on faces of peds; common distinct light brownish gray (10YR 6/2) clay depletions on faces of peds; brittle; very strongly acid; gradual irregular boundary. [Combined thickness of the Btx horizons is 61 to 127 cm (24 to 50 inches.)]

2Bt--163 to 203 cm (64 to 80 inches); yellowish brown (10YR 5/4) silt loam; weak very coarse prismatic structure; friable; few discontinuous distinct gray (10YR 5/1) clay films on faces of peds; common distinct light brownish gray (10YR 6/2) clay depletions on faces of peds; 15 percent fine and medium sand; strongly acid.

TYPE LOCATION: Knox County, Indiana; about 1.5 miles northeast of Frichton; 1,340 feet east and 435 feet south of the northwest corner of donation 68, T. 3 N., R. 9 W.; USGS Frichton, IN-IL topographic quadrangle, lat. 38 degrees 41 minutes 54.169 seconds N., 087 degrees 24 minutes 01.064 seconds W., UTM Zone 16, 465186 easting and 4283384 northing, NAD 83.

RANGE IN CHARACTERISTICS:

Depth to the base of the argillic horizon: 127 to more than 203 cm (50 to more than 80 inches)

Depth to the fragipan: 51 to 91 cm (20 to 36 inches)

The particle-size control section averages: 22 to 30 percent clay and 2 to 10 percent sand

Ap horizon:

Hue: 10YR

Value: 4 or 5

Chroma: 2 to 4

Texture: commonly silt loam, except some severely eroded pedons are silty clay loam

Reaction: strongly acid in nonlimed areas, and ranges to neutral in limed areas

E horizon, where present:

Hue: 10YR

Value: 4 or 5

Chroma: 2 to 6

Reaction: moderately acid to very strongly acid

Bt and BE horizons:

Hue: 10YR or 7.5YR

Value: 4 to 6

Chroma: 3 to 6

Texture: silt loam or silty clay loam
Reaction: strongly acid or very strongly acid in non-limed areas, and ranges to moderately acid in limed areas

Btx horizon:

Hue: 10YR or 7.5YR

Value: 4 to 6

Chroma: 3 to 8 with redox depletions

Reaction: commonly strongly acid or very strongly acid, and less commonly moderately acid

2Bt, B't, BC, and C horizons, where present:

Hue: 10YR or 7.5YR

Value: 4 to 6

Chroma: 3 to 8

Texture: silt loam or silty clay loam

Reaction: moderately acid to very strongly acid.

COMPETING SERIES: These are the Apalona, Ava, Bedford, Cincinnati, Fountainville, Grantsburg, Hildebrecht, Nicholson, Omulga, Otwell, Otwood, Solsberry, Weisburg, and Zanesville series. Apalona, Bedford, Nicholson and Weisburg soils average more than 28 percent clay in the lower part of the series control section. Ava, Cincinnati and Solsberry soils have rock fragments in the middle or lower part of the series control section. Fountainville soils have a lithic contact at depths of 102 to 152 cm (40 to 60 inches). Grantsburg soils have a lower base saturation in the series control section. Lawrenceville and Zanesville soils have a lithic contact in the series control section. Omulga and Otwell soils have average more than 28 percent clay in some subhorizon within the lower part of the series control section. Sadler soils have a glossic horizon in the series control section.

GEOGRAPHIC SETTING: Hosmer soils are commonly on summits, shoulders, and backslopes of loess hills. Hosmer soils formed in either silty loess, or silty loess and the underlying "gritty" loess which has a higher sand content. The slope gradient is commonly 2 to 12 percent, but ranges from 0 to 30 percent.

The mean annual precipitation ranges from 889 to 1168 mm (35 to 46 inches). The mean annual temperature ranges from 11 to 14 degrees C (51 to 57 degrees F). Frost-free period ranges from 170 to 210 days. Elevation ranges from 104 to 311 meters (340 to 1020 feet) above sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Alford, Iva, Muren, Stoy and Weir soils. The well drained Alford soils are on summits, shoulders, and backslopes of loess hills. The somewhat poorly drained Iva soils are on nearly level flats. The moderately well drained, more permeable Muren soils are on summits and shoulders. The somewhat poorly drained Stoy soils are on nearly level to gently rolling summits. The poorly drained Weir soils are on flats.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Moderately well drained. A perched, seasonal water table is at a depth of 46 to 76 centimeters (1.5 to 2.5 feet) from December through April in most years. Saturated

hydraulic conductivity is moderately high or high (4.23 to 14.11 micrometers/sec) above the fragipan and low to moderately high (0.07 to 1.41 micrometers/sec) in and below the fragipan. Permeability is moderate (0.6 to 2.0 inches per hour) above the fragipan and slow or very slow in and below the fragipan. The potential for surface water runoff is medium to very high.

USE AND VEGETATION: Most areas are used for growing corn, soybeans, winter wheat, or used for hay. Some areas are used for pasture and woodland. Native vegetation is mixed, deciduous hardwood forest.

DISTRIBUTION AND EXTENT: Southern Indiana, southern Illinois and western Kentucky. The acreage is of large extent and is in MLRAS 113, 114B, 115A, 120A and 120B. The type location is in MLRA 115A.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana

SERIES ESTABLISHED: Vanderburgh County, Indiana, 1939.

REMARKS: Diagnostic surface, subsurface horizons and features recognized in this pedon are: 1) Ochric epipedon: the zone from 0 to 15 cm (0 to 6 inches) (Ap horizon); 2) Argillic horizon: the zone from 15 to 203 cm (6 to 80 inches) (Bt1, Bt2, Btx/E, Btx1, Btx2, 2Bt horizons); 3) Fragipan: the zone from 76 to 163 cm (30 to 64 inches) (Btx1, Btx2 horizons); 4) Redoximorphic features: from 53 to 203 cm (21 to 80 inches).

ADDITIONAL DATA: Characterization data from the Agricultural Experiment Station, Purdue University is on file for several pedons from Indiana.

National Cooperative Soil Survey
U.S.A.

LOCATION MCGARY

IN+IL KY OH VA WV

Established Series

Rev. BGN-TJE

11/2011

MCGARY SERIES

The McGary series consists of very deep, somewhat poorly drained soils on lake plains, and less commonly on flood-plain steps. They formed in loess and the underlying calcareous, fine-textured lacustrine deposits. Slope ranges from 0 to 10 percent. Mean annual precipitation is about 1067 mm (42 inches), and mean annual temperature is about 12 degrees C (54 degrees F).

TAXONOMIC CLASS: Fine, mixed, active, mesic Aeric Epiaqualfs

TYPICAL PEDON: McGary silt loam, on a nearly level lake plain flat in a cultivated field. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 28 cm (11 inches); dark grayish brown (10YR 4/2) silt loam, light gray (10YR 7/2) dry; weak coarse subangular blocky structure parting to moderate fine and medium granular; friable; neutral; abrupt smooth boundary. [15 to 30 cm (6 to 12 inches) thick]

2Bt--28 to 38 cm (11 to 15 inches); brown (10YR 5/3) silty clay; moderate medium subangular blocky structure; firm; many faint grayish brown (10YR 5/2) clay films on faces of peds; common fine distinct gray (10YR 6/1) iron depletions in the matrix; moderately acid; clear smooth boundary.

2Btg1--38 to 56 cm (15 to 22 inches); grayish brown (10YR 5/2) silty clay; weak fine and medium prismatic structure parting to moderate medium angular blocky; firm; many distinct gray (10YR 5/1) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/4) masses of oxidized iron in the matrix; few fine black (10YR 2/1) iron-manganese concretions; neutral; clear smooth boundary.

2Btg2--56 to 69 cm (22 to 27 inches); grayish brown (10YR 5/2) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; many distinct gray (10YR 5/1) clay films on faces of peds; common fine distinct yellowish brown (10YR 5/4) masses of oxidized iron in the matrix; slightly effervescent in places; slightly alkaline; gradual irregular boundary.

2Btg3--69 to 107 cm (27 to 42 inches); gray (10YR 5/1) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; common distinct gray (10YR 6/1) clay films on faces of peds; common fine distinct light yellowish brown (10YR 6/4) masses of oxidized iron in the matrix; few fine and medium weakly cemented carbonate nodules; slightly effervescent; slightly alkaline; clear irregular boundary. [Combined thickness of the Bt horizon is 46 to 97 cm (18 to 38 inches).]

2BCtkg--107 to 127 cm (42 to 50 inches); gray (10YR 6/1) silty clay; weak coarse angular blocky structure; firm; few faint gray (10YR 5/1) clay films on faces of peds; common fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; common fine and medium weakly cemented carbonate nodules; strongly effervescent; moderately alkaline; gradual wavy boundary. [0 to 30 cm (12 inches) thick]

2Cg--127 to 152 cm (50 to 60 inches); gray (10YR 6/1) stratified silty clay loam and silty clay; massive; firm; common fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; common fine and medium weakly cemented carbonate nodules; strongly effervescent; moderately alkaline.

TYPE LOCATION: Greene County, Indiana; at the north edge of Marco; 2,050 feet east and 700 feet north of the southwest corner of sec. 24, T. 6 N., R. 7 W.; USGS Sandborn, IN topographic quadrangle; lat. 38 degrees 56 minutes 21 seconds N. and long. 087 degrees 8 minutes 30 seconds W. NAD 27; UTM Zone 16, 487722 easting and 4310041 northing, NAD 83.

RANGE IN CHARACTERISTICS:

Depth to the base of the argillic horizon: 61 to 127 cm (24 to 50 inches)

Depth to carbonates: 56 to 142 cm (22 to 56 inches)

Thickness of the loess: 0 to 51 cm (20 inches)

Particle-size control section: averages 40 to 50 percent clay and 2 to 6 percent sand

Ap horizon:

Hue: 10YR

Value: 4 or 5

Chroma: 2 to 4

Texture: silt loam or silty clay loam

Reaction: moderately acid to neutral

A horizon, where present:

Thickness: 3 to 8 cm (1 to 3 inches)

Hue: 10YR

Value: 3 or 4

Chroma: 1 to 3

2Bt, 2Btg, Bt, or Btg horizon:

Hue: 10YR or 2.5Y

Value: 4 to 6

Chroma: 1 to 6

Texture: silty clay or silty clay loam

Clay content: 35 to 55 percent

Sand content: 2 to 6 percent

Calcium carbonate equivalent: 0 to 15 percent

Reaction: very strongly acid to neutral in the upper part and neutral or slightly alkaline in the lower part

2BCtkg, 2BCg, or 2BC horizon:

Hue: 10YR or 2.5Y

Value: 4 to 6

Chroma: 1 to 6

Texture: commonly silty clay or silty clay loam, and less commonly clay
Clay content: 35 to 55 percent
Sand content: 1 to 20 percent
Calcium carbonate equivalent: 0 to 30 percent
Reaction: neutral to moderately alkaline

2C or 2Cg horizon:

Hue: 10YR or 2.5Y

Value: 4 to 6

Chroma: 1 to 6

Texture: commonly stratified silty clay and silty clay loam, and less commonly includes thin strata of clay and silt loam

Clay content: 24 to 55 percent

Sand content: 1 to 20 percent

Calcium carbonate equivalent: 10 to 40 percent

Reaction: slightly alkaline or moderately alkaline

COMPETING SERIES: These are the Crosby, Hyatts, Pymont, and Smothers series. Crosby soils have more than 20 percent sand in the lower part of the series control section. Hyatts soils have a paralithic contact within a depth of 152 cm (60 inches). Pymont soils have carbonates within a depth of 56 cm (22 inches). Smothers soils have a lithic contact within a depth of 102 cm (40 inches).

GEOGRAPHIC SETTING: McGary soils are typically on flats on lake plains, and less commonly on flood-plain steps. Slope gradients are dominantly 0 to 2 percent, but range to 10 percent. These soils formed in 0 to 51 cm (0 to 20 inches) of loess and in the underlying calcareous, fine-textured lacustrine deposits of Wisconsin age. Mean annual precipitation ranges from 889 to 1168 mm (35 to 46 inches). Mean annual temperature ranges from 10 to 14 degrees C (50 to 57 degrees F). Frost-free period is 150 to 210 days.

GEOGRAPHICALLY ASSOCIATED SOILS: McGary soils are commonly associated with the Markland, Montgomery, Shircliff, and Zipp soils. They are also associated with the Booker and Kings soils. The well drained Markland are on risers and moderately well drained Shircliff soils are on treads of dissected lake plains. The poorly drained or very poorly drained Booker, Kings, Montgomery, and Zipp soils are on flats and depressions on lake plains.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Somewhat poorly drained. In undrained areas, depth to the top of an intermittent perched high water table ranges from 15 to 46 cm (0.5 to 1.5 feet) between December and April in normal years. Potential for surface runoff is low to high. Saturated hydraulic conductivity is low or moderately low. Permeability is slow or very slow. On flood-plain steps, this soil is subject to frequent to rare periods of flooding.

USE AND VEGETATION: Most areas of this soil are being used to grow corn and soybeans. A few areas are used for growing wheat and hay, and a few areas are used for pasture or forest. Native vegetation is mixed hardwood forest.

DISTRIBUTION AND EXTENT: MLRAs 111B, 113, 114A, 114B, 115A, 120A, 120B, 121, 122, 124, 126 and 147 in Illinois Indiana, Kentucky, Ohio, Virginia, and West Virginia. The type location is on the boundary between MLRA's 114B and 115A. The series is of large extent.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana.

SERIES ESTABLISHED: Gibson County, Indiana, 1926.

REMARKS: The typical pedon does not exhibit episation very well and the type location may need to be moved to one that does. Flooded, non-flooded, drained, and undrained phases are presently recognized.

Diagnostic horizons and features recognized in this pedon are:

Ochric epipedon: from the surface to a depth of 28 cm (11 inches) (Ap horizon).

Argillic horizon: from a depth of 28 to 107 cm (11 to 42 inches) (2Bt, 2Btg1, 2Btg2, 2Btg3 horizons).

Aquic conditions: redoximorphic features present in all horizons below the ochric epipedon.

11/2011 Revision: updated competing series; minor formatting changes.

ADDITIONAL DATA: Lab data is available from the National Soil Survey Lab: S60IN-28-2 (typical pedon), S60IN-28-1, S91IN-123-101; lab data is available from the Agricultural Experiment Station, Purdue University: S76IN-83-5, S79IN-125-16, S80IN-71-3, S81IN-101-7, and S81IN-175-3.

National Cooperative Soil Survey
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LOCATION ZIPP

IN+IL KY OH PA

Established Series

Rev. JLS-GRS-BGN

03/2011

ZIPP SERIES

The Zipp series consists of very deep, poorly drained or very poorly drained soils on lake plains, lacustrine terraces and flood-plain steps. They formed in fine-textured lacustrine or slackwater sediments. Slope ranges from 0 to 1 percent. Mean annual precipitation is about 1092 mm (43 inches) and mean annual temperature is about 12 degrees C (54 degrees F).

TAXONOMIC CLASS: Fine, mixed, active, nonacid, mesic Typic Endoaquepts

TYPICAL PEDON: Zipp silty clay loam on a nearly level slope in a cultivated field at an elevation of about 119 meters (390 feet) above mean sea level. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 25 cm (0 to 10 inches); dark grayish brown (10YR 4/2) silty clay loam, light brownish gray (10YR 6/2) dry; moderate fine granular structure; firm; neutral; abrupt smooth boundary. [13 to 25 cm (5 to 10 inches) thick]

Bg1--25 to 38 cm (10 to 15 inches); dark gray (5Y 4/1) silty clay loam; moderate fine angular blocky structure; firm; many faint dark gray (5Y 4/1) pressure faces on peds; many fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; neutral; clear wavy boundary.

Bg2--38 to 89 cm (15 to 35 inches); gray (5Y 5/1) silty clay loam; moderate medium prismatic structure parting to strong fine angular blocky; firm; many faint dark gray (5Y 4/1) pressure faces on peds; many fine prominent yellowish brown (10YR 5/6) and few fine prominent light olive brown (2.5Y 5/4) masses of oxidized iron in the matrix; neutral; clear wavy boundary.

Bg3--89 to 114 cm (35 to 45 inches); dark gray (5Y 4/1) silty clay; moderate medium prismatic structure parting to moderate medium angular blocky; firm; many fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; neutral; clear wavy boundary. [Combined thickness of the Bg horizons is 64 to 127 cm (25 to 50 inches) thick]

Cg--114 to 152 cm (45 to 60 inches); gray (10YR 6/1) silty clay; massive; firm; many fine prominent yellowish brown (10YR 5/6) masses of oxidized iron in the matrix; neutral.

TYPE LOCATION: Warrick County, Indiana; about 4 1/2 miles northeast of the town of Newburgh; 200 feet north and 1,200 feet east of the southwest corner of sec. 28, T. 6 S., R. 8 W. USGS Yankeetown, IN topographic quadrangle; lat. 37 degrees 57 minutes 42.162 seconds N. and long. 087

degrees 19 minutes 05. 021 seconds W.; UTM Zone 16, 472061 easting and 4201615 northing, NAD 83.

RANGE IN CHARACTERISTICS:

Depth to the base of the cambic horizon: 76 to 152 cm (30 to 60 inches)

Particle size control section: averages 35 to 55 percent clay and 1 to 12 percent sand

Ap horizon:

Hue: 10YR or 2.5Y

Value: 4 or 5

Chroma: 1 or 2

Texture: commonly silty clay loam or silty clay, and less commonly silt loam

Reaction: commonly slightly acid or neutral and ranges to moderately acid

A horizon, less than 6 inches thick, where present:

Hue: 10YR or 2.5Y

Value: 3 to 5

Chroma: 1 or 2

Bg horizon:

Hue: 10YR, 2.5Y, 5Y or N

Value: 4 to 6

Chroma: 0 or 1

Texture: silty clay loam, silty clay or clay

Reaction: commonly slightly acid or neutral and ranges to moderately acid

Cg or C horizon:

Hue: 10YR, 2.5Y, 5Y or N

Value: 4 to 7

Chroma: 0 to 6

Texture: silty clay loam or silty clay that can be stratified and includes thin strata of silt loam

Reaction: neutral to moderately alkaline

Calcium Carbonate Equivalent: 0 to 20 percent

COMPETING SERIES: This is the Valley series. Valley soils formed in glaciolacustrine sediments underlain by till in depressions on till plains and have at least 2 percent rock fragments in the lower part of the series control section.

GEOGRAPHIC SETTING: Zipp soils are on level or slight depressions of lake plains and broad, slightly concave lacustrine terraces and flood-plain steps. They formed in fine-textured lacustrine or slackwater sediments. Slope ranges from 0 to 1 percent. The mean annual temperature ranges from 10 to 14 degrees C (51 to 58 degrees F). The mean annual precipitation ranges from 889 to 1219 mm (35 to 48 inches). Frost-free days range from 150 to 210. Elevation ranges from 104 to 244 meters (340 to 800 feet) above mean sea level.

GEOGRAPHICALLY ASSOCIATED SOILS: These are the Evansville, Kings, Markland, McGary, Montgomery and Shircliff soils. The very poorly drained

Kings soils have a mollic epipedon, smectitic clay mineralogy and are in depressions. The well drained Markland and moderately well drained Shircliff soils are on rises, shoulders, and backslopes. The somewhat poorly drained McGary soils are on slightly higher lying flats. The poorly drained, less clayey Evansville soils are on treads of stream terraces. The very poorly drained Montgomery soils have a mollic epipedon and are on similar landform positions.

DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Very poorly drained or poorly drained. Undrained areas have an intermittent apparent high water table at the surface to a depth of 30 centimeters (1.0 foot) from November through May in normal years. This soil is subject to periods of frequent, brief ponding at depths up to 15 cm (0.5 foot) from December to May in normal years. Saturated hydraulic conductivity is low or moderately low (0.07 to 0.42 micrometers/sec). Permeability is very slow (0.01 to 0.06 inches per hour). The potential for surface water runoff is low or negligible. This soil is subject to flooding in areas that are on a flood-plain step.

USE AND VEGETATION: Most areas are drained and used for growing cultivated crops and hay and pasture. Some areas are in woodland. Native vegetation is mixed deciduous forest.

DISTRIBUTION AND EXTENT: Indiana, Kentucky, Ohio Pennsylvania and Illinois. The acreage is of moderate extent, and is within several MLRA's, including 111A, 113, 114A, 114B, 115A, 115B, 120C, 121, 124, 126 and 147. The type location is in MLRA 115A.

MLRA SOIL SURVEY REGIONAL OFFICE (MO) RESPONSIBLE: Indianapolis, Indiana

SERIES ESTABLISHED: Vanderburgh County, Indiana, 1939.

REMARKS: Flooded, ponded and loamy substratum phases have been recognized.

Diagnostic surface and subsurface horizons and features recognized in this pedon are:

- 1) Ochric epipedon: the zone from 0 to 25 cm (0 to 10 inches) (Ap horizon);
- 2) Cambic horizon: the zone from 25 to 114 cm (10 to 45 inches) (Bg1, Bg2, Bg3 horizons); and
- 3) Redoximorphic features: from 25 to 152 cm (10 to 60 inches).

The classification was changed in July of 2001 from Vertic Endoaquepts back to Typic Endoaquepts, which had been the classification prior to 1996. Limited data for COLE indicates the Linear Extensibility is less than 6.0 cm in the upper 100 cm of the soil.

ADDITIONAL DATA: Data on pedon number S92IN123-004 is at the NSSC, Lincoln, NE. Additional data in on file at the Department of Agronomy, Agricultural Experiment Station, Purdue University, West Lafayette, Indiana.

National Cooperative Soil Survey

U.S.A.

APPENDIX

B BORING LOGS





Illinois Department of Transportation

Geoprobe Boring Log Number: 4338-03-B01

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-03; Tunnel Hill State Trail**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73843647780; W88.53321555330**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Fill: Dark brown, silty loam, trace gravel and roots, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
1		Fill: Light brown, sandy gravel, dry			
2		Silty Clay: Brown with red, with fine sand seams throughout, trace gravel, dry			



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Illinois Department of Transportation

Geoprobe Boring Log Number: 4338-06-B01

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73821375910; W88.53289068920**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Topsoil: Dark brown, silty loam, trace gravel and roots, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
1		Silty Clay: Brown with red, with fine sand seams, black mottles, trace gravel, dry			
2					



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Illinois Department of Transportation

Geoprobe Boring Log Number: 4338-06-B02

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73846079350; W88.53304350100**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Fill: Brown, sandy gravel, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis.
1		Silty Clay: Brown with red, with fine sand seams, black mottles, trace gravel, dry			* SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
2					



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Geoprobe Boring Log Number: 4338-06-B03

PROJECT: FAP 332/FAP 132 (US 45/ Poplar Street)
 SITE LOCATION: Harrisburg, Saline County, Illinois
 SITE NAME: ISGS #4338-06; ROW

EQUIPMENT: Geoprobe 5410
 OPERATOR: T. Pachowicz
 SAMPLING METHOD: Macro-Core
 DATE DRILLED: 1/17/2023
 TOTAL DEPTH: 2 feet

JOB NUMBER: EE1009008.0111
 GEOLOGIST: A. Plath
 LOCATION: N37.73847255900; W88.53281869950

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Asphalt	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
		Fill: Dark brown, sandy gravel, base course			
1		Silty Clay: Brown with red, with fine sand, black mottles, trace gravel, dry			
2					



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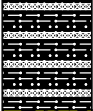

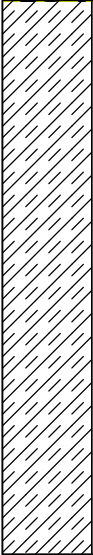
Geoprobe Boring Log Number: 4338-06-B04

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73861457170; W88.53268964970**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Asphalt	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
		Fill: Dark brown, sandy gravel, base course			
1		Silty Clay: Brown with red, with fine sand, black mottles, trace gravel, slight gasoline odor, moist			
2					



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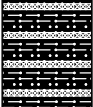


Geoprobe Boring Log Number: 4338-06-B05

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73891397490; W88.53259298470**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Asphalt	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
		Fill: Dark brown, sandy gravel, base course			
1		Fill: Brown, silty clay, with gravel, moist			
2					



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Geoprobe Boring Log Number: 4338-06-B06

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73879815250; W88.53232951300**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Topsoil: Dark brown, silty loam, trace gravel and roots, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
1		Silty Clay: Brown, stiff, trace gravel, dry			
1.5		Sand: Brown, medium, trace gravel, moist			
2		Silty Clay: Brown, trace gravel, dry			



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Geoprobe Boring Log Number: 4338-06-B08

PROJECT: FAP 332/FAP 132 (US 45/ Poplar Street)
SITE LOCATION: Harrisburg, Saline County, Illinois
SITE NAME: ISGS #4338-06; ROW

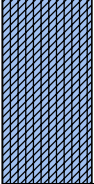
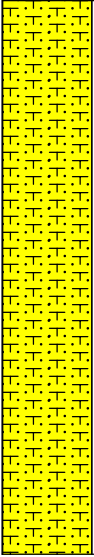
EQUIPMENT: Geoprobe 5410
OPERATOR: T. Pachowicz
SAMPLING METHOD: Macro-Core
DATE DRILLED: 1/17/2023
TOTAL DEPTH: 2 feet

JOB NUMBER: EE1009008.0111
GEOLOGIST: A. Plath
LOCATION: N37.73844150450; W88.53196189880

☒ Water level during drilling, if encountered

Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.

Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Topsoil: Dark brown, silty loam, trace gravel and roots, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
1		Silty Sand: Brown, trace gravel, moist			
2					



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Geoprobe Boring Log Number: 4338-06-B09

PROJECT: FAP 332/FAP 132 (US 45/ Poplar Street)
 SITE LOCATION: Harrisburg, Saline County, Illinois
 SITE NAME: ISGS #4338-06; ROW

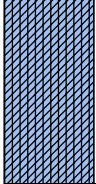
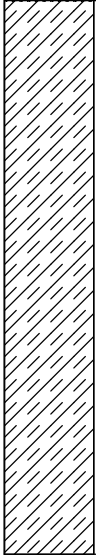
EQUIPMENT: Geoprobe 5410
 OPERATOR: T. Pachowicz
 SAMPLING METHOD: Macro-Core
 DATE DRILLED: 1/17/2023
 TOTAL DEPTH: 2 feet

JOB NUMBER: EE1009008.0111
 GEOLOGIST: A. Plath
 LOCATION: N37.73829925630; W88.53198631400

☒ Water level during drilling, if encountered

Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.

Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Topsoil: Dark brown, silty loam, trace gravel and roots, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
1		Silty Clay: Brown and gray, with sand seams, trace gravel, dry			
2					



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Geoprobe Boring Log Number: 4338-06-B10

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73826242930; W88.53248500480**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Fill: Dark brown, silty loam, trace gravel and roots, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
		Fill: Light brown, sandy gravel, dry			
1		Silty Clay: Brown, with sand seams, trace gravel, moist			
2					



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Geoprobe Boring Log Number: 4338-06-B11

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73800792090; W88.53267057490**

☒ Water level during drilling, if encountered
 Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.
 Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		<p>Topsoil: Dark brown, silty loam, trace gravel and roots, dry</p> <p>Silty Clay: Brown, stiff, trace gravel, dry</p> <p>Gravel: Brown, with sand, moist</p>	100	0.0	<p>0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis.</p> <p>* SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.</p>
1					
2					



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Geoprobe Boring Log Number: 4338-06-B12

PROJECT: FAP 332/FAP 132 (US 45/ Poplar Street)
 SITE LOCATION: Harrisburg, Saline County, Illinois
 SITE NAME: ISGS #4338-06; ROW

EQUIPMENT: Geoprobe 5410
 OPERATOR: T. Pachowicz
 SAMPLING METHOD: Macro-Core
 DATE DRILLED: 1/17/2023
 TOTAL DEPTH: 2 feet

JOB NUMBER: EE1009008.0111
 GEOLOGIST: A. Plath
 LOCATION: N37.73763732990; W88.53280578580

☒ Water level during drilling, if encountered

Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.

Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Asphalt	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
		Fill: Dark brown, sandy gravel, dry			
		Silty Clay: Brown, trace gravel, black mottles, dry			
1					
2					



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Geoprobe Boring Log Number: 4338-06-B13

PROJECT: **FAP 332/FAP 132 (US 45/ Poplar Street)**
 SITE LOCATION: **Harrisburg, Saline County, Illinois**
 SITE NAME: **ISGS #4338-06; ROW**

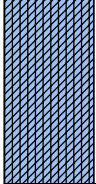
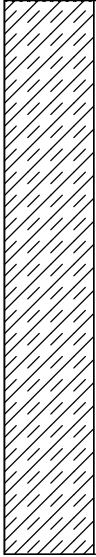
EQUIPMENT: **Geoprobe 5410**
 OPERATOR: **T. Pachowicz**
 SAMPLING METHOD: **Macro-Core**
 DATE DRILLED: **1/17/2023**
 TOTAL DEPTH: **2 feet**

JOB NUMBER: **EE1009008.0111**
 GEOLOGIST: **A. Plath**
 LOCATION: **N37.73784550460; W88.53301024460**

☒ Water level during drilling, if encountered

Boring continuously sampled using a 2-inch diameter sampler, 4 feet in length.

Soil headspace readings conducted at 2-foot intervals.

DEPTH (Feet)	GRAPHIC LOG	SOIL DESCRIPTION	REC. (%)	PID Meter Units	SOIL INTERVAL COLLECTED FOR LABORATORY CHEMICAL ANALYSIS
0		Topsoil: Dark brown, silty loam, trace gravel and roots, dry	100	0.0	0 to 2-foot depth interval soil sample collected for VOCs, SVOCs, metals, pH and TCLP* analysis. * SPLP metals analysis will be conducted on sample-specific basis for special metals based on the results of TCLP.
1		Silty Clay: Brown and red, with fine sand seams, black mottles, trace gravel, dry			
2					



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APPENDIX

C SUMMARY OF ANALYTICAL RESULTS





A large, white, diagonal shape resembling a stylized 'V' or a folded corner, positioned in the lower-left quadrant of the page.

Analytical Data Summary
PTB #172-27; Work Order 111 - IDOT Job # C-99-022-20

Key to Data Tables

- MAC = Maximum Allowable Concentration of Chemical Constituent in Uncontaminated Soil Used as Fill Material At Regulated Fill Operations
- mg/kg = Milligrams per kilogram.
- mg/L = Milligrams per liter.
- MSA = Metropolitan Statistical Area
- TACO = Tiered Approach to Corrective Action Objectives
- TCLP = Toxicity Characteristic Leaching Procedure.
- SCGIER = Soil Component of the Groundwater Ingestion Exposure Route
- SPLP = Synthetic Precipitation Leaching Procedure.
- ND = Not detected.
- NA = Not analyzed or not applicable.
- J = Estimated value.
- U = Analyte was analyzed for but not detected.
- PID = Photoionization detector.
- = No PID readings detected above background (within instrument margin of error).

Criteria Qualifiers and Shading

- # = pH is less than 6.25 or greater than 9.0 standard units.
 - † = Concentration exceeds the most stringent MAC.
 - m = Concentration exceeds the MAC for an MSA.
 - * = Concentration exceeds the MAC for Chicago corporate limits.
 - c = Concentration exceeds a TACO Tier 1 RO for the Construction Worker Exposure Route.
 - r = Concentration exceeds a TACO Tier 1 soil RO for residential properties.
 - L = The detected TCLP/SPLP concentration exceeds the TACO Tier 1 RO for the SCGIER.
-  = Headspace reading exceeds background levels
 -  = Concentration exceeds the most stringent MAC only
 -  = Concentration exceeds the MAC for Chicago corporate limits.
 -  = Concentration exceeds applicable comparison criteria.

CONTAMINANTS OF CONCERN

SITE	ISGS #4338-3 (Tunnel Hill State Trail)	Comparison Criteria					
		MACs			TACO		
BORING	4338-03-B01	Most Stringent	Within an MSA	Within Chicago	Residential	Construction Worker	SCGIER
SAMPLE	4338-03-B01 (0-2)						
MATRIX	Soil						
DEPTH (feet)	0-2						
pH	7.7						
PID	--						
VOCs (None Detected)							
SVOCs (mg/kg)							
2-Methylnaphthalene	0.13 J	--	--	--	--	--	--
Acenaphthylene	0.38	--	--	0.25	--	--	--
Anthracene	0.17 J	12,000	--	2.6	23,000	610,000	--
Benzo(a)anthracene	1 †	0.9	1.8	11	1.8	170	--
Benzo(a)pyrene	1.2 J †	0.09	2.1	11	2.1	17	--
Benzo(b)fluoranthene	2 J †	0.9	2.1	13	2.1	170	--
Benzo(g,h,i)perylene	0.31 J	--	--	4.4	--	--	--
Benzo(k)fluoranthene	0.67 J	9	--	8.1	9	1700	--
Chrysene	1.2	88	--	11	88	17,000	--
Dibenz(a,h)anthracene	0.12 J †	0.09	0.42	--	0.42	17	--
Fluoranthene	1.8	3,100	--	28	3,100	82,000	--
Indeno(1,2,3-cd)pyrene	0.36 J	0.9	1.6	5.8	1.6	170	--
Naphthalene	0.066 J	1.8	--	0.26	170	1.8	--
Phenanthrene	0.52	--	--	15	--	--	--
Pyrene	1.7	2,300	--	18	2,300	61,000	--
Inorganics (mg/kg)							
Antimony	ND U	5	--	--	31	82	--
Arsenic	6.5	11.3	13	--	13	61	--
Barium	100	1,500	--	--	5,500	14,000	--
Beryllium	0.64	22	--	--	160	410	--
Boron	2.6 J	40	--	--	16,000	41,000	--
Cadmium	0.24	5.2	--	--	78	200	--
Calcium	20,000	--	--	--	--	--	--
Chromium	9.9	21	--	--	230	690	--
Cobalt	7.8	20	--	--	4,700	12,000	--
Copper	15	2,900	--	--	2,900	8,200	--
Iron	13,000	15,000	15,900	--	--	--	--
Lead	49	107	--	--	400	700	--
Magnesium	1,900	325,000	--	--	--	730,000	--
Manganese	330	630	636	--	1,600	4,100	--
Mercury	0.045	0.89	--	--	10	0.1	--
Nickel	15	100	--	--	1,600	4,100	--
Potassium	580	--	--	--	--	--	--
Silver	0.32	4.4	--	--	390	1,000	--
Sodium	74	--	--	--	--	--	--
Vanadium	16	550	--	--	550	1,400	--
Zinc	63	5,100	--	--	23,000	61,000	--
TCLP Metals (mg/L)							
Barium	1.1	--	--	--	--	--	2
SPLP Metals (Not Analyzed)							

CONTAMINANTS OF CONCERN

SITE	ISGS #4338-6 (ROW)					Comparison Criteria					
	4338-06-B01	4338-06-B02	4338-06-B03	4338-06-B04	4338-06-B05	MACs			TACO		
BORING	4338-06-B01 (0-2)	4338-06-B02 (0-2)	4338-06-B03 (0-2)	4338-06-B04 (0-2)	4338-06-B05 (0-2)	Most Stringent	Within an MSA	Within Chicago	Residential	Construction Worker	SCGIER
SAMPLE	4338-06-B01 (0-2)	4338-06-B02 (0-2)	4338-06-B03 (0-2)	4338-06-B04 (0-2)	4338-06-B05 (0-2)						
MATRIX	Soil	Soil	Soil	Soil	Soil						
DEPTH (feet)	0-2	0-2	0-2	0-2	0-2						
pH	7.6	7.9	8.1	7.8	8.4						
PID	--	--	--	--	--						
VOCs (mg/kg)											
Benzene	ND U	ND U	ND U	ND U	ND U	0.03	--	--	0.8	2.2	--
SVOCs (mg/kg)											
2-Methylnaphthalene	0.079	0.26	0.049 J	0.37	0.036 J	--	--	--	--	--	--
Acenaphthene	ND U	0.053 J	ND U	0.01 J	ND U	570	--	0.94	4,700	120,000	--
Acenaphthylene	ND U	0.4	ND U	ND U	0.0062 J	--	--	0.25	--	--	--
Anthracene	ND U	0.23	ND U	ND U	0.0068 J	12,000	--	2.6	23,000	610,000	--
Benzo(a)anthracene	0.032 J	1.2	0.0096 J	0.054	0.037 J	0.9	1.8	11	1.8	170	--
Benzo(a)pyrene	0.023 J	1.2 J †	0.0091 J	0.057	0.04 J	0.09	2.1	11	2.1	17	--
Benzo(b)fluoranthene	0.027 J	1.8 J †	0.0094 J	0.082	0.048 J	0.9	2.1	13	2.1	170	--
Benzo(g,h,i)perylene	0.013 J	0.21 J	ND U	0.025 J	0.018 J	--	--	4.4	--	--	--
Benzo(k)fluoranthene	ND U	0.7 J	ND U	0.026 J	0.021 J	9	--	8.1	9	1700	--
Bis(2-ethylhexyl) phthalate	ND U	ND U	ND U	ND U	ND U	46	--	--	46	4,100	--
Chrysene	0.034 J	1.3	0.011 J	0.074	0.06	88	--	11	88	17,000	--
Dibenz(a,h)anthracene	ND U	0.093 J †	ND U	0.008 J	ND UJ	0.09	0.42	--	0.42	17	--
Dibenzofuran	ND U	0.14 J	ND U	ND U	ND U	--	--	--	--	--	--
Fluoranthene	0.039	1.9	0.015 J	0.076	0.046	3,100	--	28	3,100	82,000	--
Fluorene	ND U	0.05 J	ND U	0.011 J	ND U	560	--	1.1	3,100	82,000	--
Indeno(1,2,3-cd)pyrene	ND U	0.28 J	ND U	0.025 J	ND UJ	0.9	1.6	5.8	1.6	170	--
Naphthalene	0.051	0.16	0.03 J	0.36	0.03 J	1.8	--	0.26	170	1.8	--
Phenanthrene	0.096	1	0.017 J	0.089	0.038 J	--	--	15	--	--	--
Pyrene	0.038 J	1.9	0.014 J	0.088	0.079	2,300	--	18	2,300	61,000	--
Inorganics (mg/kg)											
Antimony	0.66 J	0.94 J	0.23 J	0.35 J	0.31 J	5	--	--	31	82	--
Arsenic	8.2	18 †mr	5.6	5.3	6	11.3	13	--	13	61	--
Barium	120	140	74	75	77	1,500	--	--	5,500	14,000	--
Beryllium	0.78	0.67	0.74	0.53	0.67	22	--	--	160	410	--
Boron	1.5 J	3.6	3.6	2 J	2.5 J	40	--	--	16,000	41,000	--
Cadmium	ND U	0.66	ND U	0.25	0.21	5.2	--	--	78	200	--
Calcium	1,800	21,000	32,000	65,000	62,000	--	--	--	--	--	--
Chromium	22 †	10	11	8.9	11	21	--	--	230	690	--
Cobalt	25 †	7.4	9.3	5.7	7.7	20	--	--	4,700	12,000	--
Copper	9.7	49	10	20	9.7	2,900	--	--	2,900	8,200	--
Iron	20,000 †m	18,000 †m	14,000	9,900	13,000	15,000	15,900	--	--	--	--
Lead	20	270 †	23	68	19	107	--	--	400	700	--
Magnesium	900	3,600	5,000	5,300	8,400	325,000	--	--	--	730,000	--
Manganese	2,300 †mr	280	350	170	280	630	636	--	1,600	4,100	--
Mercury	0.016 J	0.18	0.022	0.083	0.026	0.89	--	--	10	0.1	--
Nickel	12	16	21	12	15	100	--	--	1,600	4,100	--
Potassium	550	750	890	790	930	--	--	--	--	--	--
Selenium	0.37 J	ND U	ND U	ND U	ND U	1.3	--	--	390	1,000	--
Silver	ND U	0.31	0.3	0.23 J	0.3	4.4	--	--	390	1,000	--
Sodium	62	100	120	83	270	--	--	--	--	--	--
Thallium	ND U	0.29 J	ND U	0.48 J	ND U	2.6	--	--	6.3	160	--
Vanadium	27	19	17	15	21	550	--	--	550	1,400	--
Zinc	29	190	58	75	71	5,100	--	--	23,000	61,000	--
TCLP Metals (mg/L)											
Barium	0.84	1.3	0.99	1.3	1.1	--	--	--	--	--	2
Boron	0.052 J	ND U	ND U	ND U	ND U	--	--	--	--	--	2
Cadmium	ND U	0.004 J	ND U	0.0022 J	ND U	--	--	--	--	--	0.005
Cobalt	ND U	ND U	ND U	ND U	ND U	--	--	--	--	--	1
Iron	0.29 J	ND U	ND U	ND U	ND U	--	--	--	--	--	5
Lead	ND U	0.065 L	ND U	ND U	ND U	--	--	--	--	--	0.0075
Nickel	ND U	ND U	ND U	0.018 J	ND U	--	--	--	--	--	0.1
Zinc	ND U	0.15 J	0.025 J	0.057 J	0.027 J	--	--	--	--	--	5
SPLP Metals (mg/L)											
Barium	NA	NA	NA	NA	NA	--	--	--	--	--	2
Lead	NA	0.59 L	NA	NA	NA	--	--	--	--	--	0.0075

CONTAMINANTS OF CONCERN

SITE	ISGS #4338-6 (ROW)					Comparison Criteria					
	4338-06-B06	4338-06-B07	4338-06-B08	4338-06-B09	4338-06-B10	MACs			TACO		
BORING	4338-06-B06 (0-2)	4338-06-B07 (0-2)	4338-06-B08 (0-2)	4338-06-B09 (0-2)	4338-06-B10 (0-2)	Most Stringent	Within an MSA	Within Chicago	Residential	Construction Worker	SCGIER
SAMPLE	4338-06-B06 (0-2)	4338-06-B07 (0-2)	4338-06-B08 (0-2)	4338-06-B09 (0-2)	4338-06-B10 (0-2)						
MATRIX	Soil	Soil	Soil	Soil	Soil						
DEPTH (feet)	0-2	0-2	0-2	0-2	0-2						
pH	8	6.9	8.2	7.7	7.1						
PID	--	0.3	--	--	--						
VOCs (mg/kg)											
Benzene	ND U	ND U	0.0064 J	ND U	ND U	0.03	--	--	0.8	2.2	--
SVOCs (mg/kg)											
2-Methylnaphthalene	0.069 J	0.17	0.018 J	0.088 J	0.0093 J	--	--	--	--	--	--
Acenaphthene	ND U	ND U	0.0086 J	0.017 J	ND U	570	--	0.94	4,700	120,000	--
Acenaphthylene	ND U	ND U	ND U	ND U	ND U	--	--	0.25	--	--	--
Anthracene	0.024 J	ND U	ND U	0.043 J	ND U	12,000	--	2.6	23,000	610,000	--
Benzo(a)anthracene	0.23	0.0062 J	0.057	0.19	ND U	0.9	1.8	11	1.8	170	--
Benzo(a)pyrene	0.32 †	ND U	0.092 J †	0.17 †	ND U	0.09	2.1	11	2.1	17	--
Benzo(b)fluoranthene	0.48	ND U	0.15 J	0.27	ND U	0.9	2.1	13	2.1	170	--
Benzo(g,h,i)perylene	0.15	ND U	0.04 J	0.042 J	ND U	--	--	4.4	--	--	--
Benzo(k)fluoranthene	0.17	ND U	0.06 J	0.073 J	ND U	9	--	8.1	9	1700	--
Bis(2-ethylhexyl) phthalate	ND U	ND U	0.12 J	ND U	ND U	46	--	--	46	4,100	--
Chrysene	0.34	ND U	0.084	0.21	ND U	88	--	11	88	17,000	--
Dibenz(a,h)anthracene	0.045 J	ND U	ND UJ	0.022 J	ND U	0.09	0.42	--	0.42	17	--
Dibenzofuran	ND U	ND U	ND U	ND U	ND U	--	--	--	--	--	--
Fluoranthene	0.56	ND U	0.14	0.3	ND U	3,100	--	28	3,100	82,000	--
Fluorene	ND U	ND U	ND U	ND U	ND U	560	--	1.1	3,100	82,000	--
Indeno(1,2,3-cd)pyrene	0.16	ND U	0.039 J	0.051 J	ND U	0.9	1.6	5.8	1.6	170	--
Naphthalene	0.033 J	0.26	0.0087 J	0.022 J	0.015 J	1.8	--	0.26	170	1.8	--
Phenanthrene	0.2	0.012 J	0.057	0.42	ND U	--	--	15	--	--	--
Pyrene	0.42	0.0077 J	0.18	0.24	ND U	2,300	--	18	2,300	61,000	--
Inorganics (mg/kg)											
Antimony	0.31 J	0.45 J	0.31 J	0.75 J	0.48 J	5	--	--	31	82	--
Arsenic	6.2	5.5	6.1	17 †mr	8.4	11.3	13	--	13	61	--
Barium	82	82	110	110	170	1,500	--	--	5,500	14,000	--
Beryllium	0.49	0.63	0.61	0.91	0.83	22	--	--	160	410	--
Boron	1.6 J	0.97 J	2.8 J	3.2	1.3 J	40	--	--	16,000	41,000	--
Cadmium	0.33	ND U	ND U	0.59	ND U	5.2	--	--	78	200	--
Calcium	59,000	1,200	15,000	9,600	1,700	--	--	--	--	--	--
Chromium	11	9.6	12	16	12	21	--	--	230	690	--
Cobalt	7	5.5	9.2	8.1	16	20	--	--	4,700	12,000	--
Copper	17	7.6	16	110	11	2,900	--	--	2,900	8,200	--
Iron	12,000	13,000	14,000	18,000 †m	17,000 †m	15,000	15,900	--	--	--	--
Lead	27	14	15	190 †	24	107	--	--	400	700	--
Magnesium	6,100	1,100	6,100	1,600	1,300	325,000	--	--	--	730,000	--
Manganese	370	160	480	270	320	630	636	--	1,600	4,100	--
Mercury	0.06	0.012 J	0.024	0.38 J	0.021	0.89	--	--	10	0.1	--
Nickel	12	7.7	11	74	19	100	--	--	1,600	4,100	--
Potassium	770	590	840	910	900	--	--	--	--	--	--
Selenium	ND U	ND U	ND U	ND U	ND U	1.3	--	--	390	1,000	--
Silver	0.35	0.34	0.33	0.49	0.5	4.4	--	--	390	1,000	--
Sodium	350	85	320	160	43 J	--	--	--	--	--	--
Thallium	ND U	ND U	ND U	ND U	ND U	2.6	--	--	6.3	160	--
Vanadium	19	22	22	23	31	550	--	--	550	1,400	--
Zinc	67	24	37	260	48	5,100	--	--	23,000	61,000	--
TCLP Metals (mg/L)											
Barium	0.67	0.96	0.5	0.9	1.4	--	--	--	--	--	2
Boron	ND U	ND U	ND U	ND U	ND U	--	--	--	--	--	2
Cadmium	ND U	ND U	ND U	0.004 J	0.0023 J	--	--	--	--	--	0.005
Cobalt	ND U	ND U	ND U	ND U	0.069	--	--	--	--	--	1
Iron	ND U	ND U	0.39 J	0.2 J	0.28 J	--	--	--	--	--	5
Lead	ND U	ND U	ND U	ND U	ND U	--	--	--	--	--	0.0075
Nickel	ND U	ND U	ND U	ND U	0.042	--	--	--	--	--	0.1
Zinc	0.031 J	0.037 J	0.02 J	0.15 J	0.09 J	--	--	--	--	--	5
SPLP Metals (mg/L)											
Barium	NA	NA	NA	NA	NA	--	--	--	--	--	2
Lead	NA	NA	NA	NA	NA	--	--	--	--	--	0.0075

CONTAMINANTS OF CONCERN

SITE	ISGS #4338-6 (ROW)				Comparison Criteria					
	4338-06-B11	4338-06-B12		4338-06-B13	MACs			TACO		
BORING	4338-06-B11 (0-2)	4338-06-B12 (0-2)	4338-06-B12 (0-2)D	4338-06-B13 (0-2)	Most Stringent	Within an MSA	Within Chicago	Residential	Construction Worker	SCGIER
SAMPLE	Soil	Soil	Soil	Soil						
MATRIX	0-2	0-2	0-2	0-2						
DEPTH (feet)	8.2	7.5 J	8.2 J	7.5						
pH	--	--	--	--						
PID										
VOCs (mg/kg)										
Benzene	ND U	ND U	ND U	ND U	0.03	--	--	0.8	2.2	--
SVOCs (mg/kg)										
2-Methylnaphthalene	0.008 J	ND U	0.012 J	ND U	--	--	--	--	--	--
Acenaphthene	ND U	ND U	0.0085 J	ND U	570	--	0.94	4,700	120,000	--
Acenaphthylene	ND U	ND U	0.0074 J	ND U	--	--	0.25	--	--	--
Anthracene	0.0097 J	ND U	0.012 J	ND U	12,000	--	2.6	23,000	610,000	--
Benzo(a)anthracene	0.11	ND U	0.13 J	ND U	0.9	1.8	11	1.8	170	--
Benzo(a)pyrene	0.16 †	ND U	0.19 J †	ND U	0.09	2.1	11	2.1	17	--
Benzo(b)fluoranthene	0.21	0.013 J	0.29 J	ND U	0.9	2.1	13	2.1	170	--
Benzo(g,h,i)perylene	0.1	ND U	0.1 J	ND U	--	--	4.4	--	--	--
Benzo(k)fluoranthene	0.078	ND U	0.099 J	ND U	9	--	8.1	9	1700	--
Bis(2-ethylhexyl) phthalate	ND U	ND U	ND UJ	ND U	46	--	--	46	4,100	--
Chrysene	0.16	ND U	0.18 J	ND U	88	--	11	88	17,000	--
Dibenz(a,h)anthracene	0.031 J	ND U	0.027 J	ND U	0.09	0.42	--	0.42	17	--
Dibenzofuran	ND U	ND U	ND U	ND U	--	--	--	--	--	--
Fluoranthene	0.31	0.011 J	0.23	ND U	3,100	--	28	3,100	82,000	--
Fluorene	ND U	ND U	ND U	ND U	560	--	1.1	3,100	82,000	--
Indeno(1,2,3-cd)pyrene	0.1	ND UJ	0.094 J	ND U	0.9	1.6	5.8	1.6	170	--
Naphthalene	ND U	ND U	0.0058 J	ND U	1.8	--	0.26	170	1.8	--
Phenanthrene	0.11	ND U	0.1	ND U	--	--	15	--	--	--
Pyrene	0.22	ND U	0.41 J	ND U	2,300	--	18	2,300	61,000	--
Inorganics (mg/kg)										
Antimony	0.4 J	0.37 J	0.8 J	0.29 J	5	--	--	31	82	--
Arsenic	5.6	4.8 J	11 J	3.5 J	11.3	13	--	13	61	--
Barium	93	140 J	400 J	86 J	1,500	--	--	5,500	14,000	--
Beryllium	0.87	0.79	0.89	0.89 J	22	--	--	160	410	--
Boron	4.2	1.1 J	0.77 J	ND UJ	40	--	--	16,000	41,000	--
Cadmium	0.21	0.25	0.3	ND U	5.2	--	--	78	200	--
Calcium	11,000	2,100 J	30,000 J	1,800 J	--	--	--	--	--	--
Chromium	18	13	12	9 J	21	--	--	230	690	--
Cobalt	12	7.1 J	22 J †	7.5 J	20	--	--	4,700	12,000	--
Copper	15	6.7	13	6.3 J	2,900	--	--	2,900	8,200	--
Iron	18,000 †m	14,000	20,000 †m	11,000	15,000	15,900	--	--	--	--
Lead	20	11 J	78 J	8.9 J	107	--	--	400	700	--
Magnesium	3,800	2,000	3,000	1,300 J	325,000	--	--	--	730,000	--
Manganese	280	410 J	3,400 J †mr	71 J	630	636	--	1,600	4,100	--
Mercury	0.015 J	0.014 J	0.067	0.01 J	0.89	--	--	10	0.1	--
Nickel	28	20	11	12 J	100	--	--	1,600	4,100	--
Potassium	2,200	780	530	670 J	--	--	--	--	--	--
Selenium	ND U	ND U	0.44 J	ND UJ	1.3	--	--	390	1,000	--
Silver	0.47	0.49	0.55 J	0.4 J	4.4	--	--	390	1,000	--
Sodium	470	170	160	260 J	--	--	--	--	--	--
Thallium	ND U	ND U	ND U	ND U	2.6	--	--	6.3	160	--
Vanadium	26	22	30	13 J	550	--	--	550	1,400	--
Zinc	72	160	96	33 J	5,100	--	--	23,000	61,000	--
TCLP Metals (mg/L)										
Barium	0.38 J	0.8	2.1 L	0.69	--	--	--	--	--	2
Boron	ND U	ND U	ND U	ND U	--	--	--	--	--	2
Cadmium	ND U	ND U	ND U	ND U	--	--	--	--	--	0.005
Cobalt	ND U	ND U	ND U	ND U	--	--	--	--	--	1
Iron	ND U	ND U	ND U	0.26 J	--	--	--	--	--	5
Lead	ND U	ND U	ND U	ND U	--	--	--	--	--	0.0075
Nickel	ND U	ND U	ND U	ND U	--	--	--	--	--	0.1
Zinc	ND U	0.025 J	ND U	ND U	--	--	--	--	--	5
SPLP Metals (mg/L)										
Barium	NA	NA	1.1	NA	--	--	--	--	--	2
Lead	NA	NA	NA	NA	--	--	--	--	--	0.0075

APPENDIX

D LABORATORY DATA PACKAGES AND SITE PHOTOGRAPHS

PHOTOGRAPHIC RECORD

Work Order No: 0111
Route: FAP 332/ FAP 132 (US 45/Poplar Street)
Contract Number: PTB 172-027
IDOT Project Number: C-99-022-20

Site: ISGS #4338-03
(Tunnel Hill State Trail)

Date: 1/17/2023
Direction: East
Time: 1508

Description: Orange cone
and placard indicate location
of boring 4338-03-B01



Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: South
Time: 1504

Description: Orange cone
and placard indicate location
of boring 4338-06-B01



PHOTOGRAPHIC RECORD

Work Order No: 0111
Route: FAP 332/ FAP 132 (US 45/Poplar Street)
Contract Number: PTB 172-027
IDOT Project Number: C-99-022-20

Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: East
Time: 1508

Description: Orange cone and placard indicate location of boring 4338-06-B02



Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: East
Time: 1510

Description: Orange cone and placard indicate location of boring 4338-06-B03



PHOTOGRAPHIC RECORD

Work Order No: 0111
Route: FAP 332/ FAP 132 (US 45/Poplar Street)
Contract Number: PTB 172-027
IDOT Project Number: C-99-022-20

Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: East
Time: 1511

Description: Orange cone and placard indicate location of boring 4338-06-B04



Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: South
Time: 1526

Description: Orange cone and placard indicate location of boring 4338-06-B05



PHOTOGRAPHIC RECORD

Work Order No: 0111
Route: FAP 332/ FAP 132 (US 45/Poplar Street)
Contract Number: PTB 172-027
IDOT Project Number: C-99-022-20

Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: South
Time: 1600

Description: Orange cone and placard indicate location of boring 4338-06-B06



Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: West
Time: 1602

Description: Orange cone and placard indicate location of boring 4338-06-B07



PHOTOGRAPHIC RECORD

Work Order No: 0111
Route: FAP 332/ FAP 132 (US 45/Poplar Street)
Contract Number: PTB 172-027
IDOT Project Number: C-99-022-20

Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: West
Time: 1602

Description: Orange cone and placard indicate location of boring 4338-06-B08



Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: West
Time: 1604

Description: Orange cone and placard indicate location of boring 4338-06-B09



PHOTOGRAPHIC RECORD

Work Order No: 0111
Route: FAP 332/ FAP 132 (US 45/Poplar Street)
Contract Number: PTB 172-027
IDOT Project Number: C-99-022-20

Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: West
Time: 1607

Description: Orange cone and placard indicate location of boring 4338-06-B10



Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: West
Time: 1616

Description: Orange cone and placard indicate location of boring 4338-06-B11



PHOTOGRAPHIC RECORD

Work Order No: 0111
Route: FAP 332/ FAP 132 (US 45/Poplar Street)
Contract Number: PTB 172-027
IDOT Project Number: C-99-022-20

Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: West
Time: 1623

Description: Orange cone and placard indicate location of boring 4338-06-B12



Site: ISGS #4338-06 (ROW)

Date: 1/17/2023
Direction: South
Time: 1503

Description: Orange cone and placard indicate location of boring 4338-06-B13



APPENDIX

E

UNCONTAMINATED
SOIL CERTIFICATION
FORMS