Sampling and Analysis Plan
Revision 0

JASPER POWER PLANT
1163 EAST 15TH STREET
JASPER, INDIANA 47547

CARDNO ATC PROJECT NO. 170IN1507H

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1 Introduction

In accordance with a request by the Indiana 15 Regional Planning Commission, Cardno ATC has prepared this Sampling and Analysis Plan (SAP) to investigate the *Recognized Environmental Conditions* (RECs) and other non-ASTM scope considerations identified by Cardno ATC in the December 9, 2014 Phase I Environmental Site Assessment (Phase I) performed at the Jasper Power Plant, located at 1163 East 15th Street in Jasper, Indiana (Site). Specifically the RECs include the following:

- The past use of the Site includes a power plant that utilized water treatment chemicals for boiler operation and lubricants used for plant equipment. A past environmental cleanup included the removal of coal ash from former lagoons on the Site. No evidence of soil and/or groundwater sampling was noted in association with the cleanup.
- Coal stored at the plant caught fire in August 2011 and the cleanup was coordinated with the Environmental Protection Agency (EPA) air monitoring support. The Emergency Response Notification System (ERNS) database reported a release to the air and soil stemming from the August 2011 fire on the Site.
- Based on available aerial photographs, apparent coal storage and an ash lagoon were observed on the northeast portion of the Site from 1968 to 1986.
- The northwest adjacent facility (assumed hydraulically upgradient of the Site) was identified as Inwood Office Furniture (1108 E. 15th Street) was listed in the Resource Conservation and Recovery Act (RCRA) non-generator database. The facility was a historical small quantity generator of hazardous wastes including waste paint and solvents. Several violations were noted at the facility in April 1999 and appeared to achieve compliance in 2000. Lilly Industries, Inc. was also listed at the facility's address in 2000, where ignitable hazardous wastes were historical generated. Based on the file review on the IDEM VFC, multiple air monitoring reports were listed for the Site from 1999 to 2014. Hazardous wastes generated at the facility included D001, F003, and F005 wastes. The violations reported in 1999 include the misuse of on-site filters and wiping cloths. Improper determination of hazardous wastes was also noted.
- Surrounding properties to the north and west were listed as Kimball Sales Division, Jasper Desk Company, Artec, Inwood Office Furniture, and E.H. Hamilton Trucking. The adjacent properties to the north and west are assumed to be hydraulically upgradient from the Site.
- Staining was observed on several areas of the concrete floor in the plant, maintenance shop, and storage building. Black staining and stressed vegetation was noted on the ground on the northeast portion of the Site. Staining was also observed near several drains in the plant basement and near a floor drain and sump in the coal transfer room. Dark staining was also observed near a floor drain in the maintenance shop. According to Mr. Bauer, the floor drains discharge into the sanitary sewer.
- A "coal collection pit" was observed east of the plant, where coal would be dumped before being transferred through the plant for processing. The pit appears to be constructed of

concrete and has an open top (metal grate). A sump was observed in the bottom of the coal transfer room of the plant. According to Mr. Kent Bauer, accumulated water (apparent groundwater from leaky walls) would be pumped from the sump to a concrete pit east of the plant. Based on observations, it appears that coal sediment (dust/debris) would make its way into the sump and get pumped out along the accumulated water. The concrete pit appears to retain the coal sediment and allow the water to drain out through an observed pipe in the wall of the pit. Mr. Bauer was unsure as to where the pipe discharges. Dark gray sediment and water was observed in the pit. Black staining was observed along the walls of the pit.

- Suspect ACMs were identified in the building in the form of floor tile, vinyl cove base, drywall, drop-in ceiling tile, and pipe insulation. Other suspect ACMs observed on the Site includes stored loose materials such as gaskets, mechanical insulation, and pipe insulation. Based on the age of the Site building (1968), ACMs are likely to be present at the Site.
- Cardno ATC's Site reconnaissance included a visual inspection for suspect lead sources. Based on the building's age (1968); there is a potential for lead-based paint to be present at the Site. Painted surfaces at the Site were observed in poor to good condition.

The work and all documents prepared during this scope of work is being funded through the Indiana 15 Regional Planning Commission, which received a U.S. Environmental Protection Agency (U.S. EPA) Hazardous Substance and Petroleum Grant (US EPA Grant No. BF00E01209-0). This SAP has been prepared in accordance with Indiana Department of Environmental Management's (IDEM's) *Remediation Closure Guide* (RCG), dated March 2012 (updated March 2014), and provides an outline of the objectives, organization, functional procedures, and quality assurance (QA) and quality control (QC) protocols for sampling, sample handling and storage, chain of custody, and field/laboratory testing and analysis.

QA/QC procedures identified herein were developed to accommodate applicable professional technical standards, IDEM requirements, government regulations and guidelines, and specific project goals and requirements.

2 Background

The Phase I, dated December 9, 2014, identified the Site, located at 1163 East 15th Street Jasper, Dubois County, Indiana as a former inactive coal-fired power plant situated in a relatively hilly area characterized by undeveloped, industrial, and residential land uses. The 8.46 acre parcel is improved with a main plant facility, located near the northwest corner of the Site and consists of several operations rooms, offices, maintenance areas, boiler areas, a turbine room, and coal transfer areas. Several stored containers, ASTs, and piping were also observed inside the plant. Various oils, wastewater treatment chemicals, and cleaning chemicals were stored in or around the plant. A maintenance shop is located southeast of the plant, which is used for storage and light maintenance activities on the Site. A cooling tower structure is also located southeast of the plant. A storage shed is located north of the cooling tower and is used to store wastewater treatment chemicals for past plant operations. When in operation, the cooling tower water was re-circulated and treated prior to re-use or discharge into the sanitary sewer system. A storage building containing equipment and supplies is located on the southwest corner of the Site. A mobile shed is located west of the maintenance shop and is used to store lawn equipment and fuel. Empty concrete storage bins were observed on the northeast part of the Site. The bins were once used to store coal during past plant operations. The bins are also used in the winter for salt and sand storage by the City. Staining and stressed vegetation was observed north of the storage bins. Concrete and asphalt pavement was observed on the north portion of the Site. A gravel lay-down lot is located south of the plant for storage of utility poles by the City. Grass and wooded areas make up the south and east portions of the Site.

A Request for Eligibility was submitted to the US EPA on October 29, 2014 for review and approval. The US EPA approved the Eligibility Determination Request on November 4, 2014.

The objective of the scope of work described in this SAP is to investigate the soil and groundwater quality at the in the vicinity of the *RECs* identified during the Phase I. Once the Site is characterized and the environmental issues are resolved, the Site may be redeveloped for commercial or industrial land use.

3 Sampling and Analysis Plan

This SAP describes sample collection and laboratory analysis of soil and groundwater samples that will be collected to evaluate the current site conditions in comparison with the applicable IDEM Remediation Closure Guide (RCG) screening levels. Specifically, the results of the laboratory analyses will be compared to the IDEM RCG screening levels for both residential and commercial/industrial land use. This SAP is presented to define the field activities to be conducted and protocol to be followed in order to accomplish the Data Quality Objectives outlined in **Section 4.0**. This section is provided as guidance for the personnel assigned to conduct the activities and discusses in detail the procedures and specifications required to achieve the level of Quality Assurance (QA) necessary for the data generated. Clear sampling and analysis procedures must be used to ensure proper QA is adhered to and that field tasks are conducted to certify that all data generated is of sufficient quantity and quality to satisfy the project objectives. Accordingly, all field activities, including; boring, drilling and sampling operations, will be conducted or supervised under the direction of an Indiana Licensed Professional Geologist.

3.1 Utilities

Prior to initiating Site activities, Cardno ATC will contact the Indiana Underground Plant Protection Service (IUPPS) and request the member utilities to identify the underground utility locations in the rights-of-way surrounding the Site. If additional information is discovered during the course of the subsurface investigation, it may become necessary to utilize a private locating sub-contractor to locate the on-site utilities.

3.2 Health and Safety

The Health and Safety Plan (HASP) included within **Appendix A** has been developed to identify potential human health and worker hazards and to describe appropriate worker personal protective equipment and safety protocols. The HASP for subsurface investigation addresses worker safety during field sample screening, sample collection, and associated testing. The HASP also addresses potential field hazards related to heavy equipment operation and common biological exposures (snakes, ticks, poisonous plants, etc.). Personnel involved with the subsurface investigation will be required to hold a health and safety meeting prior to beginning work each day.

3.3 Work Zones

To reduce the accidental spread of potentially hazardous substances by workers and equipment, work zones will be established on the site where different types of operations will occur, and the flow of personnel among the zones will be controlled. The establishment of work zones will help ensure that personnel are properly protected against hazards present, work activities and contamination are confined to the appropriate areas, and personnel can be located and evacuated in an emergency.

3.4 Investigation Locations

The subsurface investigation to evaluate the soil and groundwater quality at the Site will include the collection and analysis of up to thirty-four soil samples and thirteen groundwater samples.

Seventeen soil borings will be advanced to a depth of approximately 30 feet below ground surface (ft-bgs) or 5 ft below the groundwater table, whichever is shallower, with thirteen of the borings being completed as temporary monitoring wells. The proposed sampling locations are shown on **Figure 1**. Although the general soil boring layout has been developed to focus on areas most likely to have been adversely impacted by Site operations, the location of each soil boring will be determined in the field based on access and field conditions. The proposed sample locations and rationale are provided below:

- Eight soil borings (5 temporary monitoring wells) will be advanced in the vicinity of the former ash storage/lagoons.
- Two soil borings (2 temporary monitoring wells) will be advanced along the north and west Site boundaries to evaluate the potential migration of contaminated groundwater from hydraulically upgradient properties.
- Five soil borings (4 temporary monitoring wells) will be advanced in the vicinity of the main building and maintenance shop.
- Two soil borings (2 temporary monitoring wells) will be advanced along the southern boundary to evaluate groundwater quality migrating from the Site.

3.5 Subsurface Investigation Procedures

Soil "grab" samples will be collected in accordance with IDEM RCG, as described in the Quality Assurance Project Plan (QAPP) Revision 0, dated March 10, 2014, which was conditionally approved by US EPA on June 6, 2014.

3.5.1 Soil Sampling

Each boring may initially be advanced using a stainless steel hand auger to a maximum depth of approximately four ft-bgs to minimize the potential hazards associated with buried utilities. The soil borings will then be advanced and soil samples collected continuously to the desired depth using a track mounted Geoprobe® drill rig equipped with 5-foot long, nominal 2-inch diameter Macro-core® samplers. The Macro-core samplers shall be equipped with new plastic internal liners prior to collection of each sample.

Soil samples from a minimum of each 2-foot interval will be collected and sampled for potential submittal to the laboratory for analysis. Each sample collected will be labeled and placed in a cooler with ice for preservation following collection. A portion of the remaining sample will then be placed into re-sealable plastic bag for field headspace screening. Each soil sample will be inspected for physical evidence of contaminants such as staining, odors, free product, etc. Soil headspace measurements will be collected for the emission of total photo-ionizable vapors (TPVs) using a photo-ionization detector (PID) which measures TPVs in parts per million (ppm). The inspection information, soil field descriptions, and headspace emission measurements will be recorded on boring logs generated for each boring location.

Two soil samples will be retained for laboratory analysis from each of the seventeen soil borings. The samples retained for analysis will include the surface sample and the

subsurface sample exhibiting the greatest potential for being impaired (i.e., highest TPV reading, staining, odors, etc.) based on field screening and/or field inspection.

The samples retained for analysis will be containerized with minimal headspace in sample containers provided by the laboratory, sealed using Teflon® lined caps, labeled with a unique identification, placed in an ice-packed cooler and transported to Pace Analytical Laboratory located in Indianapolis, Indiana using appropriate chain-of-custody protocol. Soil samples to be analyzed for volatile organic compounds (VOCs) will be collected in accordance with SW846 Method 5035 (Indiana Modified). Laboratory analyses will be performed on a normal two-week turn around basis.

3.5.2 Groundwater Sampling

If groundwater is encountered and conditions permit, i.e. enough water is produced, Cardno ATC will collect a groundwater sample from the thirteen temporary monitoring wells to be installed. The location of the proposed wells is provided on **Figure 1**. Each temporary well will be constructed of 1 inch diameter polyvinyl chloride (PVC) riser and a 10 ft factory slotted screen. The groundwater samples will be collected using a low flow/low stress sampling methodology. The water samples will be placed in appropriate sample containers, labeled with a unique identification, placed in a cooler and transported to Pace Analytical laboratory using the appropriate chain-of-custody controls. Laboratory analyses will be performed on a normal two-week turn around basis. After the samples are collected, a licensed water-well driller will return to the Site to properly abandon the temporary wells.

3.6 Asbestos Investigation

Conducting sampling to identify asbestos-containing materials will cost-effectively enable Indiana 15 to properly plan asbestos abatement activities, if warranted. The EPA's National Emission Standard for Hazardous Air Pollutants (NESHAP) standard for asbestos (40 CFR Part 61, Subpart M) requires thorough inspections for the presence of both friable and non-friable ACMs in all buildings to be demolished or renovated. Local, state and federal environmental agencies may also require notification prior to any renovation or demolition activities in public or commercial buildings, and this investigation will provide data required for in these notifications. Therefore, a comprehensive asbestos investigation during which suspect materials observed throughout the building will be documented and either sampled or assumed to contain asbestos. Category I non-friable flooring and roofing material samples will not be collected as part of this survey unless deemed by the inspector to be in friable condition, as these materials can be disposed of as regular construction debris utilizing routine demolition activities, i.e. no cutting, abrading, sanding or grinding. All samples will be collected by Cardno ATC building inspectors who are accredited by the State of Indiana, as required by Indiana regulations.

During an asbestos investigation, the site will be inspected for the presence of surfacing materials (i.e., plaster and textured paint), thermal system insulation (i.e., pipe coverings and pipe fitting insulation) and miscellaneous materials (i.e., floor tile, wallboard and roofing materials) that may contain more than 1 percent asbestos. All of the materials suspected of being ACMs are categorized in homogeneous areas (HAs). Each HA consists of all observed materials found in various locations in a building that are similar in color, appearance, texture and date of installation.

When asbestos is found in a bulk sample of friable material, but the asbestos content is determined by visual estimation to be less than 10%, the building owner/operator may either (1) elect to assume that the material contains more than 1% asbestos and is therefore a legally defined ACM, or (2) require verification of the asbestos content using the Point Counting Method. Cardno ATC will assume that visual estimation is acceptable for the purposes of this investigation.

3.7 Lead Based Paint Investigation

A lead-in-paint investigation of the former power plant buildings will be conducted using a portable Niton X-Ray Florescence (XRF) device. This survey will be conducted concurrently with the asbestos investigation and will be performed by a qualified lead inspector to sample coated surfaces to document lead content in general accordance with OSHA Lead Standard 29 CFR 1926.62. Painted components will be grouped by type and age if applicable. We will perform a lead-in-paint investigation in which a representative number of suspect surfaces observed will be documented and tested to determine lead content. These collected readings will be compared to the United States Department of Housing and Urban Development (HUD) guidelines. During renovation and demolition projects, the presence of lead paint can become an environmental concern, since airborne lead paint dust particles are known to cause health problems. The OSHA Standard for Lead in Construction (29 CFR 1926.62) has specific requirements that must be followed if lead is identified in areas that will be disturbed during any planned renovation or manual demolition activities.

3.9 Analytical Procedures

All environmental media samples will be placed in the appropriate laboratory containers, logged on a chain of custody, placed in a cooler with ice to maintain a temperature of approximately 4° Celsius, and transported to an accredited laboratory in Indianapolis, Indiana for analysis. The samples will be analyzed within the established holding times using U.S. EPA-approved Methods as described in the EPA publication, Test Methods for Evaluation of Solid Wastes, Physical/Chemical Methods (SW-846, 3rd Edition, Update III).

3.9.1 Soil

Up to thirty-four soil samples (two per boring) will be analyzed for the following parameters:

- VOCs, using US EPA SW-846 Methods 8260,
- Polynuclear Aromatic Hydrocarbons (PAHs), using US EPA SW-846 Method 8270SIM
- Resource Conservation & Recovery Act (RCRA) Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver) using US EPA Method 6010B/7470

3.9.2 Groundwater

Up to thirteen groundwater samples (one per temporary monitoring well) will be analyzed for the following parameters:

- VOCs using US EPA SW-846 Methods 8260B
- PAHs, using US EPA SW-846 Method 8270SIM
- RCRA Metals using US EPA Method 6010B/7470

3.9.3 Asbestos

Up to 50 suspected ACM bulk samples will be analyzed using US EPA Method 600/R-93/116. July, 1993.

In addition to the thirty-four discrete soil samples, thirteen groundwater samples described above, two duplicate soil sample, one duplicate groundwater sample, three trip blanks, and three matrix spike/matrix spike duplicate samples will be analyzed. A summary of the proposed sampling program and applicable QA/QC samples is provided as **Table 1**.

The Method Detection Limits (MDLs) and Estimated Quantification Limits (EQLs) shall be low enough to determine if the reported COC concentrations, if any, are in excess of the RCG Screening Levels. Quality Assurance/Quality Control (QA/QC) shall be performed and submitted for review in accordance with the RCG, and in accordance with the **full data package criteria**.

3.10 Decontamination Procedures

Sampling equipment and supplies (i.e. gloves, hand augers, etc.) will be dedicated to a specific sample location, disposed of after use or decontaminated between sample collection. Sampling personnel are to wear clean latex or nitrile gloves at any time they are handling equipment or containers and will take all precautions to avoid contamination of equipment and supplies. Geoprobe® sampling equipment, which enters each borehole, will be cleaned prior to drilling. The sampling equipment will also be cleaned between sample intervals using a solution of non-phosphate detergent and rinsed in potable water. Parts or surfaces of the portable non-dedicated equipment that come in contact with soil be decontaminated between sample collection points by washing with a non-phosphate detergent wash, followed by a rinse in potable water.

3.12 Sampling Location Survey

The location of each soil boring will be recorded using a global positioning system, and the elevation of each temporary well point will be surveyed to allow for correlation of groundwater level data. The groundwater level data, collected prior to sample collection, will be utilized to determine the apparent groundwater flow direction beneath the Site.

4 Data Quality Objectives (DQOs)

This section discusses DQO's for sampling and analysis of subsurface soil samples from the area of interest identified during the IDEM's site visits. The following types of data will be generated in the course of this investigation:

- Field observations and geologic and hydrogeologic conditions including soil characteristics, and chemicals of concern (COC) indicators;
- Field meter readings including those for measurement of water levels, basic water chemistry, and TPV headspace screening;
- Field records of onsite activities including well construction, sample collection, sample handling, and other activities directly tied to the generation of data or the proper context of data; and
- Results of laboratory analysis of soil and groundwater samples.

The quality objective for these data types are discussed below and in further detail in the QAPP Revision 0, dated March 10, 2014, which was conditionally approved by US EPA on June 6, 2014 for Indiana 15 Regional Planning Commission (US EPA Grant No. BF00E01209 0).

4.1 Field Observations and Documentation

Field documentation will be crucial to ensure the integrity of samples and the associated analytical results. For these sampling tasks, documentation will include field logbooks, field data collection forms, field meter calibration information, and chain of custody documentation. The quality of field observations of geologic and hydrogeologic conditions relies heavily on the training and experience of the personnel responsible for those activities. Criteria for performance are established through standard operating procedures for the applicable activities presented in **Section 3.0** (Sampling and Analysis Plan). The quality objectives for these data will be to maintain adherence to the applicable procedures and to maintain proper documentation.

4.2 Equipment Calibration

The quality of field meter readings relies on the proper calibration and operation of equipment. Equipment used to gather, generate, or measure environmental data will be calibrated with sufficient frequency and in such a manner that accuracy and reproducibility of results are consistent with the manufacturer's specifications.

At a minimum, each instrument will be calibrated in the laboratory or office prior to each sampling event and operate in accordance with the manufacturer's specifications. Equipment used during the field sampling will be examined daily to certify that it is in operating conditions and calibrated according to manufacturer's instructions. If equipment malfunction is suspected and calibration failure occurs, equipment will be removed from service and substitute equipment will be obtained. Calibration activities will be recorded in the appropriate field forms or logbook(s).

4.3 QA/QC Samples

To provide for a measurement of the precision and accuracy of the sampling event, the following QA/QC samples will be submitted for analysis along with environmental media samples.

4.3.1 Trip Blanks

1) Intent: Expose handling or transportation induced deterioration of the sample.
2) Method: Before the start of sampling, the laboratory will provide a blank TerraCore Sampling Kit (1 vial with 25ml methanol and 2 vials with 5ml of DI water) to serve as a trip blank for soil samples and a water sample trip blank for water samples) and . These blanks will be sent from the laboratory to the site, and will be submitted for analysis by the field sampling team. Trip Blanks will be analyzed for VOCs only.
3) Frequency: The trip blank for soil sampling will be one unused TerraCore sampling Kit per bottle lot, and the trip blank for water samples will be one 40ml vial of laboratory supplied DI water for each day of sampling and/or for each cooler used to store and transport samples for VOC analysis.

4.3.2 Field Duplicates

1) Intent: Expose deficiencies in the sample collection and laboratory analysis that influence sample precision.
2) Method: Field samples will be collected for a replicate analysis from selected sampling locations. The sample will be collected by filling double the amount of sample containers as called for in the sample plan. One set of samples will be identified as the sample. The second set will be identified as a field duplicate.
3) Frequency: One field duplicate will be collected and submitted for every 20 samples collected.

4.3.3 Matrix Spike/Matrix Spike Duplicates (MS/MSD) or Laboratory Duplicates

1) Intent: Evaluate laboratory precision, accuracy, representativeness, comparability and completeness (PARCC) of the data parameters generated during this investigation.
2) Method: MS/MSD samples will be collected for replicate analysis from selected sampling locations. The sample will be collected by filling triple the amount of sample containers as called for in the sample plan. One set of samples will be identified as the sample. The second and third sets will be identified as MS/MSD.
3) Frequency: One MS/MSD sample will be collected and submitted for every 20 samples collected.

	QC Sample Type	Frequency of Sample/Analysis	Details
Field Samples	Duplicate Samples	1 duplicate per 20 samples per matrix, or 1 duplicate per sample matrix if fewer than 20 samples.	Duplicate sample to be collected by the same methods at the same time as the original sample. Used to verify sample and analytical reproducibility.
	Trip Blanks	1 trip blank per cooler containing samples for VOC analysis for water samples.	Laboratory prepared organic-free blank to assess potential contamination during sample container shipment and storage.
		1 trip blank per day or per cooler.	One unused TerraCore Sampling Kit (1 vial with 25ml methanol and 2 vials with 5ml of DI water)
Lab Samples	Matrix Spike/ Matrix Spike Duplicate	1 MS/MSD per 20 or fewer samples per matrix	Laboratory spiked sample to evaluate matrix and measurement methodology.
	Method Blanks	1 method blank per batch of samples prepared, or per lab SOP	Laboratory blank sample to assess potential for contamination from laboratory instruments or procedures.
	Laboratory Control Samples and Duplicates	Analyzed as per method requirements and laboratory SOPs	Evaluates laboratory reproducibility.

4.4 Sample Packaging and Shipment

Once the field sampling crew has filled out all the appropriate sample labeling and custody documentation, the samples must be stored on ice, and shipped to the laboratory via courier. As the samples are assembled for shipment, the following steps will be conducted:

1) Follow all appropriate instructions for collecting the samples.
2) Tightly secure the lid of each sample container and confirm that the sample has been properly labeled with the date and time of sample collection.
3) Place each sample container inside bubble pack (if container is glass).

4) Place the sample containers inside the sample cooler.
5) Place bubble wrap, or other suitable material that will maintain its integrity if it gets wet, between each sample container to take up any void space.
6) Add ice in the cooler containing the samples.
7) Place a chain-of-custody and any other instructions inside a resealable plastic bag and place the bag inside the cooler.
8) Close the cooler and secure closed with shipping tape by running the tape around both ends of the cooler at least two times.
9) Place one custody seal across the front of the cooler.
10) Place address label with both the "Shipped From" and "Ship To" addresses on the top of each cooler.
11) Notify the laboratory that it will be receiving the samples.

4.5 Chain of Custody Procedures

Possession of samples collected during field investigations must be traceable from the time the samples are collected until they or their derived data are summarized used for data analysis, interpretation, and site decision-making. Chain of custody procedures will be followed to maintain sample accountability.

The custody form will document which individuals were in possession of the samples and when custody was transferred from one individual to another. Any deviations from sampling protocol will also be documented on the custody record. Additionally, the chain of custody form will double as a request for analysis form. The custody form will specify the type and number of bottles shipped, analysis to be performed and turnaround time requirements. The sample custody records will be part of the final report.

Whenever the custody of samples is transferred, the individuals relinquishing and receiving the sample will sign, date, and note the time on the record. Separate records will accompany each sample package shipped to the laboratory. The original custody form will accompany the samples and a copy will be retained by the sampling team.

When shipped by courier, the method of shipment and courier name will be noted in the remarks column. For ground or air courier shipments to the laboratory, the sampling team will complete the chain of custody, place it in the sampling cooler, and seal the cooler with shipping tape and a custody seal. Samples will not be relinquished to the shipping firm; rather, the unbroken custody seal will establish sample integrity during the time that the samples are in transit. Shipping return receipts, freight bills, and bills of lading will be retained as part of the sample custody documentation.

4.6 Laboratory Quality Assurance and Deliverables

The results of laboratory analyses are subject to the quality objectives of the Laboratory Quality Assurance Manual (QAM), which is available on request from the laboratory that is used to perform the analyses. The Laboratory QAM specifies methods for the maintenance and calibration of equipment, handling of samples, execution of test procedures, and other activities impacting the quality of the generated data.

Analytical results will be validated internally by the laboratory, according to laboratory procedures. The laboratory will assess the validity of sample results, along with duplicate, matrix spike/matrix spike duplicate (MS/MSD), and blank sample results. Laboratory validation is performed according to established internal quality control programs initiated by the laboratory.

Laboratory and field analytical results will be submitted in digital data files prepared in accordance with IDEM digital data format guidance. Hardcopy analytical reports will also be submitted.

Standard, or Level II, laboratory QA/QC reporting will be provided with the original analytical results. Level II laboratory data deliverables for performance monitoring samples will include:

- Date and time of sample receipt;
- Sample condition upon receipt;
- Sample identification number;
- Summary report of results (case narrative);
- Sampling, preparation and analysis data;
- Analytical and preparation methods used;
- Sample, duplicate sample, and blank results;
- Laboratory Control Sample results;
- Matrix spike/matrix spike duplicate results;
- Surrogate recoveries (for GC and GC/MS); and
- Signed Chain-of-Custody sheets for all samples.

In addition to the reporting elements listed above for Level II, Level III laboratory data deliverables will include summaries of:

- Instrument performance checks;
- Initial calibration data;
- Continuing calibration checks;
- Methods;
- Laboratory Control Samples;
- MS/MSD results;
- Surrogate recoveries;
- Internal standards;
- Retention times; and
- GC analytical sequence

In accordance with the RCG, if the laboratory results will be used for closure purposes, the final laboratory report will include additional QA/QC documentation, including raw data. This laboratory reporting level, referred to as Level IV, will accompany the analytical results submitted if requested.

The Level IV (**Full Data Package)** report will also include raw data for:

- GC/MS tuning;
- Continuing Calibration standards;
- Initial Calibration curves;
- Method blanks
- Laboratory Control Samples;

- MS/MSD samples;
- Sample Chromatograms and quantitative reports;
- GC/MS Spectra;
- Sample run logs; and
- Extraction logs.

4.7 Analytical Results

The data will be used to evaluate if the soil and/or groundwater quality relative to the IDEM RCG screening levels. If analytical results are found above the closure concentrations, additional soil and groundwater assessment and/or remediation may be necessary.

When asbestos is found in a bulk sample of friable material, but the asbestos content is determined by visual estimation to be less than 10%, the building owner/operator may either (1) elect to assume that the material contains more than 1% asbestos and is therefore a legally defined ACM, or (2) require verification of the asbestos content using the Point Counting Method. Cardno ATC will assume that visual estimation is acceptable for the purposes of this investigation

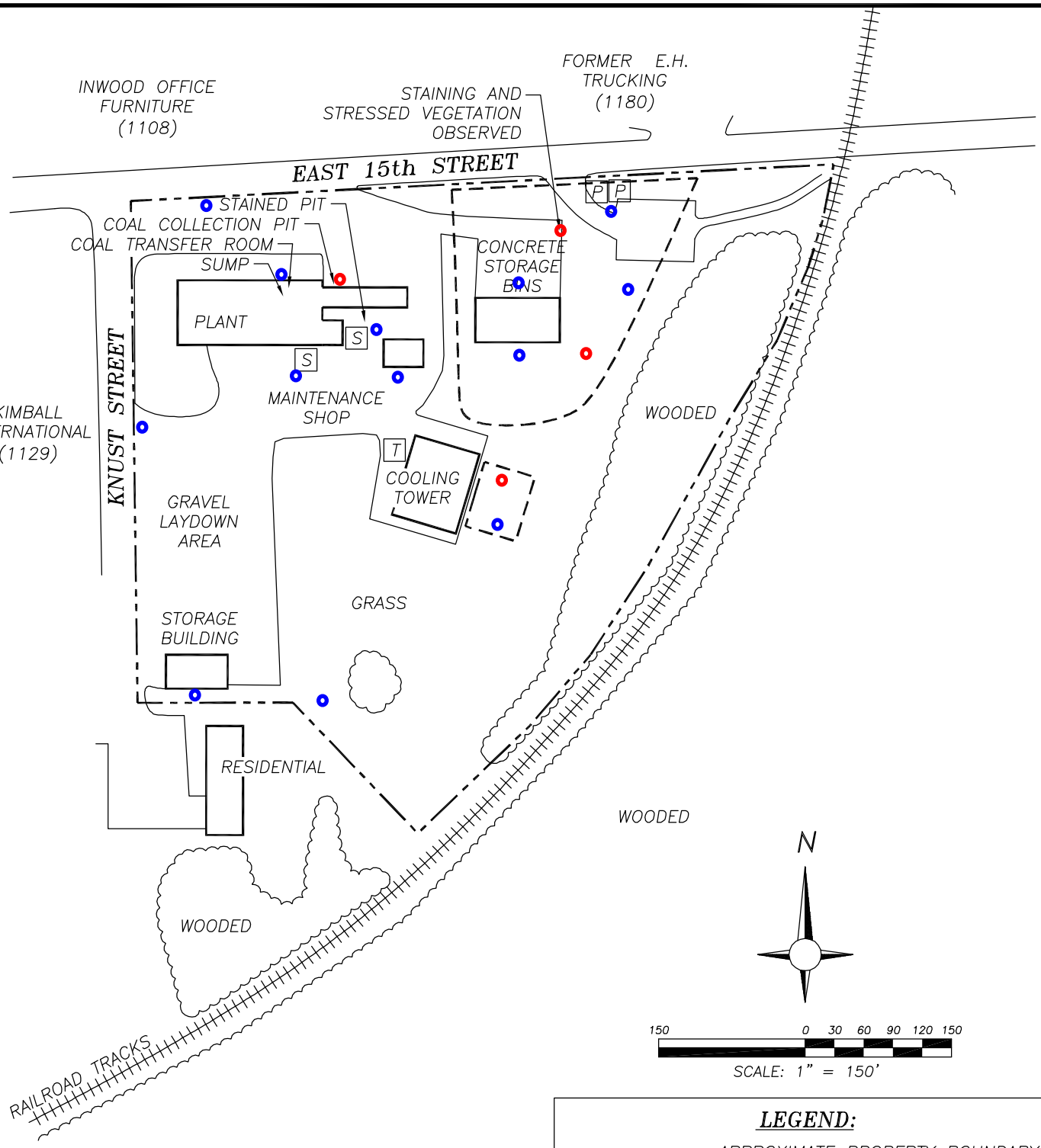
5 Data Quality Assessment

DQA involves assessing the effectiveness of the sample design, sampling procedure, and laboratory analysis. DQA is used to ensure that the sampling and analytical quality are adequate to meet the precision, accuracy, representativeness, comparability, and completeness (PARCC) requirements established in the DQOs. DQA identifies the review process needed to support project requirements and confirms that the field sampling QA/QC event, the field documentation, and the QA/QC samples provide useable data. DQA also evaluates the final results of the site investigation and compares them to the closure levels. Accordingly, DQA of field and laboratory data collection will include the following:

- Review of sampling design and data collection documentation;
- Review of field measurement results;
- Review of laboratory case narratives;
- Review of field duplicate results;
- Review of equipment blank results; and
- Review of MS/MSD results and blank results.

Comparison of soil and groundwater concentrations to the IDEM RCG screening levels is part of the DQA process.

Figures



LEGEND:

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF FORMER ASH LAGOONS AND COAL PILES
- S SHED
- SOIL & GROUNDWATER SAMPLE
- SOIL SAMPLE

PROPOSED SOIL & GROUNDWATER SAMPLE LOCATIONS

PHASE II ENVIRONMENTAL SITE ASSESSMENT
JASPER POWER PLANT
1163 EAST 15th STREET
JASPER, INDIANA

Project Number: 170EM00003		Drn. By: SP
Drawing File: SEE LOWER LEFT		Ckd. By: BK
Date: 11/14	Scale: AS SHOWN	App'd By:
Cardno ATC		Figure: 1

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Tables

Table 1. Proposed Sampling Program, Fomer Jasper Power Plant, Jasper, Indiana

Area of Concern	Sample Matrix	Data Usage	Number of Borings	Number of Samples	Field Parameters	Laboratory Parameters	Analytical Method
Coal Ash and Lagoon Area	Soil	Investigate Soil Quality	8	16	Qualitative screening; PID	VOCs PAHs Metals	8260 8270 6010B/7470
	Groundwater	Evaluate groundwater quality	5	5	Qualitative screening; pH, Specific Conductance & Temperature	VOCs PAHs Metals	8260 8270 6010B/7470
Upgradient Properties	Soil	Investigate Soil Quality	2	4	Qualitative screening; PID	VOCs PAHs Metals	8260 8270 6010B/7470
	Groundwater	Evaluate groundwater quality	2	2	Qualitative screening; pH, Specific Conductance & Temperature	VOCs PAHs Metals	8260 8270 6010B/7470
Main Plan and Maintenance Shop	Soil	Investigate Soil Quality	5	10	Qualitative screening; PID	VOCs PAHs Metals	8260 8270 6010B/7470
	Groundwater	Evaluate groundwater quality	4	4	Qualitative screening; pH, Specific Conductance & Temperature	VOCs PAHs Metals	8260 8270 6010B/7470
Southern Site Boundary	Soil	Investigate Soil Quality	2	4	Qualitative screening; PID	VOCs PAHs Metals	8260 8270 6010B/7470
	Groundwater	Evaluate groundwater quality	2	2	Qualitative screening; pH, Specific Conductance & Temperature	VOCs PAHs Metals	8260 8270 6010B/7470
Trip Blank	DI Water		NA	3	-	VOCs	8260
Matrix Spike/Matrix Spike Duplicate Sample	Soil	Investigate Soil Quality	NA	2	Qualitative screening; PID	VOCs PAHs Metals	8260 8270 6010B/7470
	Groundwater	Evaluate groundwater quality	NA	1	Qualitative screening; pH, Specific Conductance & Temperature	VOCs PAHs Metals	8260 8270 6010B/7470

Notes:
NA - Not Applicable

Appendix A – Site Health and Safety Plan

HEALTH AND SAFETY PLAN

Prepared By:
Cardno ATC
7988 Centerpoint Drive, Suite 100
Indianapolis, Indiana 46256

Prepared For:
INDIANA 15 REGIONAL PLANNING COMMISSION

JASPER POWER PLANT
1163 EAST 15TH STREET
JASPER, INDIANA 47547

CARDNO ATC PROJECT NO. 170IN1507H

CARDNO ATC
HEALTH AND SAFETY PLAN (HASP)
REVIEW AND APPROVAL

CLIENT Indiana 15 Regional Planning Commission

PROJECT NUMBER: 170IN1507H

SITE NAME: Former Jasper Power Plant SITE LOCATION: Jasper, IN

PROJECT DESCRIPTION: Conduct subsurface investigation, including the collection of near surface soil, subsurface soil, and groundwater samples.

PREPARED BY: Robert Walker Principal Geologist DATE: 1/5/15

Robert B. Walker		1/5/15
Project Manager	Signature	Date
Reviewer's Name	Signature	Date

This Health and Safety Plan (Plan) has been written for the use of Cardno ATC. (ATC) and its employees. It may also be used as a guidance document by properly trained and experienced ATC subcontractors. However, ATC does not guarantee the health or safety of any person entering this Site.

Due to the potential hazardous nature of this Site and the activity occurring thereon, it is not possible to discover, evaluate, and provide protection for all possible hazards which may be encountered. Strict adherence to the health and safety guidelines set forth herein will reduce, but not eliminate, the potential for injury at this Site. The health and safety guidelines in this Plan were prepared specifically for this Site and should not be used on any other Site without prior research by trained health and safety specialists.

ATC claims no responsibility for use of this Plan by others. The Plan is written for the specific Site conditions, purposes, dates, and personnel specified and must be amended if these conditions change.

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EMERGENCY INFORMATION

Site Emergencies Call:

Ambulance **911**

Fire: **911**

Police: **911**

Nationwide Call Before You Dig **811**

Core Health Networks (24 hour First-Aid) **(855) 282-6331**

Poison Control Center: **(800) 222-1222**

National Response Center: **(800) 424-8802**

Spills: **Local USEPA Office (800)-621-8431**
State Health Department (800)-246-8909
State Environmental Agency (800) 451-6027

Hospital **(812) 723-2811**

Memorial Hospital
800 W 9th St, Jasper, IN
Jasper, IN 47546

See attached map for directions
Approximate travel time is **5** minutes.

EMERGENCY ASSEMBLY LOCATION: Northwest corner of site.

FIRST-AID MEASURES

In the event that personnel exhibit symptoms of exposure call COMP-CARE immediately in first-aid assessment process. The following procedures will be used:

Eye Contact: Flush eye immediately with copious amount of water for a minimum of 15 minutes. Repeat until irritation is eliminated and seek medical attention.

Skin Contact: Wash exposed area with soap and water for at least 15 minutes. If dermatitis or severe reddening occurs, seek medical attention.

Inhalation: Move the person into fresh air. If symptoms persist, seek medical attention.
Ingestion: Do not induce vomiting. Seek immediate medical attention.

Important Numbers:

Project Manager: ……..	Robert Walker	317-579-4014
Site Safety and Health Officer: ……	Brian Kleeman	812-457-0043
Site Supervisor: ……...	Brian Kleeman	812-457-0043
Client Contact: ……	Elliot Englert	(812) 367-8455
Regional Safety Coordinator: ……..	Nick Guidry	(337) 262-7977
State Utility Locate Service: ……...	IUPPS	811

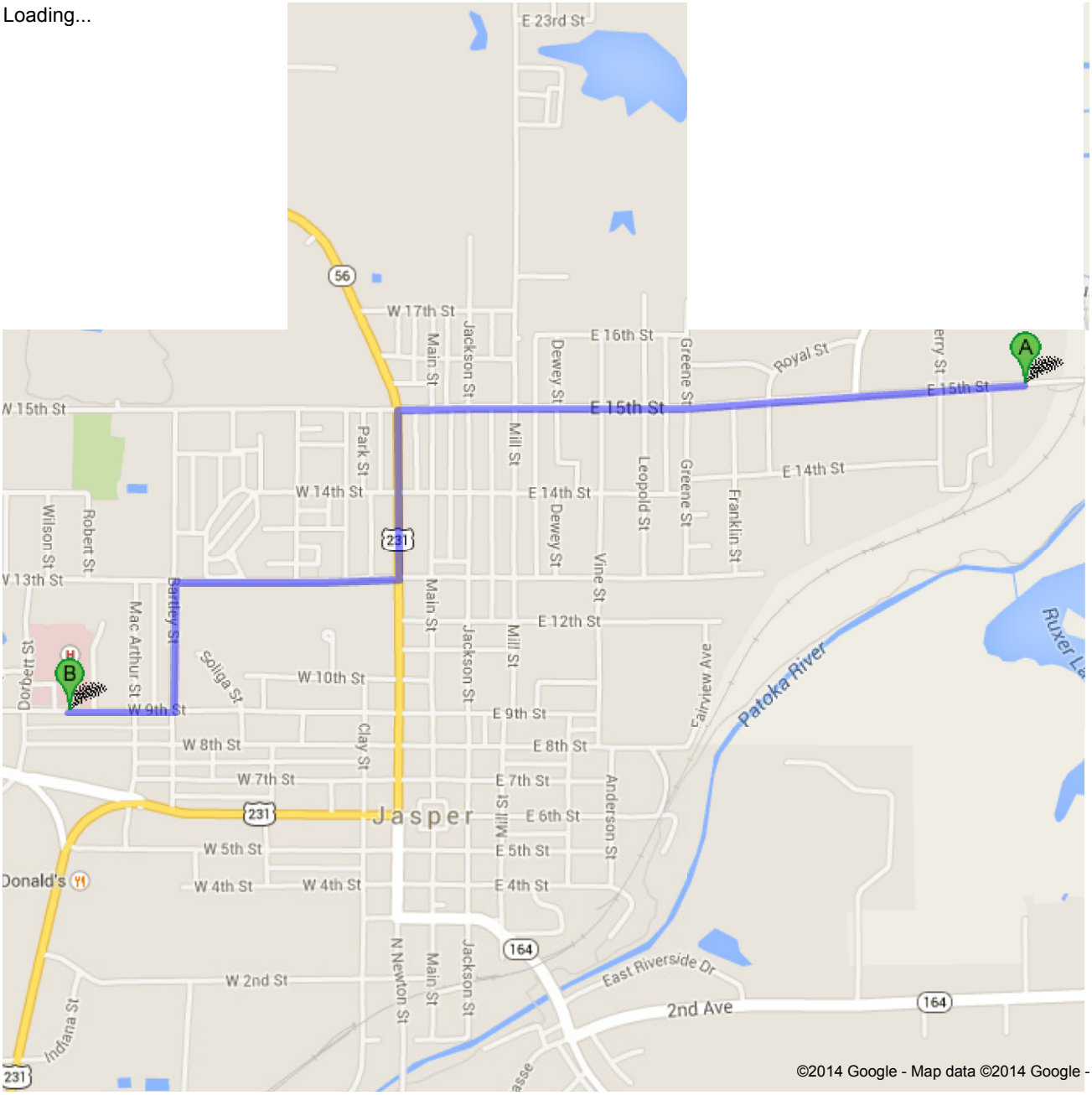
NOTE: For additional emergencies/important contacts, refer to your Cardno ATC Lifelines Card.

EMERGENCY MEDICAL ROUTE TO HOSPITAL

Google

Directions to 800 W 9th St, Jasper, IN 47546
1.9 mi – about **6 mins**

Loading...



1163 E 15th St, Jasper, IN 47546

	1. Head **west** on **E 15th St** toward **Knust St** About 3 mins	go 0.9 mi total 0.9 mi
	2. Turn left onto **N Newton St** About 47 secs	go 0.3 mi total 1.2 mi
	3. Take the 2nd right onto **W 13th St** About 55 secs	go 0.3 mi total 1.5 mi
	4. Take the 1st left onto **Bartley St**	go 0.2 mi total 1.7 mi
	5. Take the 1st right onto **W 9th St** Destination will be on the right About 48 secs	go 0.2 mi total 1.9 mi

800 W 9th St, Jasper, IN 47546

These directions are for planning purposes only. You may find that construction projects, traffic, weather, or other events may cause conditions to differ from the map results, and you should plan your route accordingly. You must obey all signs or notices regarding your route.

Map data ©2015 Google

Directions weren't right? Please find your route on maps.google.com and click "Report a problem" at the bottom left.

1.0 - INTRODUCTION

1.1 Scope and Applicability of the Site Health and Safety Plan

This Health and Safety Plan (HASP) has been prepared by Cardno ATC for the activities associated with the subsurface investigation at the Blackburn Auto Body, located in Tell City, Indiana (Site).

The health and safety protocols established in this Plan are based on the Cardno ATC Employee Health and Safety Policy Manual, the Occupational Safety and Health Administration (OSHA) Regulations, past field experiences, specific Site conditions, and chemical hazards known or anticipated to be present from available Site data. The following Site Health and Safety Plan (HASP) is intended solely for use during the proposed activities described in the project documents and technical specifications. Specifications herein are subject to review and revision based on actual conditions encountered in the field during Site characterization activities. Such changes may be instituted by using the HASP List of Approved Amendments and/or Changes (see Appendix C).

Before Site operations begin, all employees, including subcontractors for Cardno ATC covered by this plan, involved in these operations will have read and understood this HASP and all revisions. All Site personnel have the authority to "Stop Work" if unsafe conditions are present or discovered during Site activities. Before work begins, all affected workers will sign the Heath and Safety Plan Acknowledgment Form (see Appendix C). By signing this form, all individuals recognize the requirements of the HASP, known or suspected hazards, and will adhere to the protocols required for the project Site.

1.2 Historical Overview

The Phase I, dated December 9, 2014, identified the Site, located at 1163 East 15th Street, Jasper, Dubois County, Indiana as a former inactive coal-fired power plant situated in a relatively hilly area characterized by undeveloped, industrial, and residential land uses. The 8.46 acre parcel is improved with a main plant facility, located near the northwest corner of the Site and consists of several operations rooms, offices, maintenance areas, boiler areas, a turbine room, and coal transfer areas. Several stored containers, ASTs, and piping were also observed inside the plant. Various oils, wastewater treatment chemicals, and cleaning chemicals were stored in or around the plant. A maintenance shop is located southeast of the plant, which is used for storage and light maintenance activities on the Site. A cooling tower structure is also located southeast of the plant. A storage shed is located north of the cooling tower and is used to store wastewater treatment chemicals for past plant operations. When in operation, the cooling tower water was re-circulated and treated prior to re-use or discharge into the sanitary sewer system. A storage building containing equipment and supplies is located on the southwest corner of the Site. A mobile shed is located west of the maintenance shop and is used to store lawn equipment and fuel. Empty concrete storage bins were observed on the northeast part of the Site. The bins were once used to store coal during past plant operations. The bins are also used in the winter for salt and sand storage by the City. Staining and stressed vegetation was observed north of the storage bins. Concrete and asphalt pavement was observed on the north portion of the Site. A gravel lay-down lot is located south of the plant for storage of utility poles by the City. Grass and wooded areas make up the south and east portions of the Site.

A Request for Eligibility was submitted to the US EPA on October 29, 2014 for review and approval. The US EPA approved the Eligibility Determination Request on November 4, 2014.

The objective of the scope of work described in this SAP is to investigate the soil and groundwater quality at the in the vicinity of the RECs identified during the Phase I. Once the Site is characterized and the environmental issues are resolved, the Site may be redeveloped for commercial or industrial land use.

1.3 Visitors

All visitors to the Site must be instructed about the hazards of the activities that Cardno ATC or its subcontractors are performing. All visitors must sign the Cardno ATC Visitors Log (see Appendix C).

1.4 Subcontractor Activities

All subcontractors used at the Site have been Pre-Approved in the Cardno ATC Subcontractor Prequalification System.