OFF-SITE INTERIM MEASURE WORK PLAN AND RESPONSE TO COMMENTS

Franklin Power Products, Inc. / Amphenol Corporation
Administrative Order on Consent, Docket #R8H-5-99-002
EPA ID # IND 044 587 848
980 Hurricane Road
Franklin, Indiana 46131

Prepared For:

Carolyn Bury
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Date: June 18, 2019

Prepared by:

IWM Consulting Group, LLC
7428 Rockville Road
Indianapolis, IN 46214
Phone No. (317) 347-1111
Fax No. (317) 347-9326

OFF-SITE INTERIM MEASURE WORK PLAN AND RESPONSE TO COMMENTS

Franklin Power Products, Inc. / Amphenol Corporation
Administrative Order on Consent, Docket #R8H-5-99-002
EPA ID # IND 044 587 848
980 Hurricane Road
Franklin, Indiana 46131

Prepared For:

Carolyn Bury
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Prepared By:

Christopher D. Parks, LPG
Senior Project Manager

June 18, 2019
Date

Bradley E. Gentry, LPG
Vice President/Brownfield Coordinator

June 18, 2019
Date

TABLE OF CONTENTS

FIGURES

FIGURES (continued)

TABLES

APPENDICES

Off-Site Interim Measure Work Plan
And Response to Comments
Franklin Power Products, Inc. / Amphenol Corporation
Administrative Order on Consent, Docket #R8H-5-99-002
EPA ID # IND 044 587 848
980 Hurricane Road
Franklin, Indiana 46131

1.0 Introduction

In accordance with the request made by the United States Environmental Protection Agency (USEPA) in a letter dated December 11, 2018, Industrial Waste Management Consulting Group, LLC (IWM Consulting), on behalf of Amphenol Corporation (Amphenol) the "Performing Respondent", is submitting this *Off-Site Interim Measure Work Plan* (OIM Work Plan). Reports entitled *Off-Site Interim Measure Conceptual Design* (Conceptual Design) and *Off-Site Interim Measure Conceptual Design Addendum* (Conceptual Design Addendum) were submitted to the USEPA on May 7, 2019 and May 16, 2019, respectively, which proposed the removal of impacted soil and groundwater surrounding portions of the sanitary sewer system along Hamilton Avenue and North Forsythe Street. The removal of soil and groundwater surrounding the sanitary sewer system was proposed to create an environment which will not produce soil vapors which can potentially impact preferential exposure pathways to residents and businesses down-gradient of the facility. The USEPA has reviewed the Conceptual Design document and provided comments in a letter dated June 3, 2019. This OIM Work Plan is being submitted to provide a detailed work plan for the removal of impacted soil and groundwater from the Study Area. The Study Area includes portions of streets and adjacent structures that are near and downgradient of the Former Amphenol facility located at 980 Hurricane Road, Franklin, IN (Site), including Hurricane Road, Hamilton Avenue, Forsythe Street, Glendale Drive, and Ross Court. A map depicting the Study Area has been included as **Figure 1**.

This OIM Work Plan addresses USEPA comments from the June 3, 2019 letter and requests from the December 11, 2018 letter and outlines off-Site potential exposure pathways, corrective action objectives (CAOs), challenges, Site conditions, the design plan, and the anticipated implementation schedule.

2.0 Response to Comments

The USEPA reviewed the Conceptual Design document prepared by IWM Consulting and supplied comments in a letter dated June 3, 2019. The following responses have been prepared to address those comments.

USEPA General Comment 1: *"The aerial scope of the remedy must be explained and supported. A comparison of Figures 10 and 11 to figures displaying elevated VOC vapors in sewers and sewer-line soils shows that some impacted sewers are not included in the proposed remedy. Specifically, the eastern portion of Hamilton Avenue, portions of Glendale Drive and the sewer connection between Glendale Drive and Forsythe Street. These areas having elevated VOC measurements are not*

included in the remedy. EPA notes that per the City's 2015 Sewer System Evaluation Study, the City also planned to line the north/south western portion of Glendale Drive, ostensibly due to the line breaks recorded in the City's video logging event.

In the next design phase, expand the remedial design scope to include all areas impacted with VOC vapors in the sewer lines. Alternatively, provide a justification why these other areas are not included in the current design scope."

IWM Consulting Response: The areal extent of the remedy is based upon the documented extent of trichloroethylene (TCE) contamination in soil, groundwater, and soil gas media, rather than the presence of impacted sewer gas. Between Manhole 250053 and 250056 on Hamilton Avenue, and Manhole 250052 and 250040 on Forsythe Street, impacted soil will be excavated (and the sewer line will be replaced). The primary benefit of this activity is removal of residual contamination that may be present beneath the sewer line and serving as a continued source of groundwater contamination via leaching. A secondary benefit of this activity is that the new sewer line will not have cracks and inactive laterals through which soil gas can enter. As discussed in the Conceptual Design, it is believed that soil gas vapors emanating from groundwater may be entering sewer lines, which can then act as a preferential pathway for vapor intrusion to indoor air. By sealing cracks and unused laterals along the sewer line, much of this pathway is mitigated because soil gas vapors do not have entry points into the sewer line. An overall map showing the extent of proposed excavation and sewer lining activities has been included as **Figure 15**.

From Manhole 250040 to 250010 (along Forsythe Street, south of Ross Court), the sewer line is submerged beneath the water table and groundwater is expected to flow into the sewer line, rather than sewer contents flowing outward. Groundwater contamination in the northern portion of this stretch is believed to have flowed south along the sewer line from leaks in the vicinity of Ross Court. Additionally, soil impacts in the vicinity of the sewer main at concentrations in excess of screening levels were not documented to the south of Ross Court. As such, there is no need to remove contaminated soil materials in the same way as areas along Forsythe Street north of Ross Court, and excavation of the sewer line is not proposed. Instead, this section of sewer line along Forsythe Street from Ross Court to near Hurricane Creek will be lined. This lining will prevent infiltration of groundwater into the sewer line, where contaminants could potentially volatilize. VOCs in sewer gas can potentially travel greater distances than they would in soil gas. The lining of the sewer will extend south beyond the extent of groundwater contamination.

The sewer line will also be lined along the western portion of Ross Court, from Manhole 250040 to 250041. This section of sewer line is not along the flow path from the former Amphenol facility to the wastewater plant and soil beneath this sewer line has not been documented to be contaminated. However, some damage was observed during the City's video inspection and groundwater in a portion of this stretch of sewer line exceeds the 9.1 micrograms per liter (µg/L) Indiana Department of Environmental Management (IDEM) Remediation Closure Guide (RCG) Residential Groundwater Vapor Exposure (GVE) screening level for TCE. To mitigate the potential for groundwater and soil gas infiltration, this section of sewer will be lined.

The sewer line in the Glendale Drive area connects to the Forsythe Street sewer line via a connector from Manholes 250070 to 250060 to 250050. The portion of this connector nearer Glendale Drive, between Manholes 250070 and 250060, was observed to be in good condition during the City's video inspection and is east of groundwater contamination that exceeds 9.1 µg/L of TCE. Little damage was noted in the western portion of this connector between Manholes 250050 and 250060. However, this section of the connector within the groundwater plume will be preemptively lined to mitigate the potential for contaminated groundwater or soil gas entering the sewer.

The sewer line that is being replaced along Hamilton Avenue only extends as far east as the sewer lateral to the former Amphenol facility, which has already been replaced. A separate sewer line flows south along Hurricane Road before jogging left along a small stretch of Hamilton Avenue and then continuing south along Glendale Drive. As noted in US EPA's comment, a north-south portion of the sewer line on Glendale Drive was determined to have multiple condition issues during the City's video inspection. Since the inspection, the City has lined this section of sewer (between Manholes 250080 and 250070) during Spring 2019. Sewer gas concentrations of TCE at Manhole 250070 (which is also the beginning of the connector to the Forsythe Street sewer line) at the southern end of this newly lined section were below screening limits in September 2018, indicating that there is no significant soil gas migration into this lined section of sewer.

Following completion of the work outlined in the original Conceptual Design, all sewer lines within areas of groundwater concentrations exceeding 9.1 µg/L will have been replaced or lined, with one exception. In the area of Manhole 250090, TCE concentrations in groundwater exceed the screening level. This manhole is located at the intersection of Hamilton Avenue and Glendale Drive. The City video inspection indicates the condition of this line to the south (Manhole 250090 to 250080) is good. To the east (Manhole 250090 to 250100), the City's video inspection noted debris in the line and light and moderate roots. Although these sections of sewer line are mostly outside of the groundwater plume area, they are in close enough proximity to the plume that contaminants volatilizing from groundwater could theoretically migrate along these lines through sewer gas. To further mitigate the potential for TCE in soil gas to enter sewer lines, lining of these two sections of sewer line (Manhole 250100 to 250090 and 250090 to 250080) will be included in the revised remedial design scope.

USEPA General Comment 2: *"The next design phase should include a discussion of how remediation performance will be confirmed post-construction."*

IWM Consulting Response: As discussed in the response to Comment 1 above, potentially contaminated vadose-zone soils beneath sewer lines will be excavated and removed from the project area. Furthermore, sewer lines within the areal extent of the groundwater plume will be either replaced or lined to further mitigate the possibility that contaminants in groundwater and soil gas can enter the sewer lines.

Based upon the results of the recent assessment activities and subsequent mitigation measures already completed to date, lining of sewer lines within the project area is not necessary to meet soil and groundwater remedial objectives. In the few houses where indoor air screening levels were exceeded, plumbing repairs and soil gas mitigation measures have been demonstrated to render exposure

pathways incomplete. That said, the additional cost of lining the sewers while the system is already being disturbed for excavation and source removal is considered worthwhile as an additional measure of assurance that exposure pathways will remain incomplete.

It is important to keep in mind that Amphenol's activities in Franklin serve two objectives: 1) to ensure the health and safety of residents affected by contamination from historical activities at the former Amphenol facility by eliminating exposure pathways, and 2) to perform activities that will lead to future reduction of TCE concentrations in groundwater, thereby eliminating the need to mitigate exposure pathways. To these ends, Amphenol has conducted extensive soil, groundwater and vapor intrusion investigations throughout the project area to identify potentially complete exposure pathways. Only five (5) residences were found to have indoor air concentrations above screening levels, and appropriate mitigation measures have either already been implemented or are being implemented that effectively prevent exposure of occupants to TCE contamination originating from the former Amphenol facility or potential other off-site sources. Post-mitigation vapor intrusion sampling confirms that the mitigation measures effectively reduced indoor air concentrations below screening levels. As such, remedial performance with respect to ensuring the health and safety of residents has already been demonstrated prior to completing excavation and sewer line replacement or lining activities.

With regards to the second objective (future reduction of TCE concentrations in groundwater), it has been demonstrated in many other remedial projects that the single most effective means to improve groundwater quality is to remove source areas from soil. Without the removal of contaminants in soil source areas, any contaminants removed via groundwater treatment are repeatedly replenished through additional leaching. With removal of source areas in soil, natural attenuation processes can effectively reduce groundwater concentrations. As discussed in the Conceptual Design, the remedial performance of sewer line excavation will be confirmed by collection of vadose zone soil samples to ensure that TCE concentrations in remaining soils are below the adjusted TCE RCG Migration to Groundwater (MTG) screening level of 0.065 milligrams per kilogram (mg/kg).

The long-term goal of sewer line excavation is reduction of TCE concentrations in groundwater. To this end, groundwater quality within the plume area will be monitored to demonstrate that chemical of concern (COC) concentrations are decreasing following source removal activities. Immediately following a disturbance such as the planned excavation, it is common to see short-term fluctuations in contaminant concentrations (both up and down) as conditions return to equilibrium. These fluctuations often last a few months, although the precise amount of time is difficult to predict due to site-specific conditions. Following completion of excavation and site restoration activities, off-Site monitoring wells (MW-31 through MW-40) will be sampled monthly for a period of one year. This will serve to 1) better identify when conditions have returned to equilibrium, and 2) establish a data set that is sufficiently large to serve as a basis for statistical evaluation (most statistical methodologies require a minimum of 8 samples). Proposed monitoring wells are displayed on **Figure 19**.

Following the one year of monthly sampling events, monitoring well sampling will continue on a semi-annual basis in the spring and fall of each year. Data will be statistically evaluated to ensure that TCE concentrations in groundwater decrease over time. Methods used will be consistent with USEPA's *Unified Guidance - Statistical Analysis of Groundwater Monitoring Data at RCRA*

Facilities (Unified Guidance) document EPA 530/R-09-007 dated March 2009. It is anticipated that a Mann-Kendall Trend Test will be most appropriate for demonstrating decreasing trends, although normality of data will first be evaluated. Groundwater monitoring will continue until it can be demonstrated that TCE concentrations at a monitoring well do not exceed 9.1 µg/L. This demonstration will be made by one of the following methods: 1) no exceedance of 9.1 ug/L during two years (4 events) of monitoring, 2) demonstration that an upper confidence limit does not exceed 9.1 µg/L in accordance with Sections 21.1 or 21.2 of the Unified Guidance, or 3) demonstration that the upper confidence band surrounding a trend line is below 9.1 µg/L in accordance with Section 21.3 of the Unified Guidance. Groundwater conditions will be monitored until CAOs are achieved or until a demonstration can be made that the residual dissolved VOCs no longer pose an unacceptable exposure pathway.

USEPA General Comment 3: *"The next design phase should include a list of potential contingency measures if remedial confirmation sampling reports that elevated VOC sewer vapors persist in the sewer lines."*

IWM Consulting Response: Sewer vapor flow is affected by numerous factors and thus the successful implementation of this remedy should not be measured by VOC sewer vapor concentrations. Sewer vapor flow in sewer lines is typically in the direction of water flow, unless forced otherwise (WERF 2009). However, in lines with little sewer water movement, sewer gas can move independently and relies more on pressure differentials and the buoyancy effect.

Typically, the most important factor in sewer gas movement is water drag. Water drag is the drag between the water surface and the air in the headspace of the sewer line. The sewer gas velocity is typically less than the sewer water velocity, generally in the range of 5% to 30% of the average water velocity (Pescod and Price 1982). However, when water velocity decreases due to changes in slope or headspace, the sewer gas flow rate will decrease as well. These decreases in flow rates often result in sewer vapors venting out through manholes. If velocities increase, air will often enter through manholes causing dilution of sewer gas (Lowe 2016). However, in lines with little to no sewer water movement, water drag is not expected to be the primary factor for sewer vapor movement. Portions of this system exhibit low to minimal flow.

Air pressure is the second major factor in sewer gas movement. Higher pressure areas want to move to lower pressure areas. Experimental studies have shown atmospheric parameters influence pressure within the sewer system. Sewer gas flow rates can be affected by small changes in pressure influence by atmospheric wind speed, air temperature, atmospheric humidity, and atmospheric pressure in addition to sewer headspace humidity and temperature (Parker and Ryan 2001).

The buoyancy effect is the third factor which influences air flow in the sewer system within the Study Area. Sewer gas if generally less dense than ambient air due to its high humidity. In the winter, cold and low humidity air enters lower portions of the sewer system and as it is warmed, becomes less dense and is forced out of higher elevation manholes. This is known as the stack effect (Lowe 2016).

Following the completion of source removal activities and subsequent decreases in groundwater concentrations are observed, soil gas will no longer be generated and will no longer have the ability

to impact sewer gas. Additionally, the installation of a new polyvinyl chloride (PVC) sanitary main (and select sanitary laterals) will provide a sealed sanitary sewer system to eliminate entry routes for soil gas and impacted groundwater. Therefore, if sewer vapors with the presence of volatile organic compounds (VOCs) are observed, they are likely being transported within the sewer system from secondary up- or down-gradient source areas that are not associated with the release from the Site.

USEPA General Comment 4: *"Identify how long a re-lined clay pipe is expected to maintain its integrity and how the pipes will be monitored for deficiencies after replacement or re-lining."*

IWM Consulting Response: Lined pipes have a minimum life expectancy of 50 years. However, manufacturers anticipate the life expectancy will be much longer than 50 years. The sewer lines in the project area that will be or have already been rehabilitated are being lined using EX Pipe or Cured-In-Place Pipe (CIPP) material by Miller Pipeline. Pipe liners range in thickness from 4.5 mil to 7.5 mil, depending on the pipe diameter and depth.

EX Pipe is produced from a base of PVC, conforming to ASTM D-1784 cell classification 12334-B, tested to ASTM F 1504-Standard Specifications for folded PVC Pipe for sewer rehabilitation. The EX Pipe delivers chemical, earthquake, and abrasion resistance, which results in a superior pipeline with long-term, proven stability. The jointless EX Pipe stops water infiltration (and exfiltration), root intrusion, and soil loss.

Similarly, CIPP is resin-impregnated flexible tube, which when cured, is continuous and tight fitting throughout the entire length of the original pipe. The flexible tube consists of one or more layers of absorbent non-woven fiberglass fabric which is impregnated with a resin that consists of a corrosion resistant polyester or vinyl ester resin and catalyst system.

The City of Franklin is responsible for inspecting and maintaining their sanitary sewer system. Different portions of the sanitary sewer system are cleaned and inspected annually. The sanitary sewer system in the Study Area was last inspected in 2015 and sewer cleaning, repairs, and lining were completed in early 2019. The sanitary sewer lining extends the life expectancy of the sanitary sewer lines a minimum of 50 years, and could extend the life of the lines to the vicinity of 70 to 100 years or more.

USEPA General Comment 5: *"The remedy will remove contaminated soils in the vadose zone in designated sections of the sewer lines, and contaminated soils and groundwater in other sections of the sewer lines that intersect the water table. Based on the Conceptual Site Model described in Section 3.1, a smear zone could develop in the clean backfill. If the new PVC sewer line (e.g., joints) of the re-lined old clay pipe degrade in the future, how will renewed migration of VOC vapors be prevented in the future?"*

IWM Consulting Response: Following the completion of source removal activities and subsequent decreases in groundwater concentrations are observed, soil gas will no longer be generated and will no longer have the ability to impact sewer gas, therefore, the creation of new smear zones will be of no consequence. Additionally, the installation of a new PVC sanitary main (and select sanitary laterals) will provide a sealed sanitary sewer system to eliminate entry routes for any residual soil gas

and impacted groundwater in the short term. Lined pipes have a minimum life expectancy of 50 years and it is expected that their life expectancy will be much longer than 50 years according to most manufacturers. Similarly, the new PVC sanitary system is expected to have a conservative life expectancy of 50 to 70 years, however, manufacturers indicate that a life expectancy of 100 or more years is likely with PVC sanitary systems. PVC deteriorates when in contact with sunlight, and since the PVC lines will be buried in the ground, sunlight is not a problem with shortening the lifespan of the PVC lines.

USEPA General Comment 6: *"Given the post-remedial conditions of residual contaminated media, the next design phase should discuss how the remedy will be monitored into the future."*

IWM Consulting Response: Following the completion of excavation and restoration activities, the existing monitoring well network will be expanded in order to monitor groundwater conditions in the Study Area. Off-site groundwater conditions will be monitored monthly for a period of one (1) year utilizing monitoring wells MW-31 through MW-40, displayed on **Figure 19**. Following the one year of monthly sampling events, monitoring well sampling will continue on a semi-annual basis in the spring and fall of each year. Data will be statistically evaluated to document TCE concentrations in groundwater have decreased over time. Methods used will be consistent with USEPA's Unified Guidance. It is anticipated that a Mann-Kendall Trend Test will be most appropriate for demonstrating decreasing trends, although normality of data will first be evaluated. Groundwater monitoring will continue until it can be demonstrated that TCE concentrations at a monitoring well do not exceed 9.1 µg/L. This demonstration will be made by one of the following methods: 1) no exceedance of 9.1 ug/L during two years (4 events) of monitoring, 2) demonstration that an upper confidence limit does not exceed 9.1 µg/L in accordance with Sections 21.1 or 21.2 of the Unified Guidance, or 3) demonstration that the upper confidence band surrounding a trend line is below 9.1 µg/L in accordance with Section 21.3 of the Unified Guidance. Groundwater conditions will be monitored until CAOs are achieved or until a demonstration can be made that the residual dissolved VOCs no longer pose an unacceptable exposure pathway.

USEPA General Comment 7: *"In the next design phase, discuss whether the City contractors will be HAZWOPER trained, or supervised by a responsible individual who can stop work if they are exposed above occupational exposure levels (e.g., IDEM RCG construction excavation levels). This comment also applies to the "other utility entities (i.e. municipal water company and natural gas company)" which will be invited to replace utilities and take advantage of the open trench conditions. The utility companies could encounter contaminated soil during their work which could affect the schedule."*

IWM Consulting Response: The contractor selected to complete the implementation of the OIM Work Plan will be supervised by a responsible individual employed by IWM Consulting which has been HAZWOPER trained. Soil conditions will be monitored by IWM Consulting personnel and if adsorbed COC concentrations exceed IDEM RCG Excavation Direct Contact screening levels, work will be stopped and the appropriate personal protective equipment (PPE) will be donned by excavation workers to prevent direct contact with impacted soil. Additionally, an ambient air monitoring plan (AAMP) has been developed and will be in place during work activities. Ambient air will be screened and compared to action levels developed based on the photo-ionization (PID) response factors for

tetrachloroethylene (PCE) or TCE to verify excavation workers do not exceed worker vapor exposure protection based on published exposure limits established by the Occupational Safety and Health Administration (OSHA) or the American Conference of Governmental Industrial Hygienist (ACGIH).

Work being completed by private utility companies is not under the direction of Amphenol or IWM Consulting. Neither Amphenol nor IWM Consulting have control of the activities being completed by third party private utility companies within the right-of-way in the Study Area. Additionally, private utility installations are not expected to exceed four (4) feet in depth, well above any documented soil or groundwater impacts. IWM Consulting can make the attempt to advise the private utility companies regarding soil and groundwater conditions in the Study Area, materials management, and potential sampling of materials, however, neither Amphenol nor IWM Consulting can guarantee the cooperation of private utility companies. IWM Consulting will not be present during work completed by private utility companies.

USEPA General Comment 8: *"The City contractor must have its own health and safety plan. For practical reasons, Amphenol's and the City's contractor should have HASPs that are harmonized where they agree to the same PPE, action levels, and conditions that require upgrading or downgrading PPE, etc."*

IWM Consulting Response: The contractor selected to complete the implementation of the OIM Work Plan will have its own health and safety program and will have a site-specific health and safety plan (HASP) harmonized with IWM Consulting's HASP. The contractor's HASP will concur with IWM Consulting's HASP in regards to action levels, PPE, and other pertinent health and safety factors.

USEPA General Comment 9: *"EPA assumes the following which should be explicit in the next design phase document:*

Amphenol is responsible for

a. *determining what material is contaminated and for contaminated materials management (i.e. removing, staging, and disposing of contaminated material).*
b. *materials management of non-contaminated material"*

IWM Consulting Response: Amphenol and IWM Consulting will be responsible for determining what material is contaminated and non-contaminated and will coordinate materials management (removing, staging, sampling, and disposing of contaminated and non-contaminated materials). Asphalt materials will be milled and segregated to the extent practical and re-utilized removed as both permanent fill and temporary asphalt for maintenance of traffic on other projects.

In order to dispose of the impacted soils excavated from Project Area, lined roll-off boxes will be loaded by the contractor selected to implement the OIM Work Plan. The lined roll-off boxes will be tarp covered and transported back to the Site by an IWM Consulting sub-contractor and staged in a secure area where each roll-off box will be composite soil sampled to determine if the soils can be classified as non-hazardous using the IDEM's Contained-In Determination. Once the hazard classification of the soils has been determined, the lined roll-off boxes will be transported to a landfill for disposal by an IWM Consulting sub-contractor. Once the roll-off boxes are emptied, they will be

returned to the Site, re-lined, and the process will be repeated. All IWM Consulting sub-contractors will be supervised by IWM Consulting personnel and will adhere to IWM Consulting's HASP.

USEPA General Comment 10: *"In the next design phase, identify who will be supplying and verifying clean fill."*

IWM Consulting Response: The contractor selected to implement the OIM Work Plan will supply all backfill material. The backfill material supplied during the implementation of the OIM Work Plan will consist of Number 8 stone for sanitary sewer bedding, structure backfill (Type 1) for excavation backfilling, and Number 53 stone aggregate for road bedding and will meet Indiana Department of Transportation (INDOT) specifications. In order to meet INDOT specifications, these backfill materials will be virgin material sourced from a quarry, therefore, verification sampling for VOCs is not warranted. Topsoil used in surface restoration will be the original topsoil removed from the excavation area by the contractor selected to implement the OIM Work Plan. The top soil removed will be replaced, seeded, and mulched.

USEPA General Comment 11: *"In the next design phase, identify whether pre-excavation of post-excavation surveys or related work will be required and who is responsible for doing that for sewer lines, water, and natural gas lines."*

IWM Consulting Response: Pre- and post-excavation surveys in relation to the grade of the sanitary sewer and surface grade within the project area will be completed by Crossroad Engineers, P.C. (Crossroad). Surveys related to the water and natural gas lines are not being completed under the City of Franklin, Amphenol, or IWM Consulting's direction, therefore, it is not known if surveys related to these utilities will be completed.

USEPA General Comment 12: *"In the next design phase, identify who is supplying all construction materials for water lines and natural gas lines."*

IWM Consulting Response: Any water or natural gas line replacement is not being completed under the direction of the City of Franklin, Amphenol, or IWM Consulting, therefore, the materials being used for these potential utility replacements is unknown. Any water or natural gas lines replaced will be completed by the private utility company or their contractor.

USEPA Specific Comment 13: *"Section 1.0 Introduction*
Note that EPA requested the Conceptual Design in an email dated March 11, 2019, not just during the April 11, 2019 meeting with Amphenol Corporation ("Amphenol"). EPA also requested a conceptual design plan when we agreed to Amphenol's proposed plan to complete design-level soil sampling as a preliminary response to EPA's December 11, 2018 request for a remedial work plan for the sewer line remedy."

IWM Consulting Response: This oversight has been noted.

USEPA Specific Comment 14: *"Section 2.0 Project Background*

Page 1. In the discussion of previous remedial work, the status of the vapor mitigation system installed at the former manufacturing facility should be included."

IWM Consulting Response: The project background will be updated in this and future reports to clarify that the vapor mitigation systems in the former manufacturing facility had been deactivated and removed as of August 3, 2012.

USEPA Specific Comment 15: *"Section 3.1 Conceptual Site Model*
Page 3. This section should point out that while the portion of the sewer line intersects the water table, VOC vapors still decrease towards the southern, down-gradient end of the study area. Fluctuation of vapor concentrations, as were observed between the two sampling events, could potentially be explained by water table fluctuations and precipitation events."

IWM Consulting Response: As previously discussed, sewer vapor flow is affected by numerous factors. Sewer vapor flow in sewer lines is typically in the direction of water flow, unless forced otherwise (WERF 2009), or if there is little sewer water flow. There is considerably more sewer water flow in the southern portion than the northern portion of the Study Area. During sewer gas sampling events, sample concentrations were highly variable, as collected from Manhole 250010 with concentrations ranging from 2,732.8 micrograms per cubic meter ($\mu g/m^3$) [September 2018] to 230.94 $\mu g/m^3$ (October 2018) as well as samples from Manhole 250020 with concentrations ranging from 774.0 $\mu g/m^3$ (September 2018) to 37.06 $\mu g/m^3$ (October 2018). It is not likely that there was a large change in groundwater elevation on the southern end of the Study Area within a one-month time frame and there were not any rain events within several days of the sampling events. According to the on-site weather station, between the September 2018 and October 2018 sewer gas sampling events, only 1.55 inches of rain were received in the area over the course of eleven (11) different rain events. It is more likely that changes in atmospheric wind speed, air temperature, humidity, and pressure affected the concentrations of sewer gas observed. However, it is possible that changes in sewer gas concentrations could be caused by water table fluctuations and precipitation events.

USEPA Specific Comment 16: *"Section 5.3 Local Challenges*
Page 7. Amphenol will determine whether the groundwater remediation system may need to be taken off line during construction, or periodically during construction. If the sewer system will not be bypassed and the pump and treat system is turned off, in the next design phase, provide an analysis of how far groundwater might move off-site and a plan for how the plume will be monitored, and whether the water table is expected to rise due to not pumping, and if that would affect the planned construction."

IWM Consulting Response: Following discussions with Crossroad, it is anticipated that the remediation system will remain fully operational for the duration of the OIM Work Plan implementation.

USEPA Minor Comment 17: *"Figure 1. Study Area Boundary*
The figure includes the extended study area boundary to the south where additional manholes were sampled as part of the sewer vapor investigation. In the next phase design, include the area to the west and south where additional groundwater sampling was completed."

IWM Consulting Response: The Study Area Boundary has been updated on **Figure 1** to depict areas where off-site groundwater sampling has been conducted.

USEPA Conceptual Design Addendum Comment 18: *"EPA noted that the "Right of Way Access, Repair and Payment Agreement between Amphenol and the City of Franklin" (Attachment A) ("Agreement") does not mention replacement or relining of sewer laterals."*

IWM Consulting Response: The sewer laterals are privately owned and will be evaluated on a property by property basis. If it is determined that the private lateral is in poor condition (contains roots, cracks, breaks, etc.) and is located within a documented groundwater exceedance area, then the lateral will be lined or replaced if a private property access agreement between Amphenol and the property owner can be obtained.

USEPA Conceptual Design Addendum Comment 19: *"Addendum – There appears to be a presumption that all waste collected for disposal will be non-hazardous. Either explain the presumption or revise the text to state that the waste soil will be sampled and analyzed for the IDEM contained in determination."*

IWM Consulting Response: Based on observed concentrations during the design-level data soil investigation, it is anticipated that all soil collected for disposal will be non-hazardous. However, roll-off boxes will be loaded by the contractor selected to implement the OIM Work Plan and the boxes will be transported back to the Site by an IWM Consulting sub-contractor and staged in a secure area. The soils within each roll-off box will be soil sampled to determine if the soils can be classified as non-hazardous using the IDEM's Contained-In Determination. Once the hazard classification of the soils has been determined, they will be transported to a landfill for disposal by an IWM Consulting sub-contractor. If the soils are determined to be hazardous, they will be transported to a permitted hazardous waste landfill.

USEPA Conceptual Design Addendum Comment 20: *"Page 3. Crossroad Engineers, P.C. will prepare a community relations plan. Please provide a draft plan to the EPA so that we may ensure that any included risk information is communicated appropriately and is consistent with EPA's messaging."*

IWM Consulting Response: Crossroad has prepared a community relations plan to communicate construction related details to the community. As the on-Site inspection team for the City of Franklin, Crossroad will update adjacent property owners on maintenance of traffic, property access issues, temporary sewer interruptions, and project schedule via bi-weekly newsletters. Crossroad will also utilize door to door communication with those directly impacted during construction. Additionally, the City of Franklin will post the bi-weekly newsletters on their website and request that the USEPA share the newsletters with the email distribution list collected from the public meetings. All health risk associated correspondence to the public will be directed under supervision of the USEPA.

USEPA Conceptual Design Addendum Comment 21: *"Page 3. Please provide EPA with the draft SWPPP."*

IWM Consulting Response: Crossroad has prepared a Storm Water Pollution Prevention Plan (SWP^3). The SWP^3 identifies all potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the project Site and the steps necessary to prevent or reduce pollutants from affecting storm water. The SWP^3 will be submitted to IDEM for review and approval. A copy of the SWP^3 has been included in the Preliminary Construction Plans included in **Appendix A**.

3.0 Project Background

The main manufacturing building on the subject Site was constructed in 1961 by Dage Electric, Inc. In 1963, the operation was acquired by Bendix Corporation (Bendix) for the manufacture of electrical connectors. The subject Site operated as an electric connectors manufacturing facility from approximately 1961 through 1983. In 1983, Bendix was acquired by Allied Corporation (Allied) and Bendix was merged with Allied's Amphenol Products Division. As a result of consolidation efforts, manufacturing at the Franklin facility ceased in September 1983 and the plant was closed. In 1986, Amphenol Products Division became Amphenol Corporation.

Manufacturing activities at the subject Site consisted of the following: manufacturing of electrical connectors, electroplating, machining, assembling, and storing of manufactured components and raw materials required for production. From 1961 to 1981, waste acid, cyanide/alkalide, and chromium wastewaters from plating operations were routed into a sanitary sewer manhole, which discharged into the local sanitary sewer system south of the subject Site. Wastewater was discharged to the sanitary sewer system under a discharge permit issued by the City of Franklin. In 1981, a wastewater pretreatment system was installed in a separate building for treatment of cyanide and chromium bearing wastewater from the plating room. Treated wastewater was then discharged to the sanitary manhole south of the facility.

A subsurface investigation was completed at the Site in 1985 and VOCs were detected in the soil and groundwater beneath the Site. Subsequent investigations have been conducted on- and off-Site in order to define the vertical and horizontal extent of adsorbed, dissolved, and vapor phase COCs. Additionally, numerous corrective actions have been implemented at the Site, including: excavating and disposing of approximately 856 cubic yards of impacted soil; disconnecting and plugging the subject Site's former sanitary sewer line and installing a new sanitary sewer line beneath the property; completion of an enhanced bioremediation pilot study; source remediation using Modified Fenton's Reagent beneath the former plating room; installation of a sub-slab vapor barrier beneath the floor of the former plating room; installation of a vapor mitigation system at the former manufacturing facility; and installation and operation of an interim corrective measure (ICM) consisting of a groundwater pump and treat remedial system. The ICM was installed at the Site in February 1995, has operated continuously since that time, and has recovered 269,311,986 gallons of groundwater as of May 24, 2019. The sub-slab depressurization systems at the former manufacturing facility were deactivated and removed as of August 3, 2012.

Between July 2018 and June 2019, the USEPA requested Amphenol complete additional on- and off-Site investigations of soil, groundwater, soil vapor, ambient air, and sewer gas, prepare an OIM

Conceptual Design, and prepare this OIM Work Plan. Amphenol has complied with the USEPA requests and completed numerous investigations of soil, groundwater, ambient air, soil vapor, and sewer gas conditions on- and off-Site, performed sanitary sewer repairs at nine (9) private residences, installed five (5) vapor mitigation systems at private residences, and submitted the OIM Conceptual Design.

4.0 Off-Site Potential Exposure Pathways

Based on ambient air, indoor air, sub-slab, and sewer gas testing completed at twenty-nine (29) priority residences (PRs) within the Study Area, the primary exposure routes in which COCs may potentially enter off-Site structures are through sewer gas vapor leaks inside the structure and soil gas vapor intrusion. It should be noted that soil gas vapor intrusion has only been detected in structures which are constructed on basements. TCE is the only compound that has exceeded IDEM RCG Residential Indoor Air (RIA) screening levels within a residential structure as a result of sewer gas leaks or direct soil gas vapor intrusion. Although 1,2-dichloroethane (1,2-DCA) has been detected within indoor air above RIA screening levels in some of the structures sampled, all observed concentrations above screening levels appear to be from indoor or ambient sources rather than sewer gas leaks or soil gas vapor intrusion and the USEPA has agreed with this conclusion. All other COCs detected in indoor air have been below RCG RIA screening levels.

4.1 Conceptual Site Model

Off-Site soil, sewer bedding, groundwater, soil vapor, and sewer gas impacts are present as a result of impacted wastewater escaping the sanitary sewer main along Hamilton Avenue and North Forsythe Street from 1961 to 1983. Impacted wastewater historically leaked from cracks, breaks, and joints in the vitrified clay pipe of the sanitary sewer main and migrated vertically downward through the vadose zone and sewer bedding until it reached groundwater, at which time, impacts were transported to the south-southeast via groundwater flow. Changes in groundwater elevation since the release have created a "smear" zone of absorbed COCs in the area directly above the normal groundwater surface, which is in close proximity to the sanitary sewer main.

Residual impacts in soil and sewer bedding beneath the sanitary main may continue to provide a source for COCs to leach to groundwater and generate soil vapor. Additionally, volatilization from the residual soil and groundwater impacts beneath the sanitary sewer main and private sewer laterals are likely continuing to influence sewer gas concentrations. Sanitary sewer mains and private sewer laterals in the Study Area appear to be preferential pathways for impacted sewer gas.

The highest observed sub-slab soil gas concentrations of TCE were detected at PR #14 and PR #22, south-southeast of the northern-most documented break in the sanitary sewer main along North Forsythe Street. Additionally, the homes on the east side of Forsythe Street had higher elevated TCE concentrations in sewer gas when compared to the homes on the west side of Forsythe. It is plausible that impacts at the groundwater surface migrating to the south-southeast from the sanitary sewer main are volatilizing and directly entering private sanitary laterals that are in poor condition.

The highest observed soil gas concentrations have been observed near documented breaks in the sanitary sewer main, further confirming that soil and groundwater impacts beneath the sanitary sewer main are most heavily concentrated in the vicinity of sanitary sewer main breaks or cracks.

It is unlikely that significant quantities of COCs remain directly within the sanitary sewer lines, due to historic city maintenance activities (cleaning of the lines) and years of fluids moving within the lines. Sewer gas impacted with COCs are likely from soil vapor entering breaks in the line (northern portion of Forsythe Street and Hamilton Avenue) or from volatilization off of groundwater which has entered the line (southern portion of Forsythe Street). As the sanitary sewer main proceeds south on Forsythe Street, the main becomes submerged beneath groundwater, and due to hydrostatic pressure, impacted groundwater can enter the sanitary sewer main through breaks or cracks in the main, rather than impacted wastewater leaking out of the main as in the northern portion of Forsythe Street. Submerged portions of the sanitary sewer main likely did not historically leak impacted wastewater from breaks or cracks, rather, groundwater likely entered the sanitary sewer main in these areas. Changes in groundwater elevation over time may change the method of entry (i.e. groundwater infiltration versus soil gas infiltration) of impacts into the sanitary main at any given entry point.

As previously discussed, sewer vapor flow is affected by numerous factors. Sewer vapor flow in sewer lines is typically in the direction of water flow. There is considerably more water flow in the southern portion of the Study Area than the northern portion, which may correlate with groundwater infiltration into the sewer main. It is likely that changes in atmospheric wind speed, air temperature, humidity, and pressure have affected the concentrations of sewer gas observed. However, it is possible that changes in sewer gas concentrations could be caused by water table fluctuations and precipitation events.

Vapor intrusion from soil gas only appears to be a potential exposure pathway in structures which are completed within Unit B (basements). Structures which are constructed within Unit A (crawl spaces or slab on-grade foundations) do not have vapor intrusion from soil gas. All structures constructed with crawl space or slab on-grade foundations which have exhibited COC concentrations within indoor air were subsequently determined to have been caused by sewer gas leaks from plumbing fixtures within the structures and not from vapor intrusion originating from soil gas.

Soil vapors originating from impacted groundwater appear to only be directly entering or underlying structures with basements. Structures with basements which have exhibited sub-slab soil gas concentrations in excess of RCG screening levels have been equipped with mitigation systems to control the exposure pathway, with the exception of PR #29. The owner of PR #29 has declined installation of a mitigation system because they do not want a hole installed through the basement floor. Following the implementation of this OIM Work Plan, groundwater conditions are expected to improve over time thereby decreasing sub-slab soil gas concentrations. Groundwater conditions will be monitored until CAOs are achieved or until a demonstration can be made that the residual dissolved VOCs no longer pose an unacceptable exposure pathway.

Direct contact with impacted soil is not a potential exposure pathway for occupants of structures to the south-southeast of the facility. Additionally, shallow groundwater in the Study Area is not used

for consumption purposes. Potable water is supplied to structures in the Study Area by Indiana-American Water Company.

A Conceptual Site Model (CSM) diagram for potential off-Site exposure pathways has been included as **Figure 2**.

5.0 Corrective Action Objectives

CAOs have been developed to protect human health and the environment based on the potential exposure pathways set forth in Section 4.0. IWM Consulting has worked in conjunction with the USEPA to develop a shortlist for VOC COCs associated with the Site. The VOC shortlist includes the following compounds: TCE, PCE, vinyl chloride, trans-1,2-dichloroethene (trans-1,2-DCE), 1,1-dichloroethane (1,1-DCA), cis-1,2-dichloroethene (cis-1,2-DCE), 1,2-DCA, methylene chloride, and 1,1,1-trichloroethane (1,1,1-TCA).

Since the generation of soil vapor from dissolved and adsorbed TCE is the primary driver for potential exposure to vapor-phase COCs at concentrations above RIA screening levels, IWM Consulting is proposing that CAOs in unsaturated soil be set at site-specific re-calculated IDEM RCG MTG screening levels based on RCG Residential Groundwater Volatilization to Indoor Air screening levels as opposed to Maximum Contaminant Levels (MCLs). The RCG Residential Groundwater Volatilization to Indoor Air screening level for TCE is 9.1 µg/L and is based, in part, on Indiana's regional groundwater temperature of 12.5 degrees Celsius (°C) [54.5 degrees Fahrenheit]. Therefore, the adjusted TCE RCG MTG screening level based on a TCE Residential Groundwater Volatilization to Indoor Air screening level of 9.1 µg/L is 0.065 milligrams per kilogram (mg/kg) as opposed to 0.036 mg/kg. The re-calculated VOC shortlist MTG screening levels are included as **Table 1**. The calculation to develop these revised screening levels can be found in Appendix A of the RCG and is given below.

Equation A-9: Migration to Ground Water Screening Levels

$$SL_{MTG} = SL_{GW} \times DAF \times \left[(K_{OC} \times f_{OC}) + \frac{\theta_W + (\theta_A \times H')}{\rho_b} \right]$$

Where

SL_{MTG} = Migration to ground water screening level, in mg/kg

SL_{GW} = Ground water screening level, in micrograms per liter (µg/L), from column seven of Table A-6. This level may be a maximum contaminant level (MCL) for some chemicals.

DAF = Dilution attenuation factor (DAF, unitless). As recommended in US E.P.A. (2011) for source areas of 0.5 acres, IDEM uses a default DAF value of 20. IDEM will accept other values that are appropriately derived using site-specific data. See Section 4.11.5 of US E.P.A. (2011) for additional information.

K_{OC} = Chemical-specific organic carbon partition coefficient, in liters per kilogram (L/kg). For most chemicals, IDEM uses K_{oc} values from the RSL Chemical-specific Parameters Supporting Table when calculating IDEM migration to ground water screening levels. For metals, IDEM uses the K_d values appearing in Section 4.11 of U.S. EPA (2011) in place of $(K_{oc} \times f_{oc})$.

f_{OC} = Fraction of organic carbon, in grams per gram (g/g). IDEM uses a default value of 0.002 when calculating IDEM migration to ground water screening levels. IDEM will accept other values that are appropriately derived from site-specific data.

θ_W = Water filled soil porosity, in liters of water per liters of soil. IDEM uses a default value of 0.3 when calculating IDEM migration to ground water screening levels. IDEM will accept other values that are appropriately derived from site-specific data.

θ_A = Air filled soil porosity, in liters of air per liters of soil. IDEM uses a default value of 0.13 when calculating IDEM migration to ground water screening levels. IDEM will accept other values that are appropriately derived from site-specific data.

H' = Chemical-specific dimensionless Henry's Law constant (unitless). IDEM uses values from the RSL Chemical-specific Parameters Supporting Table when calculating IDEM migration to ground water screening levels.

ρ_b = Dry soil bulk density, in kilograms per liter (kg/L). IDEM uses a default value of 1.5 when calculating IDEM migration to ground water screening levels. IDEM will accept other values that are appropriately derived from site-specific data.

COC concentrations in saturated soil samples do not apply to these recalculated MTG soil CAOs as COC concentrations exhibited by saturated soil samples are a combination of adsorbed and dissolved COCs, since impacted groundwater fills the pore space of the soil. Saturated soil will be evaluated using groundwater conditions.

Since groundwater is not being used as a potable water source, shallow groundwater at the interface with the vadose zone and in direct communication with the sewer main is the only groundwater media of concern due to the potential for volatilization of COCs and generation of soil gas. Shallow groundwater CAOs will be defined by IDEM RCG Residential Groundwater Volatilization to Indoor Air screening levels. These screening levels are based on Indiana's regional groundwater temperature of 12.5°C and are more representative of actual Site conditions than the USEPA's Vapor Intrusion Screening Levels (VISLs), which uses a default groundwater temperature of 25°C.

A summary of unsaturated soil and shallow groundwater CAOs are summarized on **Table 2**.

6.0 Off-Site Interim Measure Conceptual Design

6.1 Project Overview and Goals

This project will provide an off-Site interim measure for adsorbed soil impacts, impacted groundwater, and soil gas surrounding and within the sanitary sewer main and laterals in the Study Area and will provide a vapor resistant conveyance structure for the City of Franklin's wastewater as it is transported through the Study Area. It will identify and prioritize approaches that protect human health and the environment, thereby preventing and/or minimizing potential exposure pathways. Other goals include:

- Prevent and/or minimize soil gas vapor intrusion into residential sanitary sewer laterals and the City of Franklin's sanitary sewer main within the Study Area.
- Prevent and/or minimize impacted groundwater infiltration into the sanitary sewer main and residential laterals within the Study Area.
- Prevent and/or minimize potential soil vapor intrusion into residential structures by removing source (impacted soil) surrounding and beneath the sanitary sewer main and installing vapor mitigation systems, as necessary.
- Identifying private sewer laterals and verifying that only active laterals are connected to the sanitary sewer main.
- Active removal of source material (VOC impacted soil and sewer bedding) and recovery of groundwater from excavation areas to assist in reduction of groundwater concentrations to levels near CAOs.
- Maintaining safe environments for residents in the Study Area.
- Protecting the water quality of Hurricane Creek.

6.2 Project Benefits

The Project Area where active excavation or lining of sanitary sewer mains and laterals will include portions of Hamilton Avenue, North Forsythe Street, Glendale Drive, and Ross Court. The excavation of impacted soils from the areas surrounding the sanitary sewer system will minimize future vapor intrusion into the sanitary sewer system and assist in reducing COC concentrations in groundwater in the Project Area. Additionally, the replacement of the sanitary sewer main and select laterals along a portion of North Forsythe Street and Hamilton Avenue will provide a sanitary sewer system that should prevent and/or minimize vapor intrusion as a potential exposure pathway relating to vapor phase VOCs. Additionally, sanitary sewer mains and laterals will be lined in areas where significant cracks or breaks are documented, but no soil or sewer bedding impacts above CAOs have been observed. The new and lined sanitary sewer mains will allow for better flow of wastewater within the Project Area since breaks will have been repaired and roots will no longer be able to enter into the sewer main or laterals. This project will also reduce groundwater infiltration into the sanitary sewer system in the Project Area and thereby lessen the amount of wastewater treatment at the sanitary sewer plant. Additional benefits of this project include the reduction of maintenance by city personnel and residents since the sanitary sewer main and private sewer laterals (as applicable) will be new or newly lined and roots should no longer be entering into the sewer lines. The new/lined sewer system will

have an increased life expectancy of a minimum of 50 years, but more realistically in the vicinity of 100 years or more.

Other utility entities (i.e. municipal water company and natural gas company) were invited by the City of Franklin to replace or upgrade their existing utility structures along North Forsythe Street or Hamilton Avenue in conjunction with replacement of the sanitary sewer main and select laterals. It appears that Indiana-American Water may install a new water main prior to implementation of the OIM Work Plan. This will allow the utility entities to forego future utility upgrades and disturbance to the streets and residents and save cost related to surface restoration that would have to be passed onto its customers (residents).

Groundwater remediation will occur by source removal and excavation dewatering. During excavation activities, dewatering activities are anticipated to recover approximately 25 gallons per minute (gpm) of groundwater, which equals to 36,000 gallons per day (gpd). It is expected that the sanitary sewer line and sewer bedding and soil directly below the line are submerged within the southern two-thirds of the Project Area. Over the course of the excavation portion of the project, it is expected that between 1,000,000 and 2,000,000 gallons of groundwater may be recovered, treated, and discharged to the sanitary sewer system.

6.3 Local Challenges

The following items have been identified as potential challenges during this project.

- Groundwater levels may cause delays and challenges for excavation activities and sanitary sewer line replacement. Dewatering of the excavation and subsequent groundwater treatment and discharge to the down-gradient sanitary sewer line will be incorporated as part of the OIM Work Plan.

- Transportation of the excavated soil will require the loading of the soil into lined roll-off boxes. This will require the constant staging and re-staging of the roll-off boxes. The roll-off boxes will be sampled and results will need to be received and reviewed prior to the roll-off boxes being transported to a landfill for disposal. The sampling results will determine whether the soil located in the roll-off boxes can be transported to a permitted hazardous or permitted non-hazardous landfill.

- By-passing of the up-gradient sanitary sewer flow due to the on-Site groundwater pump and treat system. The on-Site groundwater pump and treat system will remain operational during the duration of the OIM Work Plan implementation.

- Due to the potential length of this project (approximately 90 days), public acceptance and patience with this project may be a considerable challenge. This will include the development of acceptable traffic re-routes and local access for residents/occupants to their homes/businesses.

- Numerous buried utility service lines and mains have been identified along Forsythe Street and Hamilton Avenue which will require significant consideration to avoid damage and service disruption to local residents/occupants. Additionally, the narrow streets have low overhead lines on both sides of the street, with telephone and electric lines periodically crossing the street. It will be the selected OIM Work Plan implementation contractor's responsibility to repair any damaged private or public utilities.

- Following the completion of activities each day, the sewer line will be temporarily re-connected to the sanitary sewer main in order to temporarily restore sanitary sewer service to local residents and businesses and to minimize overnight collapsing of the sewer trench.

6.4 Site Conditions

The former Amphenol facility historically covered an area of approximately 15.16 acres. The former Amphenol facility has recently been sub-divided into five parcels and is currently occupied by Grayson Thermal Systems, Miller Chemical, Bastin Logan Water Services, Inc., and the groundwater pump and treat remediation system. The Site is located in part of the Northwest Quarter of the Northwest Quarter of Section 13, Township 12 North, Range 4 East on the northeastern side of Franklin, Indiana. The Site is bound on the east by Hurricane Road, on the South by Hamilton Street, on the north by an abandoned rail line, and on the west and northwest by former Farm Bureau Co-Op facility and former Arvin Industries, respectively. The Site is relatively flat with approximate elevations ranging from 730 and 735 feet above Mean Sea Level. Within the Study Area, the topography gently slopes to the southeast, toward Hurricane Creek.

The Site-wide geology can be described as four distinct Units (A, B, C, and D). Unit A is a 3-foot to 10-foot thick silty loam unit which has been impacted by VOCs. Unit B is an approximately 1-foot to 14-foot thick sandy, water-bearing unit that is known to be impacted by VOCs and is thinner on the southern end of the Study Area, toward Hurricane Creek. Unit C is an approximately 23-foot thick glacial till unit of loam texture. This unit is underlain by Unit D, a 17-foot to 20-foot thick coarse and loamy sand unit. Unit C and Unit D are not considered to be impacted by VOCs. The groundwater beneath the Site is present within Unit B, is unconfined, and was most recently (March 2019) encountered at depths ranging between approximately 3 and 17 feet below land surface (BLS). Groundwater flow during the March 2019 gauging event was to the south-southeast, which is consistent with historic groundwater flow directions at the Site. The March 2019 groundwater flow map has been included as **Figure 3**.

6.4.1 Design-Level Data Soil Boring Installation and Analytical Results

Based on the results of the off-Site sewer and soil gas investigation completed within the right-of-way (ROW) in September/October 2018, IWM Consulting advanced forty-seven (47) soil borings to the base of Unit B on February 25 through February 28, 2019. The borings were continuously sampled and select sample intervals were submitted for laboratory analysis in order to determine if soils are impacted by short-list VOCs above, at, or below the sanitary sewer main. Soil borings were placed approximately every 100 feet along the sewer main in addition to soil borings concentrated in areas

surrounding documented breaks in the sanitary sewer main, which were observed in a 2015 sewer inspection provided by the City of Franklin. The off-Site design-level data soil boring locations are displayed on **Figure 4** through **Figure 7**. The work plan to collect these samples was submitted to the USEPA on February 19, 2019 and was subsequently approved on February 21, 2019.

Soil borings were advanced utilizing direct-push technology. The direct-push probe utilizes hydraulics to advance a sampler into the soil; consequently, excess soil cuttings were not generated during direct-push drilling activities. Continuous soil samples were obtained utilizing dual-tube sampling methods where a five-foot long acetate sleeve contained within a stainless-steel casing was advanced hydraulically to obtain the soil sample. Soil samples passed through the sampler cutting shoe and were retained within a sealed disposable acetate plastic sampling tube for retrieval. The acetate sleeve containing the soil sample was then removed while the stainless-steel outer casing remained in place. A new acetate sleeve was placed inside the casing for continued sampling and advancement of the borehole. Any soil cuttings generated were placed in labeled 55-gallon steel drum for characterization and future disposal. The drum was temporarily stored near the existing groundwater treatment building located on the Site and was removed for disposal on April 25, 2019.

Strict decontamination procedures were followed during the investigation activities by IWM Consulting personnel to reduce the potential for cross-contamination. Drilling and all non-disposable, down-hole sampling equipment was decontaminated prior to first use on-Site, and thereafter between uses, using a vigorous wash in Alconox® solution, followed by a tap water rinse. Any decontamination water generated was temporarily placed in a 55-gallon steel drum which was temporarily stored near the existing groundwater treatment building on the Site, and then removed on April 25, 2019 for proper disposal at a certified disposal facility.

The soil samples collected were field screened using a PID in an effort to determine the relative presence of VOCs. The soil was also visually examined and logged in general accordance with the Unified Soil Classification System (USCS). To ensure accurate VOC screening, the quantity of the soil, temperature, and headspace volume are kept as constant as possible. Prior to field activities, the PID was calibrated in accordance with manufacturer's directions to minimize error through instrument drift. Soil boring logs are included in **Appendix B**.

Soil Sampling Activities

Soil samples were collected from the soil borings to determine if soil impacts or non-aqueous phase liquid (NAPL) were present at concentrations exceeding site-specific re-calculated MTG screening levels.

In order to characterize soils located between the ground surface and the top of the sanitary sewer main for future disposal or potential re-use during implementation of the OIM Work Plan, one soil sample was collected from the one-foot interval located above the sanitary sewer main for laboratory analysis. Additional soil samples were collected from beneath the approximate depth of the sanitary sewer main in North Forsythe Street, Hamilton Avenue, and Ross Court to characterize soils potentially impacted by chlorinated solvents released from breaks or cracks in the sanitary sewer main. Therefore, a second soil sample was collected within approximately one-foot below the bottom of the

sanitary sewer main, a third soil sample was collected from the bottom one-foot of Unit B, and a fourth soil sample was collected from the mid-point between the second and third sample intervals (if the thickness between the second and third sample intervals exceeded two feet).

Soil samples were analyzed for short list VOCs using SW-846 Method 8260 and percent moisture. Soil samples collected for laboratory analysis of VOCs were obtained in general accordance with USEPA Sampling Method 5035 using bulk TerraCore™ sampling supplies, including the 5-gram T-handle sampling device.

Samples were analyzed by the laboratory using a 48-hour turnaround time (TAT) and Level IV quality assurance/quality control (QA/QC) procedures. For QA/QC purposes, duplicates were collected at a rate of one (1) sample per every ten (10) soil samples and were analyzed for the same analytical parameters. In addition, matrix spike/matrix spike duplicate (MS/MSD) samples were collected at a rate of one (1) sample per every twenty (20) soil samples and were analyzed for the same analytical parameters. Trip blanks for VOC analysis accompanied each cooler shipment that contained samples for select VOC analyses. Equipment blanks were also obtained each day. The equipment blank was collected by pouring laboratory-prepared water through the field sampling equipment (e.g., the cutting shoe) and collecting the rinsate in the proper analytical containers.

Soil Analytical Results

During off-Site soil boring advancement, 183 soil samples were collected and submitted for laboratory analysis of select VOCs. Fifty-one (51) soil samples were collected from the one-foot interval above the sanitary sewer main; forty-six (46) soil samples were collected from the one-foot interval beneath the sanitary sewer main; sixty (60) soil samples were collected from the one-foot interval at the base of Unit B; and twenty-six (26) soil samples were collected from the mid-point between the base of Unit B and the one-foot interval beneath the sanitary sewer main.

Only one unsaturated soil sample [DSB-6 SL (9.4-10.4)] exhibited an adsorbed COC concentration in excess of the site-specific re-calculated MTG screening level. All other soil samples which exhibited a COC concentration in excess of a site-specific re-calculated MTG screening level were saturated and the results are biased high due to the presence of impacted groundwater within the soil matrix. However, of the 183 soil samples, only 41 (40 saturated and 1 unsaturated) soil samples exhibited COC concentrations in excess of re-calculated MTG screening levels. Soil analytical results are summarized in the following table and on shown in full within **Table 3**. TCE concentrations in soil are shown on **Figure 8**, **Figure 9**, and **Figure 10**.

Soil Samples with COC Concentrations in Excess of Re-Calculated RCG MTG Screening Levels

	One-Foot Interval Above Sanitary Sewer Main	One-Foot Interval Below Sanitary Sewer Main	Mid-Point Between the One-Foot Interval Below Sanitary Sewer Main and the Base of Unit B Interval	Base of Unit B Interval
Soil Samples with COC Concentrations in Excess of Site-Specific Re-Calculated MTG Screening Levels	DSB-36	DSB-6*, DSB-36 and DSB-43	DSB-3, DSB-16, DSB-21, and DSB-35	DSB-1, DSB-2, DSB-3, DSB-12, DSB-14 through DSB-21, DSB-31, DSB-36 through DSB-40, DSB-42, DSB-43, DSB-44, DSB-46, DSB-47, TW-15, and TW-16

*Note – soil sample was not saturated.

As shown above, the majority of soil samples with COC concentrations in excess of their respective site-specific re-calculated MTG screening level were obtained from the base of Unit B and will not be accessible during soil excavation and sewer replacement activities based on the depth of the soil, extensive groundwater present within this zone, and due to limitations of the excavation equipment and necessary shoring to excavate to this depth. A cross-section location map has been included as **Figure 11** and cross-sections have been included as **Figure 12** and **Figure 13** which depict the location and depth of the sanitary sewer main in relation to the observed water table, soil impacts, as well as the depth to the base of Unit B.

All off-Site soil samples exhibited COC concentrations less than RCG Residential Direct Contact (RDC) screening levels. Laboratory analytical reports and third-party data validation reports are included in **Appendix C**.

6.4.2 Off-Site Temporary Well Installation and Groundwater Analytical Results

In order to delineate groundwater impacts, IWM Consulting advanced a total of thirty-one (31) boring locations to the base of Unit B and installed forty-five (45) temporary monitoring wells between October 23, 2018 and March 6, 2019. The borings were continuously sampled and soil samples were field screened using a PID in an effort to determine the relative presence of adsorbed VOCs. The soil was also visually examined and logged in general accordance with the USCS. To ensure accurate VOC screening, the quantity of the soil, temperature, and headspace volume are kept as constant as possible. Prior to field activities, the PID was calibrated in accordance with manufacturer's directions to minimize error through instrument drift. Temporary well boring logs and construction diagrams are included in **Appendix B**. The work plans to collect these samples were submitted to the USEPA

on October 18, 2018 and January 18, 2019 and were subsequently approved on October 23, 2018 and February 25, 2019, respectively.

Soil borings were advanced utilizing direct-push technology. The direct-push probe utilizes hydraulics to advance a sampler into the soil; consequently, excess soil cuttings were not generated during direct-push drilling activities. Continuous soil samples were obtained utilizing dual-tube sampling methods where a five-foot long acetate sleeve contained within a stainless-steel casing was advanced hydraulically to obtain the soil sample. Soil samples passed through the sampler cutting shoe and were retained within a sealed disposable acetate plastic sampling tube for retrieval. The acetate sleeve containing the soil sample was then removed while the stainless-steel outer casing remained in place. A new acetate sleeve was placed inside the casing for continued sampling and advancement of the borehole. Any soil cuttings generated were placed in labeled 55-gallon steel drum for characterization and future disposal. The drum was temporarily stored near the existing groundwater treatment building located on the Site and was removed for disposal on April 25, 2019.

Strict decontamination procedures were followed during the investigation activities by IWM Consulting personnel to reduce the potential for cross-contamination. Drilling and all non-disposable, down-hole sampling equipment was decontaminated prior to first use on-Site, and thereafter between uses, using a vigorous wash in Alconox® solution, followed by a tap water rinse. Any decontamination water generated was temporarily placed in a 55-gallon steel drum which was temporarily stored near the existing groundwater treatment building on the Site, and then removed on April 25, 2019 for proper disposal at a certified disposal facility.

The borings were advanced to the base of the first encountered saturated zone (Unit B) and did not exceed a total depth of 23.5 feet bgs. Temporary 2-inch diameter polyvinyl chloride (PVC) screens two feet in length (with varying lengths of PVC risers) were placed into the boreholes at the top of the observed saturated zone within Unit B to facilitate the collection of the one-time groundwater samples. If the saturated zones were thicker than 5 feet, a second temporary well was installed at the bottom of the saturated zone within Unit B in a similar manner. Although the groundwater sampling points were temporary, washed quartz (#5) sand was installed within the borehole and extended approximately 1-foot above the top of the screen interval in an effort to assist in filtering any suspended sediment in the groundwater being sampled. The remaining borehole was filled with bentonite in order to prevent surface water from entering into the borehole after installation activities.

Groundwater Sampling Activities

One-time groundwater samples were obtained from the temporary wells on either October 24 or 25, 2018 or March 5, 6, or 7, 2019. Groundwater samples were obtained from the temporary wells via low-flow sampling methods. Disposable tubing was utilized to minimize the risk of cross-contamination. Purge water generated during groundwater sampling activities was temporarily containerized within a labeled 55-gallon DOT approved steel drum, transported back to the Site, and then treated by the onsite groundwater remediation system, prior to discharge to the on-Site sanitary sewer per the approved municipal discharge permit with the City of Franklin.

A portable bladder pump in conjunction with a Horiba® U-52 Multi-Probe Field Meter was used to collect groundwater samples from the temporary wells. The pump was equipped with a disposable bladder sleeve that was exchanged between wells. Dedicated tubing was used for each well. The Multi-Probe Field Meter included probes for turbidity, temperature, pH, specific conductance, dissolved oxygen, and oxidation-reduction potential (ORP). Purge rates were established at a rate that minimized groundwater drawdown and the primary objective of the purging activities was to reduce the turbidity of the samples, as documented by a stable (±10%) or decreasing trend in turbidity.

Field parameters were measured continuously, and per the approved work plan, groundwater samples were collected after the turbidity had stabilized or after a maximum of 15 minutes of purge time, whichever occurred first. Care was taken to ensure the bladder pump discharge tubing and flow through cell had evacuated several volumes of water before the samples were obtained. Groundwater criteria which were monitored during the purging activities are listed below:

- Turbidity — Nephelometric Turbidity Unit
- pH — pH units
- Specific Conductance — Siemens/meter or milli Siemens/centimeter
- Dissolved Oxygen — milligrams per liter
- ORP — millivolts

The groundwater samples were collected from the temporary wells and placed into the appropriate laboratory provided pre-labeled containers. The groundwater samples were submitted to Pace Analytical Services, LLC located in Indianapolis, Indiana and analyzed for shortlist VOCs using SW-846 Method 8260 using Level IV QA/QC.

To determine the Site-specific groundwater flow direction, the top-of-casing elevations for the temporary wells were surveyed to a common benchmark using transit-stadia techniques and depth to groundwater measurements were obtained from the points at least 24-hours after they were installed. Once the sampling and subsequent groundwater gauging activities were completed, the temporary wells (TW-1 though TW-14S/D) were removed and the boreholes were backfilled with bentonite and the surface was capped with like material (e.g., concrete, gravel, or topsoil) to match existing surface conditions in the area of the borehole. Temporary wells TW-15S/D through TW-31 are still in place awaiting USEPA approval to permanently abandon.

Groundwater Analytical Results

During off-Site temporary monitoring well sampling, forty-nine (49) groundwater samples (including duplicate samples) were collected and submitted for laboratory analysis of select VOCs. Thirty-four (34) groundwater samples were collected from the groundwater at the top of the saturated zone of Unit B and fifteen (15) groundwater samples were collected from the base of Unit B.

The COC concentrations from groundwater samples collected from the top of the saturated zone of Unit B represent the concentrations which may have the potential to volatilize and become soil gas. Groundwater analytical results are summarized in the table below and are shown in full within **Table 4**. Temporary monitoring well locations and a TCE in groundwater iso-concentration contours have

been included on **Figure 14**. Additional isoconcentration maps have not been generated since TCE is the only COC with groundwater concentrations in excess of RCG Residential GVE screening levels.

Shallow Groundwater Samples with COC Concentrations in Excess of RCG Residential Groundwater Vapor Exposure Screening Levels

	Sample Location
Groundwater Samples with COC Concentrations Greater than RCG RGVE SLs	TW-9, TW-10, TW-11, TW-12, TW-13, TW-15, and TW-27

Deeper groundwater concentrations were not evaluated since they do not pose a volatilization risk to soil gas and drinking water is supplied to the area by Indiana-American Water Company. Laboratory analytical reports and third-party data validation reports are included in **Appendix C**.

6.5 Design Approach

6.5.1 Site-Specific Constraints/Considerations

The portions of Hamilton Avenue and North Forsythe Street selected for replacement of the sanitary sewer system are typical conditions along both Hamilton Avenue and North Forsythe Street throughout the Study Area. Hamilton Avenue consists of one east-bound lane and one west-bound lane while North Forsythe Street consists of one north-bound lane and one south-bound lane. Neither street have developed sidewalks or storm sewer systems. Vehicular traffic on Hamilton Avenue and North Forsythe Street are both generally moderate throughout the day, while land uses along the streets are primarily residential, with some light commercial/industrial uses. Limitations on traffic patterns will be required in order to complete this project and developing traffic routes for residences within the construction area will be essential.

The existing sanitary sewer main is located in the center of Hamilton Avenue, west of Forsythe Street, and trends to the north towards the Site, to the east of Forsythe Street. The sanitary sewer main is located generally within the center of North Forsythe Street. Buried gas and water mains are located on the north side of Hamilton Avenue and the west side of Forsythe Street, with numerous private laterals crossing Hamilton Avenue or Forsythe Street to the south and east/west, respectively, to residential homes and commercial properties. A buried telecommunication line is located on the south side of Hamilton Avenue and crosses Forsythe Street. The location of buried utilities on the north side of Hamilton Avenue and west side of Forsythe Street will limit expansion of the excavation in those directions. Additionally, overhead utilities located on both sides of the streets and lateral lines traversing across the streets will add complexity to the excavation process and will limit the radius the excavator can turn.

Private sanitary sewer laterals extending to the sanitary main will be evaluated to determine if they are active laterals, and if so, what condition the laterals are in and of what material type they are constructed. Active sanitary laterals constructed with vitreous clay pipe (VCP) and/or exhibiting cracks, breaks, or root intrusion will require replacement or lining in areas of TCE impacted groundwater. Consideration will need to be taken to gain access to private properties in order to evaluate and potentially replace sanitary sewer laterals. Private access agreements between Amphenol and individual residents will be acquired if inspection of the sanitary lateral determines it needs to be replaced. If the laterals are replaced, then an exterior sewer cleanout will also be installed.

Soils within Unit B consist of clayey sands and sand with gravel and exhibit very high permeabilities and low stabilities. Provisions will need to made regarding dewatering of Unit B during excavation and sewer main replacement activities and the sidewalls will need to be stabilized in order to prevent undermining.

6.6 Plan Design

Based on discussions between the USEPA, Amphenol, and IWM Consulting, the removal of source impacted soil and impacted groundwater during the replacement of the sanitary sewer main (and select sanitary laterals) in portions of Hamilton Avenue and North Forsythe Street will achieve objectives necessary to minimize and/or prevent potential exposure pathways to residents within the Study Area. Proposed areas for excavation and sewer main lining have been depicted on **Figure 15**. Detailed bid specifications for the implementation of the construction portion of the Plan Design have been included as **Appendix A**.

The Plan Design includes:

- Materials management plan.
- Excavation of approximately six (6) feet wide to approximately two (2) feet beyond the bottom of the existing sanitary sewer main in the Project Area. The excavation may expand in width [beyond six (6) feet in some areas (see **Figure 16** and **17** for the initial excavation plan)] in select areas based on design soil boring soil analytical results.
- Evaluation via camera inspections of all laterals coming into the sanitary main in the portions of Forsythe Street and Hamilton Avenue in which the sanitary sewer main is being replaced or lined. Replace or line all necessary laterals that appear to be constructed with VCP and/or have breaks/cracks within Project Area. Only active laterals will be replaced or lined. Sewer laterals will remain at their original approximate depth and will not be over-excavated.
- Replacement of the sanitary sewer main and manholes from Manhole 250053 (1st manhole west of Forsythe St) to Manhole 250056 (south end of Site) on Hamilton Avenue.
- Replacement of the sanitary sewer main and manholes from Manhole 250052 (located at intersection of Hamilton Avenue and North Forsythe Street) south to Manhole 250040 (located at intersection of Ross Court and North Forsythe Street) on Forsythe Street.
- Propose extending of the sanitary lateral from 1021 Hamilton Avenue to the newly installed sanitary main on Hamilton Avenue. The sanitary sewer lateral currently leaves the residence and proceeds east to Manhole 250090. Capping the sanitary lateral entering Manhole 250090 from the west. Line the interior of Manhole 250090.

- Lining of the sanitary sewer main from Manhole 250090 (at entrance of Glendale Drive) to Manhole 250080 (within Glendale Drive) and from Manhole 250090 east to Manhole 250100.
- Lining of the sanitary sewer main from Manhole 250040 (located at intersection of Ross Court and North Forsythe Street) south to Manhole 250010 (located just to north of Hurricane Creek) on Forsythe Street.
- Lining of the sanitary sewer main from Manhole 250040 (located at intersection of Ross Court and North Forsythe Street) east to Manhole 250041 (first manhole located east of North Forsythe Street on Ross Court).
- Lining of the sanitary sewer main from Manhole 250050 (located in front of 721 North Forsythe Street) east to Manhole 250060 (located between North Forsythe Street and Glendale Drive).
- Note: The City of Franklin has recently completed lining of the sanitary sewer main located on Glendale Drive from Manhole 250080 to Manhole 250070.
- Confirmatory soil sampling.
- Dewatering of the excavation area for excavation activities and sewer line replacement. Anticipated groundwater treatment system components and drawings are included in **Appendix D**.
- Implementation of a community relations plan. The community relations plan was discussed in Section 2.0.
- Development of a SWP^3. The SWP^3 identifies all potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction area and the steps necessary to prevent or reduce pollutants from affecting storm water. A copy of the proposed SWP^3 has been included in **Appendix A**. The SWP^3 will be submitted to IDEM for review and approval.
- Development of a maintenance of traffic plan. The maintenance of traffic plan has been included in the detailed bid specifications, included in **Appendix A**.
- Development of an AAMP. A copy of the proposed AAMP has been included in **Appendix E**.
- Addition of off-site permanent monitoring wells to the existing monitoring well network following the completion of Project Area restoration activities. Proposed monitoring wells are shown on **Figure 19**.
- Confirmatory groundwater sampling.

6.6.1 Materials Management Plan

In order to dispose of the impacted soils excavated from Project Area, lined roll-off boxes will be loaded by the contractor selected to implement the OIM Work Plan. The lined roll-off boxes will be tarp covered and transported back to the Site by an IWM Consulting sub-contractor and staged in a secure area. Each roll-off box will be composite soil sampled to determine if the soils can be classified as non-hazardous using the IDEM's Contained-In Determination. Once the hazard classification of the soils has been determined, the lined roll-off boxes will be transported to a landfill for disposal by an IWM Consulting sub-contractor. Once the roll-off boxes are emptied, they will be returned to the Site, re-lined, and the process will be repeated. All IWM Consulting sub-contractors will be supervised by IWM Consulting personnel and will adhere to IWM Consulting's HASP.

Composite soil samples collected from each roll-off box using dedicated sampling equipment. The soil samples will be collected by hand using disposable mini-ice scoops or shovel (decontaminated between samples) from random portions of the soil within the roll-off box or from the excavator bucket prior to placement into the roll-off boxes. IWM Consulting personnel will collect the soil samples while wearing disposable nitrile gloves. New gloves will be worn for each sample set (i.e. roll-off box) in order to minimize cross contamination between soil samples. A portion of the soil sample will be placed into a sealable plastic bag for field screening and another portion of the homogenized soil sample will be placed into laboratory provided containers. Soil samples collected for laboratory analysis of VOCs will be placed into 2 or 4-ounce glass jars and sealed. The soil samples will immediately be placed into an ice filled cooler.

The soil samples collected in the sealed plastic bag will be field screened using a PID in an effort to determine the relative presence of adsorbed VOCs. To ensure accurate VOC screening, the quantity of the soil, temperature, and headspace volume are kept as constant as possible. Prior to field activities, the PID will be calibrated in accordance with manufacturer's directions to minimize error through instrument drift. It should be noted that elevated PID readings are not always a reliable indicator of adsorbed or dissolved chlorinated solvent impacts.

Soil samples will be analyzed for short list VOCs using SW-846 Method 8260 and percent moisture. Additional analysis may be required by IDEM, however, at this time, only short list VOCs and percent moisture are anticipated. The analysis of the samples will be used to verify each load is non-hazardous using IDEM's Contained-In Determination before it is transported to a non-hazardous landfill for disposal. Should any soil sample results not qualify for IDEM's Contained-In Determination, then the soil from that roll-off box will be transported to a hazardous waste landfill for disposal. The appropriate waste manifest (non-hazardous or hazardous) will accompany each load of soil transported to the landfill for disposal.

6.6.2 Confirmatory Soil Sampling

Confirmatory soil samples will be collected following the removal of impacted soils and the sanitary sewer main. Confirmatory soil samples will be collected from the excavation at a rate of one (1) sidewall sample per 20 linear feet and one (1) base sample per 400 square feet in order to document the condition of the soil after the excavation activities are completed. If confirmatory sidewall soil sample analysis indicates soil COC concentrations in excess of CAOs, the excavation will be expanded and additional confirmatory soil samples will be collected based on the above sample collection rates.

In order to obtain soil samples that have minimal contact with the sides of the excavator's bucket, soil samples will be collected by hand from the middle of the bucket. IWM Consulting personnel will collect the soil samples from the excavator bucket while wearing disposable nitrile gloves. New gloves will be worn for each sample in order to minimize cross contamination between soil samples. A portion of the soil sample will be placed into a sealable plastic bag for field screening and another portion of the soil sample will be immediately transferred from the excavator's bucket into laboratory provided containers. Soil samples collected for laboratory analysis of VOCs will be obtained in general accordance with EPA Sampling Method 5035 using bulk TerraCore™ sampling supplies, including the 5-gram T-handle sampling device (or comparable). If a mobile on-Site NELAC certified

lab is utilized, soil samples may be placed directly into laboratory provided 2 or 4-ounce glass containers with Teflon-lined lids for laboratory analysis. The soil samples will immediately be placed into an ice filled cooler.

The soil samples collected in the sealed plastic bag will be field screened using a PID in an effort to determine the relative presence of adsorbed VOCs. To ensure accurate VOC screening, the quantity of the soil, temperature, and headspace volume are kept as constant as possible. Prior to field activities, the PID will be calibrated in accordance with manufacturer's directions to minimize error through instrument drift. It should be noted that elevated PID readings are not always a reliable indicator of adsorbed or dissolved chlorinated solvent impacts.

Soil samples will be analyzed for short list VOCs using SW-846 Method 8260 and percent moisture.

Sample Identification, Collection, & Analysis

Sample analysis may be performed at either an on-Site mobile laboratory or fixed laboratory. Field sample identification for this project should follow the following format: a sample location identification code (CS-1 SW for Confirmatory Sample No. 1, Sidewall – or Base), a two-letter sample matrix code (SL for soil), and numbers designating the sampling interval of each sampling location. The trip blank, field duplicate, and field blank samples should utilize the identification codes TB, FD, and FB, respectively. Examples of the field sample identification codes for this project are as follows:

- For confirmatory soil samples: CS-1 SW SL (9.5' – 10')
  (Confirmatory soil sampling location No. 1, Sidewall – soil sample, interval 9.5' – 10' bgs)
- For confirmatory soil samples: CS-2 B SL (12')
  (Confirmatory soil sampling location No. 2, Base – soil sample, interval 12' bgs)
- For waste characterization soil samples: WC-1 BX1359
  (Composite waste characterization soil sample No. 1, Box No. 1359)
- For confirmatory soil sample field duplicate samples: FD-1 SL
  (Soil sample field duplicate No. 1)
  Note that no sampling location identification is utilized for the field duplicate. The field duplicate location/sampling identification information is to be recorded in the field project notebook.
- For field blank samples: FB-1 WT
  (Field Blank - water sample No. 1)
- For trip blank water samples: TB-1 WT
  (Trip Blank – water sample No. 1)

Standard protocols will be observed for sample collection, sample handling and preservation, and chain-of-custody documentation. Personnel will utilize clean, disposable, nitrile gloves for each sample obtained. Laboratory provided sample containers will be utilized. Prior to use, the sample containers will be inspected for cracks, chips, cleanliness, and preservative (as appropriate). Container threads will be wiped clean before sealing (if applicable) to ensure proper sealing. The sample containers will be labeled with the appropriate project name and/or number, sample identification

designation, date, time, and sampler's name or initials. Samples will be placed in a cooler containing ice and maintained at a temperature of approximately 4° Celsius prior to analysis.

Samples will be analyzed by the laboratory using a 24-hour TAT and Level IV QA/QC procedures. For QA/QC purposes, one (1) field duplicate will be collected at a rate of one (1) sample per every ten (10) samples per sampling media and will be analyzed for the same analytical parameters. In addition, one (1) MS/MSD sample will be collected at a rate of one (1) sample per every twenty (20) confirmatory samples per sampling media and will be analyzed for the same analytical parameters. One (1) trip blank for VOC analysis will accompany each cooler shipment that contains samples for select VOC analyses. One (1) field blank per day will be obtained. Since only dedicated sampling equipment will be utilized for the collection of confirmatory samples, equipment blank samples will not be necessary. A field blank, consisting of analyte-free water poured into a laboratory provided container in the field (in order to assess the potential for sample contamination due to field conditions) will be collected in lieu of an equipment blank.

The Pace chain-of-custody, pertinent information such as laboratory certifications for Pace, and USEPA RSLs for this project were previously submitted as Attachments C, D, and E and conditionally approved by the USEPA during the implementation of the *Off-site Groundwater Investigation Work Plan* dated October 18, 2018. The applicable Standard Operating Procedures (SOPs) which will be followed by IWM Consulting during the soil sampling activities were provided as Attachment B of the *Design-Level Data Soil Investigation Work Plan* dated February 19, 2019. If a separate on-Site mobile laboratory is selected to perform a portion of the soil sample analysis, pertinent laboratory information, including NELAC certifications, for the mobile laboratory will be submitted for review prior to initiating the field work.

6.6.3 Excavation Dewatering

Excavation of impacted soils and replacement of the sanitary sewer main will start on the southern end of the project (at Ross Court) and proceed to the north. A dewatering and groundwater treatment system will be stationed on the south end of the Project Area for the treatment and discharge of groundwater recovered from the excavation trench to the sanitary sewer system south of the Project Area. The exact location of the treatment system will be determined at a later date after discussions with the selected contractor.

Dewatering activities are anticipated to include a groundwater treatment system consisting of four (4) 22,000-gallon frac tanks, a polymer injection system, transfer pumps, four (4) 2,000-pounds liquid-phase granular activated carbon (GAC) filter vessels, sediment particulate filter vessels, and a flow totalizer. Groundwater treatment system components and drawings are included in **Appendix D**. Each batch of treated groundwater (approximately 22,000-gallons), or as required by the discharge permit, will be sampled for short-list VOCs. Since there will be no air stripping, there will not be any vapor-phase VOC emissions. If all COC concentrations are below RCG screening levels, then the treated groundwater will be discharged to the sanitary sewer system under a discharge permit obtained from the City of Franklin. The discharge permit will be obtained prior to the start of the project. If they analytical results do not meet discharge requirements, the water will be transferred back through the treatment system and re-tested to document that the water meets discharge limitations.

6.6.4 Backfill

To prevent settling, all soils removed from the excavation will be disposed of at a permitted landfill and the backfill replaced in the excavation will be clean and will meet compaction requirements. The contractor selected to implement the OIM Work Plan will supply all backfill material. The backfill material supplied during the implementation of the OIM Work Plan will consist of Number 8 stone for sanitary sewer bedding, structure backfill (Type 1) for excavation backfilling, and Number 53 stone aggregate for road bedding and will meet INDOT specifications. In order to meet INDOT specifications, these backfill materials will be virgin material sourced from a quarry, therefore, verification sampling for VOCs is not warranted. Topsoil used in surface restoration will be the original topsoil removed from the excavation area by the contractor selected to implement the OIM Work Plan. The top soil removed will be replaced, seeded, and mulched. All roads will be paved after the project is completed. Backfill and pavement specifications have been included within the detailed bid specifications. Detailed bid specifications for the implementation of the construction portion of the Plan Design have been included as **Appendix A**.

6.6.5 Ambient Air Monitoring Program

The AAMP includes the work area and a perimeter monitoring plan that will be implemented during intrusive (excavation) activities. The AAMP describes the approach taken for perimeter air monitoring during intrusive activities to determine if off-Site migration of COCs is occurring, specifically TCE or PCE. The intent of the AAMP is to provide a measure of protection for the community down-wind of the activities that includes, but is not limited to, residences and businesses, as well as on-Site workers not involved in the work activities. The AAMP also provides steps that will be taken to ensure that workers engaged in excavation activities are not exposed to site-related COCs above published exposure limits. Continuous perimeter monitoring will be implemented during excavation activities that may generate or elevate TCE and PCE levels above background concentrations. In addition to VOC monitoring, particulate monitoring will be implemented for visible particulate (dust) during excavation activities. The AAMP will describe the use of direct-reading air monitoring instruments which will be stationed at up-wind and down-wind locations of the excavation as well as a hand-held monitor which will be used to determine work area TCE and PCE levels/worker exposure levels and periodically assess concentrations at the perimeter monitoring stations.

Work area Action Levels (ALs) have been developed for worker exposure protection which were determined based on current published exposure limits established by the OSHA or the ACGIH and instrument response factors to TCE and PCE. Perimeter ALs are based on current IDEM Indoor Air Quality Standards. If ALs are reached at either the work area or the perimeter monitoring stations, the AAMP requires that a direct reading air monitor specific to the VOCs of concern be used to determine the presence or absence of TCE and PCE. If TCE and PCE are confirmed to be present at the location in question, the AAMP describes the actions which must be taken on-Site to lower the measured concentrations of TCE and PCE below the ALs and the actions needed to prevent further exposure to the workers and residents of the area. A copy of the proposed AAMP has been included in **Appendix E**.

6.6.6 Sewer Main and Lateral Lining

From Manhole 250040 to 250010 (along Forsythe Street, south of Ross Court), the sewer line is submerged beneath the water table and groundwater is expected to flow into the sewer line, rather than sewer contents flowing outward. Groundwater contamination in the northern portion of this stretch is believed to have flowed south along the sewer line from leaks in the vicinity of Ross Court. This section of sewer line along Forsythe Street from Ross Court to near Hurricane Creek will be lined. This lining will prevent infiltration of contaminated groundwater into the sewer line, where contaminants could potentially volatilize. VOCs in sewer gas can potentially travel greater distances than they would in soil gas since it is an open pipe. Consequently, the lining of the sewer will extend south beyond the extent of groundwater contamination.

The sewer line will also be lined along the western portion of Ross Court, from Manhole 250040 to 250041. This section of sewer line is not along the flow path from the former Amphenol facility to the wastewater plant and soil beneath this sewer line does not exhibit COC impacts above the CAOs. However, some damage was observed during the City's video inspection and groundwater in a portion of this stretch of sewer line exceeds the 9.1 µg/L IDEM RCG Residential GVE screening level for TCE. To mitigate the potential for groundwater infiltration, this section of sewer will be lined.

The sewer line in the Glendale Drive area connects to the Forsythe Street sewer line via a connector from Manholes 250070 to 250060 to 250050. The portion of this connector nearer Glendale Drive, between Manholes 250070 and 250060, was observed to be in good condition during the City's video inspection and is east of groundwater contamination that exceeds 9.1 µg/L of TCE. Little damage was noted in the western portion of this connector between Manholes 250050 and 250060. However, this section of the connector within the groundwater plume will be preemptively lined to mitigate the potential for contaminated groundwater or soil gas entering the sewer.

The sewer line that is being replaced along Hamilton Avenue only extends as far east as the sewer lateral to the former Amphenol facility, which has already been replaced. A separate sewer line flows south along Hurricane Road before jogging left along a small stretch of Hamilton Avenue and then continuing south along Glendale Drive. As noted in US EPA's comment, a north-south portion of the sewer line on Glendale Drive was determined to have multiple condition issues during the City's video inspection. Since the inspection, the City has lined this section of sewer (between Manholes 250080 and 250070) during Spring 2019. Sewer gas concentrations of TCE at Manhole 250070 (which is also the beginning of the connector to the Forsythe Street sewer line) at the southern end of this newly lined section were below screening limits in September 2018, indicating that there is no significant soil gas migration into this lined section of sewer.

Following completion of the work outlined in the original Conceptual Design, all sewer lines within areas of groundwater concentrations exceeding 9.1 µg/L will have been replaced or lined, with one exception. In the area of Manhole 250090, TCE concentrations in groundwater exceed the screening level. This manhole is located at the intersection of Hamilton Avenue and Glendale Drive. The City video inspection indicates the condition of this line to the south (Manhole 250090 to 250080) is good. To the east (Manhole 250090 to 250100), the City's video inspection noted debris in the line and light and moderate roots. Although these sections of sewer line are mostly outside of the groundwater plume

area, they are in close enough proximity to the plume that contaminants volatilizing from groundwater could theoretically migrate along these lines through sewer gas. To further mitigate the potential for TCE in soil gas to enter sewer lines, lining of these two sections of sewer line (Manhole 250100 to 250090 and 250090 to 250080) will be included in the revised remedial design scope.

Lined pipes have a minimum life expectancy of 50 years. However, manufacturers anticipate the life expectancy will be much longer than 50 years. The sewer lines in the project area that will be or have been rehabilitated will be or were lined using EX Pipe or CIPP material by Miller Pipeline. Pipe liners range in thickness from 4.5 mil to 7.5 mil, depending on the pipe diameter and depth.

EX Pipe is produced from a base of PVC, conforming to ASTM D-1784 cell classification 12334-B, tested to ASTM F 1504-Standard Specifications for folded PVC Pipe for sewer rehabilitation. The EX Pipe delivers chemical, earthquake, and abrasion resistance, which results in a superior pipeline with long-term, proven stability. The jointless EX Pipe stops water infiltration (and exfiltration), root intrusion, and soil loss.

Similarly, CIPP is resin-impregnated flexible tube, which when cured, is continuous and tight fitting throughout the entire length of the original pipe. The flexible tube consists of one or more layers of absorbent non-woven fiberglass fabric which is impregnated with a resin that consists of a corrosion resistant polyester or vinyl ester resin and catalyst system.

The sanitary sewer lining extends the life expectancy of the sanitary sewer lines a minimum of 50 years, and could extend the life expectancy of the lines to the vicinity of 70 to 100 years or more.

6.6.7 Monitoring Well Network Expansion

In order to monitor groundwater conditions following implementation of the OIM Work Plan, IWM Consulting proposes to install five (5) additional permanent monitoring wells (MW-36 through MW-40) within areas evaluated as part of the Off-Site Groundwater Investigation and have exhibited dissolved TCE concentrations at the groundwater-vadose zone interface in excess of RCG Residential GVE screening levels. The monitoring wells will be used to monitor the progress of the OIM following completion. The proposed monitoring wells are displayed on **Figure 19**.

The monitoring wells will be installed using a track-mounted Geoprobe drill rig equipped with 4.25-inch inside diameter hollow-stem augers and will be completed to a depth of approximetely 3.5 feet below the observed saturated water surface. The monitoring wells will be constructed with five (5) feet of two-inch diameter 0.010-inch slot schedule 40 PVC screen and enough schedule 40 PVC solid riser pipe casing to reach the surface. Sand will be poured around the screen to approximately two-feet above the screen. Bentonite chips will be poured in the remaining annular space around the well casing and hydrated. A two foot square concrete pad will be constructed for placement of the protective cover. Deeper wells will not be necessary to monitor groundwater impacts since the only potential exposure pathway comes from the surface-water interface, where groundwater impacts have the potential to volatilize to soil gas.

After the monitoring wells are installed, each monitoring well will be developed using a development pump and surging techniques and each TOC elevation will be surveyed into the existing monitoring wells network using transit-stadia surveying techniques.

All development water and soil cuttings will be containerized in properly labeled steel 55-gallon drums and stored on-site until they can be properly disposed of.

6.6.8 Confirmatory Groundwater Sampling

Six (6) months following the completion of OIM Work Plan restoration activities, IWM Consulting personnel will conduct twelve (12) monthly followed by semi-annual low-flow groundwater sampling events for the existing and proposed off-site monitoring wells.

IWM Consulting proposes to obtain depth to groundwater measurements from all on-Site monitoring wells (IT-1A, IT-2, IT-3, MW-3, MW-9, MW-12R, MW-20, MW-21, MW-22, MW-23, MW-24, MW-26, MW-27, MW-28, MW-29, and MW-30), all on-Site recovery wells (RW-1 through RW-5), all existing off-Site monitoring wells (MW-31 through MW-35), and all proposed off-Site monitoring wells (MW-36 through MW-40) as part of monthly and semi-annual gauging activities. The measurements will be obtained with an electronic water meter capable of detecting depth to groundwater measurements to within 0.01 feet. Additionally, the bottom of each well will be gauged with an electronic oil-water interface probe to check for the presence of non-aqueous phase liquid. The measurements will be obtained on the same day and will be utilized to generate a site-specific groundwater elevation map.

The groundwater samples will be collected using low flow sampling techniques and depth to groundwater measurements will be recorded prior to and during the sampling activities. If an insufficient amount of groundwater (<2.5 feet) is present within the well and low flow sampling cannot be completed, then the groundwater sample will be obtained with disposable polyethylene bailer after removing three (3) volumes of groundwater or after the well purges dry, whichever occurs first. If the samples are obtained with a bailer, care will be taken to slowly lower the bailer in and out of the well in order to minimize agitation the water column.

Purge water generated during the groundwater sampling activities will be temporarily containerized within a labeled 55-gallon DOT approved steel drum, transported back to the Site, and then treated by the on-Site groundwater remediation system, prior to discharging to the on-Site sanitary sewer per the approved municipal discharge permit with the City of Franklin.

A portable bladder pump in conjunction with a Horiba® U-52 Multi-Probe Field Meter Multi-Probe or equivalent will be used to collect groundwater samples from the monitoring wells. The pump is equipped with a disposable bladder sleeve that is exchanged between wells. Dedicated tubing will be used for each well. The Multi-Probe Field Meter includes probes for temperature, pH, specific conductance, dissolved oxygen (DO), and oxidation-reduction potential (ORP). Purge rates will be established to insure minimal drawdown. Minimal drawdown is defined as being less than 0.33 feet of drawdown during a purge cycle. Water levels will be monitored in each monitoring well during the purging cycle.

Field parameters will be measured during the sampling event, and groundwater samples will be collected after the field parameters have stabilized (for three consecutive readings), after a maximum of 1 hour of purge time, or immediately prior to the wells running dry (if insufficient groundwater recharge occurs). Care will be taken to ensure that the bladder pump discharge tubing and flow through cell have evacuated several volumes of water before the samples are obtained. Groundwater stabilization criteria which will be utilized during the purging activities are listed below:

- pH ± 0.1 pH units
- Specific Conductance ± 3% of reading
- DO ± 10% of reading or ± 0.2 mg/L
- ORP ± 10 millivolts

The groundwater samples will then be collected from the monitoring wells and placed into the appropriate laboratory provided pre-labeled containers. The groundwater samples will be submitted to Pace Analytical Services, LLC located in Indianapolis, Indiana and analyzed for shortlist VOCs using SW-846 Method 8260 using Level II QA/QC. The laboratory results of the sampling event are anticipated to be received within 2 weeks from the date the samples are collected in the field and delivered to the laboratory.

A table summarizing the Pace reporting and method detection limits for each compound compared to the MCLs and VISLs is included below:

VOC Compound	Pace Laboratory Reporting Limits (ug/L)	Pace Laboratory Method Detection Limits (ug/L)	MCL (ug/L)	Target Groundwater Concentration for RCG Residential GVE (ug/L)
1,1-DCA	5.0	0.60	NA	130
1,2-DCA	5.0	0.60	5.0	50
cis-1,2- DCE	5.0	0.65	70	NA
trans-1,2-DCE	5.0	0.86	100	NA
Methylene Chloride	5.0	5.0	5.0	7,580
PCE	5.0	0.93	5.0	110
1,1,1-TCA	5.0	0.89	200	13,000
TCE	5.0	0.80	5.0	9.1
Vinyl Chloride	2.0	0.97	2.0	2.1

To determine the Site-specific groundwater flow direction, the top-of-casing elevations for the monitoring wells will be surveyed to a common benchmark using transit-stadia techniques and depth to groundwater measurements will be obtained from the entire well network within the same day.

Sample Identification, Collection, & Analysis

For the monthly confirmatory groundwater sampling events, field sample identification for this project should follow the following format: a sample location identification code (MW-22 for Monitoring Well-22). The trip blank, field duplicate, and equipment blank samples should utilize the identification codes TB, FD, and EB, respectively. Examples of the field sample identification codes for this project are as follows:

- For monitoring well groundwater samples: MW-22
  (Monitoring well sampling location No. 22 – groundwater sample)
- For monitoring well groundwater field duplicate samples: FD-1
- (Groundwater sample field duplicate No. 1)
  Note that no sampling location identification is utilized for the field duplicate. The field duplicate location/sampling identification information is to be recorded in the field project notebook.
- For equipment blank groundwater samples: EB-1
  (Equipment Blank - groundwater sample No. 1)
- For trip blank groundwater samples: TB-1
  (Trip Blank – groundwater sample No. 1)

Standard protocols will be observed for sample collection, sample handling and preservation, and chain-of-custody documentation. Personnel will utilize clean, disposable, nitrile gloves for each sample obtained. Laboratory provided sample containers will be utilized. Prior to use, the sample containers will be inspected for cracks, chips, cleanliness, and preservative (as appropriate). Container threads will be wiped clean before sealing (if applicable) to ensure proper sealing. The sample containers will be labeled with the appropriate project name and/or number, sample identification designation, date, time, and sampler's name or initials. Samples will be placed in a cooler containing ice and maintained at a temperature of approximately 4° Celsius prior to analysis.

Samples will be analyzed by the laboratory using a standard TAT and Level II QA/QC procedures. IWM Consulting anticipates obtaining a total of eleven (11) groundwater samples which will be collected from the off-Site monitoring wells for select VOC analysis on a monthly basis for one year. Following the one-year sampling period, the monitoring well network will be sampled on a semi-annual basis. For QA/QC purposes, one (1) field duplicate and one (1) MS/MSD sample will be collected at a rate of one (1) sample per every twenty (20) confirmatory samples per sampling media and will be analyzed for the same analytical parameters. One (1) trip blank for VOC analysis will accompany each cooler shipment that contains samples for select VOC analyses. One (1) equipment blank per sampling media per day will be obtained. The equipment blank will be collected by pouring laboratory-prepared water or distilled water over or through the field sampling equipment (e.g., bladder pump) and collecting the rinsate in the proper analytical containers. If only disposable or single use sampling equipment is used, then a field blank, consisting of analyte-free water poured into a laboratory provided container in the field (in order to assess the potential for sample contamination due to field conditions) will be collected in lieu of an equipment blank.

A copy of all of the applicable SOPs which will be followed by IWM Consulting during the groundwater sampling activities were provided as Attachment B of the Off-site Groundwater Investigation Work Plan dated October 18, 2018. A copy of the Pace COC and pertinent information such as laboratory certifications for Pace which will be utilized during the work activities were also provided as Attachment C and Attachment D, respectively, of the *Off-site Groundwater Investigation Work Plan* dated October 18, 2018.

6.7 Key Companies and Personnel

This project will encompass many different facets which will require the assistance of multiple parties. IWM Consulting will contract with the selected sub-contractor(s) for implementation of the Off-Site Interim Measure and will focus on the environmental aspects of this project on behalf of the performing respondent, Amphenol. Crossroad will be completing sewer design and bid specification preparation, the Rule 5 Notice of Intent Stormwater Pollution Prevention Plan, the sanitary sewer replacement permit, and will oversee quality assurance inspections relating to the sewer line and road installation on behalf of the City of Franklin. Representatives from IWM Consulting and Crossroad will work closely together during this project to meet City and USEPA expectations. Key companies and personnel associated with this project are currently:

Amphenol Corporation – Performing Respondent
Mr. Joseph Bianchi, Group EHS Manager

IWM Consulting Group – Amphenol's Environmental Consultant
Mr. Bradley Gentry, LPG, Vice President
Mr. Christopher Parks, LPG, Senior Project Manager

Cox-Colvin & Associates, Inc – Supplemental Environmental Services for Amphenol
Mr. Nate Wanner, CPG, CP, Senior Scientist
Mr. Henry Stahl, Scientist

Groundwater & Environmental Services, Inc. – Amphenol's Ambient Air Monitoring Plan contractor
Mr. Mark Motylewski, Vice President
Mr. Robert Elliott, Principal Environmental Scientist
Mr. Tom Baylis, Certified Industrial Hygienist

City of Franklin – Municipality
Mr. Steve Barnett, Mayor
Mr. Mark Richards, PE, City Engineer
Ms. Sally Brown, Wastewater Superintendent

Crossroad Engineers, PC – City of Franklin's Sanitary Sewer Engineering Firm
Mr. Trent Newport, PE, LS, Project Manager
Mr. Derek Snyder, PE

Sanitary Sewer Construction and Excavation Firm – to be determined following award of bid for the project.

6.8 Schedule

A schedule for implementation of the Work Plan has been included as **Figure 18**. The field portion of this project must be initiated by mid-August 2019, at the latest, in order to complete restoration

activities (paving) before asphalt plants are closed for the season. However, at a minimum, the roads will be open to traffic by the end of the 2019 construction season and then the asphalt surface will be installed in the spring of 2020.

7.0 Conclusion

Potentially contaminated vadose-zone soils beneath sewer lines will be excavated and removed from the project area. Furthermore, sewer lines within the areal extent of the groundwater plume will be either replaced or lined to further mitigate the possibility that contaminants in groundwater and soil gas can enter the sewer lines. Amphenol's activities in Franklin serve two objectives: 1) to ensure the health and safety of residents affected by contamination from historical activities at the former Amphenol facility by eliminating exposure pathways, and 2) to perform activities that will lead to future reduction of TCE concentrations in groundwater, thereby eliminating the need to mitigate exposure pathways. Amphenol has conducted extensive soil, groundwater and vapor intrusion investigations throughout the Study Area to identify potentially complete exposure pathways. Only a few residences were found to have indoor air concentrations above screening levels, and appropriate mitigation measures have either already been implemented or are being implemented that effectively prevent exposure of occupants to TCE contamination originating from the former Amphenol facility or potential other off-site sources. Post-mitigation sampling has confirmed that the mitigation measures have effectively reduced indoor air concentrations below screening levels. As such, remedial performance with respect to ensuring the health and safety of residents has already been demonstrated prior to completing the proposed excavation and sewer line replacement or lining activities.

With regards to the second objective (future reduction of TCE concentrations in groundwater), it has been demonstrated in many other remedial projects that the single most effective means to improve groundwater quality is to remove source areas from soil. Without the removal of contaminants in soil source areas, any contaminants removed via groundwater treatment are repeatedly replenished through additional leaching. With removal of source areas in soil, natural attenuation processes can effectively reduce groundwater concentrations. As discussed in the Conceptual Design, the remedial performance of sewer line excavation will be confirmed by collection of vadose zone soil samples to ensure that TCE concentrations in remaining soils are below the adjusted TCE RCG MTG screening level.

The long-term goal of sewer line excavation is reduction of TCE concentrations in groundwater. Groundwater quality within the plume area will be monitored to demonstrate that COC concentrations are decreasing following source removal activities. Groundwater conditions will be monitored until CAOs are achieved or until a demonstration can be made that the residual dissolved VOCs no longer pose an unacceptable exposure pathway.

Based upon the results of the recent assessment activities and subsequent mitigation measures already completed to date, lining of sewer lines within the project area is not necessary to meet soil and groundwater remedial objectives. In the few houses where indoor air screening levels were exceeded, plumbing repairs and soil gas mitigation measures have been demonstrated to render exposure pathways incomplete. Lining the sewers while the system is already being disturbed for excavation

and source removal is considered worthwhile as an additional measure of assurance that exposure pathways will remain incomplete.

8.0 References

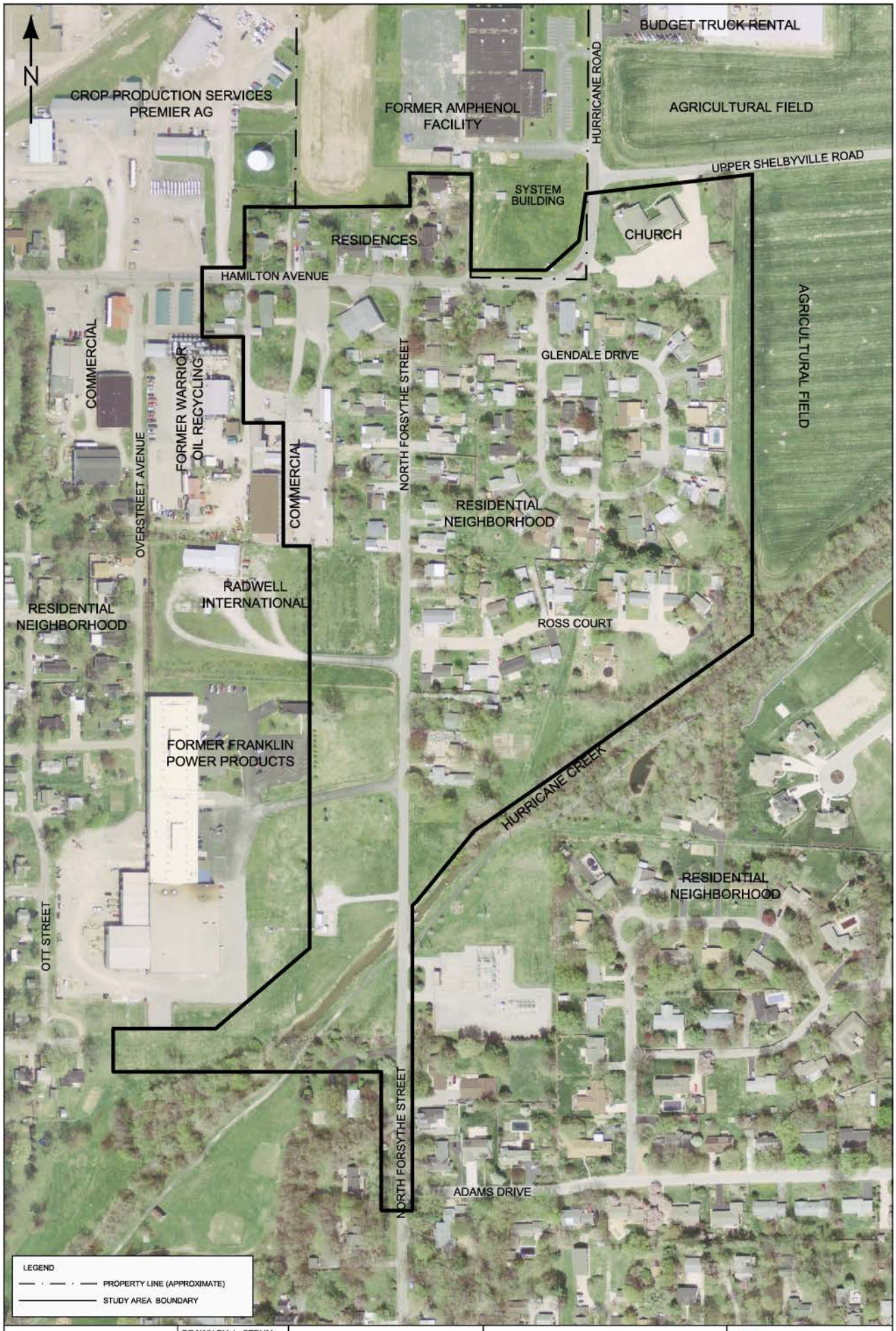
Lowe, Scott. 2016. "Sewer Ventilation: Factors Affecting Airflow and Modeling Approaches." Journal of Water Management Modeling.

Parker, W. J. and H. Ryan. 2001. "A Tracer Study of Headspace Ventilation in a Collector Sewer." Journal of the Air & Waste Management Association 51 (4): 582–92.

Pescod, M. B. and A. C. Price. 1982. "Major Factors in Sewer Ventilation." Journal of the Water Pollution Control Federation 54 (4): 385–97.

Water Environment Research Foundation (WERF). 2009. "Collection System Ventilation Research Report." Alexandria, VA: Water Environment Research Foundation. Report No. 04-CTS-1A.

Figures



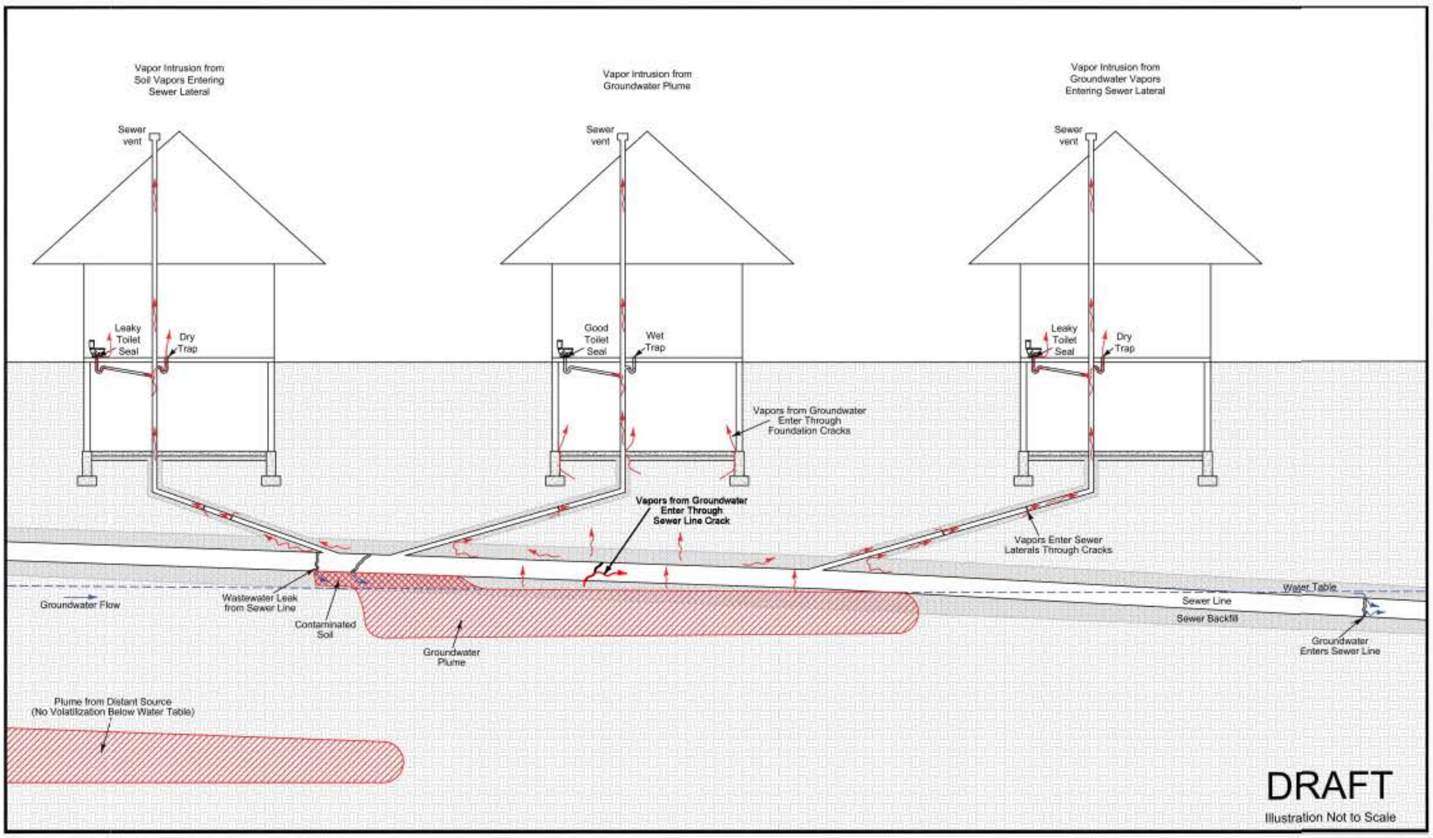
0' 200'
SCALE IN FEET

DRAWN BY: L. STRUM	
DATE: 9/27/99	
REVISED: 06/07/2019	
HWPA #111291-01	
DWG. NO. 111291S1	

FIGURE 1
STUDY
AREA MAP

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

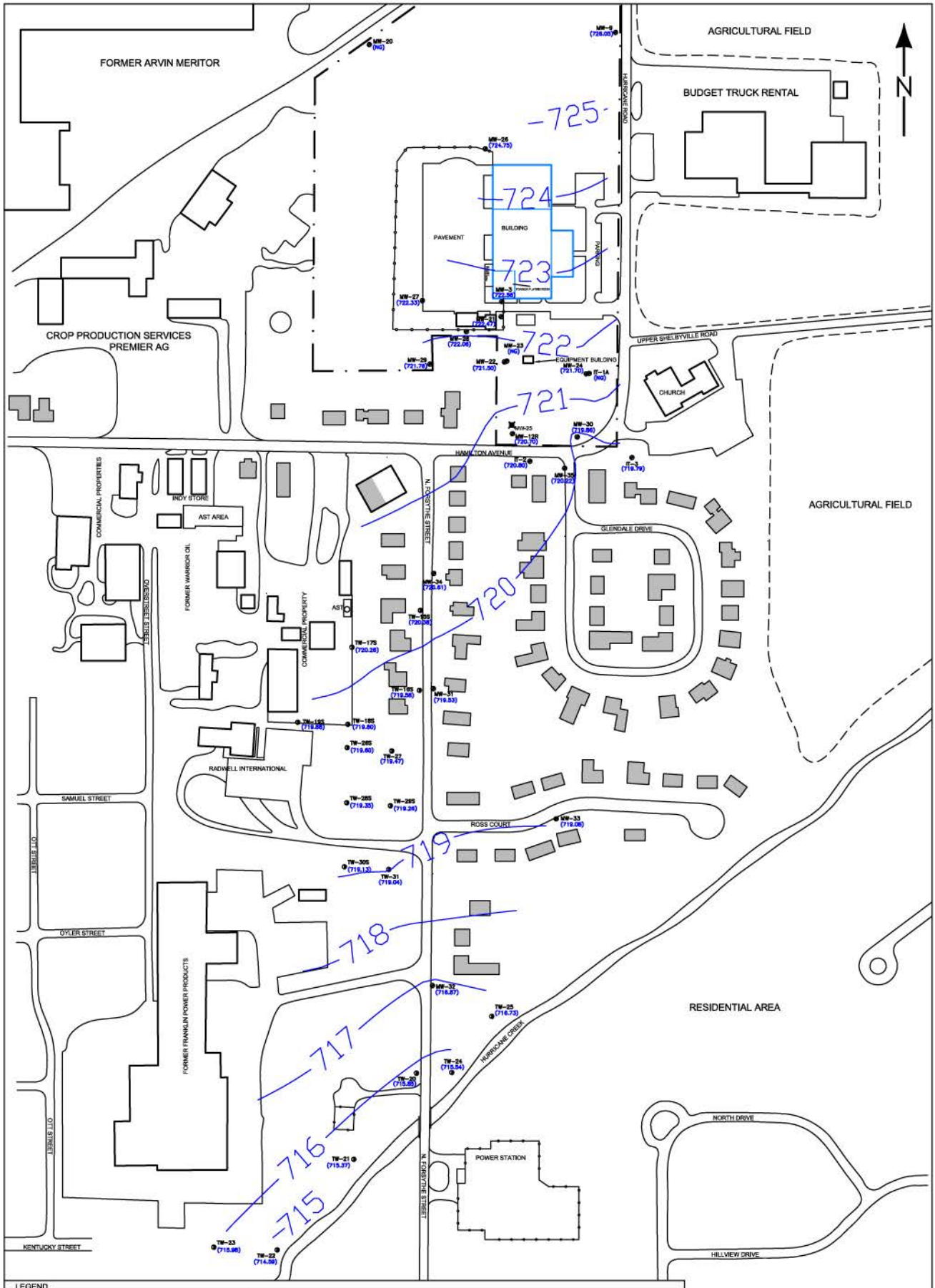
IWM CONSULTING GROUP

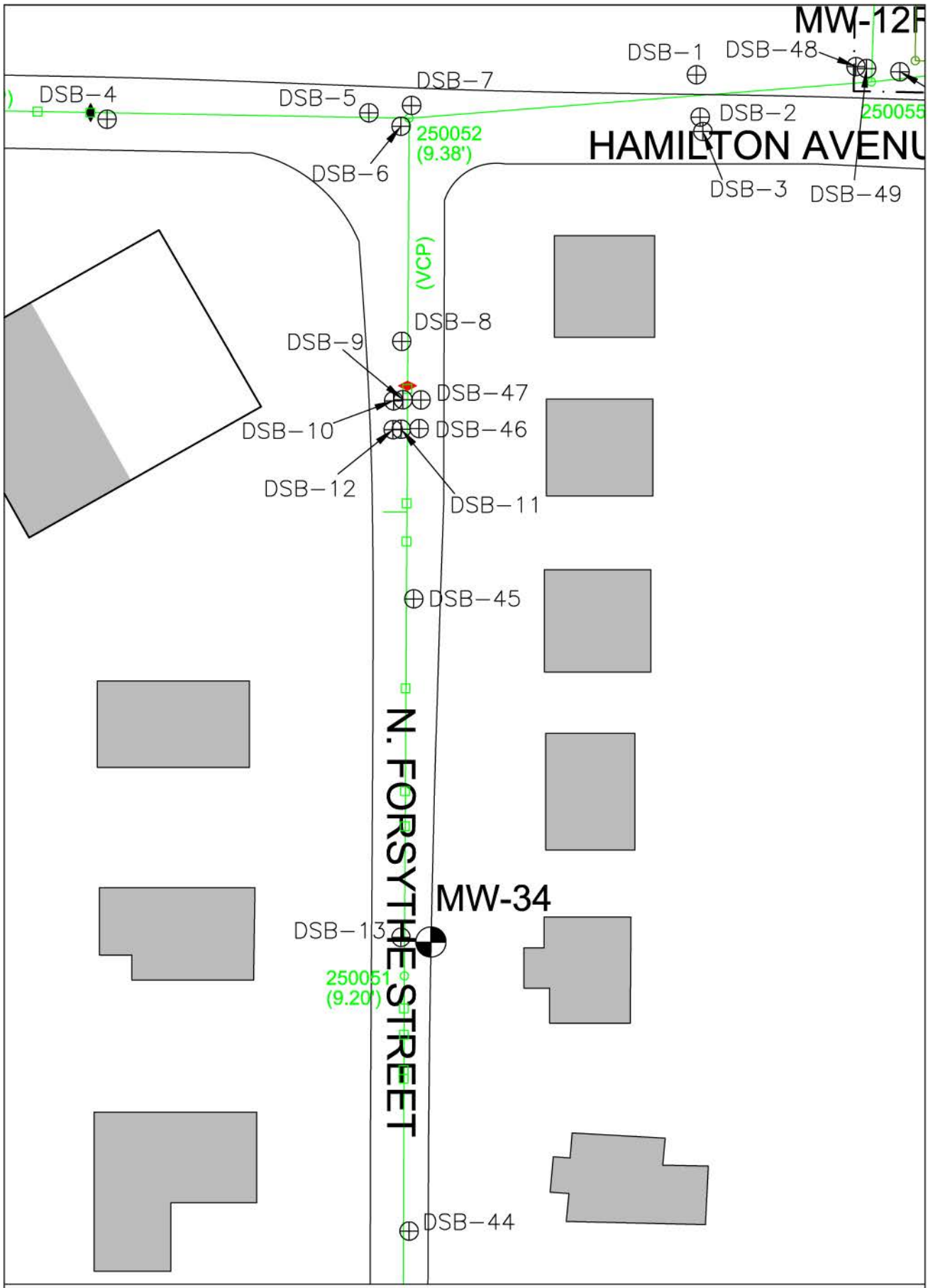


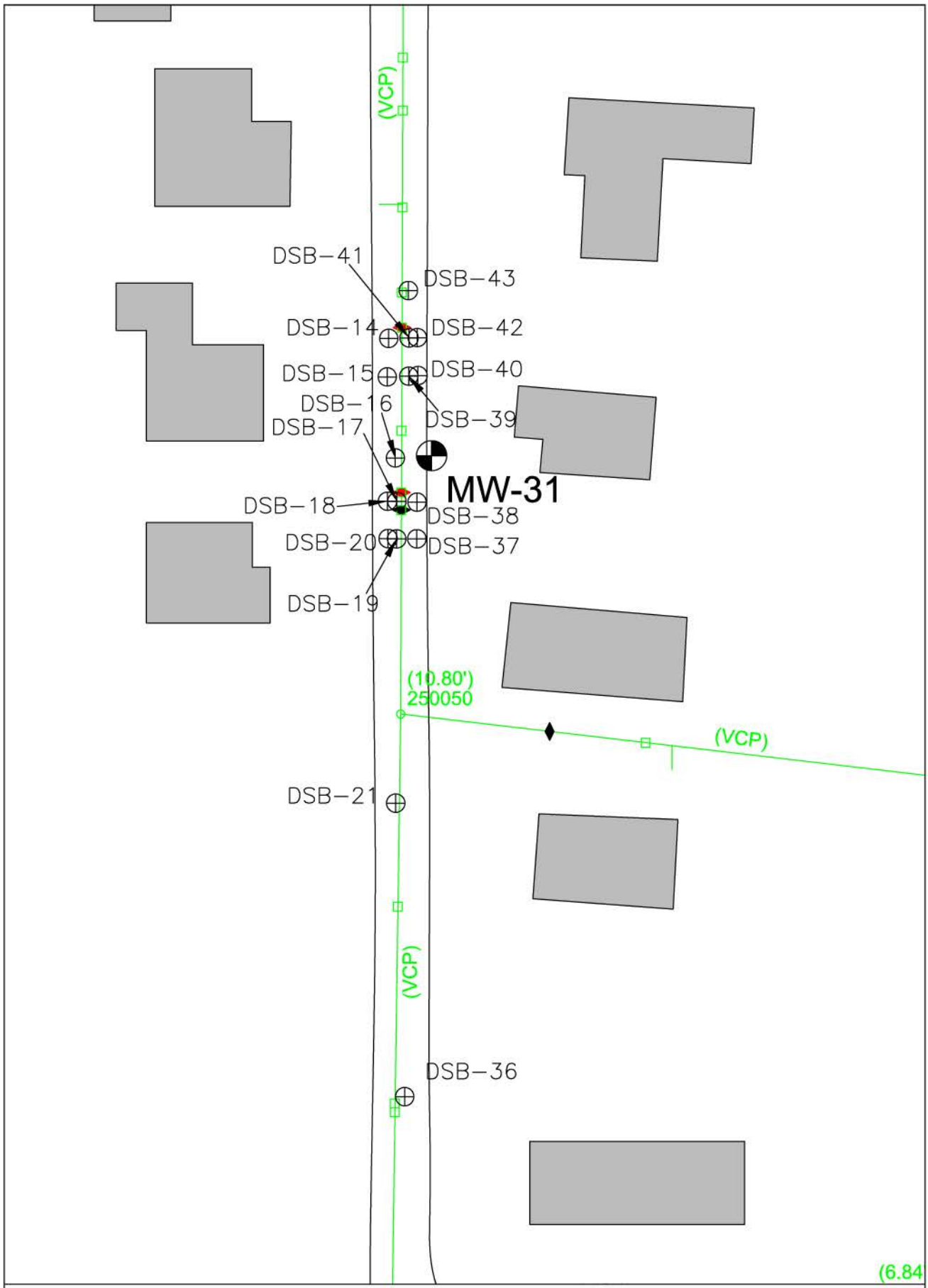
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

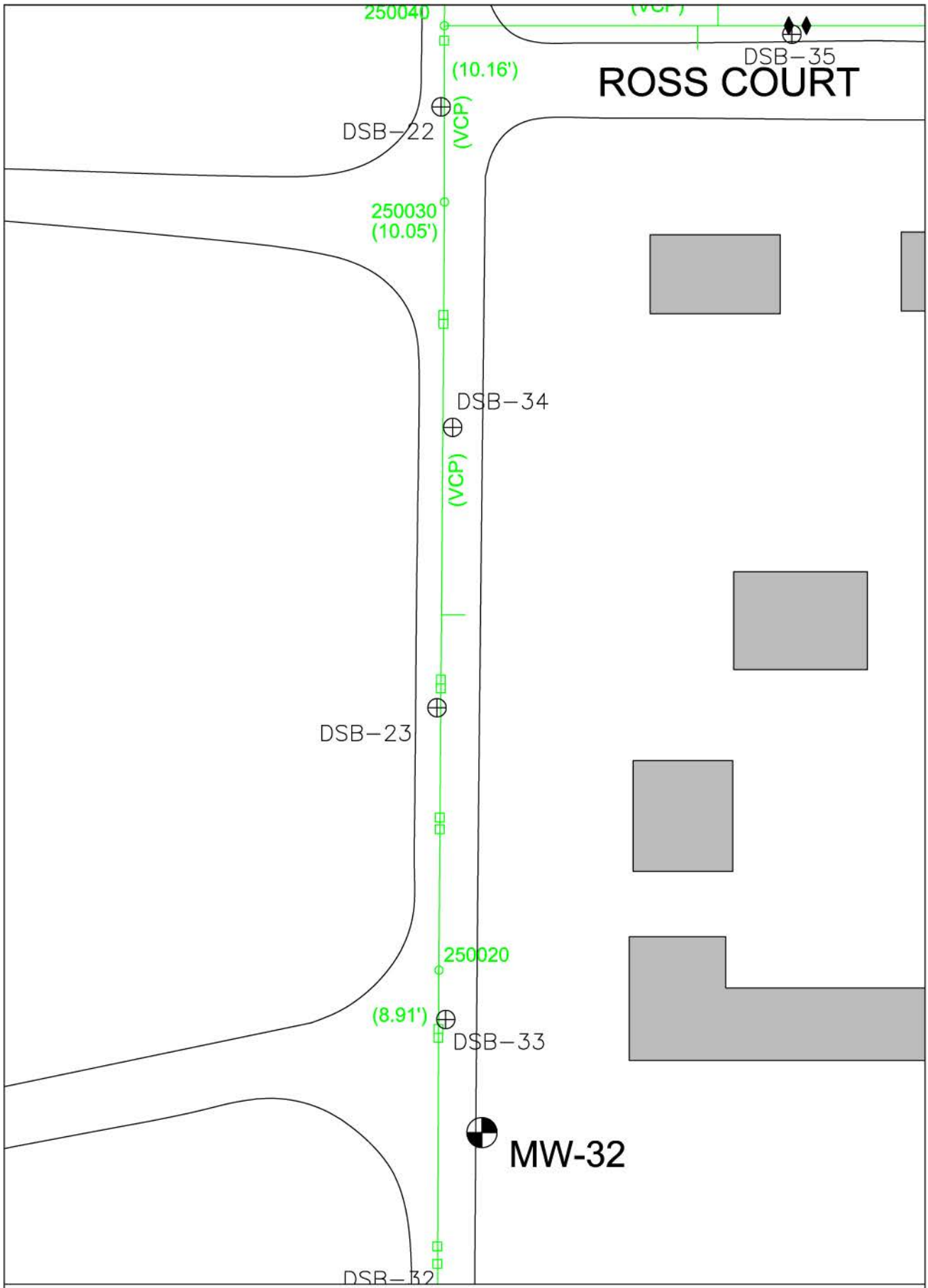
FIGURE 2
VAPOR INTRUSION
CONCEPTUAL SITE MODEL

NOT TO SCALE
ORIGINAL DIAGRAM PREPARED BY COX-COLVIN & ASSOCIATES, INC.


FORMER ARVIN MERITOR
AGRICULTURAL FIELD
BUDGET TRUCK RENTAL
HURRICANE ROAD
N
725
724
723
722
721
720
719
718
717
716
715
PAVEMENT
BUILDING
CROP PRODUCTION SERVICES
PREMIER AG
UPPER SHELBYVILLE ROAD
EQUIPMENT BUILDING
CHURCH
HAMILTON AVENUE
AGRICULTURAL FIELD
COMMERCIAL PROPERTIES
INDY STORE
AST AREA
N. FORSYTHE STREET
GLENDALE DRIVE
FORMER WARRIOR OIL
COMMERCIAL PROPERTY
AST
RADWELL INTERNATIONAL
SAMUEL STREET
OTT STREET
ROSS COURT
OYLER STREET
FORMER FRANKLIN POWER PRODUCTS
RESIDENTIAL AREA
HURRICANE CREEK
NORTH DRIVE
POWER STATION
HILLVIEW DRIVE
KENTUCKY STREET
LEGEND
ABANDONED MONITORING WELL
MONITORING WELL
TEMPORARY WELL
RESIDENTIAL HOME
* DETACHED GARAGES & SHEDS NOT SHOWN
NON-RESIDENTIAL STRUCTURE
PRIMARY BUILDING WALLS
PROPERTY LINE (APPROXIMATE)
GROUNDWATER CONTOUR
(719.56)
GROUNDWATER ELEVATION
CONTOUR INTERVAL: 1 FOOT
GAUGING DATE: 3/7/2019
0'
200'
SCALE IN FEET
DRAWN BY: L. STRUM
DATE: 9/27/99
REVISED: 06/11/2019
HWPA #111291-01
DWG. NO. 111291S1
FIGURE 3
GROUNDWATER
ELEVATION MAP (3/7/19)
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA
iWM
CONSULTING GROUP


MW-12F
DSB-1
DSB-48
DSB-7
DSB-4
DSB-5
DSB-2
250055
250052
(9.38')
HAMILTON AVENU
DSB-6
DSB-3
DSB-49
(VCP)
DSB-8
DSB-9
DSB-47
DSB-10
DSB-46
DSB-12
DSB-11
DSB-45
N. FORSYTHE STREET
MW-34
DSB-13
250051
(9.20')
DSB-44
LEGEND
ABANDONED MONITORING WELL
MONITORING WELL
RECOVERY WELL
SANITARY SEWER MANHOLE
STORM SEWER MANHOLE
(SEWER MAIN INVERT DEPTH AT MANHOLE IN FEET)
PROPERTY LINE (APPROXIMATE)
STORM SEWER
SANITARY SEWER
O/H POWER
RESIDENTIAL HOME
* DETACHED GARAGES & SHEDS NOT SHOWN
NON-RESIDENTIAL STRUCTURE
PRIMARY BUILDING WALLS
(VCP) VITREOUS CLAY PIPE
SEWER LINE BREAK
SEWER LINE CRACK
SEWER MATERIAL CHANGE
* SEWER INFORMATION OBTAINED FROM 2015 SEWER VIDEO LOG FOR FRANKLIN DPW.
SOIL BORING LOCATION
N
0'
30'
SCALE IN FEET
DRAWN BY: L. STRUM
DATE: 9/27/99
REVISED: 06/11/2019
HWPA #111291-01
DWG. NO. 111291S1
FIGURE 4
UPPER FORSYTHE ST.
SOIL BORING LOCATION MAP
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA
iWM
CONSULTING GROUP


(VCP)
DSB-41
DSB-43
DSB-14
DSB-42
DSB-15
DSB-40
DSB-16
DSB-39
DSB-17
MW-31
DSB-18
DSB-38
DSB-20
DSB-37
DSB-19
(10.80')
250050
(VCP)
DSB-21
(VCP)
DSB-36
(6.84
LEGEND
ABANDONED MONITORING WELL
MONITORING WELL
RECOVERY WELL
SANITARY SEWER MANHOLE
STORM SEWER MANHOLE
(SEWER MAIN INVERT DEPTH AT MANHOLE IN FEET)
PROPERTY LINE (APPROXIMATE)
STORM SEWER
SANITARY SEWER
O/H POWER
RESIDENTIAL HOME
* DETACHED GARAGES & SHEDS NOT SHOWN
NON-RESIDENTIAL STRUCTURE
PRIMARY BUILDING WALLS
(VCP) VITREOUS CLAY PIPE
SEWER LINE BREAK
SEWER LINE CRACK
SEWER MATERIAL CHANGE
* SEWER INFORMATION OBTAINED FROM 2015 SEWER VIDEO LOG FOR FRANKLIN DPW.
SOIL BORING LOCATION
N
0'
30'
SCALE IN FEET
DRAWN BY: L. STRUM
DATE: 9/27/99
REVISED: 06/11/2019
HWPA #111291-01
DWG. NO. 111291S1
FIGURE 5
UPPER-MIDDLE FORSYTHE ST.
SOIL BORING LOCATION MAP
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA
iWM
CONSULTING GROUP



LEGEND

- ABANDONED MONITORING WELL
- MONITORING WELL
- RECOVERY WELL
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- (SEWER MAIN INVERT DEPTH AT MANHOLE IN FEET)
- PROPERTY LINE (APPROXIMATE)
- STORM SEWER
- SANITARY SEWER
- O/H POWER
- RESIDENTIAL HOME * DETACHED GARAGES & SHEDS NOT SHOWN
- NON-RESIDENTIAL STRUCTURE
- PRIMARY BUILDING WALLS
- (VCP) VITREOUS CLAY PIPE
- SEWER LINE BREAK
- SEWER LINE CRACK
- SEWER MATERIAL CHANGE
- * SEWER INFORMATION OBTAINED FROM 2015 SEWER VIDEO LOG FOR FRANKLIN DPW.
- SOIL BORING LOCATION

N

0' 30'

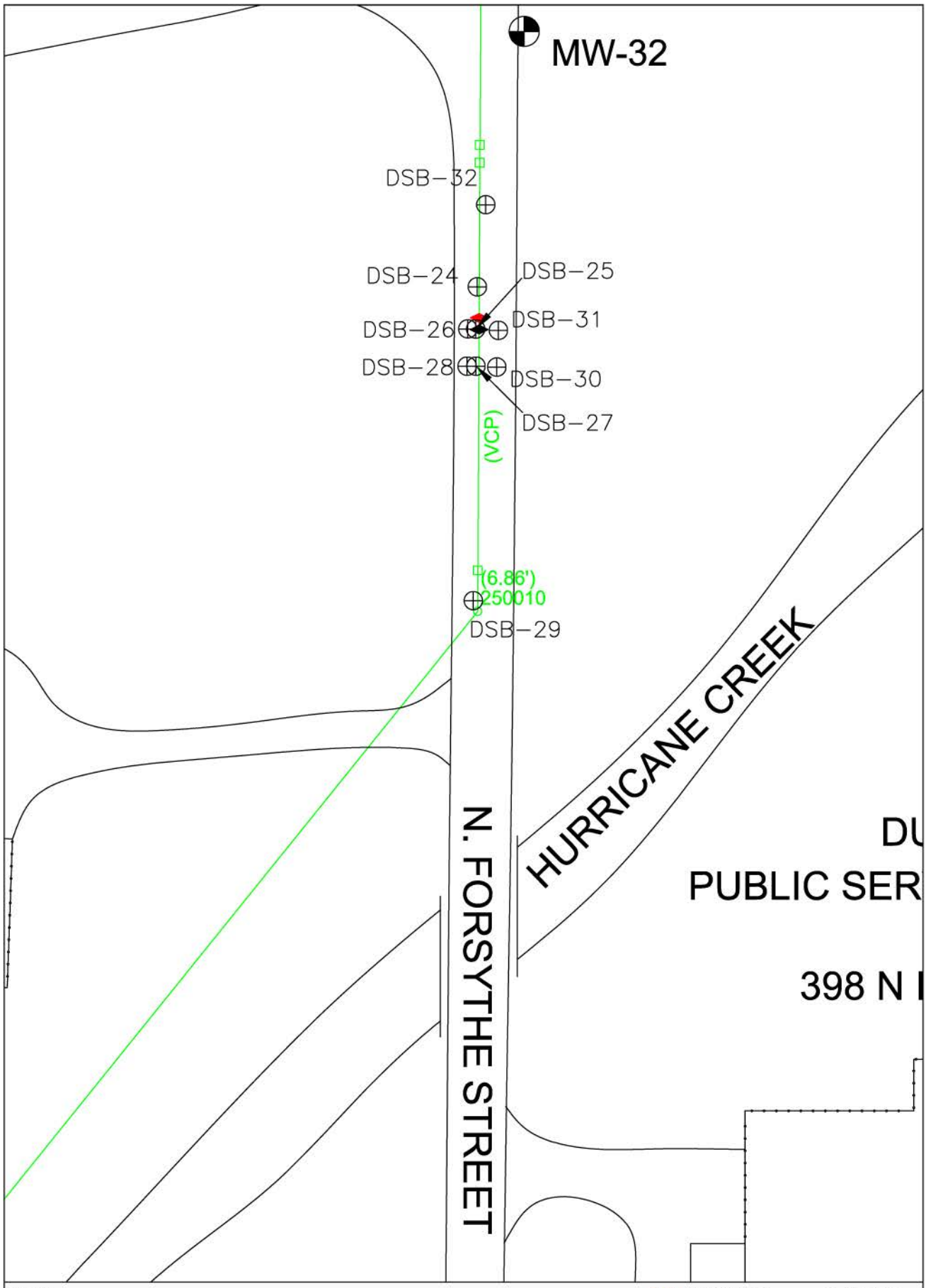
SCALE IN FEET

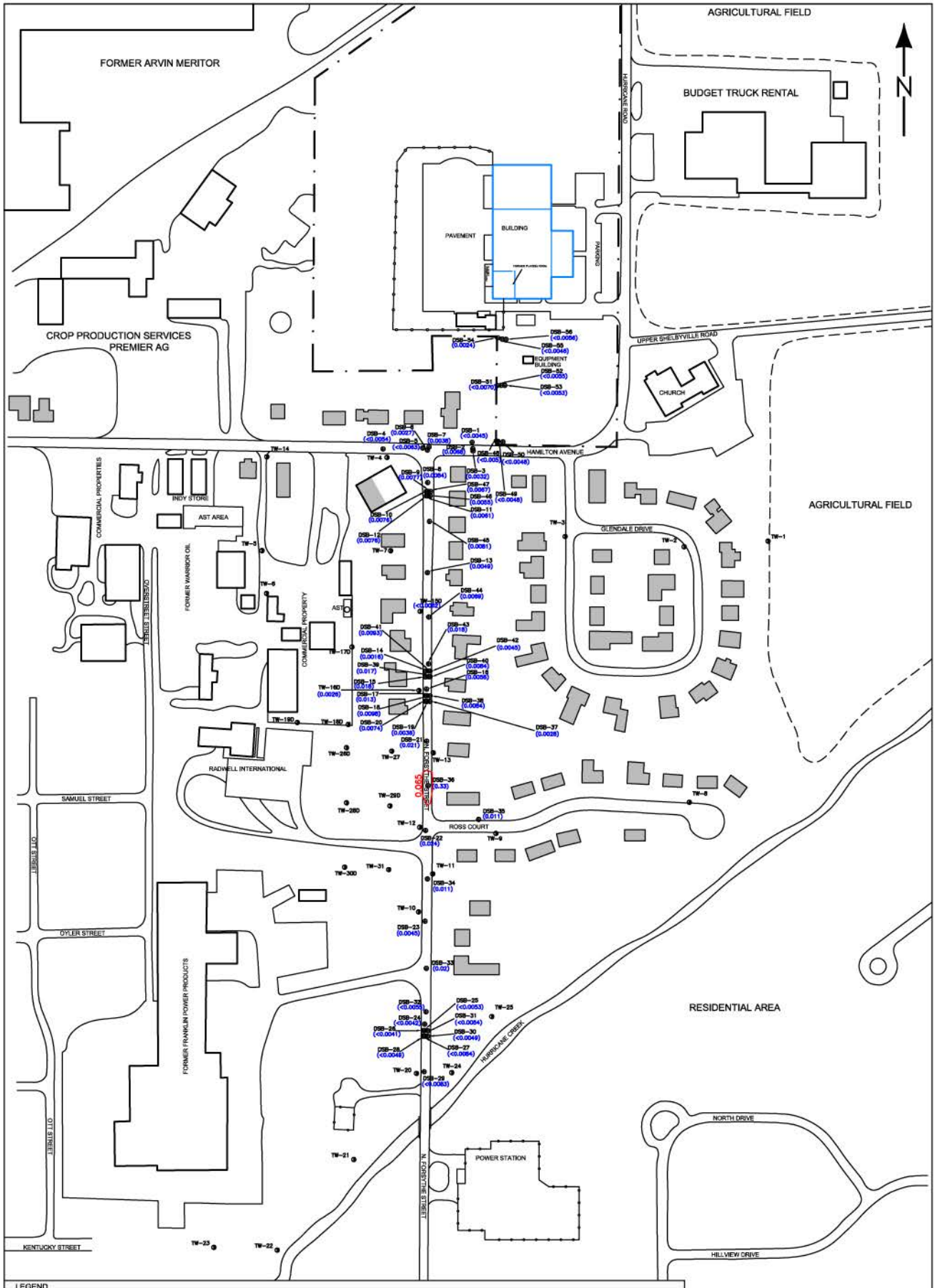
DRAWN BY: L. STRUM	
DATE: 9/27/99	
REVISED: 06/11/2019	
HWPA #111291-01	
DWG. NO. 111291S1	

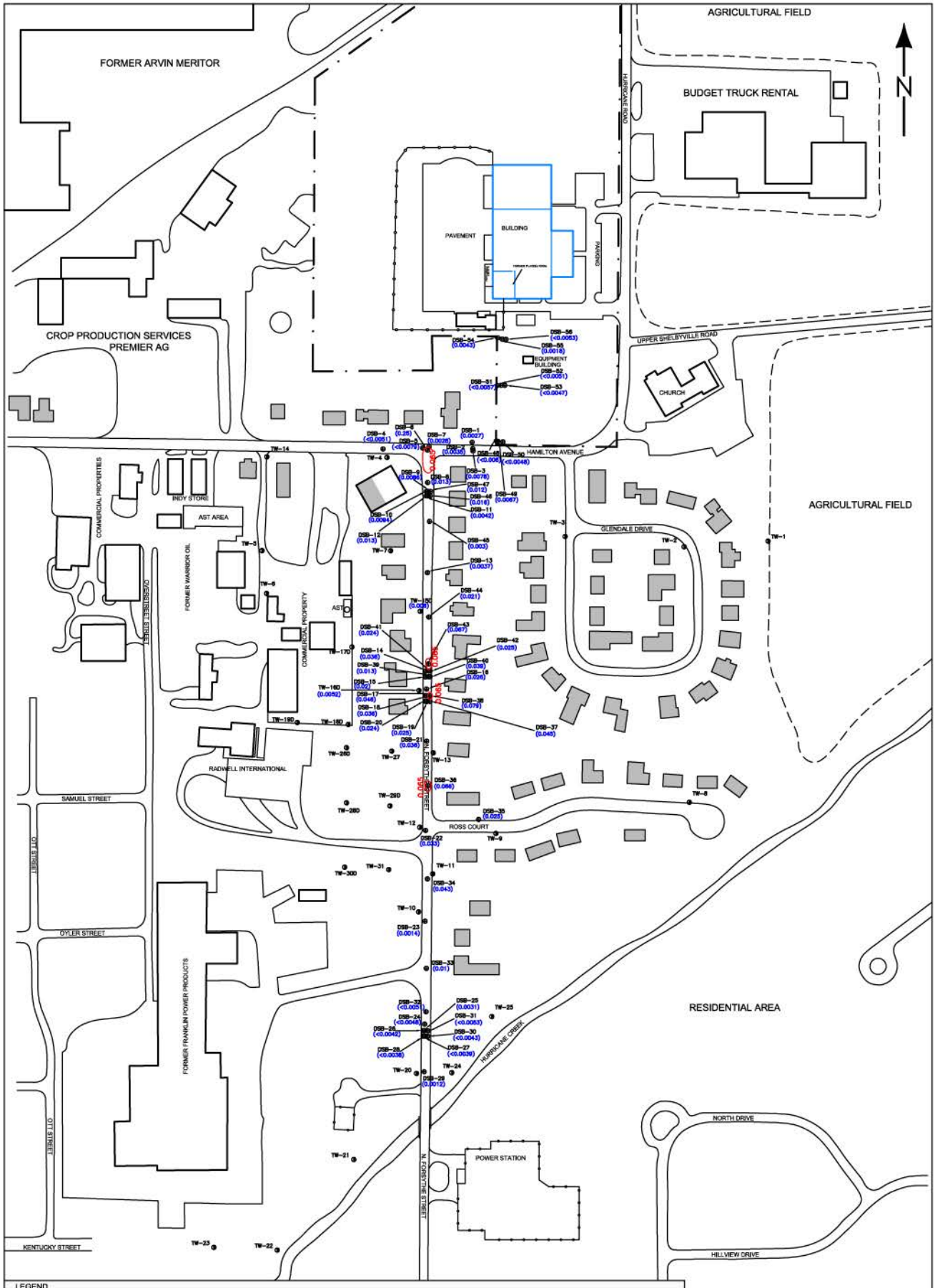
FIGURE 6
LOWER-MIDDLE FORSYTHE ST.
SOIL BORING LOCATION MAP

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP


MW-32
DSB-32
DSB-24
DSB-25
DSB-26
DSB-31
DSB-28
DSB-30
DSB-27
(VCP)
(6.86')
250010
DSB-29
HURRICANE CREEK
N. FORSYTHE STREET
DU
PUBLIC SER
398 N I
LEGEND
ABANDONED MONITORING WELL
MONITORING WELL
RECOVERY WELL
SANITARY SEWER MANHOLE
STORM SEWER MANHOLE
(SEWER MAIN INVERT DEPTH AT MANHOLE IN FEET)
PROPERTY LINE (APPROXIMATE)
STORM SEWER
SANITARY SEWER
O/H POWER
RESIDENTIAL HOME
* DETACHED GARAGES & SHEDS NOT SHOWN
NON-RESIDENTIAL STRUCTURE
PRIMARY BUILDING WALLS
(VCP) VITREOUS CLAY PIPE
SEWER LINE BREAK
SEWER LINE CRACK
SEWER MATERIAL CHANGE
* SEWER INFORMATION OBTAINED FROM 2015 SEWER VIDEO LOG FOR FRANKLIN DPW.
SOIL BORING LOCATION
N
0'
30'
SCALE IN FEET
DRAWN BY: L. STRUM
DATE: 9/27/99
REVISED: 06/11/2019
HWPA #111291-01
DWG. NO. 111291S1
FIGURE 7
LOWER FORSYTHE ST.
SOIL BORING LOCATION MAP
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA
iWM
CONSULTING GROUP


AGRICULTURAL FIELD
FORMER ARVIN MERITOR
BUDGET TRUCK RENTAL
HURRICANE ROAD
N
PAVEMENT
BUILDING
PARKING
CROP PRODUCTION SERVICES
PREMIER AG
UPPER SHELBYVILLE ROAD
EQUIPMENT BUILDING
CHURCH
HAMILTON AVENUE
COMMERCIAL PROPERTIES
INDY STORE
AST AREA
FORMER WARRIOR OIL
CROSSLEY STREET
COMMERCIAL PROPERTY
AST
GLENDALE DRIVE
AGRICULTURAL FIELD
RADWELL INTERNATIONAL
SAMUEL STREET
OTT STREET
OYLER STREET
FORMER FRANKLIN POWER PRODUCTS
ROSS COURT
0.065
N. FORSYTHE STREET
HURRICANE CREEK
RESIDENTIAL AREA
NORTH DRIVE
POWER STATION
HILLVIEW DRIVE
KENTUCKY STREET
LEGEND
TEMPORARY WELL
SITE BORING
RESIDENTIAL HOME
* DETACHED GARAGES & SHEDS NOT SHOWN
NON-RESIDENTIAL STRUCTURE
PRIMARY BUILDING WALLS
PROPERTY LINE (APPROXIMATE)
TCE ISOCONTOUR
4.52
TCE CONCENTRATION (mg/kg)
0'
200'
SCALE IN FEET
DRAWN BY: L. STRUM
DATE: 9/27/99
REVISED: 06/11/2019
HWPA #111291-01
DWG. NO. SOIL TCE AB..
FIGURE 8
SOIL ISOCONCENTRATION
MAP - TCE ABOVE SEWER
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA
iWM
CONSULTING GROUP

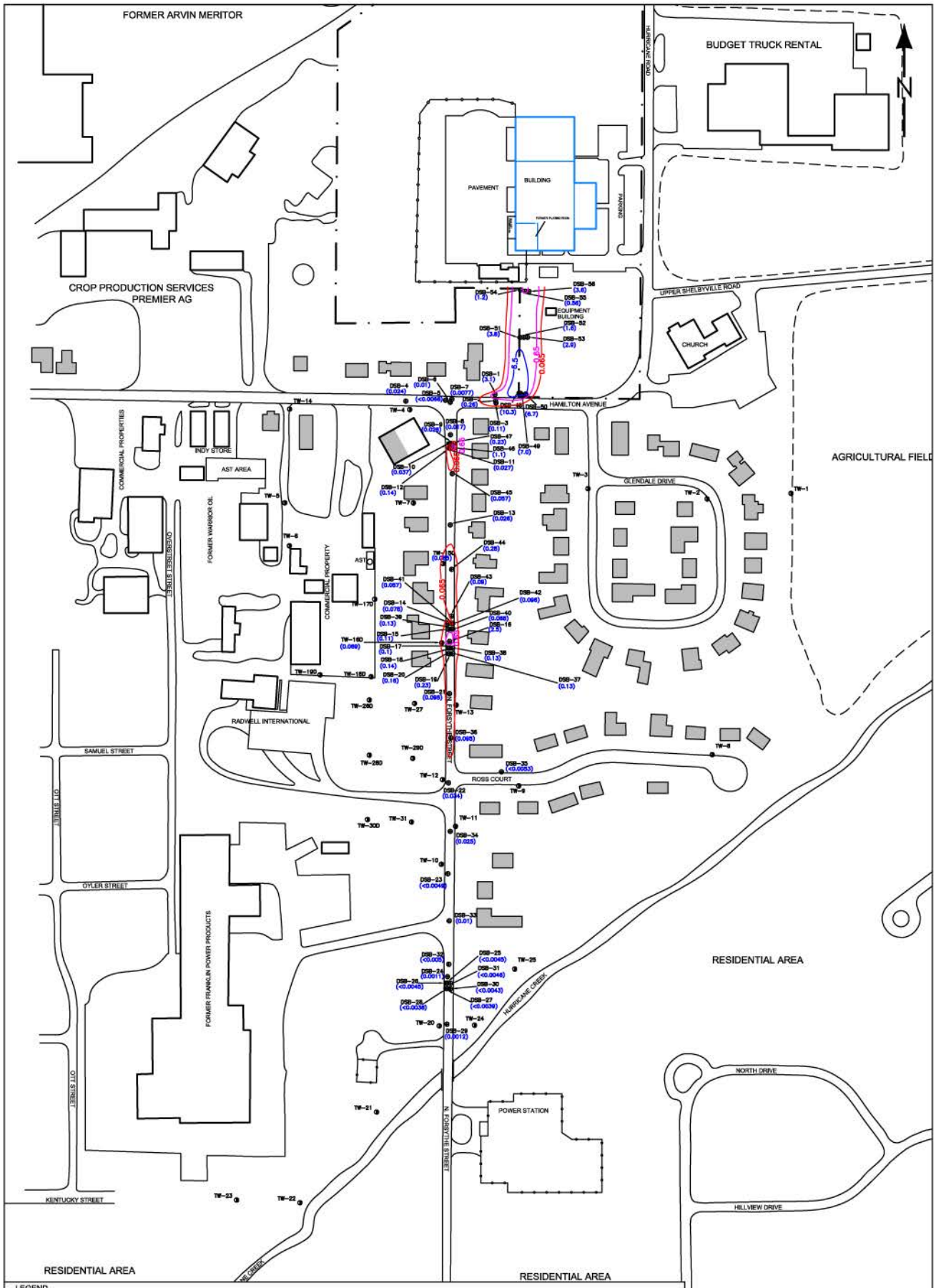


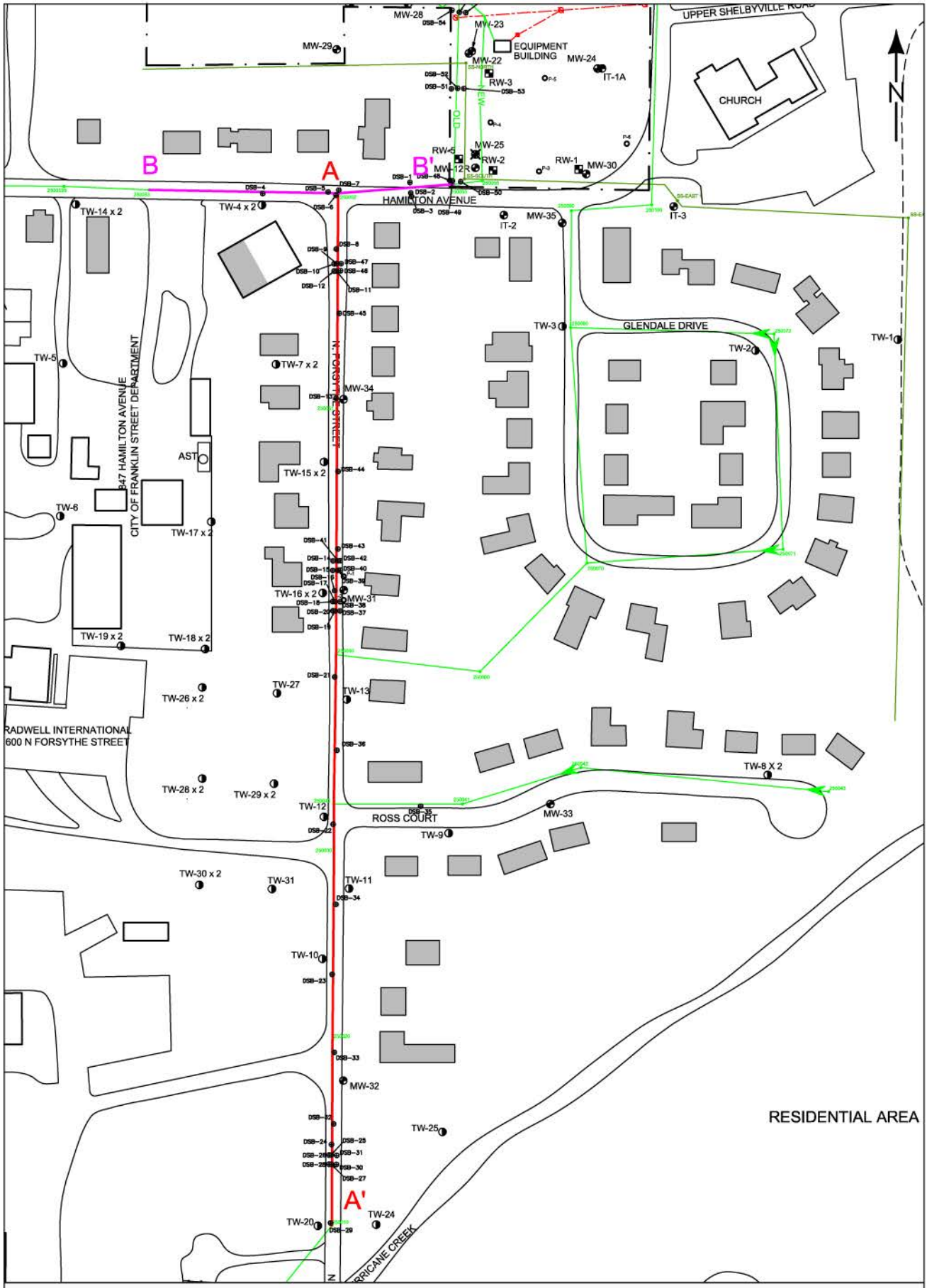
DRAWN BY: L. STRUM	
DATE: 9/27/99	
REVISED: 06/11/2019	
HWPA #111291-01	
DWG. NO. SOIL TCE BE..	

FIGURE 9
SOIL ISOCONCENTRATION MAP - TCE BELOW SEWER

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP


FORMER ARVIN MERITOR
BUDGET TRUCK RENTAL
CROP PRODUCTION SERVICES
PREMIER AG
PAVEMENT
BUILDING
EQUIPMENT BUILDING
CHURCH
UPPER SHELBYVILLE ROAD
HAMILTON AVENUE
HURRICANE ROAD
AGRICULTURAL FIELD
GLENDALE DRIVE
COMMERCIAL PROPERTIES
INDY STORE
AST AREA
FORMER WARRIOR OIL
COMMERCIAL PROPERTY
OVERSTREET STREET
RADWELL INTERNATIONAL
SAMUEL STREET
OYLER STREET
KENTUCKY STREET
FORMER FRANKLIN POWER PRODUCTS
ROSS COURT
N. HURRICANE STREET
HURRICANE CREEK
RESIDENTIAL AREA
POWER STATION
NORTH DRIVE
HILLVIEW DRIVE
LEGEND
TEMPORARY WELL
SITE BORING
RESIDENTIAL HOME
* DETACHED GARAGES & SHEDS NOT SHOWN
NON-RESIDENTIAL STRUCTURE
PRIMARY BUILDING WALLS
PROPERTY LINE (APPROXIMATE)
TCE ISOCONTOUR (0.085 mg/kg)
TCE ISOCONTOUR (0.65 mg/kg)
TCE ISOCONTOUR (6.5 mg/kg)
4,52
TCE CONCENTRATION (mg/kg)
0'
200'
SCALE IN FEET
DRAWN BY: L. STRUM
DATE: 9/27/99
REVISED: 06/11/2019
HWPA #111291-01
DWG. NO. SOIL PCE UN...
FIGURE 10
SOIL ISOCONCENTRATION
MAP - TCE - UNIT B BASE
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA
IWM
CONSULTING GROUP



LEGEND

- ABANDONED MONITORING WELL
- MONITORING WELL
- RECOVERY WELL
- INJECTION WELL
- PIEZOMETERS
- PROPERTY LINE (APPROXIMATE)
- STORM SEWER
- SANITARY SEWER
- O/H POWER
- RESIDENTIAL HOME * DETACHED GARAGES & SHEDS NOT SHOWN
- NON-RESIDENTIAL STRUCTURE
- PRIMARY BUILDING WALLS
- TEMPORARY WELLS
- SOIL BORING LOCATION

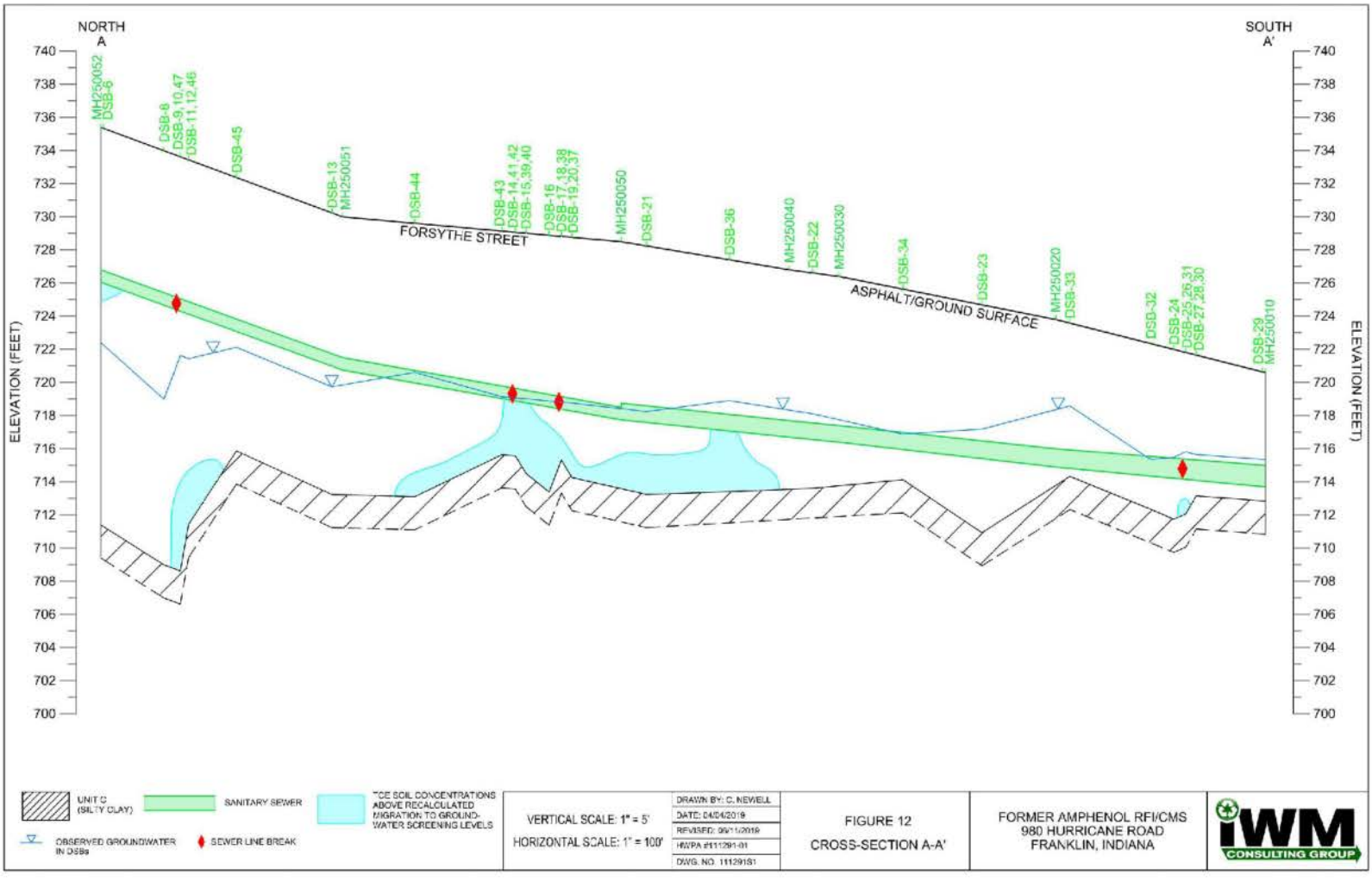
0' 120'
SCALE IN FEET

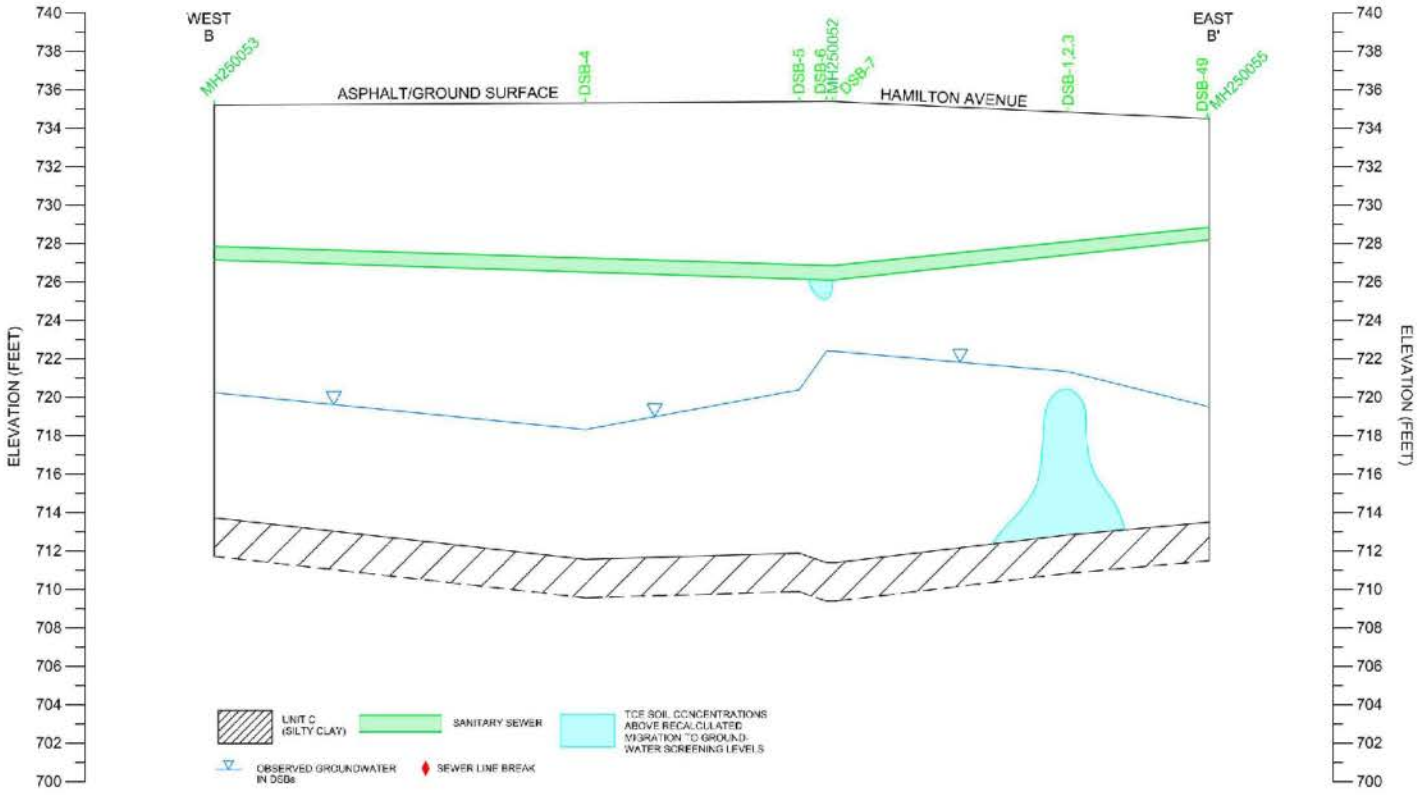
DRAWN BY; L. STRUM	
DATE; 9/27/99	
REVISED; 06/11/2019	
HWPA #111291-01	
DWG. NO. 111291S1	

FIGURE 11
CROSS-SECTION LOCATION MAP

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP


NORTH
A
SOUTH
A'
ELEVATION (FEET)
740
738
736
734
732
730
728
726
724
722
720
718
716
714
712
710
708
706
704
702
700
MH250052
DSB-6
DSB-8
DSB-9,10,47
DSB-11,12,46
DSB-45
DSB-13
MH250051
DSB-44
DSB-43
DSB-14,41,42
DSB-15,39,40
DSB-16
DSB-17,18,38
DSB-19,20,37
MH250050
DSB-21
DSB-36
MH250040
DSB-22
MH250030
DSB-34
DSB-23
MH250020
DSB-33
DSB-32
DSB-24
DSB-25,26,31
DSB-27,28,30
DSB-29
MH250010
FORSYTHE STREET
ASPHALT/GROUND SURFACE
UNIT C
(SILTY CLAY)
SANITARY SEWER
TCE SOIL CONCENTRATIONS
ABOVE RECALCULATED
MIGRATION TO GROUND-
WATER SCREENING LEVELS
OBSERVED GROUNDWATER
IN DSBs
SEWER LINE BREAK
VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 100'
DRAWN BY: C. NEWELL
DATE: 04/04/2019
REVISED: 09/11/2019
HWPA #111291-01
DWG. NO. 111291S1
FIGURE 12
CROSS-SECTION A-A'
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA
iWM
CONSULTING GROUP



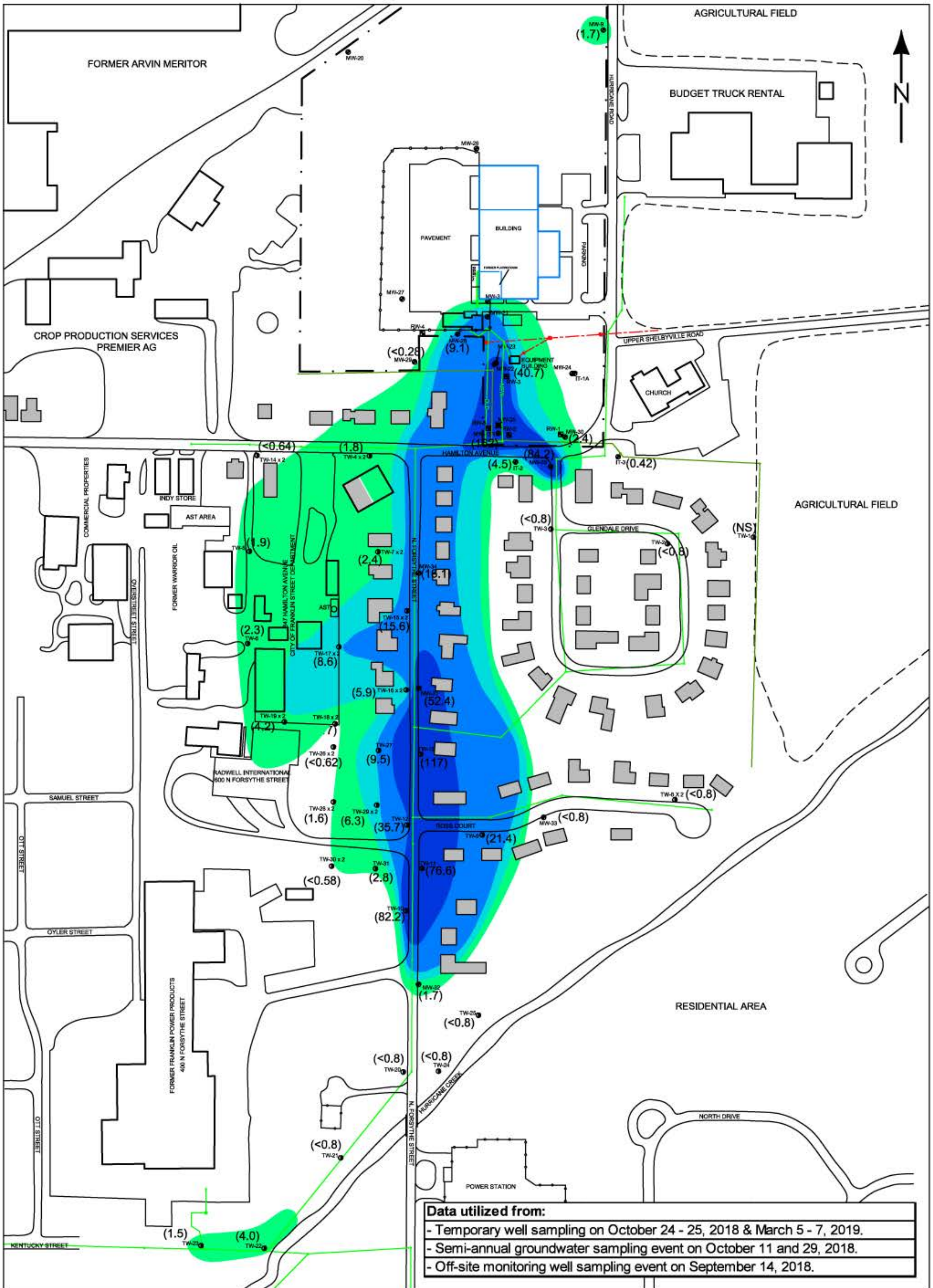
IWM CONSULTING GROUP

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

FIGURE 13
CROSS-SECTION B-B'

DRAWN BY: C. NEWELL
DATE: 04/03/2019
REVISED: 06/11/2019
HWPA #11291-01
DWG. NO. 11291S1

VERTICAL SCALE: 1" = 5'
HORIZONTAL SCALE: 1" = 40'



LEGEND

- ABANDONED MONITORING WELL
- MONITORING WELL
- RECOVERY WELL
- TEMPORARY WELLS

- PROPERTY LINE (APPROXIMATE)
- STORM SEWER
- SANITARY SEWER
- O/H POWER

- RESIDENTIAL HOME * DETACHED GARAGES & SHEDS NOT SHOWN
- NON-RESIDENTIAL STRUCTURE
- PRIMARY BUILDING WALLS

- (117) TCE CONCENTRATION IN ug/L
- TCE CONCENTRATION >1.2 ug/L
- TCE CONCENTRATION >5 ug/L
- TCE CONCENTRATION >9.1 ug/L
- TCE CONCENTRATION >38 ug/L

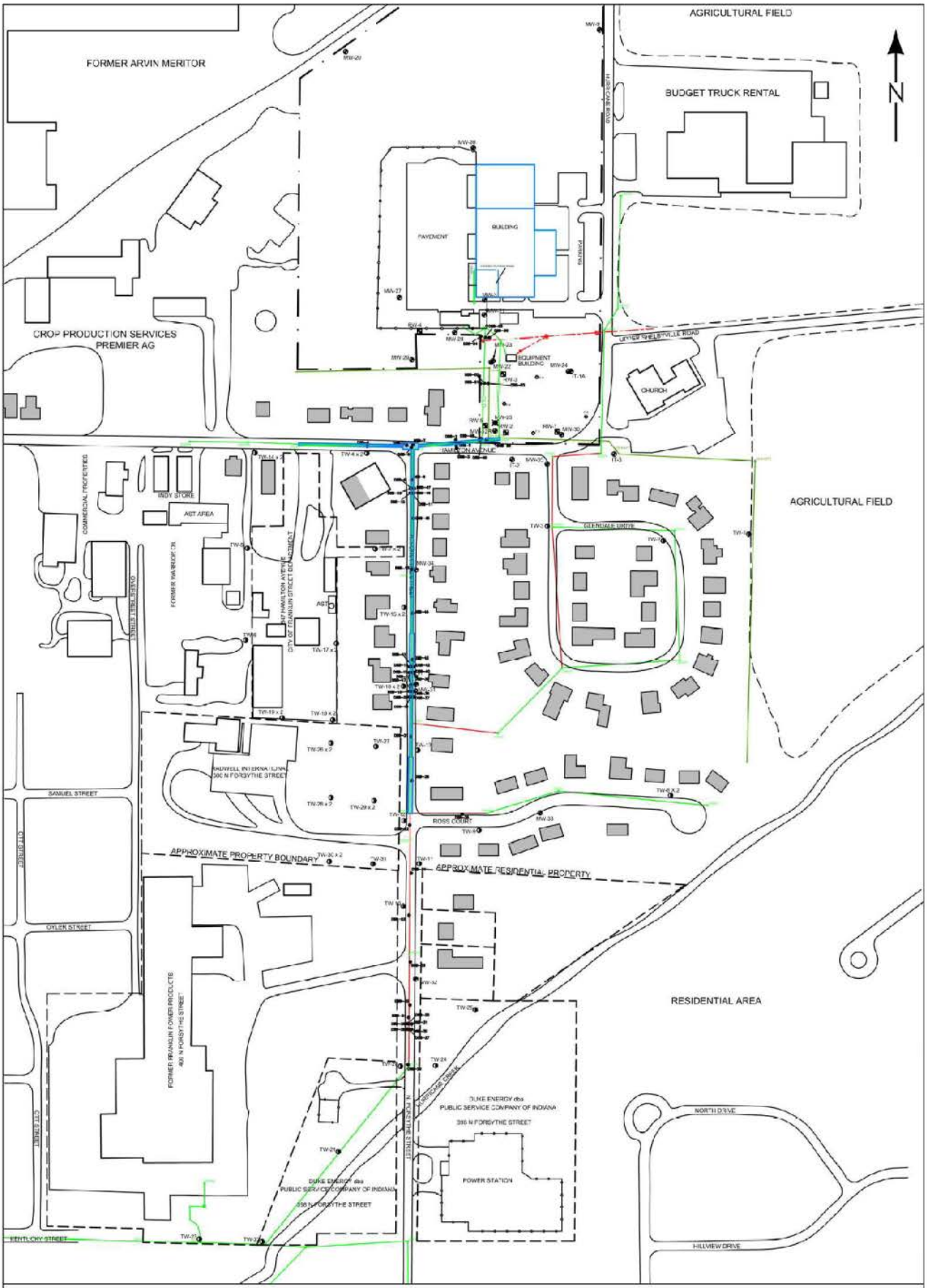
0' 200'
SCALE IN FEET

DRAWN BY: L. STRUM
DATE: 9/27/99
REVISED: 06/11/2019
HWPA #111291-01
DWG. NO. 111291S1

FIGURE 14
TCE GROUNDWATER ISOCONCENTRATION MAP

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP

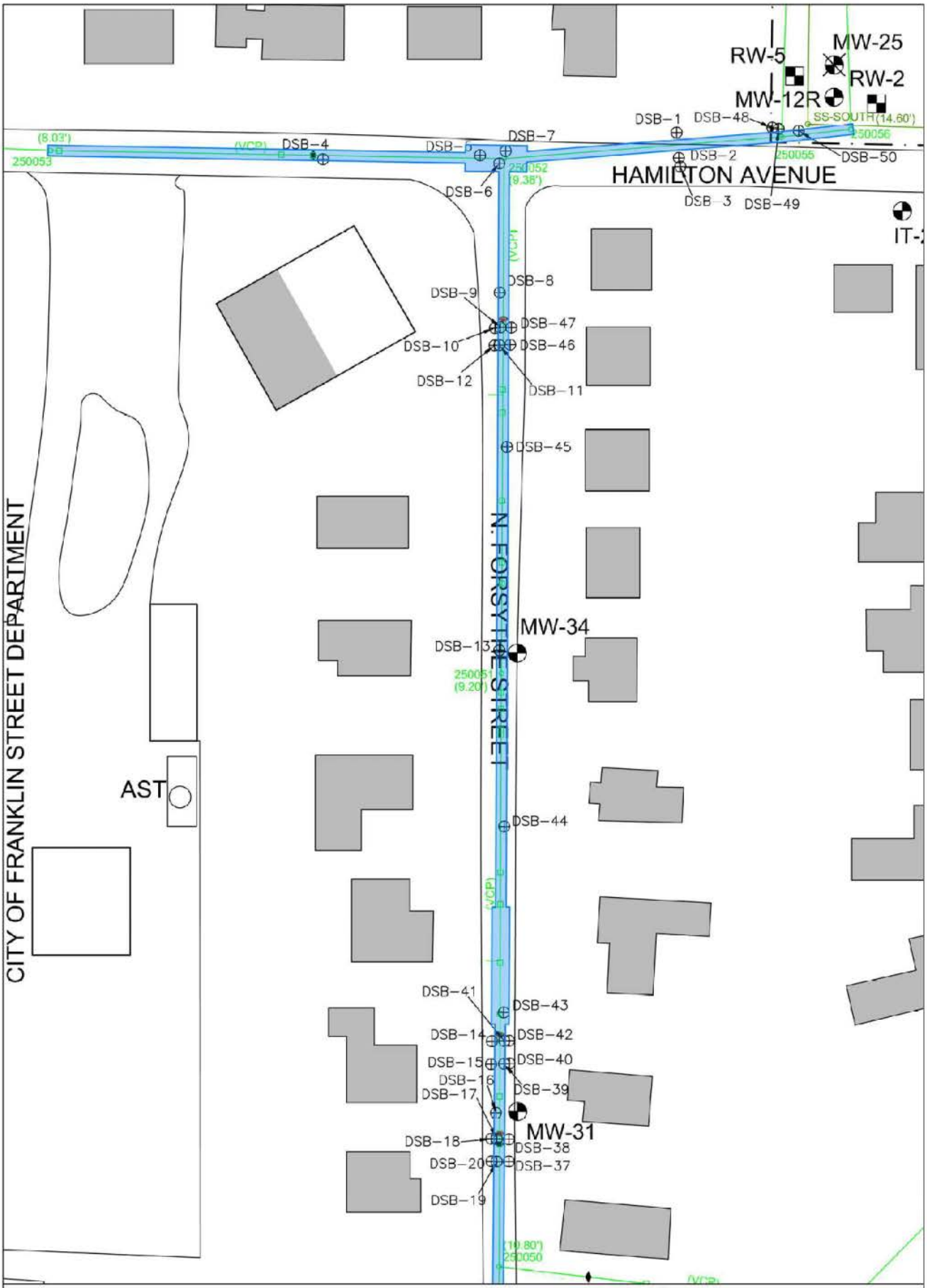


DRAWN BY: L. STRUM	
DATE: 9/27/99	
REVISED: 01/31/2019	
HWPA #111291-01	
DWG. NO. 111291S1	

FIGURE 15
PROPOSED OFF-SITE
INTERIM MEASURE
(EXCAVATION AND LINING)

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP

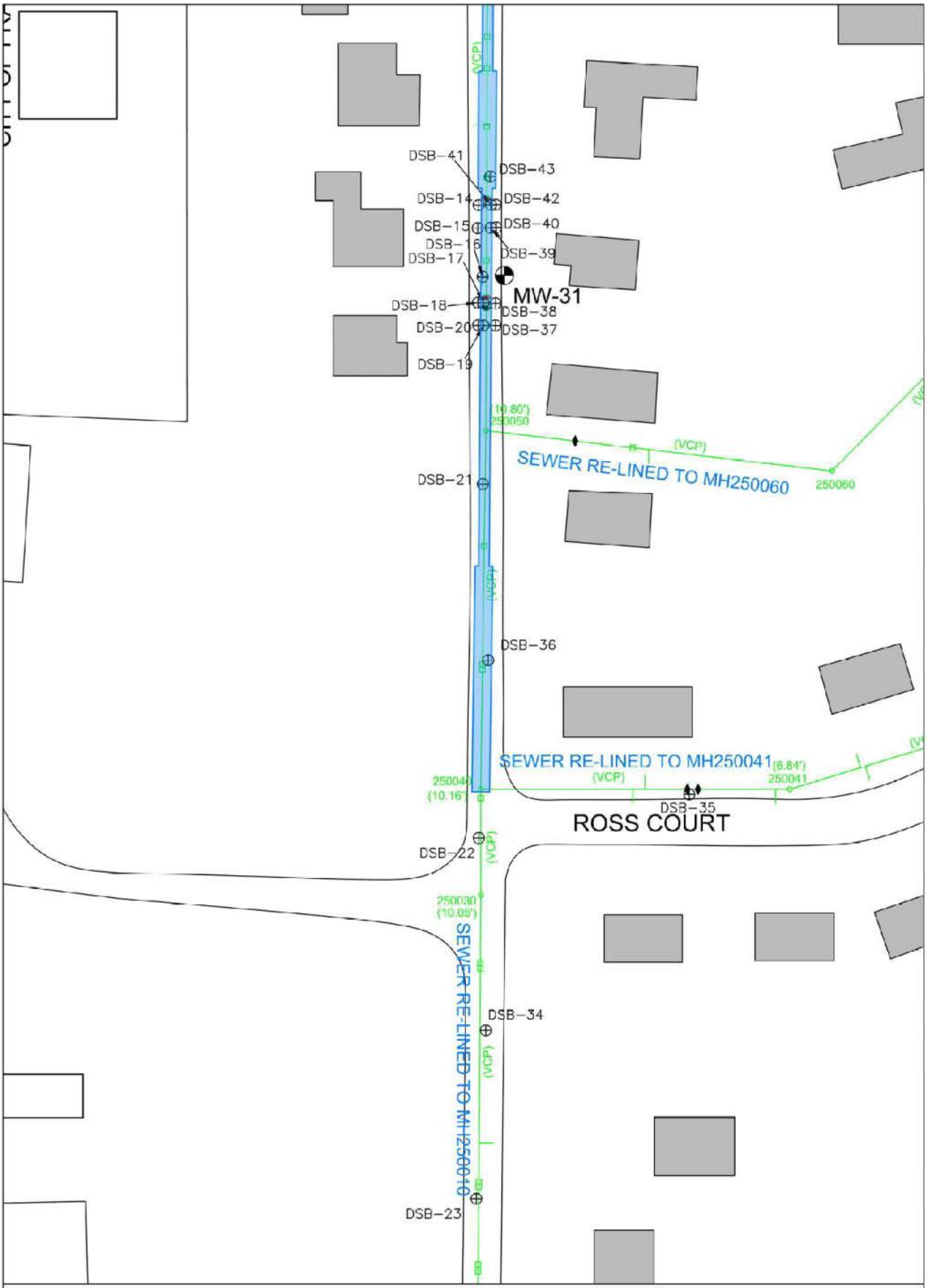


DRAWN BY: L. STRUM	
DATE: 9/27/99	
REVISED: 06/11/2019	
HWPA #111291-01	
DWG. NO. 111291S1	

FIGURE 16
SANITARY SEWER DESIGN PLAN
UPPER FORSYTHE

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP



LEGEND

- ABANDONED MONITORING WELL
- MONITORING WELL
- RECOVERY WELL
- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
  (SEWER MAIN INVERT DEPTH AT MANHOLE IN FEET)
- PROPERTY LINE (APPROXIMATE)
- STORM SEWER
- SANITARY SEWER
- O/H POWER
- RESIDENTIAL HOME
  * DETACHED GARAGES & SHEDS NOT SHOWN
- NON-RESIDENTIAL STRUCTURE
- PROPOSED EXCAVATION LIMITS
- (VCP) VITREOUS CLAY PIPE
- SEWER LINE BREAK
- SEWER LINE CRACK
- SEWER MATERIAL CHANGE
  * SEWER INFORMATION OBTAINED FROM 2015 SEWER VIDEO LOG FOR FRANKLIN DPW.
- SOIL BORING LOCATION

N

0' 50'
SCALE IN FEET

DRAWN BY: L. STRUM	
DATE: 9/27/99	
REVISED: 06/11/2019	
HWPA #111291-01	
DWG. NO. 111291S1	

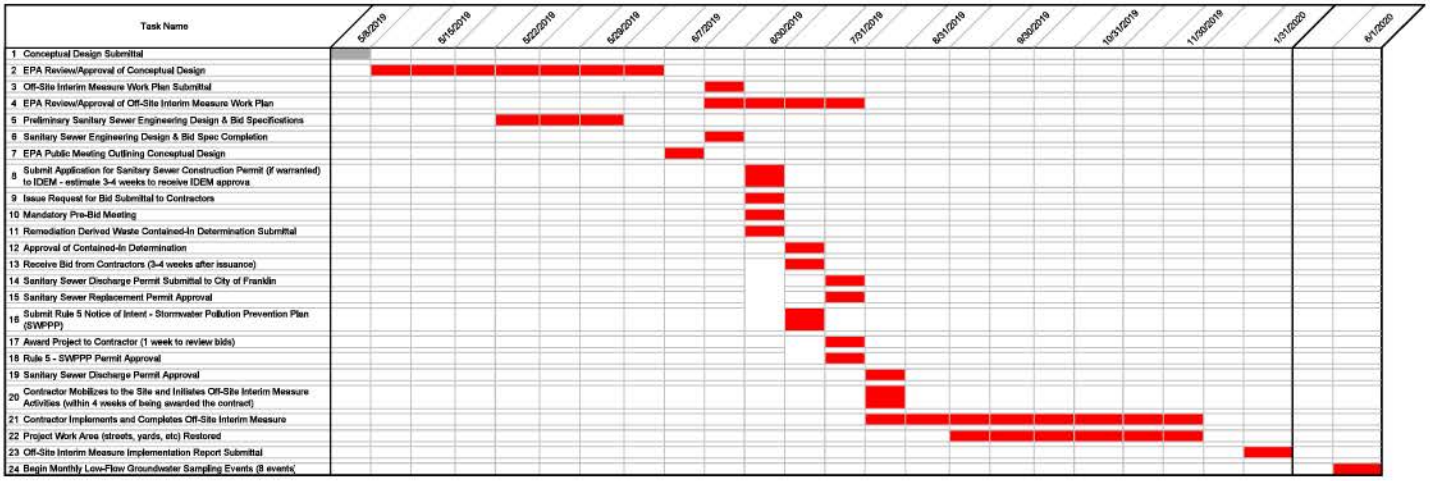
FIGURE 17
SANITARY SEWER DESIGN PLAN
LOWER FORSYTHE

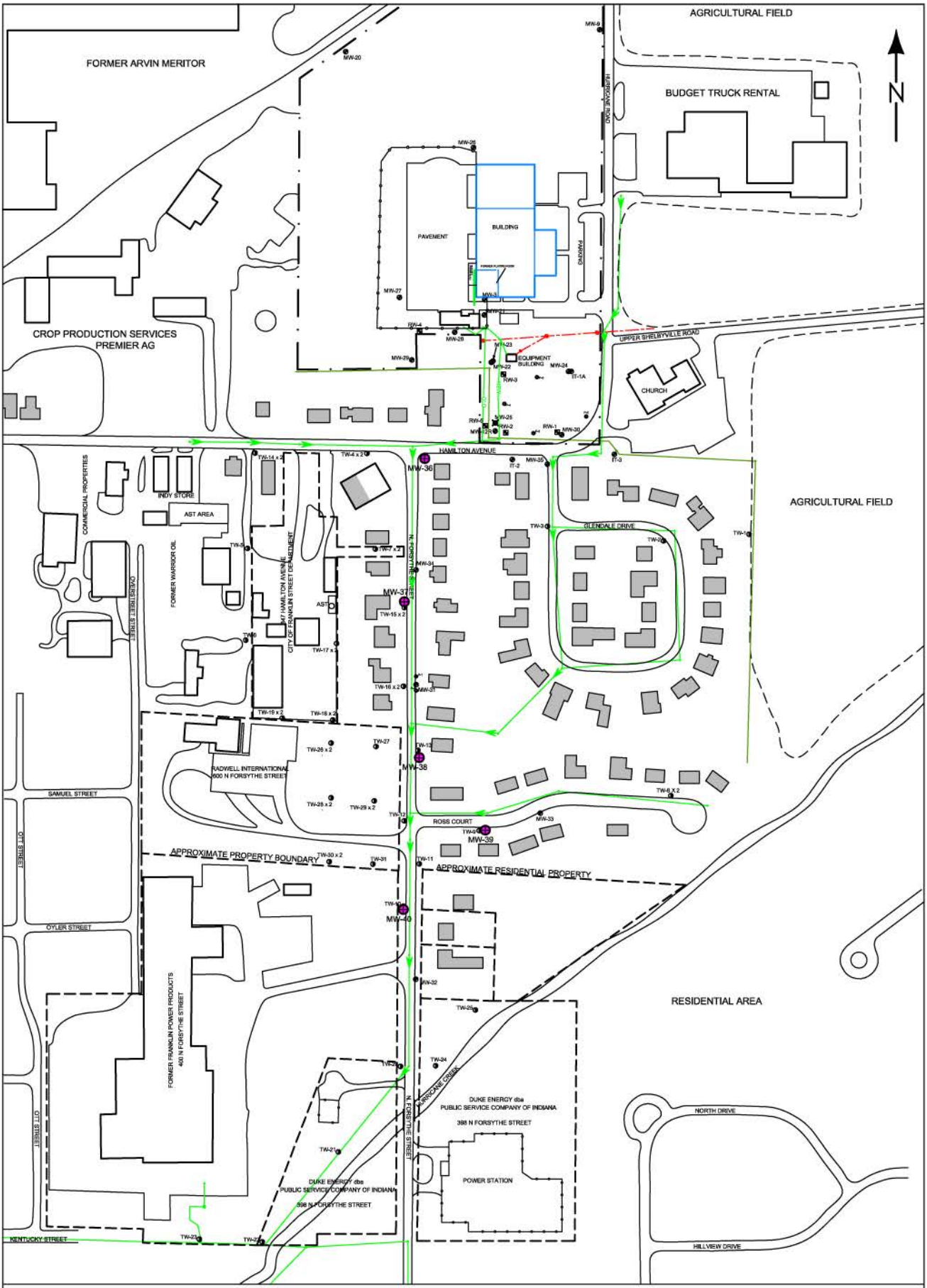
FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP

Figure 18
Off-Site Interim Measure Implementation Schedule

Former Amphenol Facility
EPA ID # IND 044 587 648
Franklin, IN 46131





LEGEND

- ABANDONED MONITORING WELL
- MONITORING WELL
- RECOVERY WELL
- PIEZOMETERS
- TEMPORARY WELLS
- PROPERTY LINE (APPROXIMATE)
- STORM SEWER
- SANITARY SEWER
- O/H POWER
- RESIDENTIAL HOME * DETACHED GARAGES & SHEDS NOT SHOWN
- NON-RESIDENTIAL STRUCTURE
- PRIMARY BUILDING WALLS
- PROPOSED MONITORING WELL

0' 200'
SCALE IN FEET

DRAWN BY: L. STRUM	
DATE: 9/27/99	
REVISED: 06/13/2019	
HWPA #111291-01	
DWG. NO. 111291S1	

FIGURE 19
PROPOSED MONITORING WELL LOCATION MAP

FORMER AMPHENOL RFI/CMS
980 HURRICANE ROAD
FRANKLIN, INDIANA

IWM CONSULTING GROUP

Tables

TABLE 1

Site-Specific Recalcualted Soil Migration to Groundwater Screening Levels
Former Amphenol Facility
EPA ID # IND 044 587 848
Franklin, Indiana 46131

Chemical of Concern	RCG MTG SL (mg/kg)	$SL_{POTABLE}$ (µg/L)	Groundwater to Indoor Air Screening Level (µg/L)	DAF	Koc (L/kg)	Foc (g/g)	$Porosity_{water}$	$Porosity_{air}$	Henry's Law Constant (unitless)	Dry Soil Bulk Density (kg/L)	SL_{MTG}[4] (mg/kg)
1,1-Dichloroethane	0.16	28	130	20	31.8	0.002	0.3	0.13	0.2298	1.5	0.737
1,2-Dichloroethane	0.028	5	50	20	39.6	0.002	0.3	0.13	0.0482	1.5	0.283
cis-1,2-Dichloroethene[1]	0.41	70	-	20	39.6	0.002	0.3	0.13	0.1668	1.5	0.411
trans-1,2-Dichloroethene	0.62	100	-	20	39.6	0.002	0.3	0.13	0.3835	1.5	0.625
Methylene Chloride[3]	0.025	5	7,580	20	21.7	0.002	0.3	0.13	0.1329	1.5	38.654
Tetrachloroethylene (PCI	0.045	5	110	20	94.9	0.002	0.3	0.13	0.7236	1.5	0.996
1,1,1-Trichloroethane	1.4	200	13,000	20	43.9	0.002	0.3	0.13	0.7032	1.5	90.668
Trichloroethylene (TCE)	0.036	5	9.1	20	60.7	0.002	0.3	0.13	0.4027	1.5	0.065
Vinyl Chloride	0.014	2	2.1	20	21.7	0.002	0.3	0.13	1.1365	1.5	0.014

Notes:
Calculation of Screening Levels for Migration of Contaminants in Soil to Ground Water Based Upon Indiana Department of Environmental Management's (IDEM) Ground Water to Indoor Air Screening Levels
RCG: IDEM's Remediation Closure Guide dated March 22, 2012 with corrections through July 9, 2012, and updated March 4, 2019.
MTG: Migration to Groundwater
SL: Screening Level
DAF: Dilution attenuation factor
Koc: Chemical-specific organic carbon partition coefficient
Foc: Fraction of organic carbon

[1] Because a groundwater to indoor air screening level is not available for cis-1,2-Dichloroethene, the groundwater potable use screening level was used for calculations.

[2] Because a groundwater to indoor air screening level is not available for trans-1,2-Dichloroethene, the groundwater potable use screening level was used for calculations.

[3] Because IDEM does not have groundwater to indoor air screening level for methylene chloride, the value in table is based on US EPA's VISL calculator at 12.5°C.

[4] The calculated screening level for migration to ground water is based on Equation A-9 of IDEM's RCG Appendix A: Screening Levels

Table generated by Cox-Colvin & Associates, Inc. and revised by IWM Consulting Group, LLC.

TABLE 2

Corrective Action Objectives
Former Amphenol Facility
EPA ID # IND 044 587 848
Franklin, Indiana 46131

Media	Unsaturated Soil	Shallow Groundwater
Chemical of Concern	**Recalculated MTG SL (mg/kg)**	**Groundwater to Indoor Air SL (µg/L)**
1,1-Dichloroethane	0.737	130
1,2-Dichloroethane	0.283	50
cis-1,2-Dichloroethene	0.411	NE
trans-1,2-Dichloroethene	0.625	NE
Methylene Chloride	38.654	7,580
Tetrachloroethylene (PCE)	0.996	110
1,1,1-Trichloroethane	90.668	13,000
Trichloroethylene (TCE)	0.065	9.1
Vinyl Chloride	0.014	2.1

Notes:

NE: Not established

MTG: Migration to Groundwater

SL: Screening level

Groundwater to Indoor Air Screening Level obtained from the Indiana Department of Environmental Management's (IDEM's) Remediation Closure Guide (RCG) dated March 22, 2012 with corrections through July 9, 2012 and updated March 4, 2019.

Recalculated MTG SLs based on IDEM RCG Groundwater to Indoor Air SLs and regional groundwater temperature of 12.5 degrees Celsius.

Table 5
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 587 849
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Hamilton - East	Hamilton - East	Hamilton - East	Hamilton - West	Hamilton - Center	Hamilton - Center	Hamilton - Center	Forsythe - North	Forsythe - North
				Sample ID	**DSB-1 SL (5.75-6.75)**	**DSB-2 SL (5.75-6.75)**	**DSB-3 SL (5.75-6.75)**	**DSB-4 SL (7.1-8.1)**	**DSB-5 SL (7.7-8.7)**	**DSB-6 SL (7.7-8.7)**	**DSB-7 SL (7.7-8.7)**	**DSB-8 SL (7.65-8.65)**	**DSB-9 SL (7.65-8.65)**
				Sampling Interval	5.75 - 6.75	5.75 - 6.75	5.75 - 6.75	7.1 - 8.1	7.7 - 8.7	7.7 - 8.7	7.7 - 8.7	7.65 - 8.65	7.65 - 8.65
				Sample Date	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0045	<0.0055	<0.0025	<0.0054	<0.0063	<0.0043	<0.0064	<0.0056 ǂ	<0.0053
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0045	<0.0055	<0.0025	<0.0054	<0.0063	<0.0043	<0.0064	<0.0056 ǂ	<0.0053
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0045	<0.0055	<0.0025	<0.0054	<0.0063	<0.0043	<0.0064	<0.0056 ǂ	<0.0053
0.82	0.825	1,900	1,900	trans-1,2-Dichloroethene	<0.0045	<0.0055	<0.0025	<0.0054	<0.0063	<0.0043	<0.0064	<0.0056 ǂ	<0.0053
0.025	38.854	490	3,200	Methylene chloride	<0.018	<0.022	<0.0099	<0.022	<0.025	<0.017 ǂ	<0.026 ǂ	<0.023 ǂ	<0.021
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.0042 J	0.011	0.0089	0.0010 J	0.097	0.015	0.048	0.049 ǂ	0.053
1.4	90.868	640	640	1,1,1-Trichloroethane	<0.0045	<0.0055	<0.0025	<0.0054	<0.0063	0.00090 J	0.00075 J	<0.0056 ǂ	<0.0053
0.036	0.065	5.7	19	Trichloroethylene (TCE)	<0.0045	0.0068	0.0032	<0.0054	<0.0063	0.0027 J	0.0038 J	0.0084 ǂ	0.0077
0.014	0.014	0.83	17	Vinyl Chloride	<0.0045	<0.0055	<0.0025	<0.0054	<0.0063	<0.0043	<0.0064	<0.0056 ǂ	<0.0053
N/A	N/A	N/A	N/A	Percent Moisture	10.7	4.6	9.5	11.0	11.8	15.3	7.4	9.2	12.2

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central
				Sample ID	**DSB-10 SL (7.65-8.65)**	**DSB-11 SL (7.6-8.6)**	**DSB-12 SL (7.6-8.6)**	**DSB-13 SL (7.5-8.5)**	**DSB-14 SL (8.4-9.4)**	**DSB-15 SL (8.5-9.5)**	**DSB-16 SL (8.7-9.7)**	**DSB-17 SL (8.8-9.8)**	**DSB-18 SL (8.8-9.8)**
				Sampling Interval	7.65 - 8.65	7.6 - 8.6	7.6 - 8.6	7.5 - 8.5	8.4 - 9.4	8.5 - 9.5	8.7 - 9.7	8.8 - 9.8	8.8 - 9.8
				Sample Date	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0056	<0.0074	<0.0070	<0.0051	<0.0047	<0.0073	<0.0051	<0.0050	<0.0053
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0056	<0.0074	<0.0070	<0.0051	<0.0047	<0.0073	<0.0051	<0.0050	<0.0053
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0056	<0.0074	<0.0070	<0.0051	<0.0047	<0.0073	<0.0051	<0.0050	<0.0053
0.82	0.825	1,900	1,900	trans-1,2-Dichloroethene	<0.0056	<0.0074	<0.0070	<0.0051	<0.0047	<0.0073	<0.0051	<0.0050	<0.0053
0.025	38.854	490	3,200	Methylene chloride*	<0.022	<0.030	<0.028	<0.020	<0.019	<0.029	<0.020 ǂ	<0.020	<0.021
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.050	0.040	0.055	0.043	0.011	0.038	0.0088 ǂ	0.048	0.031
1.4	90.868	640	640	1,1,1-Trichloroethane	<0.0056	<0.0074	<0.0070	<0.0051	<0.0047	<0.0073	<0.0051	<0.0050	<0.0053
0.036	0.065	5.7	19	Trichloroethylene (TCE)	0.0076	0.0061 J	0.0076	0.0049 J	0.0016 J	0.018	0.0058	0.013	0.0088
0.014	0.014	0.83	17	Vinyl Chloride	<0.0056	<0.0074	<0.0070	<0.0051	<0.0047	<0.0073	<0.0051	<0.0050	<0.0053
N/A	N/A	N/A	N/A	Percent Moisture	5.4	9.2	4.6	8.5	7.4	9.2	10.5	11.6	8.4

Table 9 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 587 849
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - South	Forsythe - South	Forsythe - South		Forsythe - South
				Sample ID	**DSB-19 SL (8.8-9.8)**	**DSB-20 SL (8.9-9.9)**	**DSB-21 SL (8.7-9.7)**	**DSB-22 SL (8.1-9.1)**	**DSB-23 SL (7.2-8.2)**	**DSB-24 SL (5.5-6.5)**	**DSB-25 SL (5.4-6.4)**	**FD-9 SL**	**DSB-26 SL (5.4-6.4)**
				Sampling Interval	8.8 - 9.8	8.9 - 9.9	8.7 - 9.7	8.1 - 9.1	7.2 - 8.2	5.5 - 6.5	5.4 - 6.4	5.4 - 6.4	5.4 - 6.4
				Sample Date	2/28/2019	2/28/2019	2/26/2019	2/26/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0044	<0.0090	<0.0089	<0.0055	<0.0052	<0.0042	<0.0053 Ψ	<0.0055	<0.0041
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0044	<0.0090	<0.0089	<0.0055	<0.0052	<0.0042	<0.0053 Ψ	<0.0055	<0.0041
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0044	<0.0090	<0.0089	<0.0055	<0.0052	<0.0042	<0.0053 Ψ	<0.0055	<0.0041
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0044	<0.0090	<0.0089	<0.0055	<0.0052	<0.0042	<0.0053 Ψ	<0.0055	<0.0041
0.025	38.854	490	3,200	Methylene chloride*	<0.017	<0.036	<0.035	<0.022	<0.021	<0.017	<0.021 Ψ	<0.022	<0.016
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.012	0.031	0.040	0.036 Ψ	<0.0052	<0.0042	<0.0053	<0.0055	<0.0041
1.4	90.868	640	640	1,1,1-Trichloroethane	<0.0044	<0.0090	<0.0089	<0.0055	<0.0052	<0.0042	0.0084 Ψ	0.015	<0.0041
0.036	0.065	5.7	19	Trichloroethylene (TCE)	0.0038 J	0.0074 J	0.021	0.024 Ψ	0.0045 J	<0.0042	<0.0053 Ψ	<0.0055	<0.0041
0.014	0.014	0.83	17	Vinyl Chloride	<0.0044	<0.0090	<0.0089	<0.0055	<0.0052	<0.0042	<0.0053 Ψ	<0.0055	<0.0041
N/A	N/A	N/A	N/A	Percent Moisture	8.7	7.5	16.2	9.5	11.6	19.2	12.1	15.0	10.5

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South	
				Sample ID	**DSB-27 SL (5.3-6.3)**	**DSB-28 SL (5.3-6.3)**	**DSB-29 SL (4.6-5.6)**	**DSB-30 SL (5.3-6.3)**	**DSB-31 SL (5.4-6.4)**	**DSB-32 SL (5.8-6.8)**	**DSB-33 SL (6.7-7.7)**	**DSB-34 SL (7.7-8.7)**	**FD-12 SL**
				Sampling Interval	5.3 - 6.3	5.3 - 6.3	4.6 - 5.6	5.3 - 6.3	5.4 - 6.4	5.8 - 6.8	6.7 - 7.7	7.7 - 8.7	7.7 - 8.7
				Sample Date	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	<0.0053	<0.0052	<0.0055
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	<0.0053	<0.0052	<0.0055
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	<0.0053	<0.0052	<0.0055
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	<0.0053	<0.0052	<0.0055
0.025	38.854	490	3,200	Methylene chloride*	<0.034	<0.020	<0.033	<0.020	<0.021	<0.022	<0.021	<0.021	<0.022
0.045	0.996	110	170	Tetrachloroethylene (PCE)	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	<0.0053	0.0041 J	0.0055
1.4	90.868	640	640	1,1,1-Trichloroethane	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	<0.0053	0.0010 J	0.0014 J
0.036	0.065	5.7	19	Trichloroethylene (TCE)	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	0.020	0.011	0.014
0.014	0.014	0.83	17	Vinyl Chloride	<0.0084	<0.0049	<0.0083	<0.0049	<0.0054	<0.0055	<0.0053	<0.0052	<0.0055
N/A	N/A	N/A	N/A	Percent Moisture	19.8	10.8	25.8	13.8	5.6	6.6	12.1	16.8	19.5

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 987 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Ross Court - West	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central
				Sample ID	**DSB-35 SL (6-7)**	**DSB-36 SL (8.3-9.3)**	**DSB-37 SL (8.9-9.9)**	**DSB-38 SL (8.8-9.8)**	**DSB-39 SL (8.5-9.5)**	**DSB-40 SL (8.5-9.5)**	**DSB-41 SL (8.4-9.4)**	**DSB-42 SL (8.4-9.4)**	**DSB-43 SL (8.4-9.4)**
				Sampling Interval	6 - 7	8.3 - 9.3	8.9 - 9.9	8.8 - 9.8	8.5 - 9.5	8.5 - 9.5	8.4 - 9.4	8.4 - 9.4	8.4 - 9.4
				Sample Date	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0044	<0.0077	<0.0083 ǂ	<0.0058	<0.0050	<0.0045	<0.0084	<0.0047	<0.0050
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0044	<0.0077	<0.0083 ǂ	<0.0058	<0.0050	<0.0045	<0.0084	<0.0047	<0.0050
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0044	<0.0077	<0.0083 ǂ	<0.0058	<0.0050	<0.0045	<0.0084	<0.0047	<0.0050
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0044	<0.0077	<0.0083 ǂ	<0.0058	<0.0050	<0.0045	<0.0084	<0.0047	<0.0050
0.025	38.854	490	3,200	Methylene chloride*	<0.017	<0.031	<0.033 ǂ	<0.023	<0.020	<0.018	<0.034	<0.019	<0.020
0.045	0.996	110	170	Tetrachloroethylene (PCE)	<0.0044	0.051	0.023 ǂ	0.036	0.033	0.026	0.024 ǂ	0.030	0.040
1.4	90.998	640	640	1,1,1-Trichloroethane	0.0018 J	0.048	<0.0083 ǂ	<0.0058	<0.0050	<0.0045	<0.0084	<0.0047	<0.0050
0.036	0.065	5.7	19	Trichlorethylene (TCE)	0.011	**0.33**	0.0028 J ǂ	0.0084	0.017	0.0084	0.0093ǂ	0.0045 J	0.018
0.014	0.014	0.83	17	Vinyl Chloride	<0.0044	<0.0077	<0.0083 ǂ	<0.0058	<0.0050	<0.0045	<0.0084	<0.0047 ǂ	<0.0050 ǂ
N/A	N/A	N/A	N/A	Percent Moisture	6.7	14.3	9.3	3.7	11.3	8.9	9.1	7.3	9.9

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)					
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North
				Sample ID	**DSB-44 SL (7.9-8.9)**	**DSB-45 SL (7.6-8.6)**	**DSB-46 SL (7.6-8.6)**	**DSB-47 SL (7.65-8.65)**	**TW-15 SL (7.9-8.9)**	**TW-16 SL (8.7-9.7)**
				Sampling Interval	7.9 - 8.9	7.6 - 8.6	7.6 - 8.6	7.65 - 8.65	7.9 - 8.9	8.7 - 9.7
				Sample Date	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0049	<0.0063	<0.0097	<0.0052	<0.0062	<0.0048
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0049	<0.0063	<0.0097	<0.0052	<0.0062	<0.0048
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0049	<0.0063	<0.0097	<0.0052	<0.0062	<0.0048
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0049	<0.0063	<0.0097	<0.0052	<0.0062	<0.0048
0.025	38.854	490	3,200	Methylene chloride*	<0.020	<0.025	<0.027 *	<0.021	<0.025	<0.019
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.030	0.056	0.057 ǂ	0.089	0.015	0.012
1.4	90.998	640	640	1,1,1-Trichloroethane	<0.0049	<0.0063	<0.0097	<0.0052	<0.0062	<0.0048
0.036	0.065	5.7	19	Trichlorethylene (TCE)	0.0089	0.0081	0.0055 J	0.0097	<0.0062	0.0026 J
0.014	0.014	0.83	17	Vinyl Chloride	<0.0049 ǂ	<0.0063 ǂ	<0.0057 ǂ	<0.0052 ǂ	<0.0062	<0.0048
N/A	N/A	N/A	N/A	Percent Moisture	8.3	5.4	5.8	5.2	6.3	11.0

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 587 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Hamilton - East	Hamilton - East	Hamilton - East	Hamilton - West	Hamilton - Center		Hamilton - Center	Hamilton - Center	Forsythe - North
				Sample ID	**DSB-1 SL (7.5-8.5)**	**DSB-2 SL (7.5-8.5)**	**DSB-3 SL (7.5-8.5)**	**DSB-4 SL (8.8-9.8)**	**DSB-5 SL (9.4-10.4)**	**FD-2 SL**	**DSB-6 SL (9.4-10.4)**	**DSB-7 SL (9.4-10.4)**	**DSB-8 SL (9.4-10.4)**
				Screened Interval (feet)	7.5 - 8.5	7.5 - 8.5	7.5 - 8.5	8.8 - 9.8	9.4 - 10.4	9.4 - 10.4	9.4 - 10.4	9.4 - 10.4	9.4 - 10.4
				Sample Date	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0042	<0.0050	<0.0074	<0.0051	<0.0079 Φ	<0.0061	<0.26	<0.0059	<0.0054
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0042	<0.0050	<0.0074	<0.0051	<0.0079 Φ	<0.0061	<0.26	<0.0059	<0.0054
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0042	<0.0050	<0.0074	<0.0051	<0.0079 Φ	<0.0061	<0.26	<0.0059	<0.0054
0.82	0.825	1,900	1,900	trans-1,2-Dichloroethene	<0.0042	<0.0050	<0.0074	<0.0051	<0.0079 Φ	<0.0061	<0.26	<0.0059	<0.0054
0.025	38.954	490	3,200	Methylene chloride*	<0.017	<0.020	<0.030	<0.020	<0.031 Φ	<0.024	<1.0	<0.023 ǂ	<0.022
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.011	0.0072	0.019	0.0014 J	0.039 Φ	0.075	**1.0**	0.038	0.098
1.4	90.868	640	640	1,1,1-Trichloroethane	<0.0042	<0.0050	<0.0074	<0.0051	<0.0079 Φ	<0.0061	0.12 J	<0.0059	0.00091 J
0.036	0.065	5.7	19	Trichloroethylene (TCE)	0.0027 J	0.0035 J	0.0078	<0.0051	<0.0079 Φ	0.0039 J	**0.25 J**	0.0028 J	0.013
0.014	0.014	0.83	17	Vinyl Chloride	<0.0042	<0.0050	<0.0074	<0.0051	<0.0079 Φ	<0.0061	<0.26	<0.0059	<0.0054
N/A	N/A	N/A	N/A	Percent Moisture	11.4	3.7	8.2	10.7	7.1	8.7	5.8	9.3	4.6

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - Central	Forsythe - Central	Forsythe - Central
				Sample ID	**DSB-9 SL (9.4-10.4)**	**DSB-10 SL (9.4-10.4)**	**DSB-11 SL (9.4-10.4)**	**DSB-12 SL (9.4-10.4)**	**DSB-13 SL (9.25-10.25)**	**DSB-14 SL (10.1-11.1)**	**DSB-15 SL (10.2-11.2)**	**DSB-16 SL (10.4-11.4)**	**DSB-17 SL (10.5-11.5)**
				Sampling Interval	9.4 - 10.4	9.45 - 10.4	9.4 - 10.4	9.4 - 10.4	9.25 - 10.25	10.1 - 11.1	10.2 - 11.2	10.4 - 11.4	10.5 - 11.5
				Sample Date	2/25/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0055	<0.0061	<0.0051	<0.0099	<0.0044	<0.0050	<0.0041	<0.0040	<0.0048
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0055	<0.0061	<0.0051	<0.0099	<0.0044	<0.0050	<0.0041	<0.0040	<0.0048
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0055	<0.0061	<0.0051	<0.0099	<0.0044	<0.0050	<0.0041	<0.0040	<0.0048
0.82	0.825	1,900	1,900	trans-1,2-Dichloroethene	<0.0055	<0.0061	<0.0051	<0.0099	<0.0044	<0.0050	<0.0041	<0.0040	<0.0048
0.025	38.954	490	3,200	Methylene chloride*	<0.022	<0.024	<0.020	<0.040	<0.017	<0.020	<0.017	<0.016 ǂ	<0.018
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.077	0.090	0.035	0.11	0.043	0.11	0.10	0.11	0.18
1.4	90.868	640	640	1,1,1-Trichloroethane	<0.0055	<0.0061	<0.0051	<0.0099	<0.0044	0.0032 J	<0.0041	<0.0040	0.0042 J
0.036	0.065	5.7	19	Trichloroethylene (TCE)	0.0088	0.0094	0.0042 J	0.013	0.0037 J	0.036	0.02	0.026	0.048
0.014	0.014	0.83	17	Vinyl Chloride	<0.0055	<0.0061	<0.0051	<0.0099	<0.0044	<0.0050	<0.0041	<0.0040	<0.0048
N/A	N/A	N/A	N/A	Percent Moisture	6.4	7.2	5.7	6.2	10.9	14.6	9.1	8.7	7.6

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 987 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South
				Sample ID	**DSB-19 SL (10.5-11.5)**	**DSB-19 SL (10.6-11.6)**	**DSB-20 SL (10.6-11.6)**	**DSB-21 SL (10.7-11.7)**	**DSB-22 SL (10.1-11.1)**	**DSB-23 SL (9.2-10.2)**	**DSB-24 SL (7.9-8.9)**	**DSB-25 SL (7.6-8.6)**	**DSB-26 (7.6-8.6)**
				Sampling Interval	10.5 - 11.5	10.6 - 11.6	10.6 - 11.6	10.7 - 11.7	10.1 - 11.1	9.2 - 10.2	7.9 - 8.9	7.6 - 8.6	7.6 - 8.6
				Sample Date	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0050	<0.0043	<0.0049	<0.0053	<0.0050	<0.0064	<0.0046	0.027	0.19
0.026	0.283	8.4	20	1,2-Dichloroethane	<0.0050	<0.0043	<0.0049	<0.0053	<0.0050	<0.0064	<0.0046	<0.0035	<0.0042
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0050	<0.0043	<0.0049	<0.0053	<0.0050	<0.0064	<0.0046	<0.0035	<0.0042
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0050	<0.0043	<0.0049	<0.0053	<0.0050	<0.0064	<0.0046	<0.0035	<0.0042
0.025	38.854	490	3,200	Methylene chloride*	<0.020	<0.017	<0.020	<0.021	<0.020	<0.026	<0.019	<0.014	<0.017
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.12	0.083	0.076	0.13	0.048	<0.0064	<0.0046	<0.0035	<0.0042
1.4	90.958	840	840	1,1,1-Trichloroethane	0.0036 J	0.0023 J	0.0018 J	0.0034 J	<0.0050	<0.0064	<0.0046	0.19	0.077
0.036	0.065	5.7	19	Trichlorethylene (TCE)	0.036	0.025	0.024	0.036	0.033	0.0014 J	<0.0046	0.0031 J	<0.0042
0.014	0.014	0.83	17	Vinyl Chloride	<0.0050	<0.0043	<0.0049	<0.0053	<0.0050	<0.0064	<0.0046	<0.0035	<0.0042
N/A	N/A	N/A	N/A	Percent Moisture	11.2	8.9	8.8	11.7	9.9	15.0	11.0	8.8	10.2

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - South	Forsythe - South	Forsythe - South	Ross Court - West	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	
				Sample ID	**DSB-31 SL (7.6 -8.6)**	**DSB-32 SL (7.9-8.9)**	**DSB-34 SL (9.7-10.7)**	**DSB-35 SL (7.7-8.7)**	**DSB-36 SL (10.3-11.3)**	**DSB-37 SL (10.6-11.6)**	**DSB-38 SL (10.5-11.5)**	**DSB-39 SL (10.2-11.2)**	**FD-13 SL**
				Sampling Interval	7.6 - 8.6	7.9 - 8.9	9.7 - 10.7	7.7 - 8.7	10.3 - 11.3	10.6 - 11.6	10.5 - 11.5	10.2 - 11.2	10.2 - 11.2
				Sample Date	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/26/2019	2/26/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0053	<0.0051	<0.0050	<0.0048	<0.0053	<0.0049	<0.0048	<0.0058	<0.0049
0.026	0.283	8.4	20	1,2-Dichloroethane	<0.0053	<0.0051	<0.0050	<0.0048	<0.0053	<0.0049	<0.0048	<0.0058	<0.0049
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0053	<0.0051	<0.0050	<0.0048	<0.0053	<0.0049	<0.0048	<0.0058	<0.0049
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0053	<0.0051	<0.0050	<0.0048	<0.0053	<0.0049	<0.0048	<0.0058	<0.0049
0.025	38.854	490	3,200	Methylene chloride	<0.021	<0.021	<0.020	<0.019	<0.021	<0.019	<0.019	<0.023	<0.020
0.045	0.996	110	170	Tetrachloroethylene (PCE)	<0.0053	<0.0051	0.030	<0.0048	0.073	0.093	0.28	0.051	0.074
1.4	90.958	840	840	1,1,1-Trichloroethane	<0.0053	<0.0051	0.0057	0.0042 J	0.0072	0.0049	0.0095	<0.0058	0.0018 J
0.036	0.065	5.7	19	Trichlorethylene (TCE)	<0.0053	<0.0051	0.043	0.025	**0.066**	0.045	**0.079**	0.013	0.020
0.014	0.014	0.83	17	Vinyl Chloride	<0.0053	<0.0051	<0.0050	<0.0048	<0.0053	<0.0049	<0.0048	<0.0058	<0.0049 J
N/A	N/A	N/A	N/A	Percent Moisture	9.1	13.1	18.3	14.5	17.2	12.9	12.4	11.3	9.7

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 987 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)									
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North
				Sample ID	**DSB-40 SL (10.2-11.2)**	**DSB-41 SL (10.1-11.1)**	**DSB-42 SL (10.1-11.1)**	**DSB-43 SL (10.1-11.1)**	**DSB-44 SL (9.5-10.5)**	**DSB-45 SL (9.3-10.3)**	**DSB-46 SL (9.3-10.3)**	**DSB-47 SL (9.4-10.4)**	**TW-15 SL (9.5-10.5)**	**TW-16 SL (10.4-11.4)**
				Sampling Interval	10.2 - 11.2	10.1 - 11.1	10.1 - 11.1	10.1 - 11.1	9.5 - 10.5	9.3 - 10.3	9.3 - 10.3	9.4 - 10.4	9.5 - 10.5	10.4 - 11.4
				Sample Date	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0043	<0.0051	<0.0047	<0.0047	<0.0075	<0.0051	<0.0050	<0.0075	<0.0046	<0.0039
0.026	0.283	8.4	20	1,2-Dichloroethane	<0.0043	<0.0051	<0.0047	<0.0047	<0.0075	<0.0051	<0.0050	<0.0075	<0.0046	<0.0039
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0043	<0.0051	<0.0047	<0.0047	<0.0075	<0.0051	0.020	<0.0075	<0.0046	<0.0039
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0043	<0.0051	<0.0047	<0.0047	<0.0075	<0.0051	<0.0050	<0.0075	<0.0046	<0.0039
0.025	38.854	490	3,200	Methylene chloride	<0.017	<0.020	<0.019	<0.019	<0.030	<0.020	<0.020	<0.030 *	<0.018	<0.016
0.045	0.998	110	170	Tetrachloroethylene (PCE)	0.13	0.076	0.097	0.72	0.13	0.031	0.073	0.17	0.040	0.017 €
1.4	90.998	640	640	1,1,1-Trichloroethane	0.0035 J	0.0026 J	0.0023 J	0.0052	0.0023 J	<0.0051	<0.0050	<0.0075	<0.0046	<0.0039
0.036	0.065	5.7	19	Trichloroethylene (TCE)	0.039	0.024	0.025	**0.067**	0.021	0.0030 J	0.016	0.012	0.0080	0.0052
0.014	0.014	0.83	17	Vinyl Chloride	<0.0043	<0.0051 ǂ	<0.0047 ǂ	<0.0047	<0.0075 ǂ	<0.0051 ǂ	<0.0050 ǂ	<0.0075 ǂ	<0.0046	<0.0039
N/A	N/A	N/A	N/A	Percent Moisture	11.0	11.7	11.7	7.6	7.3	5.3	4.7	5.8	8.4	7.7

Table 1 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 387 849
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RDC MTC Screening Level	Site-Specific Re-Calculated RDC MTC Screening Level	RDC RDC Screening Level	RDC DMTC Screening Level	Sample Location	Hamilton - East	Hamilton - East	Hamilton - East	Hamilton - West	Hamilton - Center	Hamilton - Center		Hamilton - Center	Hamilton - North
				Sample ID	DSB-1 SL (15-16)	DSB-2 SL (15.5-16.5)	DSB-3 SL (15-16)	DSB-4 SL (16-17)	DSB-5 SL (16.5-17.5)	DSB-6 SL (17.5-18.5)	FD-1 SL	DSB-7 SL (17-18)	DSB-8 SL (16-16)
				Sampling Interval	15 - 16	15.5 - 16.5	15 - 16	16 - 17	16.5 - 17.5	17.5 - 18.5	17.5 - 18.5	17 - 18	16 - 16
				Sample Date	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019
0.18	0.757	56	190	1,1-Dichloroethane	<0.0048	<0.0044	<0.0044	<0.0044	<0.0048	<0.0048	<0.0044	<0.0044	<0.0045
0.025	0.253	8.4	20	1,2-Dichloroethane	<0.0048	<0.0044	<0.0044	<0.0044	<0.0048	<0.0048	<0.0044	<0.0044	<0.0045
0.41	0.417	220	2,300	cis-1,2-Dichloroethene	<0.0048	<0.0044	<0.0044	<0.0044	<0.0048	<0.0048	<0.0044	<0.0044	<0.0045
0.62	0.625	1,400	1,900	trans-1,2-Dichloroethene	<0.0048	<0.0044	<0.0044	<0.0044	<0.0048	<0.0048	<0.0044	<0.0044	<0.0045
0.025	38.554	64	3,200	Methylene chloride*	<0.020	<0.017	<0.024	<0.020	<0.017	<0.019 j	<0.020 e	<0.018 e	<0.017
0.045	0.396	110	170	Tetrachloroethylene (PCE)	0.054	0.058	0.12	<0.0044	0.012	0.0050	0.014	0.0084 e	0.017 e
1.4	50.398	840	840	1,1,1-Trichloroethane	0.0024 j	0.015	0.030	<0.0044	<0.0048	<0.0048	<0.0044	<0.0044	<0.0045
0.035	0.395	5.7	19	Trichloroethylene (TCE)	0.014	0.056	0.19	<0.0044	<0.0048	0.00080 j	0.00071 j	0.00087 fj	<0.0045
0.014	0.014	0.83	17	Vinyl Chloride	<0.0048	<0.0044	<0.0044	<0.0044	<0.0048	<0.0048	<0.0044	<0.0044	<0.0045
N/A	N/A	N/A	N/A	Percent Moisture	13.7	9.5	11.5	5.7	6.5	11.2	9.8	5.9	7.2

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RDC MTC Screening Level	Site-Specific Re-Calculated RDC MTC Screening Level	RDC RDC Screening Level	RDC DMTC Screening Level	Sample Location	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - Central	Forsythe - Central	Forsythe - South	Rose Court - West
				Sample ID	DSB-9 SL (16-16)	DSB-10 SL (16.5-17.5)	DSB-11 SL (15-16)	DSB-12 SL (16.5-17.5)	DSB-13 SL (13-14)	DSB-19 SL (13-13.5)	DSB-21 SL (12.5-13.5)	DSB-23 SL (11-12)	DSB-35 SL (8.5-10.5)
				Sampling Interval	15 - 16	16.5 - 17.5	15 - 16	16.5 - 17.5	13 - 14	13 - 13.5	12.5 - 13.5	11 - 12	8.5 - 10.5
				Sample Date	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/27/2019	2/27/2019
0.18	0.757	56	190	1,1-Dichloroethane	<0.0064	<0.0062	<0.0056	<0.0044	<0.0048	<0.0048	0.050	<0.0056	0.0060 J
0.025	0.253	8.4	20	1,2-Dichloroethane	<0.0064	<0.0062	<0.0056	<0.0044	<0.0048	<0.0048	<0.0048	<0.0056	<0.0077
0.41	0.417	220	2,300	cis-1,2-Dichloroethene	<0.0064	<0.0062	<0.0056	<0.0044	<0.0048	<0.0048	0.0011 J	<0.0056	<0.0077
0.62	0.625	1,400	1,900	trans-1,2-Dichloroethene	<0.0064	<0.0062	<0.0056	<0.0044	<0.0048	<0.0048	<0.0048	<0.0056	<0.0077
0.025	38.554	490	3,200	Methylene chloride*	<0.021	<0.021	<0.028	<0.017	<0.015	<0.017 g	<0.020	<0.020	<0.031
0.045	0.396	110	170	Tetrachloroethylene (PCE)	0.021	0.025	0.29	0.045	0.012	1.9	0.0051	<0.0056 e	<0.0077
1.4	50.398	840	840	1,1,1-Trichloroethane	0.0015 J	<0.0062	0.00059 J	0.0012 J	0.0021 J	0.022	0.11	<0.0056	0.037
0.035	0.395	5.7	19	Trichloroethylene (TCE)	0.022	0.0034 J	0.074	0.011	0.018	0.19	1.4	<0.0056	0.078 e
0.014	0.014	0.83	17	Vinyl Chloride	<0.0064	<0.0062	<0.0056	<0.0044	<0.0048	<0.0048	<0.0048	<0.0056	<0.0077 e
N/A	N/A	N/A	N/A	Percent Moisture	5.7	7.0	7.4	2.5	10.8	7.1	12.4	7.3	6.7

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 587 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)							
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG IDC Screening Level	Sample Location	Forsythe - Central	Forsythe - Central	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	Forsythe - North	
				Sample ID	DSB-39 SL (12-13)	DSB-40 SL (12-13)	DSB-44 SL (12.5-13.5)	DSB-45 SL (12.5-13.5)	DSB-46 SL (15.5-16.5)	DSB-47 SL (15.5-16.5)	TW-15 SL (13-14)	FD-1 SL
				Sampling Interval	12 - 13	12 - 13	12.5 - 13.5	12.5 - 13.5	15.5 - 16.5	15.5 - 16.5	13 - 14	13 - 14
				Sample Date	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019
0.18	0.157	58	160	1,1-Dichloroethane	<0.0048	<0.0047	<0.0042	<0.0065	<0.0054 [illegible]	<0.0058	<0.0068	<0.0050
0.025	0.250	6.4	20	1,2-Dichloroethane	<0.0048	<0.0047	<0.0042	<0.0065	<0.0054 [illegible]	<0.0058	<0.0068	<0.0050
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0048	<0.0047	<0.0042	<0.0065	<0.0054 [illegible]	<0.0058	<0.0068	<0.0050
0.62	0.625	1,400	1,900	trans-1,2-Dichloroethene	<0.0048	<0.0047	<0.0042	<0.0065	<0.0054 [illegible]	<0.0058	<0.0068	<0.0050
0.025	38.554	440	3,200	Methylene chloride*	<0.019	<0.019	<0.017	<0.025	<0.021 J	<0.022	<0.027	<0.021
0.045	0.946	110	170	Tetrachloroethylene (PCE)	0.15	0.078	0.17	0.060	0.12 J	0.24	0.077	0.045
1.4	90.998	640	640	1,1,1-Trichloroethane	0.0048 J	0.0056 J	0.0086	<0.0065	<0.0054 [illegible]	0.0014 J	0.0037 J	0.0019 J
0.036	0.365	5.7	19	Trichloroethylene (TCE)	0.058	0.052	0.042	0.012	0.0037 J [illegible]	0.027	0.035	0.015
0.014	0.014	0.83	17	Vinyl Chloride	<0.0048	<0.0047 [illegible]	<0.0042 [illegible]	<0.0063 [illegible]	<0.0054 [illegible]	<0.0056 J	<0.0068	<0.0050
N/A	N/A	N/A	N/A	Percent Moisture	6.4	8.1	8.1	5.1	7.3	15.6	20.5	15.7

iWM

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 987 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Hamilton - East		Hamilton - East	Hamilton - East	Hamilton - West	Hamilton - Center	Hamilton - Center	Hamilton - Center	Forsythe - North
				Sample ID	**DSB-1 SL (20.5-21.5)**	**FD-1 SL**	**DSB-2 SL (21-22)**	**DSB-3 SL (21.5-22.5)**	**DSB-4 SL (22.25-23.25)**	**DSB-5 SL (22.5-23.5)**	**DSB-6 SL (23-24)**	**DSB-7 SL (23-24)**	**DSB-8 SL (24-25)**
				Sampling Interval	20.5 - 21.5	20.5 - 21.5	21 - 22	21.5 - 22.5	22.25 - 23.25	22.5 - 23.5	23 - 24	23 - 24	24 - 25
				Sample Date	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019	2/25/2019
0.18	0.737	50	160	1,1-Dichloroethane	<0.0047	<0.0053	<0.0051	<0.0049	<0.0040	<0.0066	<0.0044	<0.0056	<0.0044
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0047	<0.0053	<0.0051	<0.0049	<0.0040	<0.0066	<0.0044	<0.0056	<0.0044
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0047	<0.0053	<0.0051	<0.0049	<0.0040	<0.0066	<0.0044	<0.0056	<0.0044
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0047	<0.0053	<0.0051	<0.0049	<0.0040	<0.0066	<0.0044	<0.0056	<0.0044
0.025	38.854	490	3,200	Methylene chloride*	<0.019	<0.021	<0.020	<0.020	<0.016	<0.026	<0.018 ǂ	<0.022	<0.018
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.0058	<0.0053	<0.0051	0.047	<0.0040	0.0026 J	0.0082	0.0081	0.042
1.4	90.998	840	840	1,1,1-Trichloroethane	0.053	0.020	0.029	0.011	<0.0040	<0.0066	0.0019 J	0.0015 J	<0.0044
0.036	0.065	5.7	19	Trichlorethylene (TCE)	**3.1**	**0.29**	**0.26**	**0.11**	0.024	<0.0066	0.010	0.0077	0.017
0.014	0.014	0.83	17	Vinyl Chloride	<0.0047	<0.0053	<0.0051	<0.0049	<0.0040	<0.0066	<0.0044	<0.0056	<0.0044
N/A	N/A	N/A	N/A	Percent Moisture	7.4	7.3	7.9	8.7	9.2	5.2	8.5	7.6	7.8

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - North		Forsythe - North	Forsythe - North	Forsythe - North		Forsythe - North	Forsythe - Central	
				Sample ID	**DSB-9 SL (24-25)**	**FD-4 SL**	**DSB-10 SL (21.5-22.5)**	**DSB-11 SL (20-22)**	**DSB-12 SL (22-23)**	**FD-5 SL**	**DSB-13 SL (16-17)**	**DSB-14 SL (12.5-13.5)**	**FD-6 SL**
				Sampling Interval	24 - 25	24 - 25	21.5 - 22.5	20 - 22	22 - 23	22 - 23	16 - 17	12.5 - 13.5	12.5 - 13.5
				Sample Date	2/25/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019
0.18	0.737	50	160	1,1-Dichloroethane	<0.0052	<0.0038	<0.0053	<0.0054	<0.0044	<0.0046	<0.0051	<0.0080 ǂ	<0.0044
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0052	<0.0038	<0.0053	<0.0054	<0.0044	<0.0046	<0.0051	<0.0080 ǂ	<0.0044
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0052	<0.0038	<0.0053	<0.0054	<0.0044	<0.0046	<0.0051	<0.0080 ǂ	<0.0044
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0052	<0.0038	<0.0053	<0.0054	<0.0044	<0.0046	<0.0051	<0.0080 ǂ	<0.0044
0.025	38.854	490	3,200	Methylene chloride*	<0.021	<0.015	<0.021	<0.022	<0.017	<0.018 ǂ	<0.020	<0.024 ǂ	<0.018 ǂ
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.0082	0.0087	0.010	0.017	0.089	0.097	0.032	0.20 ǂ	**1.2**
1.4	90.998	840	840	1,1,1-Trichloroethane	0.0011 J	<0.0038	0.0020 J	0.0015 J	0.0065	0.0056	0.0044 J	<0.0080 ǂ	0.017
0.036	0.065	5.7	19	Trichlorethylene (TCE)	0.026	0.018	0.037	0.027	**0.14**	**0.12**	0.026	**0.078 ǂ**	**0.17**
0.014	0.014	0.83	17	Vinyl Chloride	<0.0052	<0.0038	<0.0053	<0.0054	<0.0044	<0.0046	<0.0051	<0.0080 ǂ	<0.0044
N/A	N/A	N/A	N/A	Percent Moisture	12.5	7.5	4.8	13.9	11.8	11.2	10.1	8.0	8.0

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 987 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - Central	Forsythe - Central	Forsythe - Central		Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	
				Sample ID	**DSB-15 SL (12.25-13.25)**	**DSB-16 SL (14.5-15.5)**	**DSB-17 SL (12.75 - 13.75)**	**FD-7 SL**	**DSB-18 SL (12.5-13.5)**	**DSB-19 SL (13.5-14.5)**	**DSB-20 SL (13-14)**	**DSB-21 SL (14-15)**	**FD-8 SL**
				Sampling Interval	12.25-13.25	14.5 - 15.5	12.75 - 13.75	12.75 - 13.75	12.5 - 13.5	13.5 - 14.5	13 - 14	14 - 15	14 - 15
				Sample Date	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019	2/26/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0048	0.062	<0.0053	<0.0062	<0.0056	<0.0049	<0.0051	<0.0046	<0.0050
0.026	0.263	8.4	20	1,2-Dichloroethane	<0.0048	<0.0045	<0.0053	<0.0062	<0.0056	<0.0049	<0.0051	<0.0046	<0.0050
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0048	0.0027 J	<0.0053	<0.0062	<0.0056	<0.0049	<0.0051	<0.0046	<0.0050
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0048	<0.0045	<0.0053	<0.0062	<0.0056	<0.0049	<0.0051	<0.0046	<0.0050
0.025	38.854	490	3,200	Methylene chloride*	<0.18	<0.018 ǂ	<0.021	<0.025	<0.022	<0.020	<0.020	<0.019	<0.020
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.50	<0.0045	0.23	0.14	0.26	**3.2**	0.21	0.13	0.082
1.4	90.998	840	840	1,1,1-Trichloroethane	0.011	<0.0045	0.013	0.011	0.018	0.028	0.020	0.010	0.0059
0.036	0.065	5.7	19	Trichloroethylene (TCE)	**0.11**	**2.5**	**0.10**	**0.089**	**0.14**	**0.23**	**0.16**	**0.098**	0.057
0.014	0.014	0.83	17	Vinyl Chloride	<0.0048	<0.0045	<0.0053	<0.0062	<0.0056	<0.0049	<0.0051	<0.0046	<0.0050
N/A	N/A	N/A	N/A	Percent Moisture	8.9	14.5	15.5	14.0	14.1	12.2	15.0	12.4	9.7

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - Central	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South	Forsythe - South		Forsythe - South
				Sample ID	**DSB-22 SL (12-13)**	**DSB-23 SL (12.75-13.75)**	**DSB-24 SL (9.25-10.25)**	**DSB-25 SL (6.5-7.5)**	**DSB-26 SL (6.5-7.5)**	**DSB-27 SL (7.5-8.5)**	**DSB-28 SL (7.5-8.5)**	**FD-10 SL**	**DSB-29 SL (6.5-7.5)**
				Sampling Interval	12 - 13	12.75 - 13.75	9.25 - 10.25	6.5 - 7.5	6.5 - 7.5	7.5 - 8.5	7.5 - 8.5	7.5 - 8.5	6.5 - 7.5
				Sample Date	2/26/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0048	<0.0049	0.054	<0.0045 ψ	<0.0045	0.61	<0.0038	<0.0043	<0.0039
0.026	0.263	8.4	20	1,2-Dichloroethane	<0.0048	<0.0049	<0.0055	<0.0045 ψ	<0.0045	<0.0039	<0.0038	<0.0043	<0.0039
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0048	<0.0049	<0.0055	<0.0045 ψ	<0.0045	<0.0039	<0.0038	<0.0043	<0.0039
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0048	<0.0049	<0.0055	<0.0045 ψ	<0.0045	<0.0039	<0.0038	<0.0043	<0.0039
0.025	38.854	490	3,200	Methylene chloride*	<0.019	<0.020	<0.022	<0.018 ψ	<0.018	<0.016	<0.015	<0.017	<0.014
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.049	<0.0049	<0.0055	<0.0045 ψ	<0.0045	<0.0039 ψ	<0.0038	<0.0043	<0.0039 ψ
1.4	90.998	840	840	1,1,1-Trichloroethane	<0.0048	<0.0049	0.17	<0.0045 ψ	<0.0045	0.018	0.11	0.017	<0.0039
0.036	0.065	5.7	19	Trichloroethylene (TCE)	0.034	<0.0049	0.0011 J	<0.0045 ψ	<0.0045	<0.0039	<0.0038	<0.0043	0.0012 J
0.014	0.014	0.83	17	Vinyl Chloride	<0.0048	<0.0049	<0.0055	<0.0045 ψ	<0.0045	<0.0039	<0.0038	<0.0043	<0.0039
N/A	N/A	N/A	N/A	Percent Moisture	11.5	14.7	9.5	10.9	9.9	9.4	8.3	8.1	8.6

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 987 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - South	Forsythe - South	Forsythe - South		Forsythe - South	Forsythe - South	Ross Court - West	Forsythe - Central	Forsythe - Central
				Sample ID	**DSB-30 SL (7.5-8.5)**	**DSB-31 SL (8.75-9.75)**	**DSB-32 SL (9-10)**	**FD-11 SL**	**DSB-33 SL (8.7-9.7)**	**DSB-34 SL (11-11.5)**	**DSB-35 SL (11.25-12.25)**	**DSB-36 SL (13-14)**	**DSB-37 SL (13-14)**
				Sampling Interval	7.5 - 8.5	8.75 - 9.75	9 - 10	9 - 10	8.7 - 9.7	11 - 11.5	11.25 - 12.25	13 - 14	13 - 14
				Sample Date	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019	2/27/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0043	**2.1**	<0.0050	<0.0047	<0.0049	<0.0053	<0.0053	<0.0044	<0.0054
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0043	<0.0046	<0.0050	<0.0047	<0.0049	<0.0053	<0.0053	<0.0044	<0.0054
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0043	<0.0046	<0.0050	<0.0047	<0.0049	<0.0053	<0.0053	<0.0044	<0.0054
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0043	<0.0046	<0.0050	<0.0047	<0.0049	<0.0053	<0.0053	<0.0044	<0.0054
0.025	38.854	490	3,200	Methylene chloride*	<0.017	<0.018	<0.020	<0.019	<0.020	<0.021	<0.021	<0.018	<0.021
0.045	0.996	110	170	Tetrachloroethylene (PCE)	<0.0043	<0.0046	<0.0050	<0.0047	<0.0049	0.016	<0.0053	0.13	0.20
1.4	90.868	840	840	1,1,1-Trichloroethane	<0.0043	<0.0046	<0.0050	<0.0047	0.0014 J	0.0032 J	<0.0053	0.011	0.018
0.036	0.065	5.7	19	Trichloroethylene (TCE)	<0.0043	<0.0046	<0.0050	<0.0047	0.010	0.025	<0.0053	**0.095**	**0.13**
0.014	0.014	0.83	17	Vinyl Chloride	<0.0043	<0.0046	<0.0050	<0.0047	<0.0049	<0.0053	<0.0053	<0.0044	<0.0054
N/A	N/A	N/A	N/A	Percent Moisture	11.8	10.9	8.0	6.5	10.8	7.8	10.4	8.9	11.1

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)								
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central	Forsythe - Central		Forsythe - Central	Forsythe - North	
				Sample ID	**DSB-38 SL (12.25-13.25)**	**DSB-39 SL (13.5-14.5)**	**DSB-40 SL (13.5-14.5)**	**DSB-41 SL (12.5-13.5)**	**DSB-42 SL (13-14)**	**FD-14 SL**	**DSB-43 SL (12.5-13.5)**	**DSB-44 SL (15.5-16.5)**	**FD-15 SL**
				Sampling Interval	12.25 - 13.25	13.5 - 14.5	13.5 - 14.5	12.5 - 13.5	13 - 14	13 - 14	12.5 - 13.5	15.5 - 16.5	15.5 - 16.5
				Sample Date	2/27/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019
0.19	0.737	50	160	1,1-Dichloroethane	<0.0044	<0.0060	<0.0041	<0.0043	<0.0049	<0.0049	<0.0048	<0.0058	<0.0049
0.026	0.283	6.4	20	1,2-Dichloroethane	<0.0044	<0.0060	<0.0041	<0.0043	<0.0049	<0.0049	<0.0048	<0.0058	<0.0049
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0044	<0.0060	<0.0041	<0.0043	<0.0049	<0.0049	<0.0048	<0.0058	<0.0049
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0044	<0.0060	<0.0041	<0.0043	<0.0049	<0.0049	<0.0048	<0.0058	<0.0049
0.025	38.854	490	3,200	Methylene chloride*	<0.018	<0.024	<0.016	<0.017	<0.020	<0.020	<0.019	<0.023	<0.020
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.24	0.75	0.14	0.14	0.11	0.11	0.19	0.21	0.14
1.4	90.868	840	840	1,1,1-Trichloroethane	0.017	0.015	0.0093	0.0077	0.015	0.016	0.013	0.057	0.028
0.036	0.065	5.7	19	Trichloroethylene (TCE)	**0.13**	**0.13**	**0.068**	0.057	**0.096**	**0.097**	**0.090**	**0.28**	**0.14**
0.014	0.014	0.83	17	Vinyl Chloride	<0.0044	<0.0060	<0.0041 ↓	<0.0043 ↓	<0.0049 ↓	<0.0049 ↓	<0.0048 ↓	<0.0058 ↓	<0.0049 ↓
N/A	N/A	N/A	N/A	Percent Moisture	11.8	8.5	11.1	7.8	8.2	9.8	8.3	11.9	13.8

Table 3 (continued)
Design-Level Data Soil Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 987 848
Franklin, IN 46131

Screening Levels (mg/kg)				Parameters	Off-Site Soil Sampling Locations (mg/kg)					
RCG MTG Screening Level	Site-Specific Re-Calculated RCG MTG Screening Level	RCG RDC Screening Level	RCG C/IDC Screening Level	**Sample Location**	Forsythe - North	Forsythe - North		Forsythe - North	Forsythe - North	Forsythe - North
				Sample ID	**DSB-45 SL (15.5-16.5)**	**DSB-46 SL (21-22)**	**FD-16 SL**	**DSB-47 SL (20.5-21.5)**	**TW-15 SL (15.25-16.25)**	**TW-16 SL (13-14)**
				Sampling Interval	15.5 - 16.5	21 - 22	21 - 22	20.5 - 21.5	15.25 - 16.25	13 - 14
				Sample Date	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019	2/28/2019
0.16	0.737	50	160	1,1-Dichloroethane	<0.0046	<0.0051	<0.0043	<0.0060	<0.0044	<0.0047
0.026	0.263	8.4	20	1,2-Dichloroethane	<0.0046	<0.0051	<0.0043	<0.0060	<0.0044	<0.0047
0.41	0.411	220	2,300	cis-1,2-Dichloroethene	<0.0046	<0.0051	<0.0043	<0.0060	<0.0044	<0.0047
0.62	0.625	1,900	1,900	trans-1,2-Dichloroethene	<0.0046	<0.0051	<0.0043	<0.0060	<0.0044	<0.0047
0.025	38.854	490	3,200	Methylene chloride*	<0.019	<0.020	<0.017	<0.024	<0.018	<0.019
0.045	0.996	110	170	Tetrachloroethylene (PCE)	0.012	0.15	0.093	0.10	0.086	0.11
1.4	90.958	640	640	1,1,1-Trichloroethane	0.0057	0.037	0.021	0.018	0.011	0.0053
0.036	0.065	5.7	19	Trichloroethylene (TCE)	0.057	**1.1**	**1.8**	**0.23**	**0.085**	**0.069**
0.014	0.014	0.83	17	Vinyl Chloride	<0.0046 ǂ	<0.0051 ǂ	<0.0043 ǂ	<0.0060 ǂ	<0.0044	<0.0047
N/A	N/A	N/A	N/A	Percent Moisture	8.0	8.7	9.2	8.5	5.1	11.0

Notes:
1. All samples collected by IWM Consulting personnel and analyzed at Pace Analytical Services, LLC located in Indianapolis, IN.
2. All VOCs analyzed using US EPA Method 8260.
3. All results in mg/kg.
4. N/A: not applicable (risk-based screening levels have not been developed).
5. NA: Not applicable.
6. RCG: Indiana Department of Environmental Management (IDEM) Remediation Closure Guide dated March 22, 2012 (with corrections through July 9, 2012) and screening levels updated annually.
7. MTG: Migration to Groundwater
8. RDC: Residential Direct Contact
9. C/IDC: Commercial/Industrial Direct Contact
10. **Bolded** concentrations exceed Site-Specific Re-Calculated RCG MTG Screening Level.
11. *: Indicates a reported non-detect concentration exceeds the corresponding RCG MTG Screening Level.
12. J: Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
13. Shaded cells indicate sample obtained from a depth ~1 foot above the top of the sewer main.
14. Shaded cells indicate sample obtained from a depth ~1 foot below the bottom of the sewer main.
15. Unshaded cells indicate sample obtained from Unit B, between the bottom of the sewer main and the bottom of Unit B.
16. Entirely shaded sample results cells indicate sample obtained from a depth correlating to the bottom of Unit B.
17. ǂ: Indicates that due to continuing calibration percent differences, MS/MSD percent recoveries and relative percent difference, or internal standard area, data were qualified as estimated, but still accepted, as indicated in a Laboratory Data Consultants, Inc data validation report dated either March 28, 2019 or March 29, 2019.
18. Φ: Indicates that due to continuing calibration percent differences or internal standard area, data were qualified as estimated, but still accepted, as indicated in the Laboratory Data Consultants, Inc data validation report dated March 29, 2019.
19. Ψ : Indicates that due to MS/MSD percent recoveries and relative percent difference or internal standard area, data were qualified as estimated, but still accepted, as indicated in a Laboratory Data Consultants, Inc data validation report dated March 29, 2019.
20. ǂ : Indicates that due to continuing calibration percent differences, MS/MSD relative percent difference, or internal standard area, data were qualified as estimated, but still accepted, as indicated in a Laboratory Data Consultants, Inc data validation report dated March 29, 2019.
21. €: Indicates that due to MS/MSD relative percent difference, data were qualified as estimated, but still accepted, as indicated in a Laboratory Data Consultants, Inc data validation report dated March 29, 2019.

Table 5 (continued)
Design-Level Data QA/QC Sample Analytical Results
Former Amphenol Facility
EPA ID # IND 044 687 848
Franklin, IN 46131

Screening Levels (µg/L)	Parameters	Quality Assurance - Quality Control (µg/L)							
	Sample Location	Equipment Blank	Equipment Blank	Equipment Blank	Equipment Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank
RCG Residential Groundwater Tap Screening Level	Sample ID	EB-1 WT	EB-2 WT	EB-3 WT	EB-4 WT	TB-1 WT	TB-2 WT	TB-3 WT	TB-4 WT
	Sampling Interval	-	-	-	-	-	-	-	-
	Sample Date	2/25/2019	2/26/2019	2/27/2019	2/28/2019	2/25/2019	2/26/2019	2/27/2019	2/28/2019
28	1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	1,2-Dichloroethane*	<0.2*	<0.21	<0.27	<0.32	<0.21	<0.21	<0.27	<0.32
70	cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
100	trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	Methylene chloride	<5.0 B	<5.0	<5.0	<5.0	<5.0 B	<5.0	<5.0	<5.0
5	Tetrachloroethylene (PCE)*	<0.42	<0.42	<0.89	<0.6*	<0.42	<0.42	<0.89	<0.61
200	1,1,1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	Trichloroethylene (TCE)*	<0.53	<0.53	<0.84	<0.60	<0.53	<0.53	<0.84	<0.60
2	Vinyl Chloride*	<0.47	<0.47	<0.97	<0.27	<0.47	<0.47	<0.97	<0.27
N/A	Total VOCs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes:
1. All samples collected by IWM Consulting personnel and analyzed at Pace Analytical Services, LLC located in Indianapolis, IN.
2. All VOCs analyzed using U.S EPA Method 8260.
3. All results in µg/L.
4. N/A: not available (risk-based screening levels have not been developed).
5. NA: Not applicable.
6. RCG: Indiana Department of Environmental Management (IDEM) Remediation Closure Guide dated March 22, 2012 (with corrections through July 9, 2012) and screening levels updated annually.
7. **Bolded** concentrations exceed RCG Residential Groundwater Tap screening level.
8. * = Indicates no or detected concentration less than the adjusted method detection limit are adjusted reporting limit.

Table 4
Off-Site Groundwater Sampling Analytical Results
Former Amphenol Facility
EPA ID # NC Dxd 987 648
Franklin, IN 4613'

Screening Levels (µg/L)			Parameters	Off-Site Groundwater Sampling Locations (µg/L)								
MCL	VISL	RSG Residential tSVL Screening Level	Sample Location	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	
			Sample ID	TW 1	TW 2	TW 3	TW 3	TW 4	TW 4	TW 5	TW 6	TW 6
			Screened Interval (feet)	6.5-11.5	9.5-11.5	10.25-12.25	5.25-11.25	15.25-17.25	5-21	14.75-16.75	12.75-14.75	12.75-14.75
			Sample Date	10/25/2018	10/24/2018	10/24/2018	10/24/2018	10/25/2018	10/25/2018	10/25/2018	10/25/2018	10/25/2018
NA	7.6	130	1,1-Dichloroethane	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	9.2	60	1,2-Dichloroethane*	NS	<0.39	<0.39	<0.39	<0.39	<0.27	<0.27	<0.27	<0.27
70	NA	NA	cis-1,2-Dichloroethene	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	0.55J
100	NA	NA	trans-1,2-Dichloroethene	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	490	NA	Methylene chloride	NS	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	15	110	Tetrachloroethylene (PCE)*	NS	<0.61	<0.61	<0.61	<0.93	<0.53	2.74	2.4J	2.3J
200	7,400	13,000	1,1,1-Trichloroethane	NS	<5.0	<5.0	<5.0	<5.0	0.82J	<5.0	<5.0	<5.0
5	1.2	8.4	Trichloroethylene (TCE)*	NS	<0.80	<0.80	<0.80	1.8J	6.8	1.5J	2.3J	2.1J
2	0.19	2.1	Vinyl Chloride*	NS	<0.27	<0.27	<0.27	<0.97	<0.97	<0.97	<0.97	<0.97
NA	NA	NA	Total VOCs	NS	0.0	0.0	0.0	1.8	6.82	4.6	4.7	5.15

Screening Levels (µg/L)			Parameters	Off-Site Groundwater Sampling Locations (µg/L)								
MCL	VISL	RSG Residential tSVL Screening Level	Sample Location	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well
			Sample ID	TW 7	TW 7	TW 8	TW 8	TW 9	TW 10	TW 11	TW 12	TW 12
			Screened Interval (feet)	14.5-16.5	18.00-20.00	7.25-9.25	10.75-12.75	7.25-9.25	10.25-12.25	8.75-10.75	9.5-11.5	11.25-13.25
			Sample Date	10/25/2018	10/25/2018	10/24/2018	10/24/2018	10/24/2018	10/25/2018	10/25/2018	10/24/2018	10/25/2018
NA	7.6	130	1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	2.2J	<5.0	<5.0	<5.0	2.7J
5	9.2	60	1,2-Dichloroethane*	<0.27	<0.27	<0.39	<0.39	<0.39	<0.27	<0.27	<0.39	<0.27
70	NA	NA	cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
100	NA	NA	trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	490	NA	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	15	110	Tetrachloroethylene (PCE)*	<0.93	<0.93	<0.61	<0.61	<0.61	22.5	32.7	23.0	58.5
200	7,400	13,000	1,1,1-Trichloroethane	0.76J	1.4J	<5.0	<5.0	4.1J	11.0	8.0	3.9J	21.1
5	1.2	8.4	Trichloroethylene (TCE)*	2.4J	4.3J	<0.80	<0.80	21.4	52.2	75.8	35.7	117
2	0.15	2.1	Vinyl Chloride*	<0.97	<0.97	<0.27	<0.27	<0.27	<0.27	<0.97	<0.27	<0.97
NA	NA	NA	Total VOCs	3.14	5.9	0.0	0.0	27.7	125.7	137.3	62.6	199.4

Table 4 (continued)
Off-Site Groundwater Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 587 848
Franklin, IN 46131

Screening Levels (µg/L)			Parameters	Off-Site Groundwater Sampling Locations (µg/L)					
MCL	VISL	RDG Residential GVI Screening Level	**Sample Location**	Temporary Well	Temporary Well	Background Monitoring Well	Equipment Blank	Trip Blank	Trip Blank
			Sample ID	TW-14	TW-14	MW-3	EB-1	TB-1	TB-2
			Screened Interval (feet)	14.75-16.75	18.25-23.25	17-22	NA	NA	NA
			Sample Date	10/25/2018	10/25/2018	10/26/2018	10/24/2018	10/24/2018	10/26/2018
N/A	7.5	130	1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	2.2	60	1,2-Dichloroethane*	<0.27	<0.27	<0.27	<0.32	<0.32	<0.27
70	N/A	N/A	cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
100	N/A	N/A	trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	490	N/A	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	15	110	Tetrachloroethylene (PCE)*	1.9J	4.4J	<0.93	<0.51	<0.61	<0.53
200	7,400	13,000	1,1,1-Trichloroethane	<5.0	<5.0	2.2J	<5.0	<5.0	<5.0
5	1.7	9.1	Trichloroethylene (TCE)*	<0.54	1.5J	1.7J	<0.60	<0.60	<0.64
2	0.19	2.1	Vinyl Chloride*	<0.97	<0.97	<0.97	<0.27	<0.27	<0.97U
N/A	N/A	N/A	Total VOCs	1.9	5.9	3.9	0.0	0.0	0.0

Screening Levels (µg/L)			Parameters	Off-Site Groundwater Sampling Locations (µg/L)								
MCL	VISL	RDG Residential GVI Screening Level	**Sample Location**	Temporary Well	Temporary Well	Temporary Well	Temporary Well		Temporary Well	Temporary Well	Temporary Well	Temporary Well
			Sample ID	TW-15	TW-15	TW-16	TW-16	DUP-1 GW	TW-17	TW-17	TW-10	TW-18
			Screened Interval (feet)	9.75-11.75	14.25-16.25	8.75-10.75	12-14	12-14	9.75-11.75	16.5-18.5	7.75-9.75	16-18
			Sample Date	3/5/2019	3/5/2019	3/5/2019	3/5/2019	3/5/2019	3/5/2019	3/5/2019	3/5/2019	3/5/2019
N/A	7.5	130	1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	2.2	60	1,2-Dichloroethane*	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27	<0.27
70	N/A	N/A	cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	0.58J	<5.0	<5.0
100	N/A	N/A	trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	490	N/A	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	15	110	Tetrachloroethylene (PCE)*	45.5	50.6	10.2	75.7	75.0	<0.27	<0.27	<0.27	0.25J
200	7,400	13,000	1,1,1-Trichloroethane	1.7J	8.3	3.71J	6.0	5.9	1.0J	10	<5.0	2.5J
5	1.7	5.1	Trichloroethylene (TCE)*	**15.6**	**17.2**	5.5	**77.0**	**76.9**	8.8	**20.8**	<0.17	**8.9**
2	0.19	2.1	Vinyl Chloride*	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22	<0.22
N/A	N/A	N/A	Total VOCs	62.9	122.1	19.81	159.7	158.9	9.8	31.19	0.0	11.56

Table 4 (continued)
Off-Site Groundwater Sampling Analytical Results
Former Amphenol Facility
EPA ID # IND 044 587 848
Franklin, IN 46131

Screening Levels (µg/L)			Parameters	Off-Site Groundwater Sampling Locations (µg/L)								
MCL	VISL	RCG Residential GVL Screening Level	Sample Location	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	
			Sample ID	TW 18	TW 19	TW 20	TW 21	TW 22	TW 23	TW 24	TW 25	FD 3 GW
			Screened Interval (feet)	9.75-11.75	20-22	4.75-6.75	2.75-4.75	7.5-9.5	6.75-8.75	4-6	2.75-4.75	2.75-4.75
			Sample Date	3/5/2019	3/5/2019	3/7/2019	3/7/2019	3/7/2019	3/6/2019	3/7/2019	3/7/2019	3/7/2019
N/A	7.5	130	1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	2.2	50	1,2-Dichloroethane*	<0.27	<0.27	<0.32	<0.32	<0.32	<0.59	<0.32	<0.32	<0.32
70	N/A	N/A	cis-1,2-Dichloroethene	<5.0	3.6J	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
100	N/A	N/A	trans-1,2-Dichloroethene	<5.0	0.93J	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	490	N/A	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	15	110	Tetrachloroethylene (PCE)*	<0.27	<0.27	<0.51	<0.51	<0.51	<0.56	1.2J	<0.51	<0.51
200	7,400	13,000	1,1,1-Trichloroethane	0.31J	6.6	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	1.2	9.1	Trichloroethylene (TCE)*	4.2J	**65.1**	<0.60	<0.60	4.0J	1.5J	<0.60	<0.60	<0.60
2	0.15	2.1	Vinyl Chloride*	<0.22	<0.22	<0.27	<0.27	<0.27	<0.29	<0.27	<0.27	<0.27
N/A	N/A	N/A	Total VOCs	4.51	76.25	0.0	0.0	4.0	1.5	1.2	0.0	0.0

Screening Levels (µg/L)			Parameters	Off-Site Groundwater Sampling Locations (µg/L)								
MCL	VISL	RCG Residential GVL Screening Level	Sample Location	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well	Temporary Well
			Sample ID	TW 26	TW 26	TW 27	TW 28	TW 28	TW 29	TW 29	TW 30	TW 30
			Screened Interval (feet)	9.75-11.75	15-17	10.25-12.25	9.5-11.5	12.5-14.5	9.5-11.5	12.5-14.5	7.75-9.75	11-13
			Sample Date	3/6/2019	3/6/2019	3/6/2019	3/6/2019	3/6/2019	3/6/2019	3/6/2019	3/6/2019	3/6/2019
N/A	7.5	130	1,1-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	2.2	50	1,2-Dichloroethane*	<0.59	<0.59	<0.60	<0.56	<0.59	<0.59	<0.60	<0.56	<0.59
70	N/A	N/A	cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
100	N/A	N/A	trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	490	N/A	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	15	110	Tetrachloroethylene (PCE)*	<0.55	<0.56	10.1	<0.50	<0.55	3.7J	7.2	<0.50	<0.55
200	7,400	13,000	1,1,1-Trichloroethane	<5.0	2.4J	<5.0	<5.0	2.5J	<5.0	2.2J	<5.0	2.0J
5	1.2	9.1	Trichloroethylene (TCE)*	<0.62	2.7	**9.5**	1.6J	3.3J	6.6	**20.4**	<0.58	2.9J
2	0.15	2.1	Vinyl Chloride*	<0.29	<0.29	<0.25	<0.25	<0.29	<0.29	<0.25	<0.38	<0.29
N/A	N/A	N/A	Total VOCs	0.0	5.1	19.6	1.6	5.8	10.3	29.8	0.0	4.9

Table 4 (continued)
Off-Site Groundwater Sampling Analytical Results
Former Amphenol Facility
EPA ID # NCD 041 867 648
Franklin, IN 46131

Screening Levels (µg/L)			Parameters	Off-Site Groundwater Sampling Locations (µg/L)		Quality Assurance/Quality Control (µg/L)					
MCL	VISL	RSG Residential SVOL Screening Level	Sample Location	Temporary Well TW 30	Temporary Well	Equipment Blank	Equipment Blank	Equipment Blank	Trip Blank	Trip Blank	Trip Blank
			Sample ID	HD 2 GW	TW 01	EB 1 GW	EB 2 GW	EB 3 GW	TB 1 GW	TB 2 GW	TB 3 GW
			Screened Interval (feet)	11-15	9.25-10.25	NA	NA	NA	NA	NA	NA
			Sample Date	3/6/2019	3/6/2019	3/6/2019	3/6/2019	3/7/2019	3/6/2019	3/6/2019	3/7/2019
NA	7.6	130	1,4-Dichlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	9.2	60	1,2-Dichloroethane	<0.62	<0.62	<0.27	<0.62	<0.30	<0.27	<0.62	<0.30
70	NA	NA	cis-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
100	NA	NA	Trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	490	NA	Methylene chloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	15	11.0	Tetrachloroethylene (PCE)*	<0.79	<0.79	<0.27	<0.79	<0.81	<0.27	<0.79	<0.81
200	7,400	13,000	1,1,1-Trichloroethane	1.74	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
5	1.2	5.1	Trichloroethylene (TCE)*	2.14	2.84	<0.17	<0.58	<0.60	<0.17	<0.58	<0.60
2	0.16	0.1	Vinyl Chloride*	<0.35	<0.38	<0.27	<0.38	<0.77	<0.27	<0.38	<0.77
NA	NA	NA	Total VOCs	4.5	2.8	0.0	0.0	0.0	0.0	0.0	0.0

Notes:
1. All samples collected by IWM Consulting personnel and analyzed at Pace Analytical Services, LLC (Pace) in Indianapolis, IN.
2. All VOCs analyzed using US EPA Method 8260.
3. All results in µg/L.
4. NA = Not applicable (risk-based screening levels have not been developed).
5. NA = Not applicable.
6. MCL = Maximum Contaminant Level - The highest level of a contaminant that is allowed in drinking water determined by the U.S EPA.
7. VISL = Vapor Intrusion screening Level which corresponds to Resident Vapor Intrusion Screening Levels with a target cancer risk of 1x10-6, at a temperature of 25 degrees Celsius and a hazard quotient of 1 as modified by the U.S EPA, May 2016.
8. RSL = Indiana Department of Environmental Management (IDEM) Remediation Closure Guide dated March 22, 2012 (with corrections through July 9, 2012) and screening levels updated annually.
9. SVOL = Groundwater Vapor Exposure screening levels with a target cancer risk at 1x10-6 at a temperature of 12 degrees Celsius and a hazard quotient of 1 as published on the IDEM, March 2018.
10. NS = Not sampled, well was dry.
11. Monitoring well MW-8 is considered a background well.
12. EB 1 GW is a field duplicate of TW 2 and EB 2 GW is a field duplicate of TW 8.
13. Bolded concentrations exceed RSG Residential SVIE screening levels.
14. "<" Indicates non-detect concentration less than the adjusted method detection limit and adjusted reporting limit.
15. "J" Indicates estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
16. "R" Indicates that due to continuing calibration percent difference data were qualified as estimated, but will accepted as indicated - Pace Laboratory Data Consultants, Inc data validation reports dated November 2, 2019.

Appendix A

Detailed Bid Specifications

and

Preliminary Construction Plans

CITY OF FRANKLIN

BOARD OF WORKS AND SAFETY

BOB, SWINEHAMER, MEMBER

MELISSA JONES, MEMBER

MARK RICHARDS, P.E. CITY ENGINEER ERC

STEVE BARNETT, MAYOR

SANITARY SEWER RECONSTRUCTION PLANS

FORSYTHE STREET AND HAMILTON AVENUE

PROJECT LOCATION SHOWN BY
JOHNSON COUNTY

LATITUDE: 39°29'35" N LONGITUDE: 86°02'30" W

PROJECT DESCRIPTION

SANITARY SEWER RECONSTRUCTION ON FORSYTHE STREET AND HAMILTON AVENUE, LOCATED APPROXIMATELY 1.1 MILES EAST OF U.S. 31 & 0.5 MILES NORTH OF KING STREET, IN SECTION 13, T-12-N, R-4-E, FRANKLIN TOWNSHIP, JOHNSON COUNTY, INDIANA.

SCALE
1" = 2000'

PLANS PREPARED BY

CROSSROAD ENGINEERS, PC

TRANSPORTATION & DEVELOPMENT CONSULTANTS
2417 SHERMAN DRIVE
BEECH GROVE, IN 46107
(317) 780-1555
CROSSROADENGINEERS.COM

INDIANA DEPARTMENT OF TRANSPORTATION
STANDARD SPECIFICATIONS DATED 2018
TO BE USED WITH THESE PLANS

PRELIMINARY NOT FOR CONSTRUCTION

PLANS PREPARED BY: CrossRoad Engineers, P.C. (317) 780-1555 PHONE NUMBER

CERTIFIED BY: _____ 5/01/2019 DATE

APPROVED FOR LETTING: _____ CITY OF FRANKLIN DATE

DESIGNATION	
SURVEY BOOK	SHEETS 1 of 17
CONTRACT -	PROJECT -

UTILITIES

WATER
INDIANA AMERICAN WATER COMPANY
153 N. EMERSON AVE.
GREENWOOD, IN 46143
JOSH GUY
(317) 743-9184
joshua.guy@amwater.com

PHONE
CENTURY LINK
50 N. JACKSON ST.
FRANKLIN, IN. 46131
EDDIE FIELDS
(317) 736-4863
paula.fields@centurylink.com

ELEC. (TRANSMISSION)
DUKE ENERGY
1000 E. MAIN ST. (WP922)
PLAINFIELD, IN 46168
JASON KEENAN
(317) 838-1513
DEI-Tline-Coord@duke-energy.com

GAS
VECTREN ENERGY
600 INDUSTRIAL DRIVE
FRANKLIN, IN 46131
JONATHAN EASTHAM
(765) 287-1119
jonathan.eastham@centerpointenergy.com

FIBER OPTIC
METRONET
3701 COMMUNICATIONS WAY
EVANSVILLE, IN 47715
MARK DECKARD
(812) 253-2169
Mark.deckard@metronetinc.com

ELEC. (DISTRIBUTION)
DUKE ENERGY
2615 N. MORTON STREET
FRANKLIN, IN. 46131
GABE GIBSON
(317) 736-2047
gabe.gibson@duke-energy.com

CATV
COMCAST
1600 W. FOUNTAIN DR.
BLOOMINGTON, IN 47401
STEVE McARTOR
(812) 822-3267
Steve_mcartor@cable.comcast.com

SEWER
CITY OF FRANKLIN DPW
796 S. STATE STREET
FRANKLIN, IN 46131
SALLY BROWN
(317) 736-3640
sbrown@franklin.in.gov

REVISIONS

SHEET NO	DATE	REVISED

GENERAL NOTES

*	The exact location of all utilities shall be field verified by the contractor prior to starting any work.
*	Sheet signs and square posts shall not be ordered until the exact number of signs and length of each post have been determined upon field investigation.

INDEX

SHEET NO.	DRAWINGS INDEX
1	TITLE SHEET
2	INDEX SHEET AND GENERAL NOTES
3	TYPICAL CROSS SECTIONS
4	MAINTENANCE OF TRAFFIC
5-8	ROAD PLAN AND PROFILES
9-12	CONSTRUCTION DETAILS
13-15	EROSION CONTROL SHEETS/STORMWATER POLLUTION PREVENTION PLAN
16-17	MISCELLANEOUS TABLES AND DETAILS
XS1-XS20	CROSS SECTIONS

Indiana 811
Know what's below. 811 before you dig.

PRELIMINARY NOT FOR CONSTRUCTION	RECOMMENDED FOR APPROVAL: _____ DESIGN ENGINEER 5/01/19 DATE	CITY OF FRANKLIN	HORIZONTAL SCALE: BRIDGE FILE
			VERTICAL SCALE: DESIGNATION
	DESIGNED: B.S. DRAWN: K.F.	INDEX SHEET	SURVEY BOOK: SHEETS 2 of 17
	CHECKED: T.A. CHECKED: B.S.		CONTRACT: PROJECT

*Slopes are Typically 4:1
Maximum 3:1
(See Cross Sections)

LEGEND

(D) HMA for Approaches
165#/Syd. HMA Surface Type B on
385#/Syd. HMA Intermediate Type B on
6" Compacted Aggregate, No. 53, Base

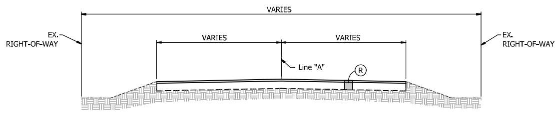
(G) Compacted Aggregate for Approaches
12" Compacted Aggregate, No. 53, Base

(K) HMA Pavement
165#/Syd. HMA Surface, Type B, 9.5 mm on
330#/Syd. HMA Intermediate, Type B, 19.0 mm on
660#/Syd. HMA Base, Type B, 25.0 mm on
12" Compacted Aggregate, No. 53, Base on
Geogrid, Type IB

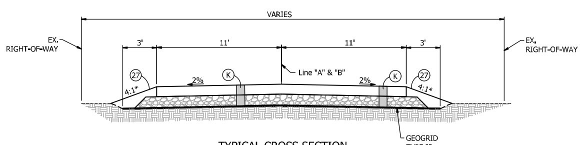
(R) Mill/Overlay
165#/Syd. HMA, Surface Type B, 9.5 mm on
Viable Depth Asphalt Milling

(16) Curb & Gutter Roll Curb Integral

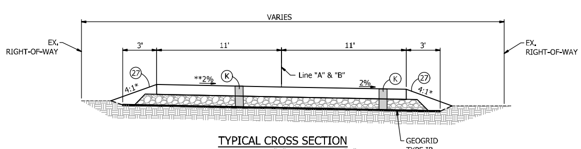
(27) Mulched Seeding, U



TYPICAL CROSS SECTION
STA. 100+40.00 "A" to 106+83.10 "A"

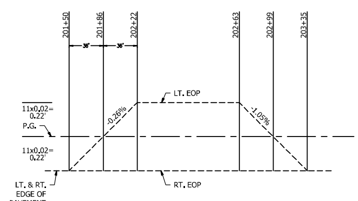


TYPICAL CROSS SECTION
STA. 106+83.10 "A" to 115+67.08 "B" &
STA. 200+00.00 "B" to 201+50.00 "B" &
STA. 203+35.00 "B" to 204+75.00 "B"

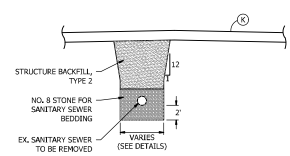


TYPICAL CROSS SECTION
STA. 202+22.00 "A" to 202+63.00 "B"

**NOTE: PAVEMENT TILT SECTION FROM STA. 201+50.00 "B" TO STA. 202+22.00 "B" AND STA. 202+63.00 "B" TO STA. 203+35.00 "B", SEE DETAIL (THIS SHEET)

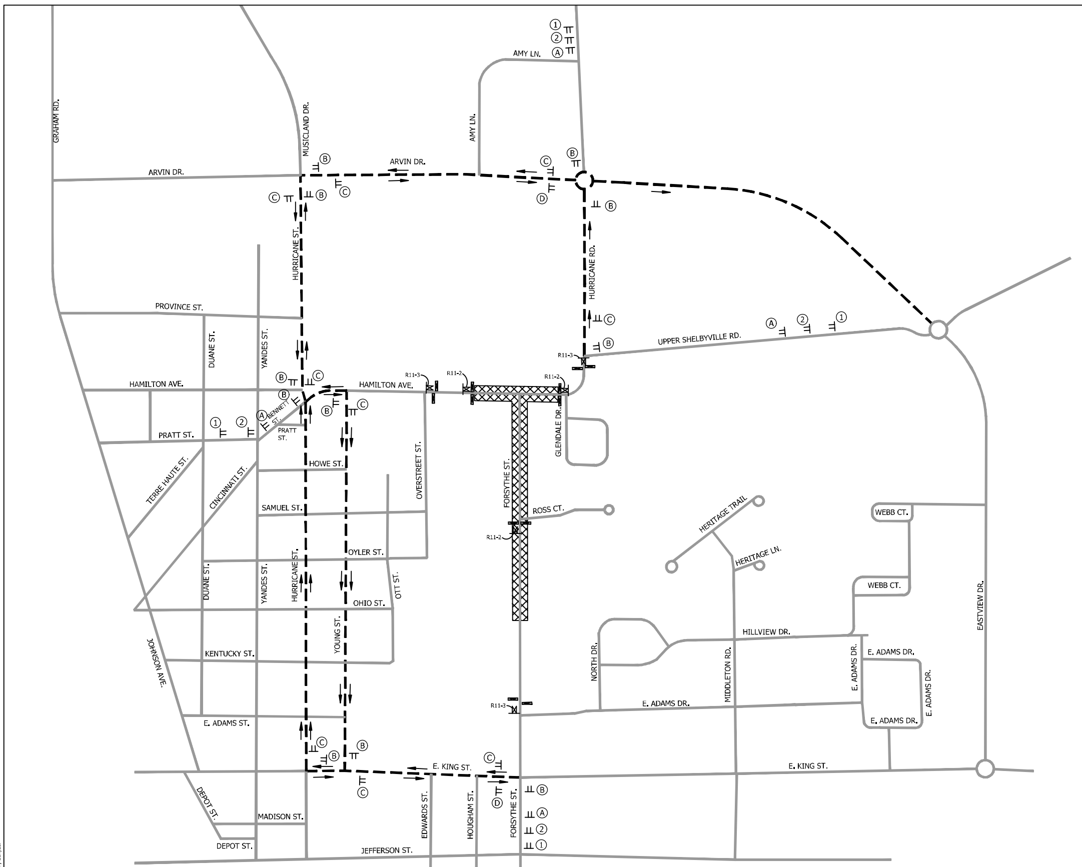


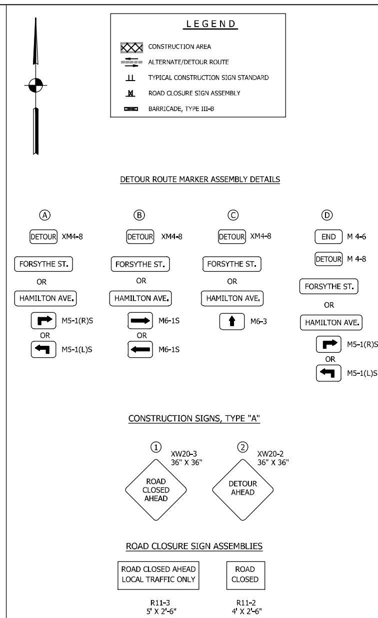
PAVEMENT TILT SECTION
STA. 201+50.00 "B" to 203+35.00 "B"



TYPICAL CONTAMINATED SOIL REMOVAL TRENCH

PRELIMINARY NOT FOR CONSTRUCTION	RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER 5/01/19 DATE		CITY OF FRANKLIN	HORIZONTAL SCALE: 1/4" = 1'-0"	BRIDGE FILE
				VERTICAL SCALE: N/A	DESIGNATION: -
	DESIGNED: D.S.	DRAWN: K.F.	TYPICAL CROSS SECTIONS	SURVEY BOOK	SHEETS: 3 of 17
	CHECKED: T.N.	CHECKED: D.S.		CONTRACT: -	PROJECT: -





NOTE: FOR SPACING OF DETOUR ROUTE MARKER ASSEMBLIES AND CONSTRUCTION SIGNING, SEE INDOT STANDARD DRAWING E 801-TCDT-01

PRELIMINARY NOT FOR CONSTRUCTION	RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER 5/01/19 DATE	CITY OF FRANKLIN	HORIZONTAL SCALE: Not to Scale	BRIDGE FILE
			VERTICAL SCALE	DESIGNATION: -
	DESIGNED: D.S. / DRAWN: K.F.	MAINTAINENCE OF TRAFFIC	SURVEY BOOK	SHEETS: 4 of 17
	CHECKED: T.N. / CHECKED: D.S.		CONTRACT: -	PROJECT: -

EROSION CONTROL PLAN INDEX

PLAN ELEMENTS

A1 RULE 5 EROSION CONTROL PLAN INDEX

ELEMENT	SHEET	ELEMENT	SHEET	ELEMENT	SHEET	ELEMENT	SHEET
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

A2 11 BY 17 INCH PLAT
The 11x17 Inch Plat has been submitted to the respective Soil and Water Conservation District.

A3 PROJECT NARRATIVE
The project involves the reconstruction of the sanitary sewer, water mains and roadways near the intersection of Forsythe St. and Hamilton Ave. The existing drainage patterns will be maintained and all runoff will continue to sheet flow south towards Hurricane Creek. Construction is anticipated to begin in the Summer of 2019.

A4 VICINITY MAP
The Vicinity Map is located in the right half of the Erosion Control Details.

A5 LEGAL DESCRIPTION
See the Title Sheet (sheet 1) for the project location.

A6 LOCATION OF ALL LOTS AND PROPOSED SITE IMPROVEMENTS
All proposed improvements are shown on the Construction Details and Erosion Control Plans.

A7 HYDROLOGIC UNIT CODE

A8 STATE AND/OR FEDERAL WATER QUALITY PERMITS
An IDEM Rule 5 Notice of Intent will be obtained for this project.

A9 STORMWATER DISCHARGE
Stormwater discharge shall leave the site at the south end of Forsythe St.

A10 WETLANDS, LAKES AND WATER COURSES
There are no potential wetland areas located within the project site, nor shall any potential wetland areas be disturbed as a result of construction.

A11 RECEIVING WATERS
The receiving water for this project is Hurricane Creek.

A12 POTENTIAL DISCHARGES TO GROUND WATER
There are no potential locations where stormwater may enter the groundwater.

A13 100 YEAR FLOOD PLAINS, FLOODWAYS AND FLOODWAY FRINGES

A14 POST-CONSTRUCTION PEAK DISCHARGE

A15 ADJACENT LANDUSE
The adjacent land uses are single family residential homes as shown on the Erosion Control Plan.

A16 DISTURBED AREAS
The construction limits (boundary of disturbed area) are shown on the Erosion Control Plan.

A17 EXISTING VEGETATIVE COVER
The existing site is public right-of-way with grass with asphalt roads.

STORMWATER POLLUTION PREVENTION - DURING CONSTRUCTION

STORMWATER POLLUTION PREVENTION - POST CONSTRUCTION

MONITORING AND MAINTENANCE GUIDELINES

CONSTRUCTION SEQUENCE & SCHEDULE OF EROSION CONTROL IMPLEMENTATION

GENERAL EROSION CONTROL REQUIREMENTS FOR COMPLIANCE WITH IDEM GENERAL PERMIT RULES FOR STORM WATER RUNOFF FROM CONSTRUCTION SITES

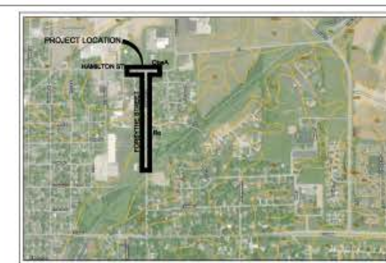
ADDITIONAL MATERIAL HANDLING AND SPILL PREVENTION PLAN

A. PURPOSE

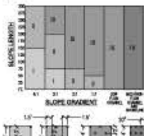
B. PREVENTION AND READINESS

C. SPILL RESPONSE

D. THE FOLLOWING PROCEDURES AND PRACTICES WILL HELP PREVENT UNNECESSARY SPILLS



Johnson County, Indiana (IN081)



SLOPE GRADIENT

EROSION CONTROL BLANKET STAPLE PATTERN DETAIL

SOIL MAP AND DESCRIPTION
NOT TO SCALE

VICINITY MAP
NOT TO SCALE

ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED BY STATE OR COUNTY OFFICIALS

PRELIMINARY NOT FOR CONSTRUCTION	RECOMMENDED FOR APPROVAL: DESIGN ENGINEER 5/01/19 DATE	CITY OF FRANKLIN	HORIZONTAL SCALE	BRIDGE FILE
			VERTICAL SCALE	DESIGNATION -
	DESIGNED: D.S. DRAWN: K.F.	STORMWATER POLLUTION PREVENTION PLAN	SURVEY BOOK	SHEETS 15 of 17
	CHECKED: T.A. CHECKED: D.S.		CONTRACT -	PROJECT -

STRUCTURE DATA TABLE

STRUCTURE NUMBER	LOCATION: STATION	LEFT	CENTER	RIGHT	SIZE	PIPE TYPE	MANHOLE, INLET, CATCH BASIN, OR SPECIALTY STRUCTURE	LENGTH	SKEW	FLOW LINE: COVER	FLOW LINE: UP STREAM	FLOW LINE: DOWN STREAM	#8 STONE BEDDING	BACKFILL METHOD	STRUCTURE BACKFILL		REMARKS
					IN.			LFT		FT	ELEV.	ELEV.	CYD		TYPE	CYD	
FORSYTHE ST. SEWER & ROAD RECONSRUCTION																	
	LINE "A"																
EX-1	101+62	X			-	-	Existing Sanitary Manhole	-		-	714.13	713.64	-	-	-	-	Furnish watertight casting and adjust to grade
EX-2	104+14	X			-	-	Existing Sanitary Manhole	-		-	714.65	714.18	-	-	-	-	Furnish watertight casting and adjust to grade
EX-3	106+76	X			-	-	Existing Sanitary Manhole	-		-	715.94	714.65	-	-	-	-	Furnish watertight casting and adjust to grade
SS-1	107+38	X			-	-	Sanitary Manhole	-		-	716.38	716.06	-	-	-	-	Connect to ex. 12" and 8" sanitary sewer mains. Watertight casting required
SS-2	109+39		X		12	SDR-35	Sanitary Manhole	284			717.34	717.48		1	1		Connect to ex. 12" sanitary sewer main
SS-3	112+76		X		10	SDR-35	Sanitary Manhole	336			720.42	717.51		1	1		
SS-4				X	10	SDR-35	Sanitary Manhole	292			725.61	720.52		1	1		
	LINE "B"																
SS-5	200+09		X		8	SDR-35	Sanitary Manhole	257			726.94	725.78		1	1		Connect to ex. 8" sanitary sewer main
SS-6	204+22	X			8	SDR-35	Sanitary Manhole	157			727.48	726.77		1	1		
SS-7	204+61	X			8	SDR-35	Sanitary Manhole	40			727.76	727.58		1	1		Connect to ex. 8" sanitary sewer main

PAVEMENT QUANTITIES AND APPROACH TABLE

LOCATION	DESCRIPTION (APPROACH TYPE OR CLASS)	WIDTH	LENGTH	RADII	GRADE 1	GRADE 2	HMA MATERIALS: HMA SURFACE, TYPE D, 9.5 mm	HMA INTERMEDIATE, TYPE B, 19.0 mm		HMA BASE, TYPE C, 25.0 mm	HMA WEDGE & LEVEL, TYPE D	ASPHALT FOR TACK COAT	ASPHALT MILLING	COMPACTED AGGREGATE FOR BASE NO. 53, DEPTH 12"	GEOGRID, TYPE IB	REMARKS
							165	330	385	660	165					
		FT	FT	FT	%	%	TONS	TONS	TONS	TONS	TONS	TONS	SYS	TONS	SYS	
FORSYTHE ST. SEWER & ROAD RECONSTRUCTION																
Line "A"																
100+65 to 106+83	Mill and Overlay, R	Varies	618				119.6					0.36	1449.4			
106+83 to 115+56	Local Road, K	22	873				186.0	386.8		805.7		1.20		1752.8	2813.9	
107+17	Public Road Approach	25.5	16.3	20 & 20			5.5	11.0		24.3		0.04		45.9	66.5	
Line "B"																
199+80 to 200+00	Mill and Overlay, R	22	20				4.0						24.4			
200+00 to 204+75	Local Road, K	22	475				95.8	200.3		418.0		0.62		915.3	1477.8	
204+75 to 204+85	Mill and Overlay, R	22	10				2.0						24.4			
	TOTALS						412.9	598.1		1248.0		2.22	1498.2	2714.0	4358.2	

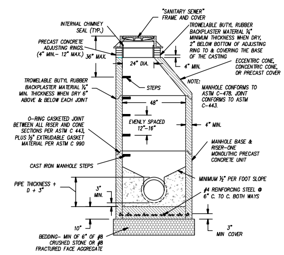
SHEET SIGN & POST SUMMARY

SIGN: PLAN SHEET NO. / LINE	SIGN LOCATION (STA.)	SIGN CODE	SIGN SIZE (IN x IN)	GROUND - MOUNTED SIGN AREA (ft²): 0.080"	0.100"	0.125"	POST: 2 1/4" X 2 1/4" - 12 GA. (TYPE 1) REINFORCED ANCHOR POST LENGTH (FT.): 1	TOTAL	Remarks
FORSYTHE ST. SEWER & ROAD RECONSTRUCTION									
LINE "A"	113+35 LT	R2-1	24 X 30	5.00			8.5	8.5	30 MPH
LINE "A"	115+22 LT	R5-2	24 X 24	4.00			8	8	
LINE "A"	115+95 RT	R1-1	30 X 30	6.25			8.5	8.5	
LINE "B"	202+50 LT	D1					8.5	8.5	Relocate ex. street sign on new post
		D1							Relocate ex. street sign on new post
		W1-7	48 X 24		8.00				
			TOTALS =	15.25	8.00	0.00		33.5	

SWPP CONTROL MEASURES

LOCATION	LT/RT	TEMPORARY SILT FENCE	TEMPORARY CHECK DAM: REVETMENT RIPRAP	FILTER STONE	TEMP GEOTEXTILE	TEMPORARY INLET PROTECTION	TEMPORARY SEED (150 LBS/AC)	TEMPORARY MULCH (2.5 TONS/AC)	TEMPORARY CONSTRUCTION ENTRANCE: TEMPORARY GEOTEXTILE	NO. 2 STONE
		LFT	TON	TON	SYS	EA	LBS	TON	SYS	TON
FORSYTHE ST. SEWER & ROAD RECONSTRUCTION										
(3) CONSTRUCTION ENTRANCES									467.0	208.0
ENTIRE DISTURBED AREA							23.0	1.0		
LINE "A"										
107+02 TO 109+30	LT	226								
107+58 TO 108+47	RT	89								
108+70 TO 109+33	RT	63								
109+50 TO 109+92	RT	42								
110+00 TO 112+70	LT	70								
110+11 TO 110+82	RT	71								
110+97 TO 111+59	RT	62								
111+23 TO 111+68	RT	45								
111+58 TO 112+38	RT	40								
112+00 TO 112+54	LT	54								
112+55 TO 113+12	RT	57								
LINE "B"										
200+68 TO 201+13	RT	25								
203+00 TO 203+48	RT	48								
204+53 TO 204+75	RT	22								
TOTAL		521					23.0	1.0	467.0	208.0

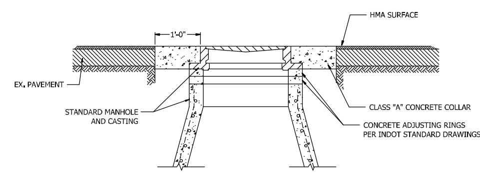
PRELIMINARY NOT FOR CONSTRUCTION	RECOMMENDED FOR APPROVAL: DESIGN ENGINEER 5/01/20 DATE	CITY OF FRANKLIN	HORIZONTAL SCALE	BRIDGE FILE
			VERTICAL SCALE	DESIGNATION -
	DESIGNED: D.S. DRAWN: K.F.	MISCELLANEOUS TABLES	SURVEY BOOK	SHEETS 16 of 17
	CHECKED: T.A. CHECKED: D.S.		CONTRACT -	PROJECT -



STANDARD SANITARY MANHOLE FOR PIPE SIZES 8"-24"

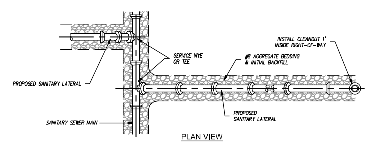
NOT TO SCALE

NOTES:
1. ALL NEW SANITARY MANHOLES SHALL INCLUDE A CLASS "A" CONCRETE COLLAR/PAD AS SHOWN ON DETAIL "A".

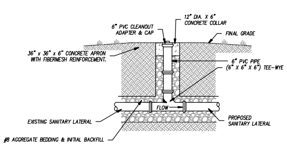


NOTES:
ADJUST MANHOLES UPWARD WITH ADJUSTING RINGS UNDER FRAME, SLOPE MANHOLE FRAME AS REQUIRED TO MATCH SLOPE OF STREET, FINAL MANHOLE ADJUSTMENTS SHALL BE MADE AFTER HMA SURFACE PAVING.

MANHOLE ADJUSTMENT DETAIL

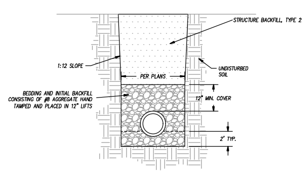


PLAN VIEW



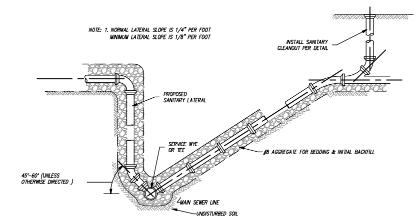
SANITARY LATERAL CLEANOUT TYPE 1 DETAIL

NOT TO SCALE



SANITARY SEWER BEDDING & BACKFILL DETAIL

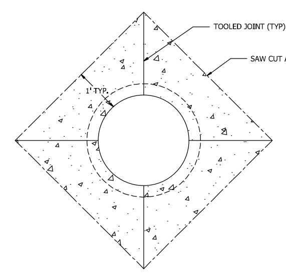
NOT TO SCALE



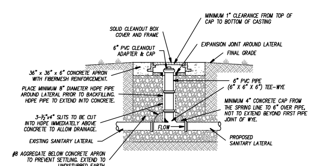
SECTION VIEW

SANITARY LATERAL SERVICE CONNECTION DETAIL

NOT TO SCALE



DETAIL "A"

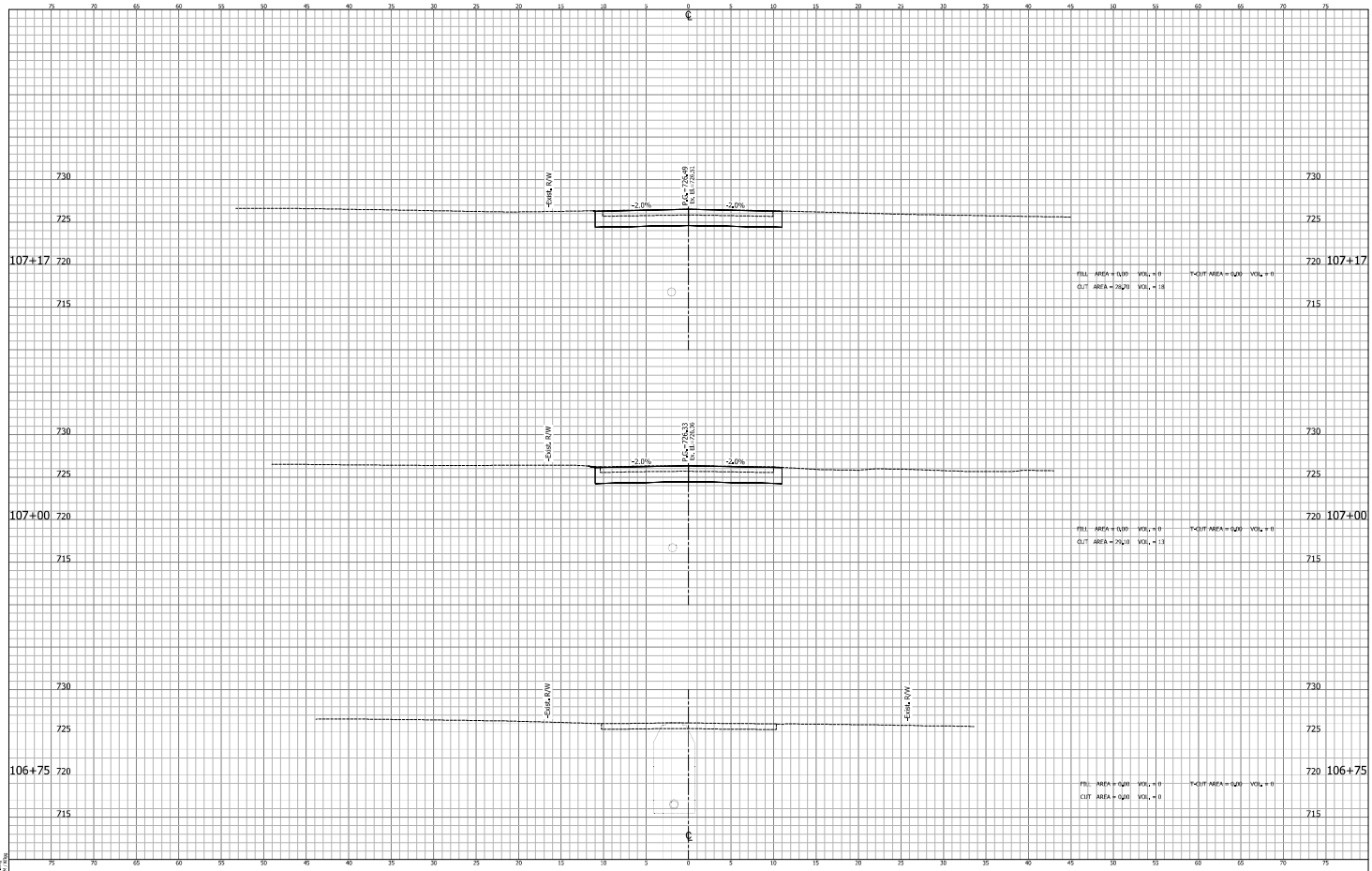


SANITARY LATERAL CLEANOUT TYPE 2 DETAIL

NOT TO SCALE

NOTES:
1. ADJUST MANHOLE AFTER PAVING OPERATION IS COMPLETE.
2. THE CONTRACTOR SHALL MARK THE LOCATION OF EVERY MANHOLE PRIOR TO PAVING BY A METHOD APPROVED BY THE ENGINEER. THIS WORK SHALL BE INCIDENTAL TO THE MANHOLE ADJUSTMENT.
3. SAW CUT SQUARE OPENING AS SHOWN IN DETAIL "A". THE MANHOLE CENTERED IN THE MIDDLE OF THE OPENING.
4. REMOVE ALL PAVEMENT MATERIAL AND ADJUST THE MANHOLE TO THE TOP OF THE NEW PAVEMENT. IN NO CASE SHALL THE MANHOLE BE ABOVE THE PAVEMENT. THE REMOVAL SHALL INCLUDE ALL TYPES OF MATERIALS, AND NO ADDITIONAL COMPENSATION WILL BE GIVEN DEPENDING ON THE TYPE OF MATERIAL.
5. FILL VOID WITH MINIMUM OF 8" OF CONCRETE. TROWEL OFF CONCRETE FLUSH WITH NEW PAVEMENT AND BROOM FINISH. MANHOLE FRAME SHALL BE RECESSED FROM CONCRETE NO MORE THAN ⅜".
6. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL MANHOLES BEING PAVED OVER OR AROUND. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES OCCURRED DURING CONSTRUCTION.
7. CONTRACTOR SHALL CLEAN OUT ANY CONSTRUCTION DEBRIS INSIDE THE MANHOLE DURING THE ADJUSTMENT OF THE CASTING. THIS WORK SHALL BE INCIDENTAL TO THE MANHOLE ADJUSTMENT.

PRELIMINARY NOT FOR CONSTRUCTION	RECOMMENDED FOR APPROVAL ______ DESIGN ENGINEER 5/01/19 DATE		CITY OF FRANKLIN	HORIZONTAL SCALE	BRIDGE FILE
				VERTICAL SCALE	DESIGNATION -
	DESIGNED: D.S.	DRAWN: K.F.	MISCELLANEOUS DETAILS	SURVEY BOOK	SHEETS 17 of 17
	CHECKED: T.N.	CHECKED: D.S.		CONTRACT -	PROJECT -



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE

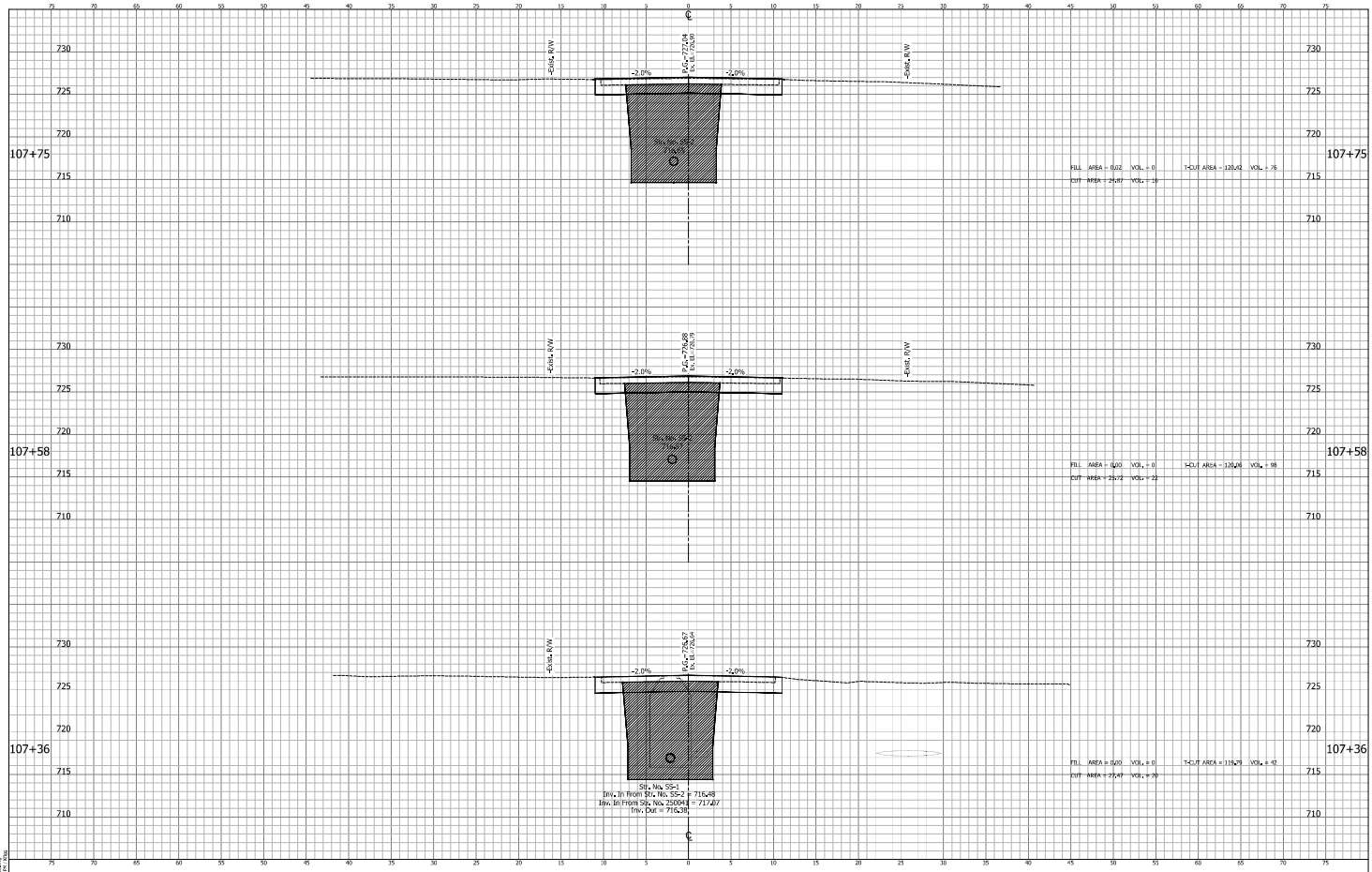
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: D.S.

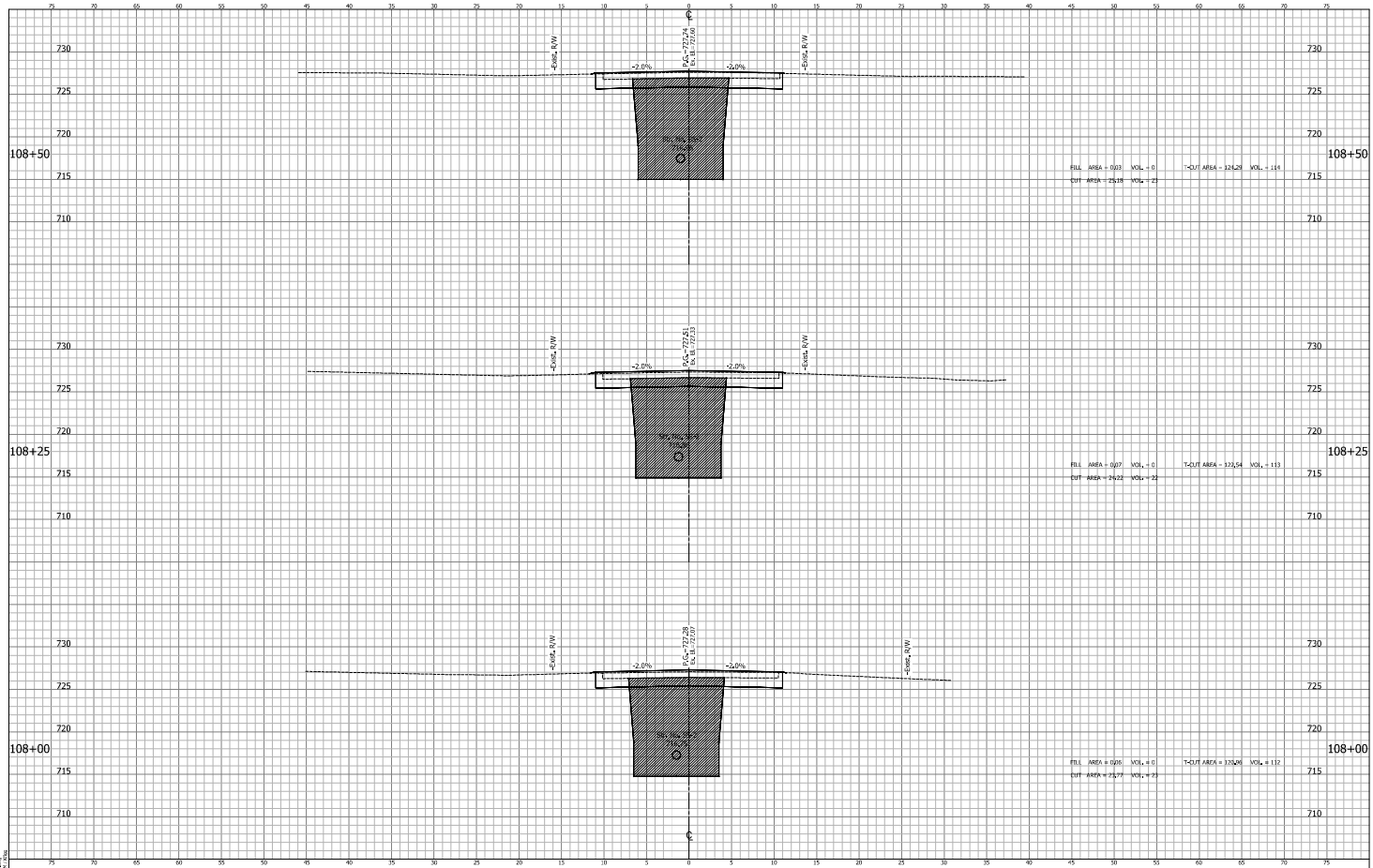
CITY OF FRANKLIN

CROSS SECTIONS
LINE "A"

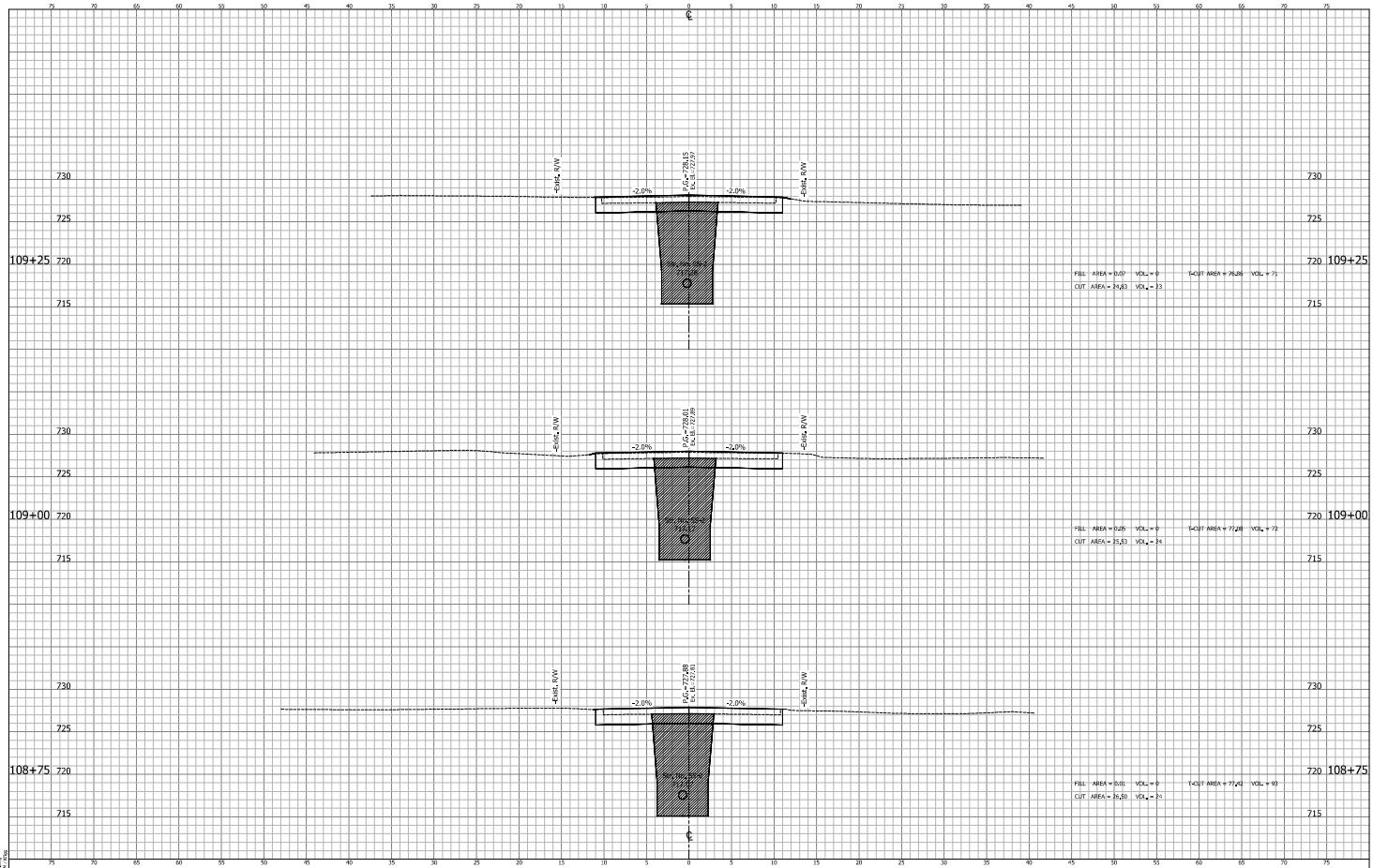
HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEETS
	XS1 of XS20
CONTRACT	PROJECT



	RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5 / BRIDGE FILE
	DESIGNED: D.S. DRAWN: K.F.	CROSS SECTIONS LINE "A"	VERTICAL SCALE 1"=5 / DESIGNATION
	CHECKED: T.A. CHECKED: D.S.		SURVEY BOOK / SHEETS: XS2 of XS20
			CONTRACT: / PROJECT



	RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5 / BRIDGE FILE
	DESIGNED: D.S. DRAWN: K.F.	CROSS SECTIONS LINE "A"	VERTICAL SCALE 1"=5 / DESIGNATION
	CHECKED: D.S. CHECKED: D.S.		SURVEY BOOK / SHEETS XS3 of XS20
			CONTRACT / PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE

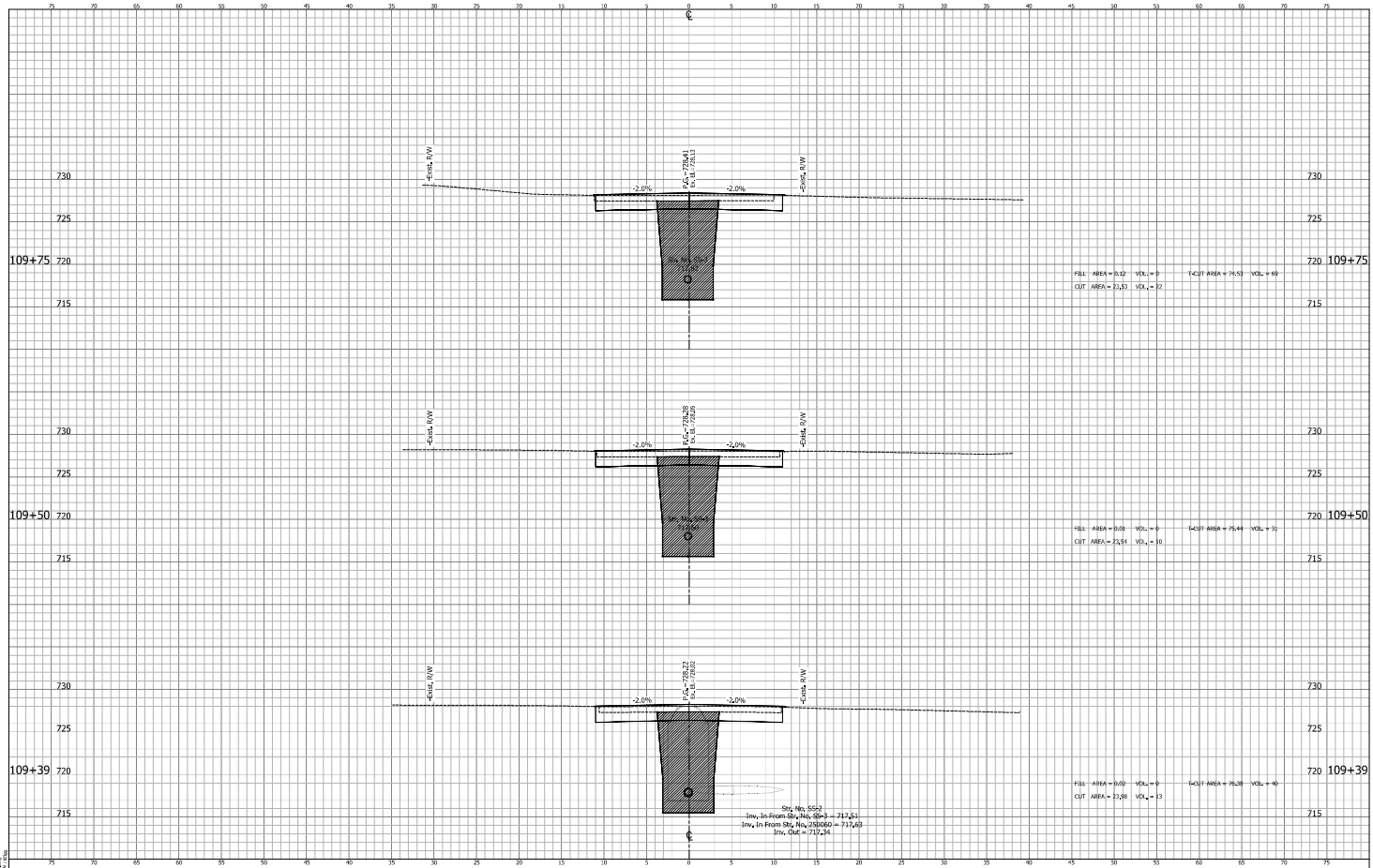
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: D.S.

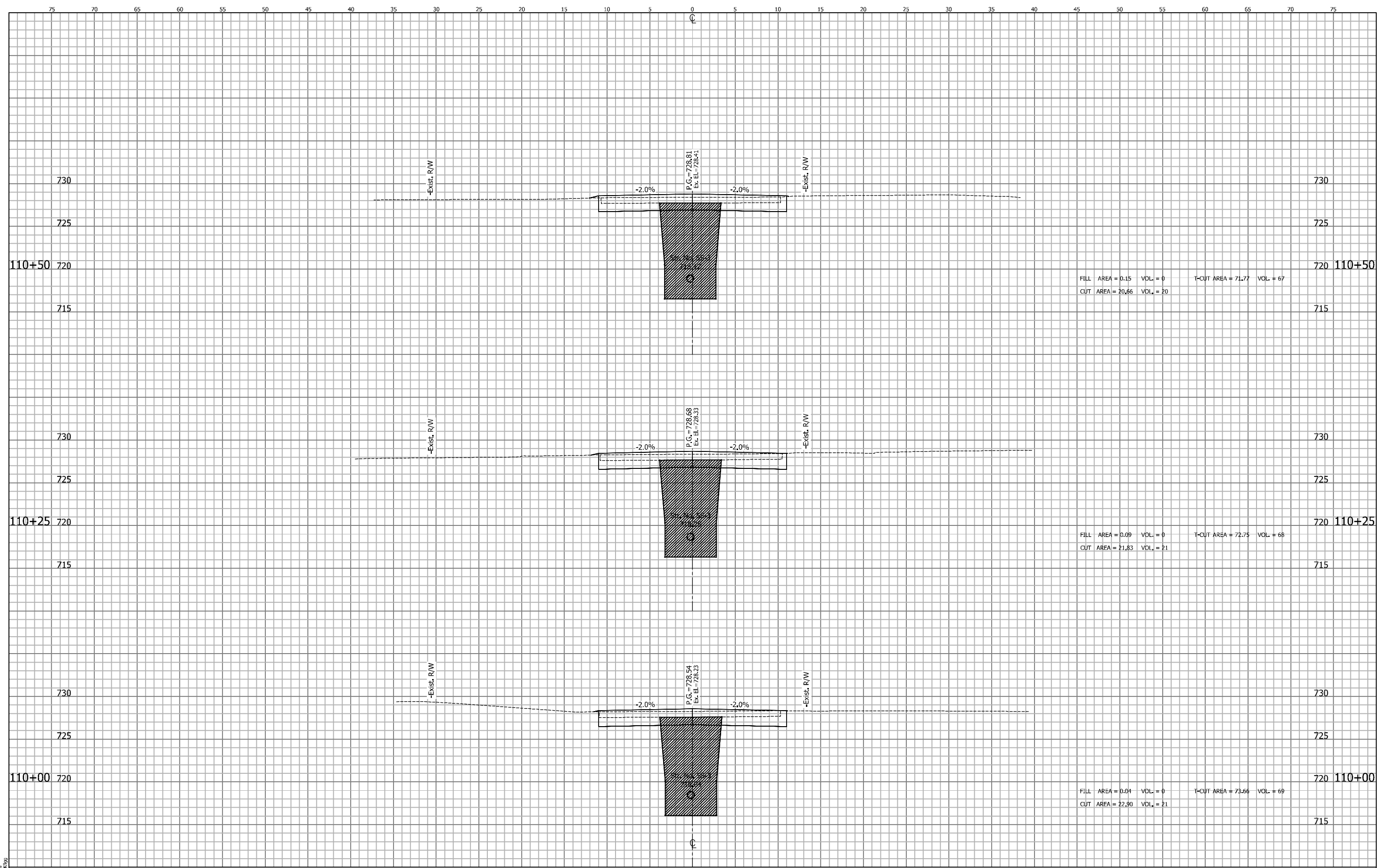
CITY OF FRANKLIN

CROSS SECTIONS
LINE "A"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEETS
	XS4 of XS20
CONTRACT	PROJECT

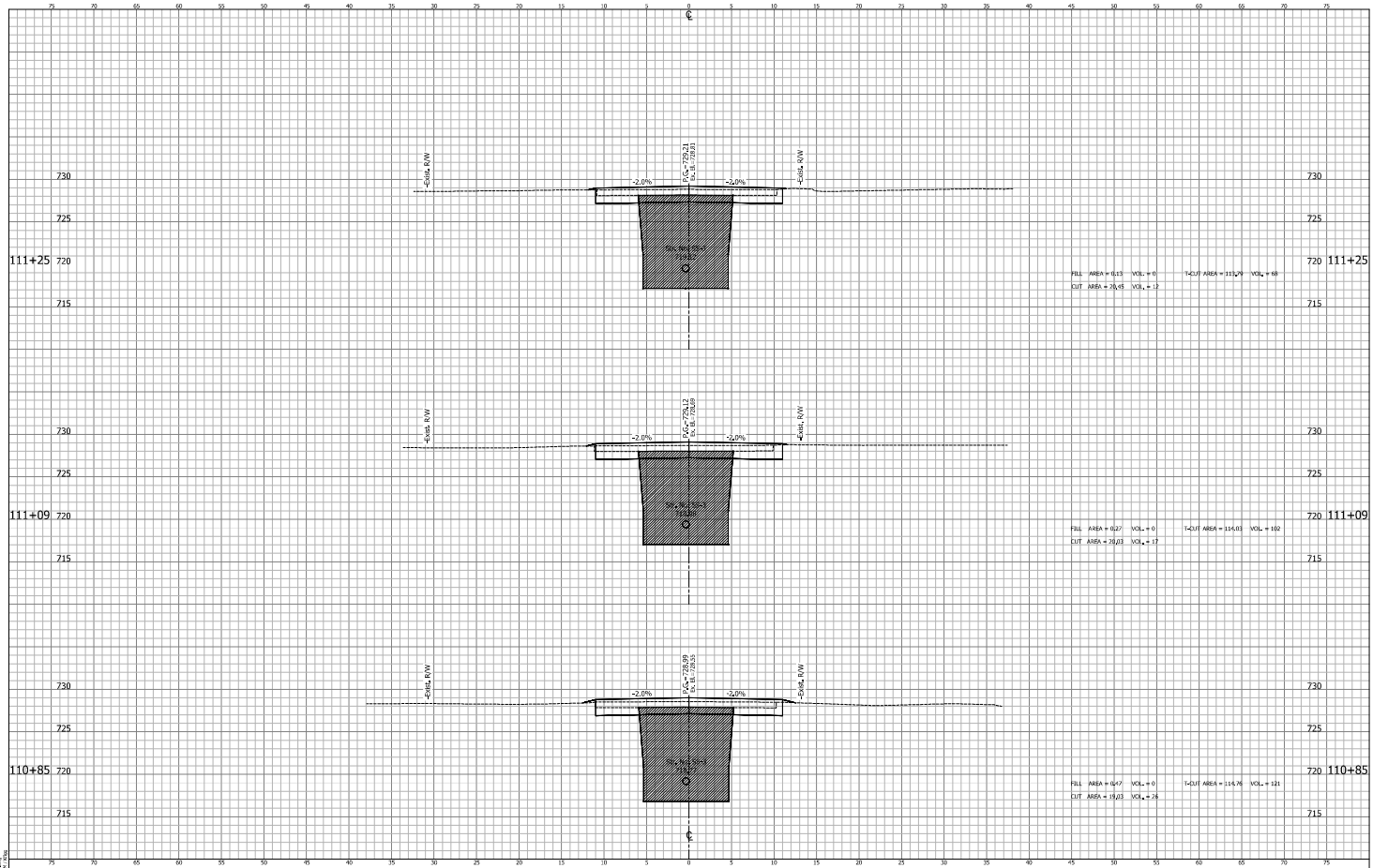


	RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5 / BRIDGE FILE
	DESIGNED: D.S. / DRAWN: K.F.	CROSS SECTIONS LINE "A"	VERTICAL SCALE 1"=5 / DESIGNATION
	CHECKED: T.A. / CHECKED: T.A.		SURVEY BOOK / SHEETS: XS5 of XS20
			CONTRACT: / PROJECT



RECOMMENDED FOR APPROVAL ______ DESIGN ENGINEER DATE		CITY OF FRANKLIN
DESIGNED: D.S.	DRAWN: K.F.	CROSS SECTIONS LINE "A"
CHECKED: T.N.	CHECKED: D.S.	

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEETS
	XS6 of XS20
CONTRACT	PROJECT



RECOMMENDED FOR APPROVAL

DESIGN ENGINEER DATE

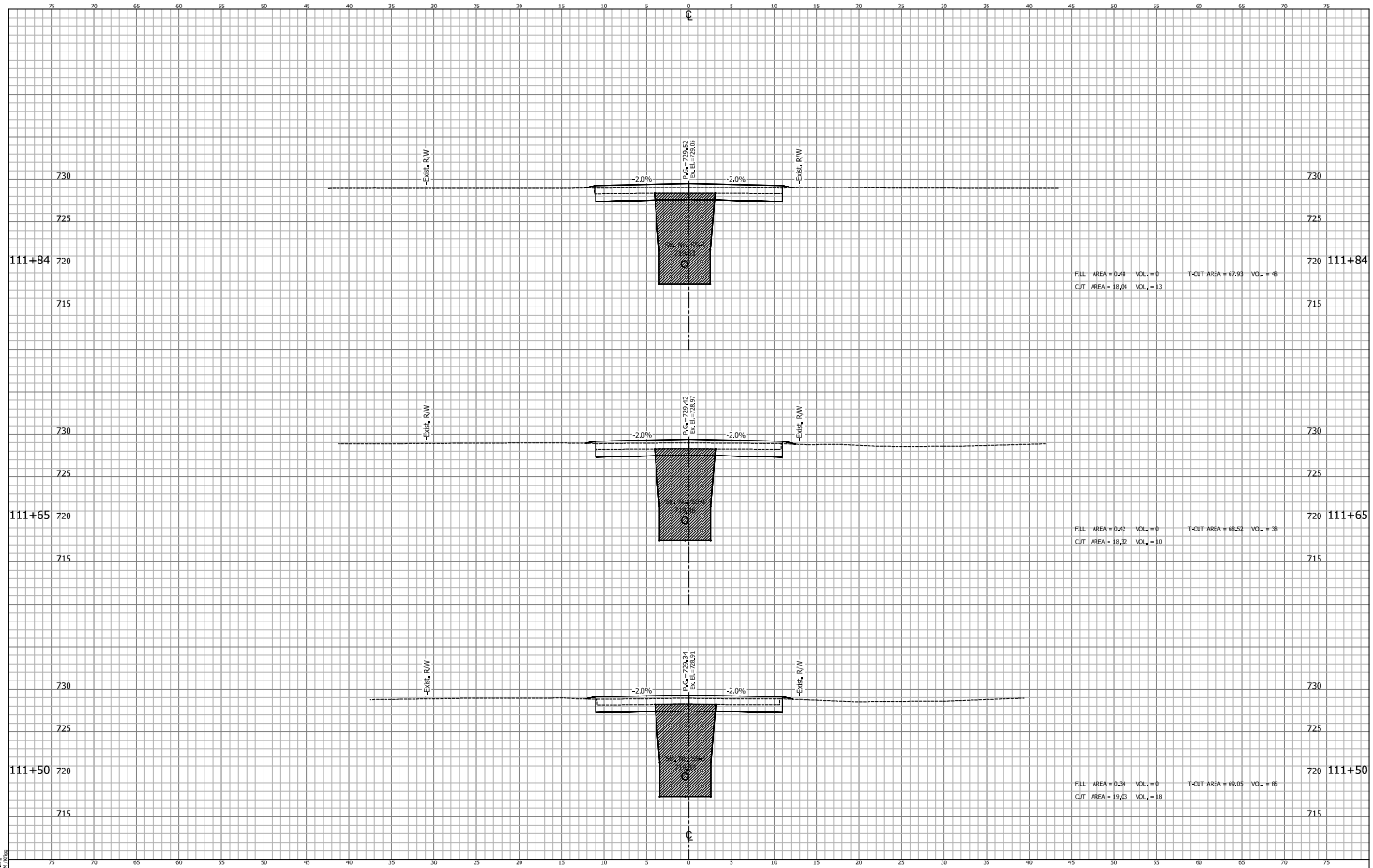
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: T.A.

CITY OF FRANKLIN

CROSS SECTIONS
LINE "A"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEETS
	XS7 of XS20
CONTRACT	PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

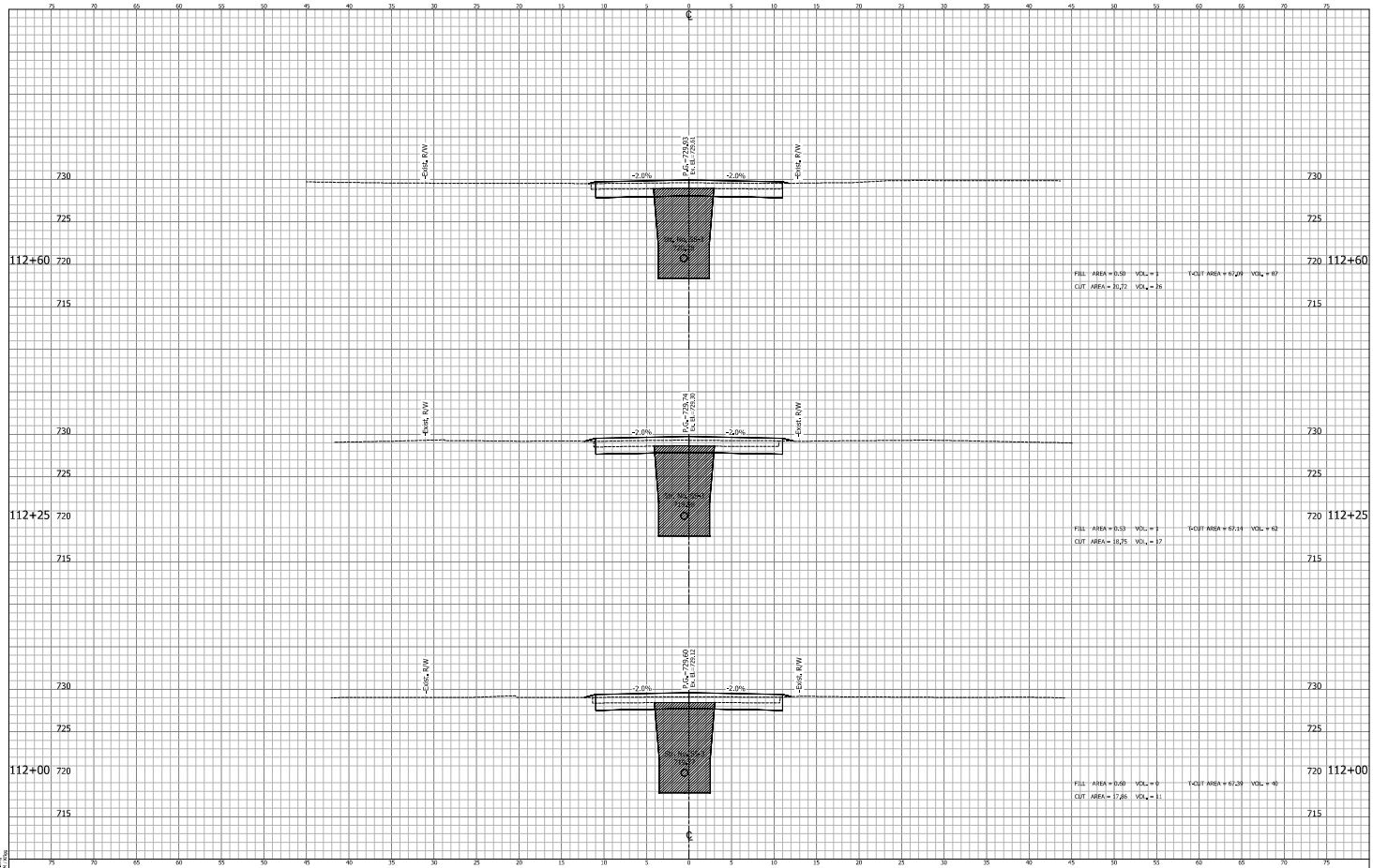
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: T.A.

CITY OF FRANKLIN

CROSS SECTIONS
LINE "A"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEET'S
	XSB of XS20
CONTRACT:	PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE

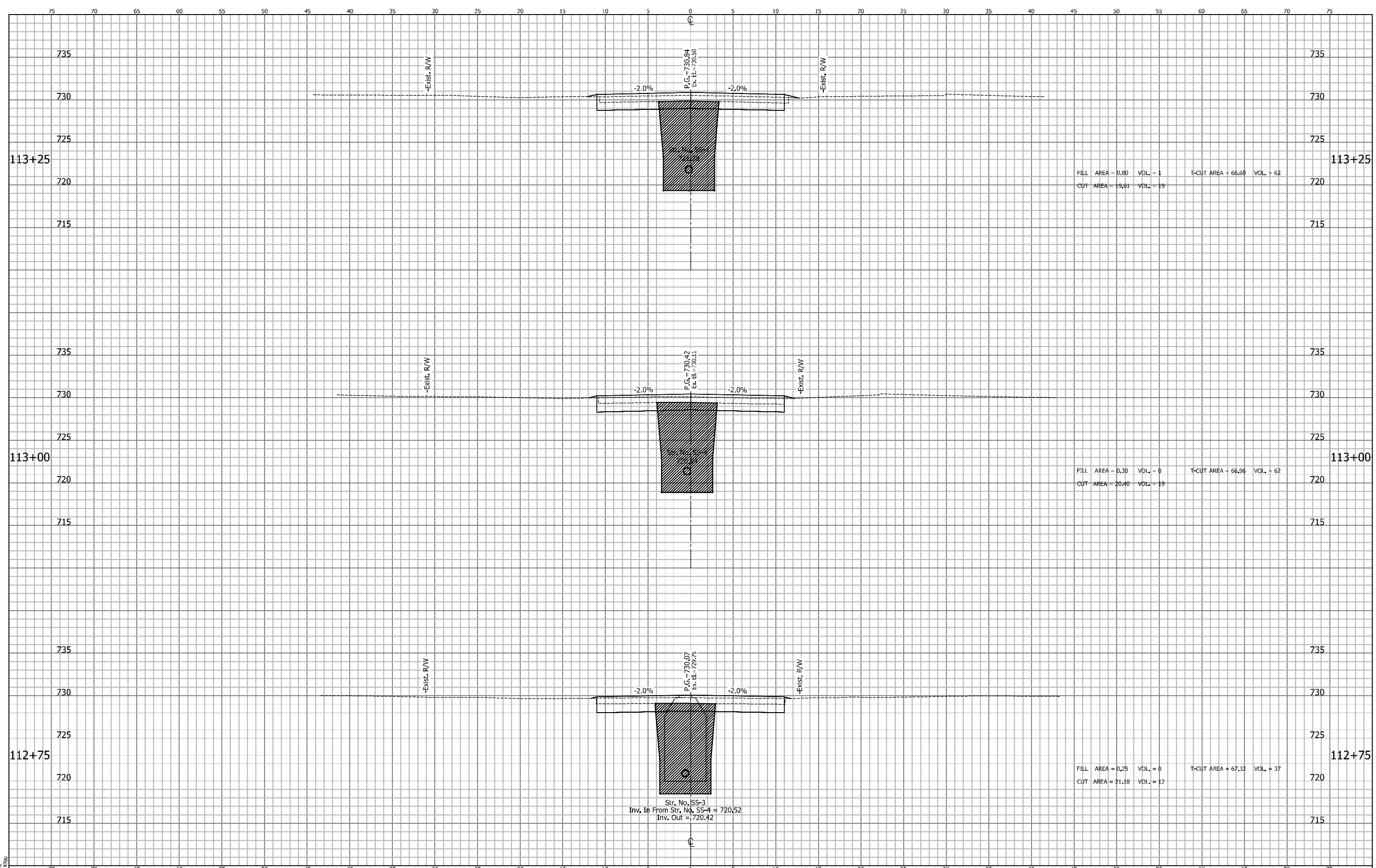
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: D.S.

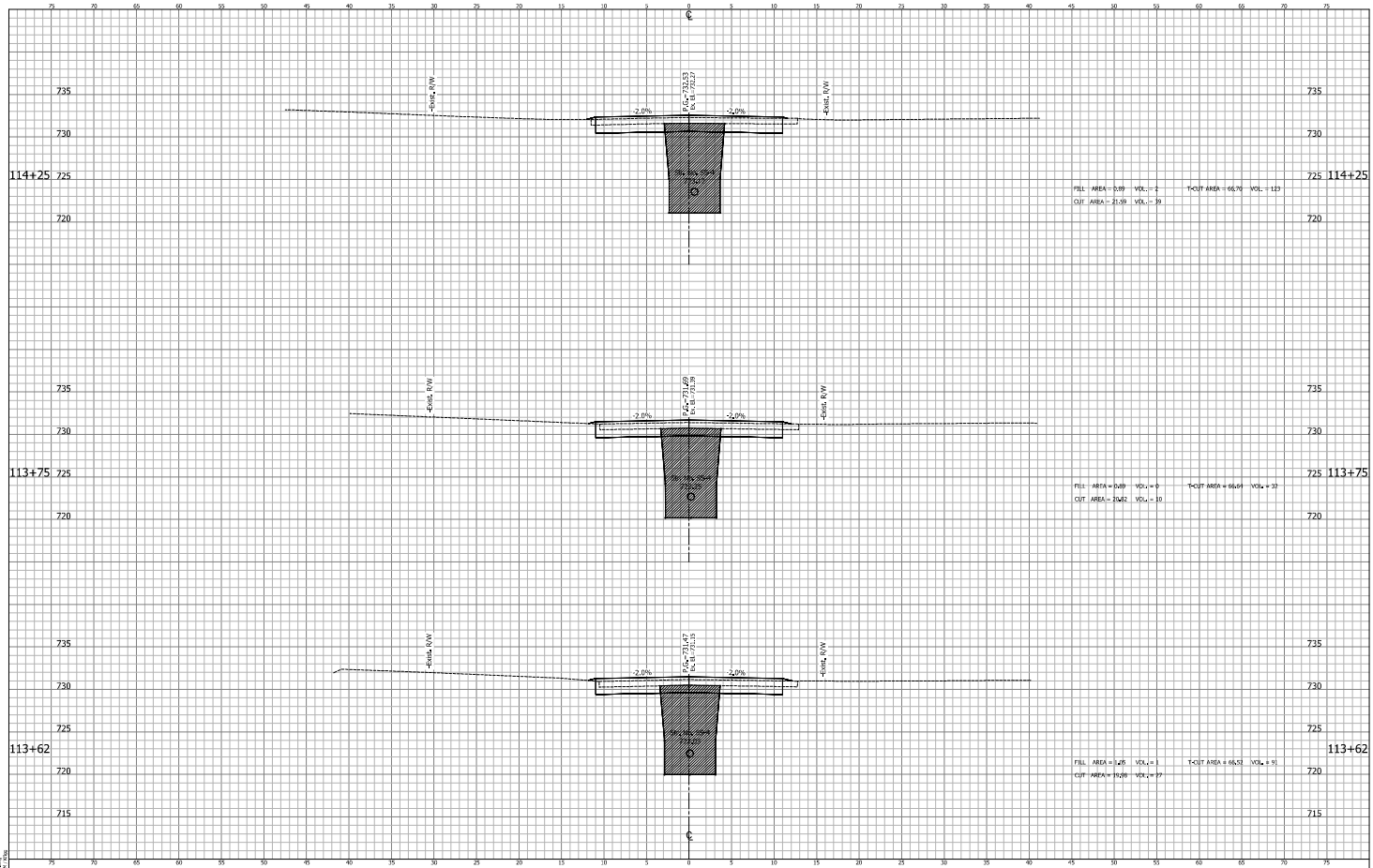
CITY OF FRANKLIN

CROSS SECTIONS
LINE "A"

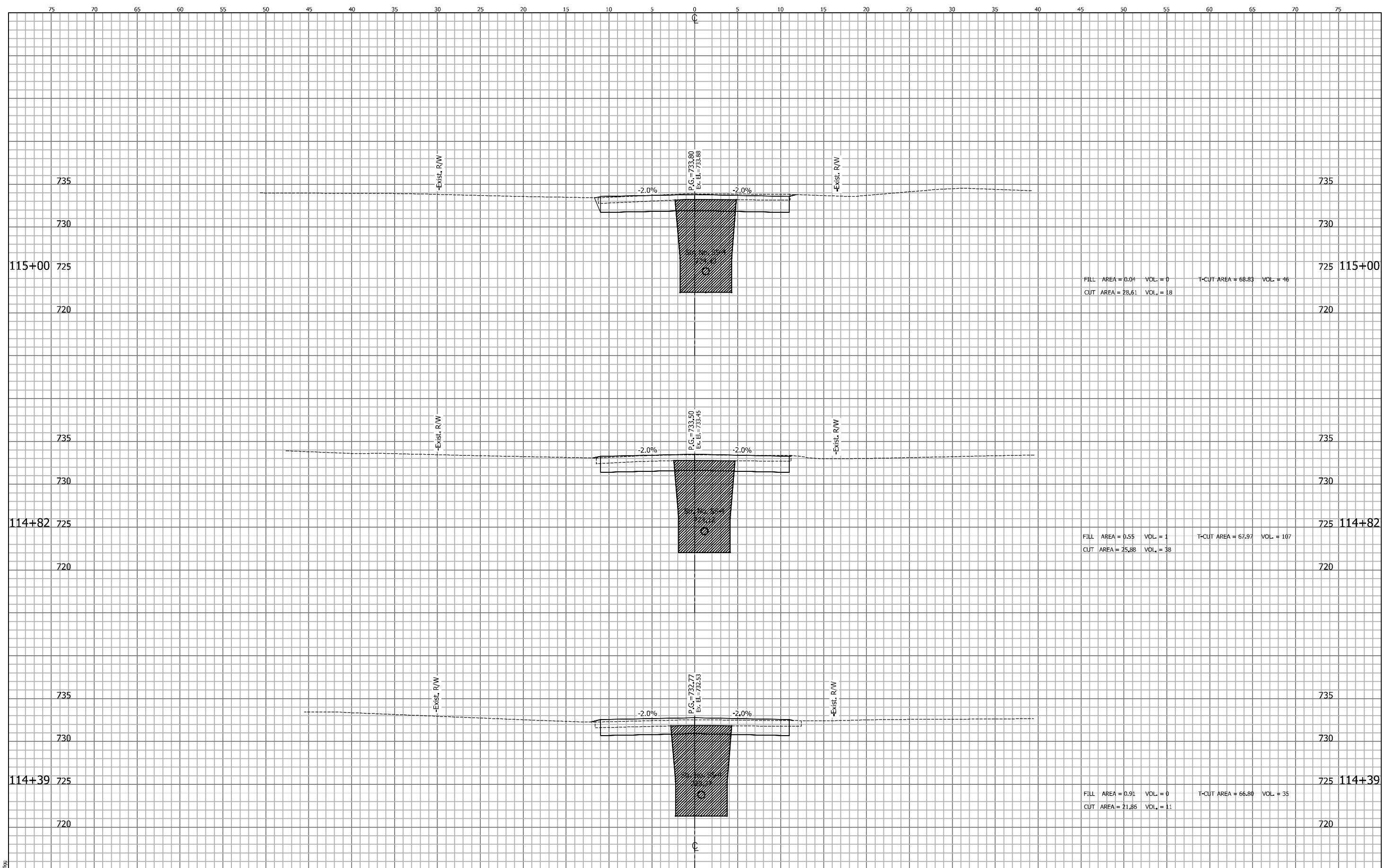
HORIZONTAL SCALE	BRIDGE FILE
1"=5	
VERTICAL SCALE	DESIGNATION
1"=5	
SURVEY BOOK	SHEETS
	XS9 of XS20
CONTRACT	PROJECT



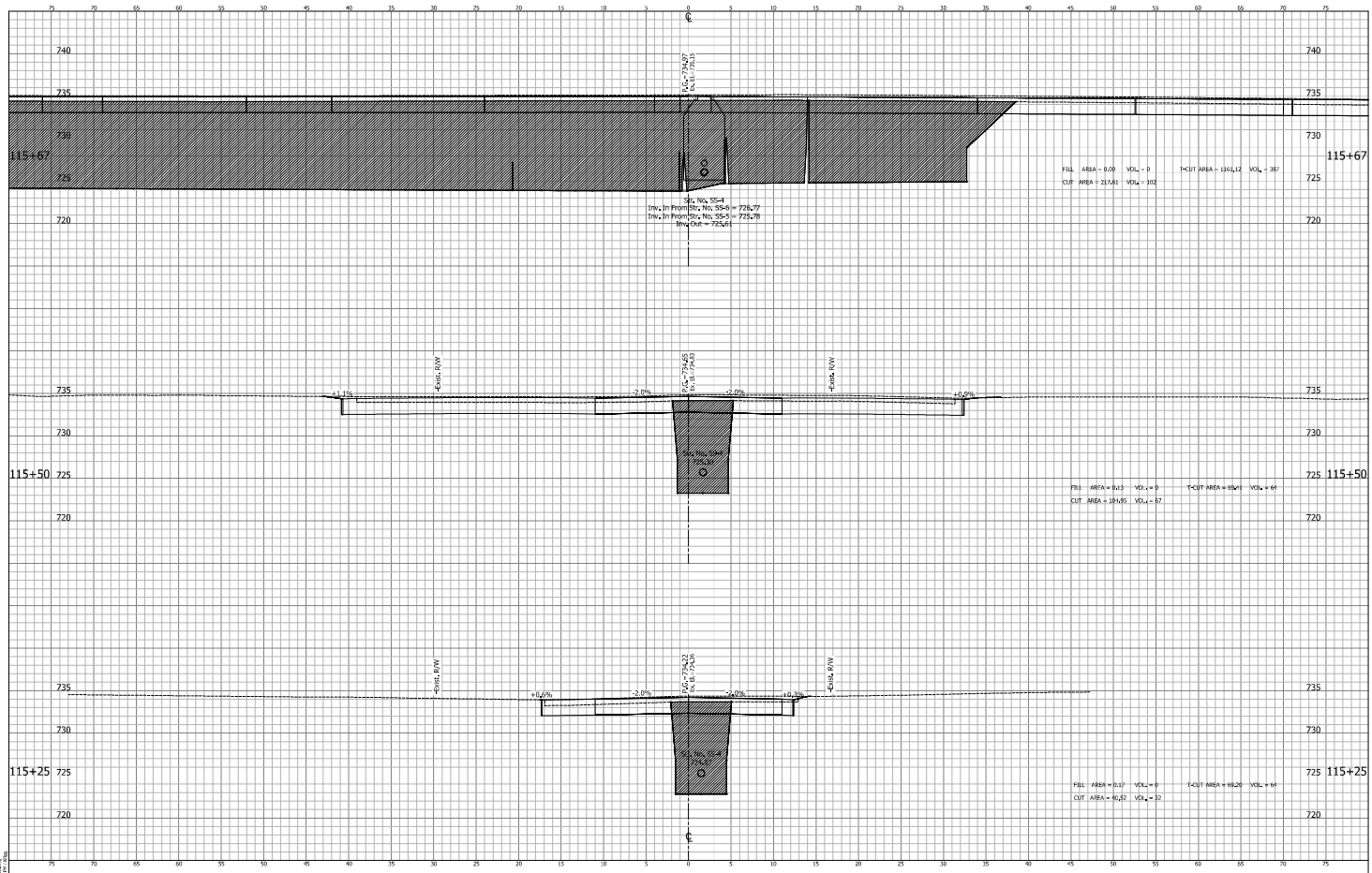
RECOMMENDED FOR APPROVAL ______ DESIGN ENGINEER DATE		CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5'	BRIDGE FILE
			VERTICAL SCALE 1"=5'	DESIGNATION
DESIGNED: D.S.	DRAWN: K.F.	CROSS SECTIONS LINE "A"	SURVEY BOOK	SHEETS XS10 of XS20
CHECKED: T.N.	CHECKED: D.S.		CONTRACT	PROJECT



	RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE	CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5 / BRIDGE FILE
	DESIGNED: D.S. / DRAWN: K.F.	CROSS SECTIONS LINE "A"	VERTICAL SCALE 1"=5 / DESIGNATION
	CHECKED: T.S. / CHECKED: T.S.		SURVEY BOOK / SHEET'S XS11 of XS20
			CONTRACT: / PROJECT



RECOMMENDED FOR APPROVAL	DESIGN ENGINEER / DATE	CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5' / VERTICAL SCALE 1"=5'
DESIGNED: D.S.	DRAWN: K.F.	CROSS SECTIONS LINE "A"	BRIDGE FILE / DESIGNATION
CHECKED: T.N.	CHECKED: D.S.		SURVEY BOOK / CONTRACT
			SHEETS XS12 of XS20 / PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

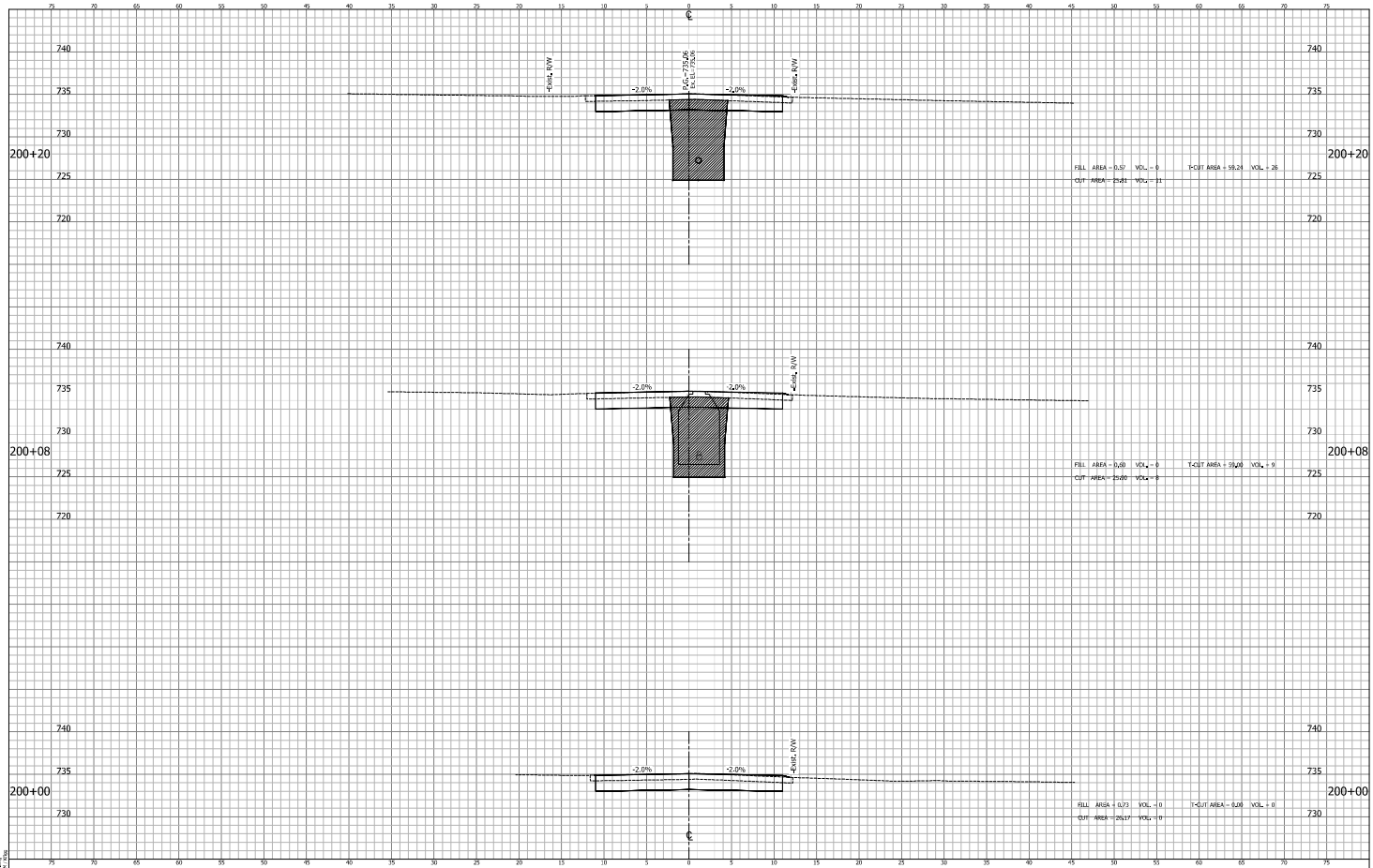
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.V. CHECKED: D.S.

CITY OF FRANKLIN

CROSS SECTIONS
LINE "A"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEETS
	XS13 of XS20
CONTRACT:	PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER _____ DATE

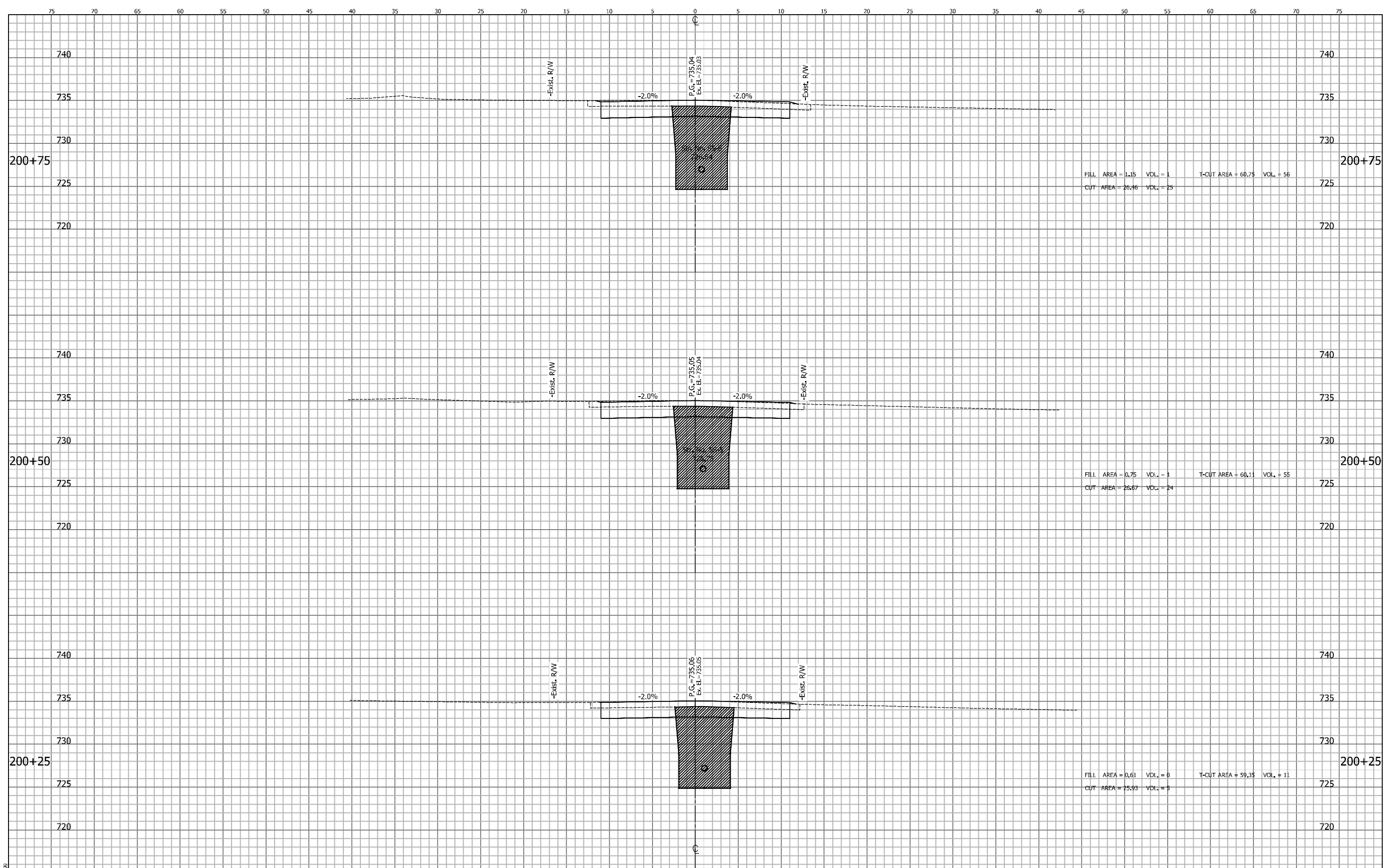
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: D.S.

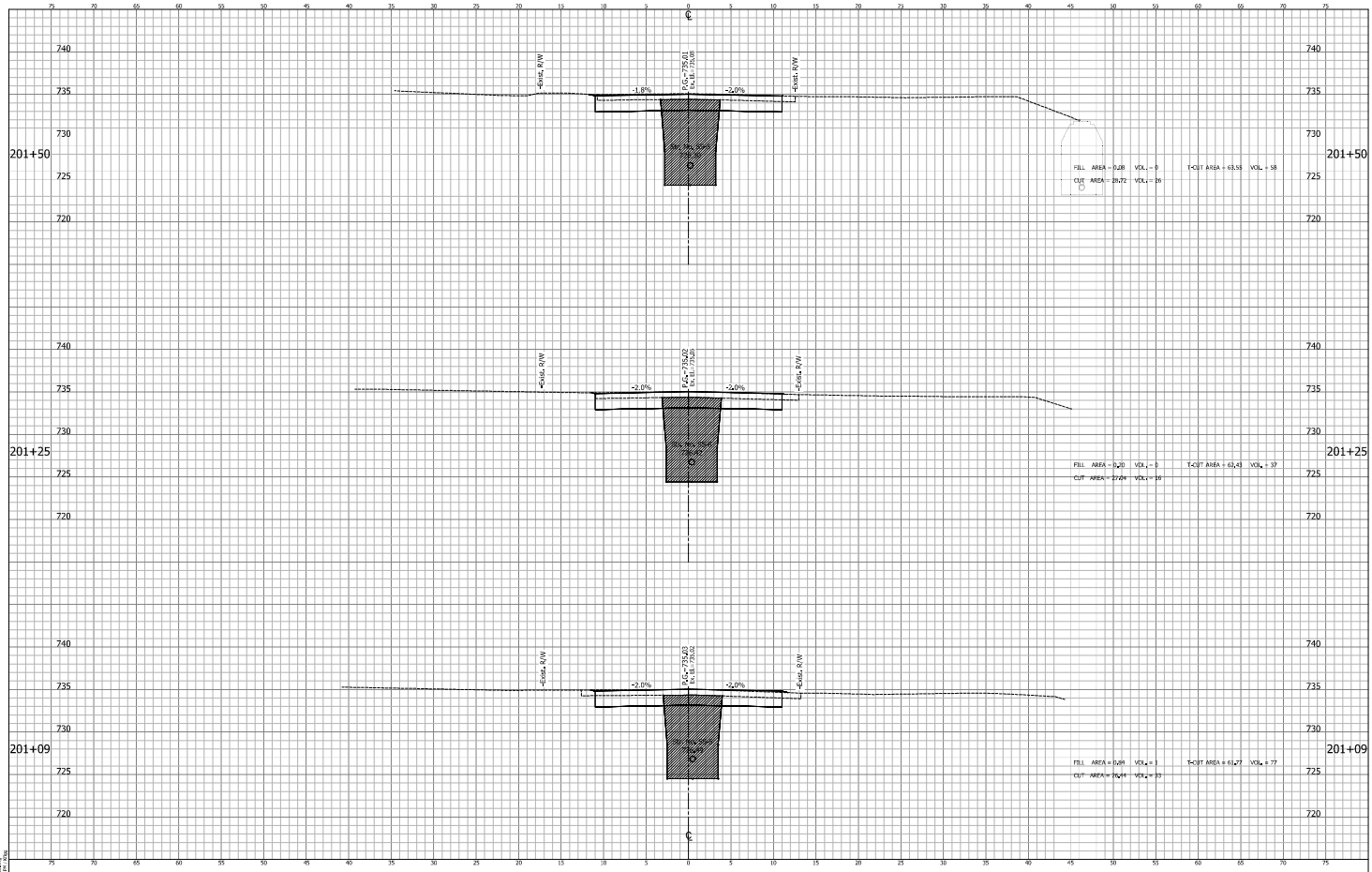
CITY OF FRANKLIN

CROSS SECTIONS
LINE "B"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEETS
	XS14 of XS20
CONTRACT	PROJECT



RECOMMENDED FOR APPROVAL ____ DESIGN ENGINEER DATE		CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5'	BRIDGE FILE
			VERTICAL SCALE 1"=5'	DESIGNATION
DESIGNED: D.S.	DRAWN: K.F.	CROSS SECTIONS LINE "B"	SURVEY BOOK	SHEETS XS15 of XS20
CHECKED: T.N.	CHECKED: D.S.		CONTRACT	PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

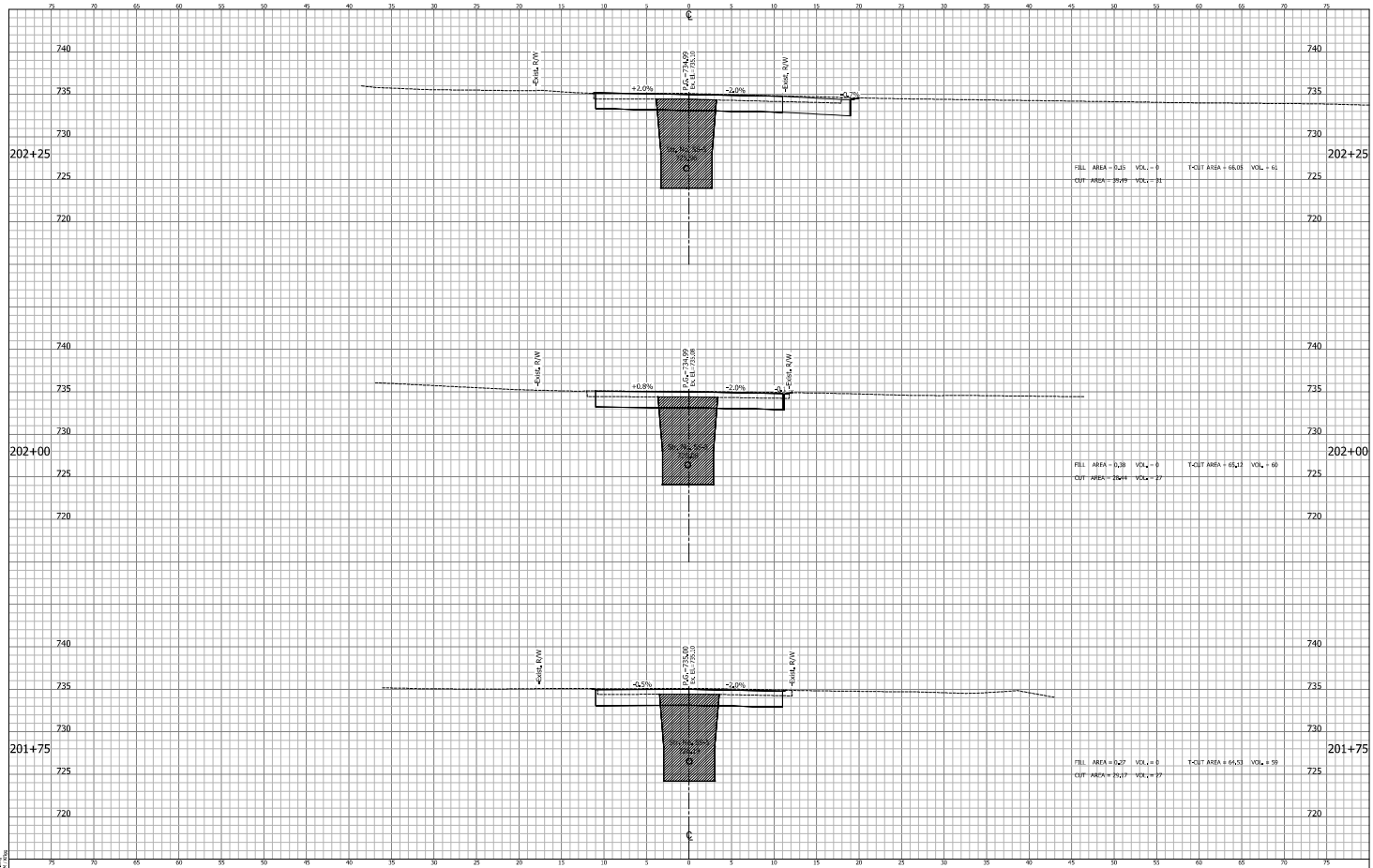
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.V. CHECKED: D.S.

CITY OF FRANKLIN

CROSS SECTIONS
LINE "B"

HORIZONTAL SCALE	BRIDGE FILE
1"=5	
VERTICAL SCALE	DESIGNATION
1"=5	
SURVEY BOOK	SHEETS
	XS16 of XS20
CONTRACT	PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

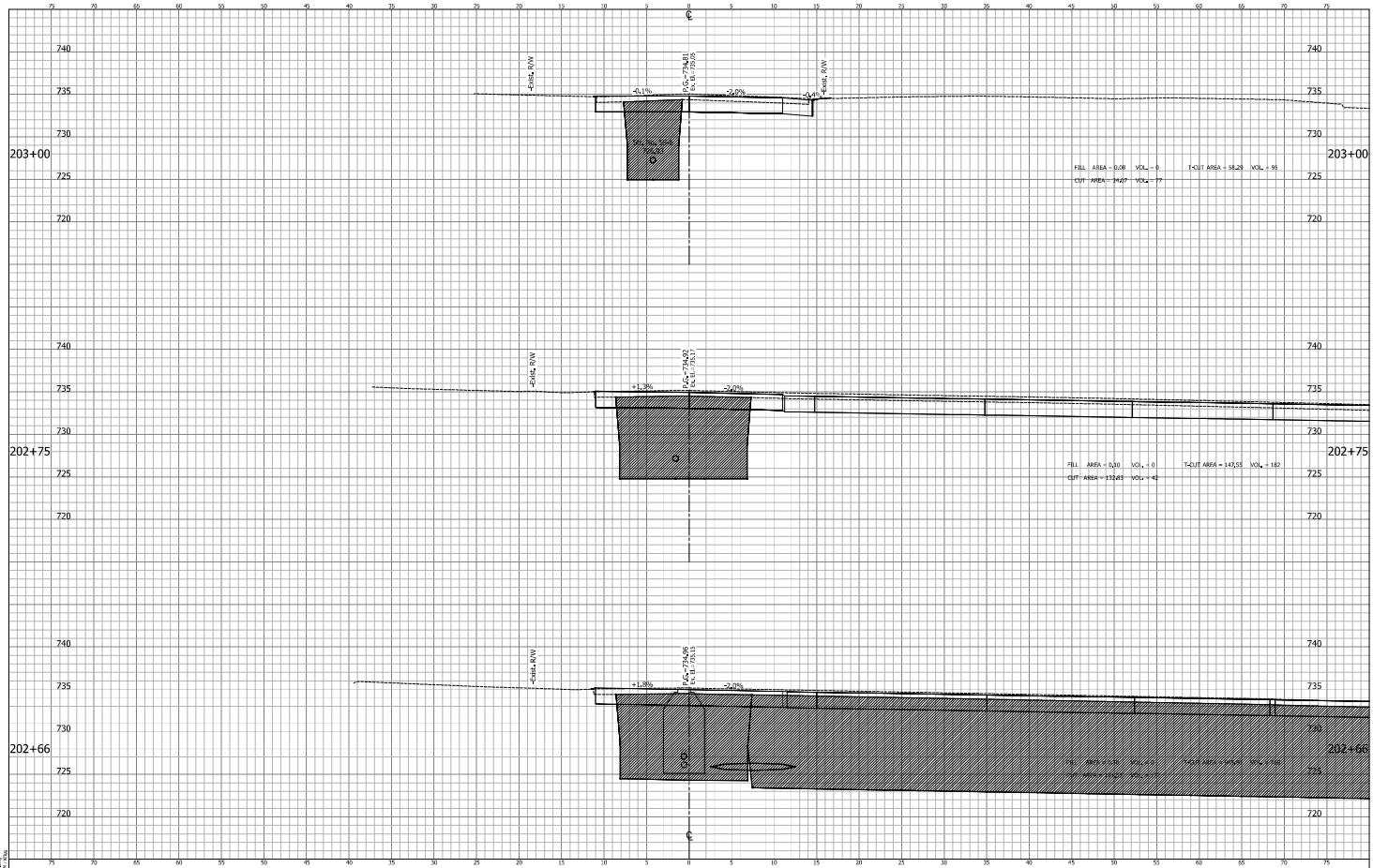
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: D.S.

CITY OF FRANKLIN

CROSS SECTIONS
LINE "B"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEET'S
	XS17 of XS20
CONTRACT	PROJECT



RECOMMENDED FOR APPROVAL

DESIGN ENGINEER DATE

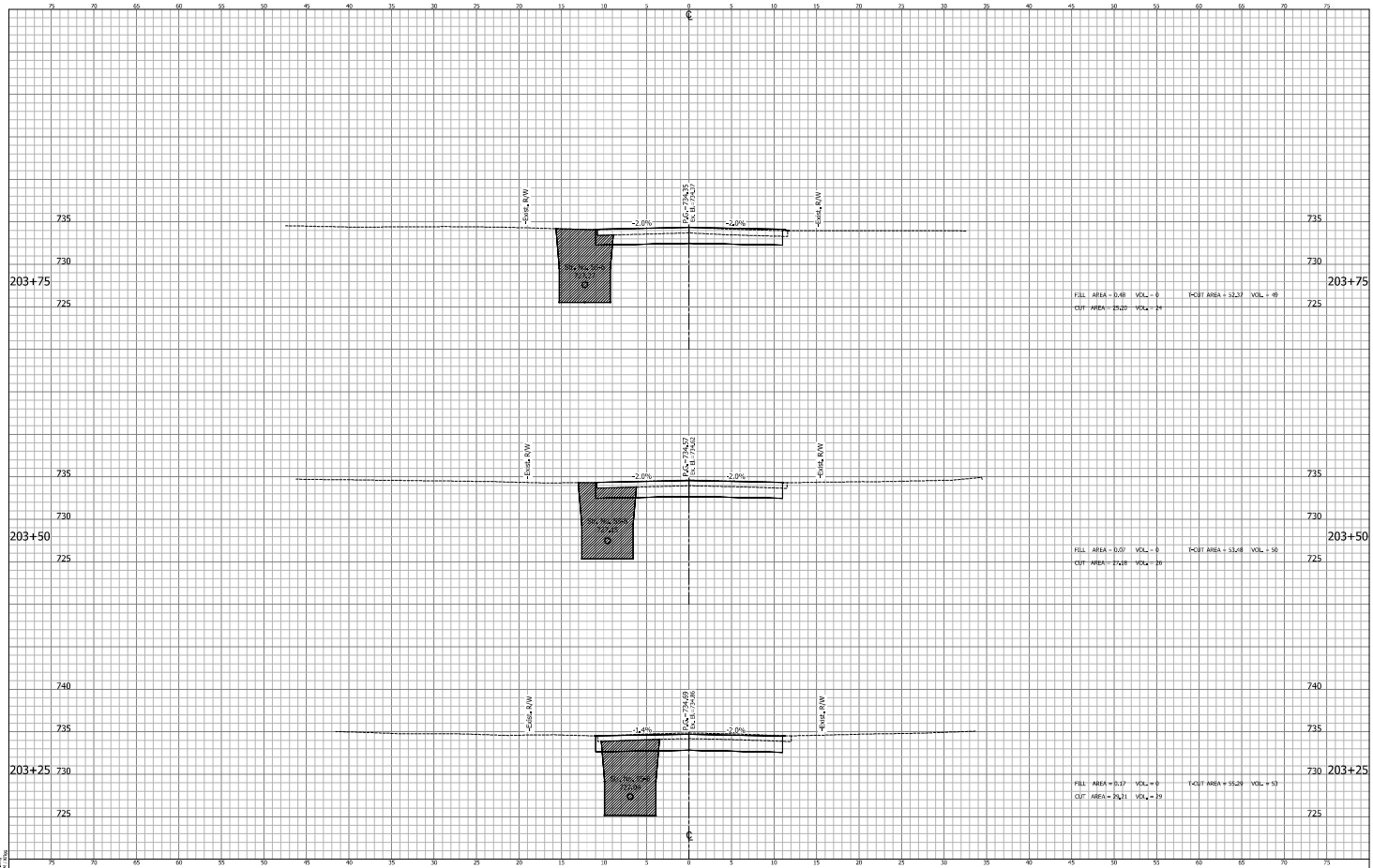
DESIGNED: D.S. DRAWN: K.F.

CHECKED: CHECKED:

CITY OF FRANKLIN

CROSS SECTIONS
LINE "B"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEETS
	XS18 of XS20
CONTRACT:	PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

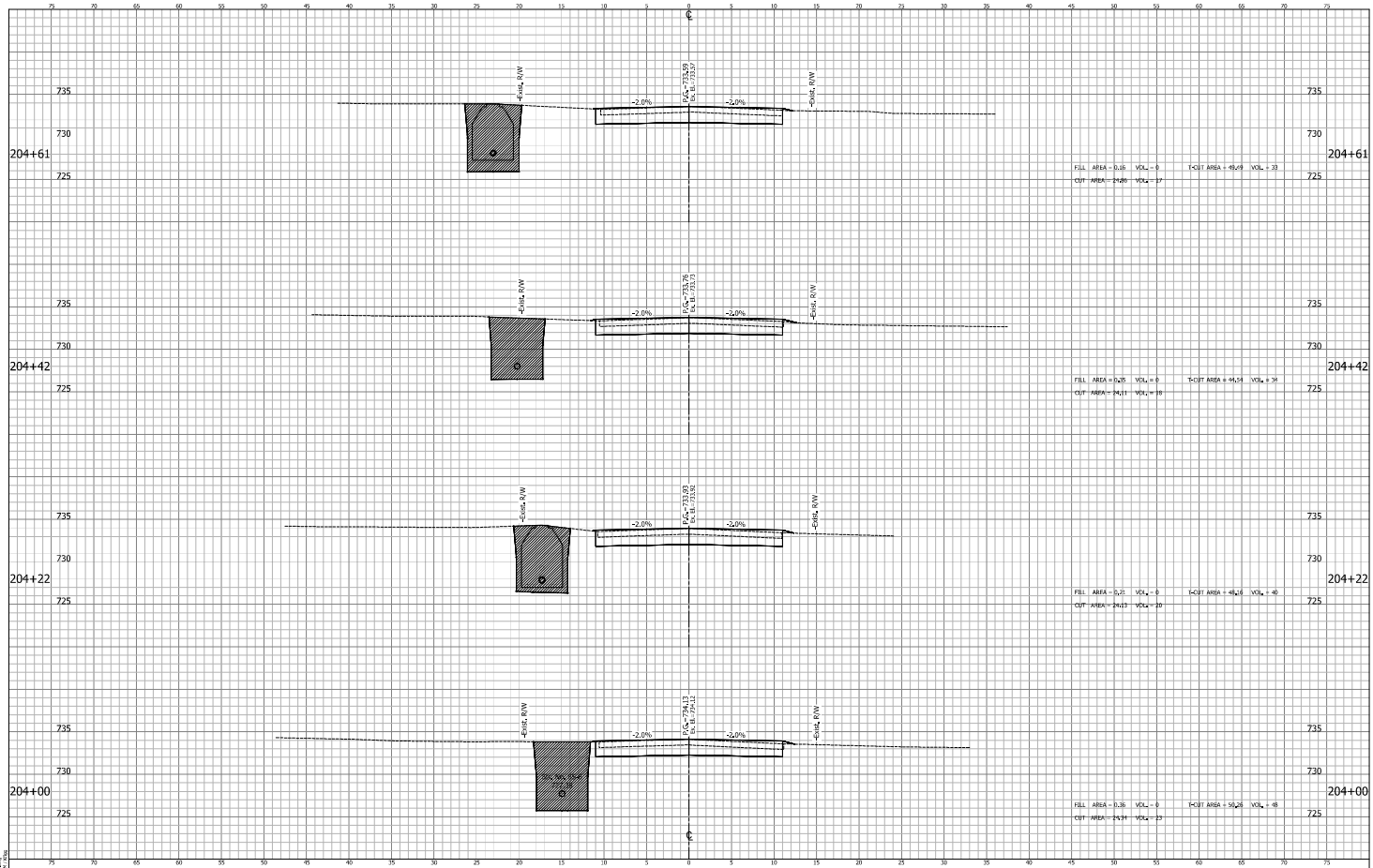
DESIGNED: D.S. DRAWN: K.F.

CHECKED: T.A. CHECKED: D.S.

CITY OF FRANKLIN

CROSS SECTIONS
LINE "B"

HORIZONTAL SCALE	BRIDGE FILE
1"=5'	
VERTICAL SCALE	DESIGNATION
1"=5'	
SURVEY BOOK	SHEET'S
	XS19 of XS20
CONTRACT:	PROJECT



RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE		CITY OF FRANKLIN	HORIZONTAL SCALE 1"=5 / BRIDGE FILE
DESIGNED: D.S.	DRAWN: K.F.	CROSS SECTIONS LINE "B"	VERTICAL SCALE 1"=5 / DESIGNATION
CHECKED: T.A.	CHECKED: D.S.		SURVEY BOOK / SHEETS: XS20 of XS20
			CONTRACT: / PROJECT

Forsythe Street Sewer & Road Reconstruction Project

FRANKLIN, INDIANA

TECHNICAL SPECIFICATIONS

1 DEFINITIONS

The following terms are used herein and defined as follows:

1) The term "CONTRACTOR" shall refer to the general contractor awarded the project, as well as, any subcontractors.
2) The term "OWNER" shall refer to Amphenol Corporation.
3) The term "OWNER's Representative" shall refer to IWM Consulting.
4) The term "CITY" shall refer to the City of Franklin.
5) The term "INSPECTOR" shall refer to CrossRoad Engineers (acting as the City of Franklin's representative.

2 GOVERNING DOCUMENTS

The applicable sections of the following documents shall apply except as modified elsewhere herein:

1) Indiana Department of Transportation (INDOT) Standard Drawings and Standard Specifications - 2018
2) INDOT Supplemental Specifications
3) City of Franklin Engineering Department Standards
4) City of Franklin Department of Public Works Standards

Unless otherwise specified within the Contract Documents, whenever any specification, standard, reference material, manual or other similar document is incorporated by reference into any of the contract documents, it shall be deemed to be the latest edition of said item including any and all supplemental addendum, which was in effect on the date of the bid opening for this project.

3 COMPLETION DATE AND LIQUIDATED DAMAGES

Proposed Project Schedule

Earliest Date to Begin Work: August 19, 2019

Final Project Completion: November 19, 2019

The Final Project Completion Date of November 19, 2019, is based on a Notice to Proceed by the OWNER given on or before August 5, 2019.

The entire project and all pay items shall be complete including HMA Surface, permanent pavement markings, and sanitary sewer work by the Final Project Completion Date of November 19, 2019.

The failure to meet the substantial completion date or the final completion date, as defined herein, shall result in liquidated damages in the amount of $1,000.00 per each day that the project remains incomplete. These damages shall be assessed to the CONTRACTOR not as penalty for incompletion but as damages incurred by the OWNER for failure to meet substantial completion and final completion dates by the CONTRACTOR.

Project Acceptance

Upon Completion of a Pre-Final Acceptance Meeting and receipt of the Punchlist by the CONTRACTOR, the CONTRACTOR shall have 5 work days to complete the Punchlist.

The failure to meet the Punchlist in 5 work days shall result in liquidated damages in the amount of $1,000.00 per each day that the Punchlist items remain incomplete. These damages shall be assessed to the CONTRACTOR not as penalty for incompletion but as damages incurred by the OWNER for failure to meet Punchlist completion dates by the CONTRACTOR.

4 HOLIDAYS WHEN WORK IS NOT PERMITTED

The CONTRACTOR may not perform work on the following days:

- Sundays (unless otherwise approved by City Engineer)
- New Years Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Day

5 WORK SCHEDULE SUBMITTAL

The CONTRACTOR shall provide a critical path work schedule for the entire project with the Post-Bid documents. This schedule shall be submitted to and approved by the OWNER and CITY prior to the start of construction and shall be updated as necessary. No work will be allowed until this schedule is submitted and approved; however, the CONTRACTOR will not be granted any time extension due to this delay.

6 CONSTRUCTION WORK HOURS

The CONTRACTOR shall perform all construction activities between the hours of 7:00 am and 7:00 pm unless receiving prior approval from the CITY.

7 LIMITATIONS OF OPERATIONS

When in the judgment of the CITY, the CONTRACTOR has obstructed or closed a greater portion of the work than is necessary for proper construction or is carrying on operations to the prejudice of the work already started, the CITY may require the CONTRACTOR to finish that portion of the work which is in progress before any additional portions are started. Except as hereafter specified, no loads of material for any construction shall be dispatched from cars or plants so late in the day that it cannot be placed, finished and protected within the Specification limits and provisions in the daylight hours of that same day.

8 HEALTH AND SAFETY PROGRAM SUBMITTAL

Description

This work shall consist of the preparation and implementation of the CONTRACTOR's health and safety program.

Submittal Requirements

CONTRACTOR shall prepare and submit a health and safety program for review and approval prior to construction. CONTRACTOR's health and safety program shall be compatible with IWM Consulting's program with regards to personal protection equipment, action levels, etc. The CONTRACTOR shall be responsible for preparing, implementing and enforcing said program in accordance with these specifications and AASHTO requirements.

Method of Measurement
No measurement will be made.

Basis of Payment
This work will not be paid for directly but shall be included in the cost of other items.

9 COOPERATION WITH UTILITIES

It shall be the CONTRACTOR'S responsibility to have all utilities located before construction in a particular area. The CONTRACTOR shall coordinate with all utilities in the adjustment of these facilities and in order to avoid damage to any facilities. Damage to any utility, shown or not shown on the construction documents, during the project caused by the CONTRACTOR'S operations or equipment, shall be repaired by the CONTRACTOR or UTILITY at no expense to the Contract. This includes sewer, water, gas, electric, telephone, cable, etc. and includes facilities within proposed storm sewer trenches. However, if any utilities are exposed and ***must be*** relocated for construction to continue, this work shall be performed by the utility, or the CONTRACTOR shall be reimbursed at an agreed upon price to perform such work. If the utility performs the work, the CONTRACTOR shall coordinate with the utility in order to expedite said work.

*The facilities of **CenturyLink** exist within the project limits including 1) aerial cables along the east side of Forsythe Street, 2) aerial cables along the south side of Hamilton Avenue and 3) utility manholes and underground ducts/conduits along the south side of Hamilton Avenue. Contractor shall contact **Eddie Fields** of the utility at **(317)-736-4863** when the duct/conduit along Hamilton Avenue is exposed during sewer installation to determine if the utility must support is during excavation.*

*The facilities of **Comcast** exist within the project limits. If questions arise, **Steve McArtor** of the utility may be contacted at **(317)-885-2405**.*

*The facilities of **Metronet** exist within the project limits. If questions arise, **Mark Deckard** of the utility may be contacted at **(812)-253-2169**.*

*The facilities of **Indiana American Water Company** exist within the project limits. The utility is requesting bids for a water main relocation project along Forsythe Street and Hamilton Avenue. The water main relocation is anticipated to begin in July 2019 with some work occurring concurrent with the Forsythe sewer and road reconstruction. The utility shall be contacted regarding any necessary adjustments that are not identified in the technical specifications or plans. If questions arise, **Joshua Guy** of the utility may be contacted at **(317)-807-2462**.*

*The facilities of **Duke Energy** exist within the project limits. If questions arise, **Gabe Gibson** of the utility may be contacted at **(317)-416-1313**.*

*The facilities of **Vectren Energy** exist within the project limits. If questions arise, **Jonathan Eastham** of the utility may be contacted at **(765) 287-2119**.*

10 EROSION CONTROL

The CONTRACTOR shall implement erosion control measures and the stormwater pollution prevention plan (SWPPP) as shown and described on the plans. In the event the CONTRACTOR desires not to perform erosion control in accordance with the plans, CONTRACTOR shall submit his alternate plan in writing to the INSPECTOR and obtain acceptance at least 1 week prior to commencement of any construction activities. Alternate erosion control plans submitted for approval shall contain, at a minimum, the following items:

1. Locations of proposed disposal area.
2. Locations of all proposed vehicle and equipment parking areas, vehicle and equipment fueling locations, placement of the site construction trailers, location of all on-site batch plants, and designated concrete truck washout areas.
3. Proposed construction sequence and phasing of erosion control measures.
4. Location of all construction entrances where vehicles and equipment will enter and exit the site.
5. Material handling and spill prevention plan, which shall include a list of expected materials that may be present on the site during construction operations, as well as a written description of how these materials will be handled to minimize the potential that the materials may enter storm water runoff from the site.
6. Statement that the erosion control measures for the project will be inspected, at a minimum, on a weekly basis and within 24 hours of every ½ inch rain event.

Ground disturbing activities shall not commence until the INSPECTOR has been provided, reviewed and approved the alternate erosion control plan.

Temporary erosion control measures will be paid for with the pay items included in the itemized bid. No direct payment will be made for notifications or preparation of amendments to the SWPPP, but such cost shall be included in the cost of other pay items.

11 EXISTING CONDITIONS

The CONTRACTOR shall verify the elevations and measurements of all points where new construction is to match existing conditions prior to the commencement of any construction activities. No direct payment shall be made for this work but the cost thereof shall be included in the costs of the other items of the contract. Data from this operation shall be provided to the CITY prior to the start of construction operations.

12 ADJUST VALVE BOX TO GRADE

This item shall include all labor, material, equipment, and services necessary to adjust existing valve boxes to grade. All valve boxes shall be installed plumb and clear of debris. The cost for this work shall be included in the pay item Water Valve Box, Adjust to Grade.

13 PROTECTION OF EXISTING STRUCTURES, PIPE, AND YARD TILE

On this project, there are existing storm drainage and sanitary sewer structures and ditches that are to remain in place. The CONTRACTOR shall take care that these structures are not damaged. If any of these structures are damaged, the CONTRACTOR shall be required to repair them at his own expense.

Yard tile encountered and affected by the scope of work specified within the Contract Documents shall be given a positive outlet. Any tile damaged by the CONTRACTOR's operations shall be replaced by the CONTRACTOR at his own expense.

14 RIGHT-OF-WAY CLEARING

Clearing Right-of-Way shall be in accordance with the requirements of Section 201 of the INDOT Standard

Specifications. Cavities formed by the removal of shrubs, trees and/or stumps shall be backfilled and compacted with structure backfill. Such compaction shall comply with Section 211.04. No direct payment shall be made for this work, but the cost thereof shall be included in the costs of the other items.

The cost of tree and stump removal, trimming, removal of fences, and other items within the right-of-way to be removed or as directed by the CITY, not listed separately, will not be paid for, but shall be included in the lump sum price for Clearing of Right-of-Way.

15 MAINTAINING TRAFFIC

Maintenance of traffic shall be the sole responsibility of the CONTRACTOR. Access and traffic to all businesses, residences, for all postal deliveries and all emergency traffic such as police, fire, medical, etc. within the project limits, shall be maintained at all times.

Unless otherwise directed, or permitted, the work specified shall be arranged and prosecuted in accordance with all applicable provisions of Sections 104.04, 107, 801 and as set out in INDOT Standard Specifications.

The names and telephone numbers of the CONTRACTOR's superintendent and one other responsible employee shall be furnished at the pre-construction conference. These employees shall be on call and available at nights, weekends, or during other non-working periods to repair or replace all traffic control devices, which may become damaged or inoperative.

In the event the CONTRACTOR desires not to perform traffic maintenance in accordance with the sequence of operations as called for within the Contract Documents, the CONTRACTOR shall submit his alternate plan in writing to the CITY and obtain acceptance at least 1 week prior to the commencement of any construction activities.

Forsythe Street and Hamilton Avenue will be closed to thru traffic for the work to be completed. The CONTRACTOR shall coordinate with the City Engineer on all matters related to the road closures and the coordination with residents and businesses.

Open trenches, if permitted by the CITY shall be spanned per current OSHA requirements and with the concurrence of the CITY.

Any trenching areas adjacent to a sidewalk shall be barricaded.

The CONTRACTOR shall be prepared to have all construction signs erected for the project as specified by the CITY.

All temporary traffic control devices not listed separately or adjustments, labor, materials, etc., necessary for the maintenance of traffic as called for within the Contract Documents, or as permitted by the CITY shall be included in the lump sum price for 'Maintenance of Traffic', as set out in the itemized proposal.

16 ROAD CLOSURE NOTIFICATION

The CONTRACTOR shall post an advance closure construction sign that notifies the traveling public of a road closure and the duration of the closure at least 7 days in advance of the road closure, unless otherwise approved by the CITY. The advance closure construction sign legend shall generally state that the named road or street will be closed on or after a specific date. The signs shall be placed as shown on the plans or as directed by the CITY.

The advance closure construction signs shall be in accordance with Section 801 of the INDOT Standard Specifications and paid for at the contract unit price per each for Construction Sign, A.

17 STREET CLEANING

The CONTRACTOR shall provide effective dust control throughout the project. Loader-mounted pick-up, power sweepers, or other types of pull type models shall be used for street cleaning. Street cleaning shall also be performed prior to the pre-final meeting as directed by the CITY.

Street cleaning will not be paid directly but shall be included in the cost of various items of the contract regardless of the amount of times this operation is reasonably requested. Naturally occurring conditions, out of the control of the CITY, that cause more dust control than normal shall not be a valid reason for request of payment for dust control.

18 TRANSPORTATION OF SALVAGEABLE ITEMS

Existing signs, castings and manhole covers, etc. specified to be removed will be salvaged and stockpiled at the job site by the CONTRACTOR. The CONTRACTOR shall deliver all designated items by the INSPECTOR, to the CITY as directed. The remainder of the items shall become the property of the CONTRACTOR.

Transportation of Salvageable Items will not be paid directly, but shall be included in the cost of various items of the contract.

19 SAW CUTTING

In all areas where proposed construction matches existing conditions, full depth saw cutting shall be required. No direct payment will be made for saw cutting but the cost thereof shall be included in the costs of the other items.

20 REGULATED MATERIAL REMOVAL

Description
This work shall consist of removing regulated materials as part of the sanitary sewer trench excavation as shown on the plans and in accordance with INDOT Standard Specifications Section 105.03.

Materials
Per the testing results provided by IWM Consulting, the "Chemical of Concern Short List" contains the following regulated materials which are being removed during construction:

1) vinyl chloride
2) trans-1,2-dichloroethene
3) 1,1-dichloroethane
4) cis-1,2-dichloroethene
5) 1,2-dichloroethane
6) methylene chloride
7) 1,1,1-trichloroethane
8) Trichloroethylene (TCE)
9) Tetrachloroethylene (PCE)

As part of their onsite operations, IWM Consulting will implement an ambient air monitoring program.

Construction Requirements
Regulated materials shall be removed in accordance with INDOT Standard Specifications Sections 202.02. Regulated materials excavated from the site shall be loaded into the roll-off boxes/containers provided by IWM Consulting. Transport and disposal of regulated materials excavated during construction shall be the

responsibility of IWM Consulting.

Soil sampling and testing will be completed by IWM Consulting during excavation to determine if additional excavation, beyond the trench limits shown on the plans, will be required. The CONTRACTOR shall coordinate with IWM Consulting for soil sampling requirements.

CONTRACTOR shall properly secure any excavation area left open overnight with orange snow/construction fence, barricades and the onsite equipment (excavator).

Method of Measurement
Excavation associated with "Regulated Material, Remove" shall be completed in accordance with the trench limits shown on the plans and measured on a per cubic yard (CYS) basis. The total removal depth and width shall be field checked and shall be constructed to reasonably close conformance as specified in Contract Documents.

If test results provided by IWM Consulting indicate that additional regulated materials must be removed, the work associated with the additional removal shall be completed as an undistributed item and measured for on a per cubic yard (CYS) basis. There shall be no adjustment in the contract unit price if quantities are less than those shown on the itemized proposal and the item can be deleted entirely without impact to the contract amount. All work involving undistributed items shall be performed only at the direction of the CITY or INSPECTOR.

Basis of Payment
The accepted quantities of regulated material removal will be paid for at the contract unit price per cubic yard.

Payment will be made under:

Pay Items	**Pay Unit Symbol**
Regulated Material, Remove	CYS
Regulated Material, Remove, Undistributed	CYS

The cost of all labor, equipment, and materials necessary to remove the regulated materials to the dimensions shown on the plans shall be included in the cost of "Regulated Material, Remove". The cost of properly securing excavation areas left open overnight in accordance with these specifications will not be paid for separately but shall be included in the cost of "Regulated Material, Remove". The cost of coordinating with IWM Consulting for soil sampling and roll-off box/container delivery and hauling shall be included in the cost of this item. IWM Consulting will be responsible for the cost of the roll-off box/container rental, delivery and hauling.

The cost of all labor, equipment, and materials necessary to remove additional regulated materials outside the dimensions shown on the plans shall be included in the cost of "Regulated Material, Remove, Undistributed". The cost of properly securing excavation areas left open overnight in accordance with these specifications will not be paid for separately but shall be included in the cost of "Regulated Material, Remove". The cost of coordinating with IWM Consulting for soil sampling and roll-off box/container delivery and hauling shall be included in the cost of this item. IWM Consulting will be responsible for the cost of the roll-off box/container rental, delivery and hauling.

21 COMMON EXCAVATION

Description
This work shall consist of excavation, hauling and disposal of all excavation including asphalt materials which are not included as regulated material removal or excavation which is otherwise classified and paid for in accordance with INDOT Standard Specifications Section 105.03.

Construction Requirements
Excavation and disposal shall be in accordance with INDOT Standard Specifications Sections 203.08, 203.09 and 203.10.

Method of Measurement
Common Excavation shall be paid per the plan quantity as indicated in the itemized proposal in the Proposal section of the Contract Documents. The total removal depth and width shall be field checked and shall be constructed to reasonably close conformance as specified in Contract Documents. In the event of additional work requiring common excavation, an agreed upon quantity for Common Excavation or an agreed upon new pay item will be added to the Contract via change order for this additional work prior to the work taking place.

The CONTRACTOR shall coordinate with the INSPECTOR on all measured quantities as the project proceeds and all items shall be agreed to prior to submittal for payment.

Basis of Payment
The accepted quantities of common excavation will be paid for at the contract unit price per cubic yard.

Payment will be made under:

Pay Items	**Pay Unit Symbol**
Common Excavation	CYS

The cost of all labor and equipment necessary for excavating, hauling and disposal of materials removed from the site, which are not classified or paid for under another excavation or removal item, shall be included in the cost of the item. No payment will be made for the construction, restoration, inspection or permitting of offsite disposal sites.

22 MATERIAL TESTING AND ACCEPTANCE

All aggregate, concrete, geogrid and bituminous materials used for the project shall be produced from an INDOT approved source. The CONTRACTOR shall submit the names and addresses of the suppliers of these materials for the project to the CITY at the pre-construction conference. Prior to delivery, the CONTRACTOR shall submit to the CITY a copy of the certification for each material supplier.

The INSPECTOR will be responsible for compaction testing of the structure backfill and compacted aggregate under the HMA section for the project. Asphalt materials shall be provided as shown on the plans; certifications and acceptance shall be in accordance with Section 402 of the INDOT Standard Specifications.

23 FINAL CLEANUP

The CONTRACTOR shall clean up all areas, including inlets, storm pipes, and streets, within the construction area as well as areas disturbed outside the construction areas at the completion of the project. This work shall be done at the satisfaction of the CITY. The areas disturbed outside of the construction area shall be seeded or sodded at no cost to this project.

24 UNDISTRIBUTED ITEMS

Quantities of undistributed items needed in addition to those shown on the itemized proposal and approved by the INSPECTOR will be paid for at the contract unit price for the quantity used on the project. There shall be no adjustment in the contract unit price if quantities are less than those shown on the itemized proposal and the item can be deleted entirely without impact to the contract amount. All work involving undistributed items shall be performed only at the direction of the INSPECTOR.

25 EXCESS MATERIAL - DISPOSAL

All excess material (waste) shall be removed from the project site. Whether a private or public waste site is utilized, such disposal shall comply with all Federal, State and local ordinances and permit requirements. A copy of all permits obtained or applied for shall be submitted to the CITY prior to the commencement of any construction activities.

26 AS-BUILT PLANS

Any deviations from the plans shall be documented in as-built drawings provided by the CONTRACTOR to the CITY once all work is completed and prior to final payment being provided. Red line drawings on the plan sheets are acceptable and shall include, but not be limited to, all key information including structure data deviations such as elevation, inverts, location with station and distance offset. The as-built drawing shall also include any underground encountered structures or facilities that remain in place. No payment will be made for this work but shall be considered within the other items.

27 RESTORATION OF DISTURBED AREAS

Cavities formed by the removal of shrubs, trees and/or stumps shall be backfilled and compacted with structure backfill. Such compaction shall comply with Section 211.04.

Any roots remaining after all the removal of any designated item shall be removed to a depth of 6 inches below the surface of the surrounding ground area.

Backfilled areas and the surrounding ground areas are to be raked to the satisfaction of the INSPECTOR and seeded. All work shall be in accordance with Section 621.

No direct payment shall be made for this work, but the cost thereof shall be included in the costs of the other items.

28 EROSION CONTROL GUARANTEE AND WARRANTY PERIOD

Prevailing Specifications: INDOT 621

Warranty Bond: Upon completion of the installation and initial inspection of the landscape material, a properly executed Warranty Bond with a surety shall be supplied in the amount of the material being warranted. The intent of the Warranty Bond shall be to permit the final acceptance of the contract and payment of the retainage.

Additions: The CONTRACTOR shall guarantee a stand of grass; and if through the actions of the elements, the seasons, animals, or man the seed does not grow; shall reseed, re-fertilize, and do that which is required to produce an abundant and uniform growth of grass on the areas requiring seeding in this contract. Final acceptance of the project will not be made until the requirements of this special provision have been attained.

Final Acceptance will not be achieved until the IDEM Rule 5 Notice of Termination has been completed.

29 GEOGRID

Description
This work shall consist of furnishing and installing geogrid as directed by the INSPECTOR and in accordance with INDOT Standard Specifications Section 105.03.

Materials
Materials shall be in accordance with INDOT Standard Specifications Section 918.05.

Construction Requirements
Shall be in accordance with INDOT Standard Specifications Sections 214.03, 214.04, and 214.05

Method of Measurement
Geogrid will be measured by the square yard. The quantity will be computed based on the total area of geogrid placed, exclusive of the area of overlaps.

Basis of Payment
The accepted quantities of geogrid will be paid for at the contract unit price per square yard of geogrid.

Payment will be made under:

Pay Items	Pay Unit Symbol
Geogrid, Type IB	SYS

The cost of furnishing materials, manufacturer's representative, all labor and equipment required for furnishing and placing the geogrid, all work necessary to establish grades, geogrid splices, overlaps, stakes or pins, supplemental product test data, and patching or replacement of geogrid shall be included in the cost of this work

30 PROJECT PERMITS

The CONTRACTOR shall complete all work in accordance with the terms and conditions of the approved Indiana Department of Environmental Management (IDEM) Rule 5 Notice of Intent. The CONTRACTOR shall post copies of all permits at the project site until final project completion.

31 TEMPORARY BYPASS PUMPING SYSTEMS FOR SANITARY SEWER

Description
This work shall consist of the design, implementation, installation and maintenance of temporary bypass pumping systems for the purpose of diverting the existing sanitary sewer flows around the work area for the duration of sanitary sewer work in accordance with 105.03.

Pre-Construction Submittal
The design, installation and operation of the temporary pumping system shall be the CONTRACTOR's responsibility. The CONTRACTOR shall employ the services of a vendor who can demonstrate that he specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least five references of projects of a similar size and complexity as this project performed by the vendor within the past three years.

The CONTRACTOR shall submit to the INSPECTOR detailed bypass pumping plans outlining all provisions and precautions to be taken by the CONTRACTOR regarding the handling of existing wastewater flows. The bypass pumping plans shall be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items required to ensure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows. No construction shall begin until all provisions and requirements have been reviewed and approved by the INSPECTOR.

The bypass pumping plans shall include; but not be limited to, details of the following:

A. Staging areas for pumps;

B. Sewer plugging method and types of plugs;

C. Number, size, material, location and method of installation of suction piping;

D. Number, size, material, method of installation and location of installation of discharge piping;

E. Bypass pump sizes, capacity, number of each size to be on site and power requirements;

F. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted);

G. Standby power generator size, location;

H. Downstream discharge plan;

I. Method of protecting discharge manholes or structures from erosion and damage;

J. Thrust and restraint block sizes and locations;

K. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill;

L. Method of noise control for each pump and/or generator;

M. All temporary pipe supports and anchoring required;

N. Design plans and computation for access to bypass pumping locations indicated on the drawings;

O. Calculations for selection of bypass pumping pipe size;

P. Schedule for installation of and maintenance of bypass pumping lines;

Q. Plan indicating selection location of bypass pumping line locations;

R. Off-site maintenance of traffic plans for installation, maintenance, and continual operation of temporary bypass pumping systems.

Design Requirements

A. Bypass pumping systems shall have sufficient capacity to pump peak flows as provided by the City of Franklin. The CONTRACTOR shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the main can be safely diverted around the section to be repaired. Bypass pumping system shall be required to be operated 24 hours per day.

B. The CONTRACTOR shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One standby pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.

C. Bypass pumping system shall be capable of bypassing the flow around the work area and of releasing any amount of flow up to full available flow into the work area as necessary for satisfactory performances of work.

D. The CONTRACTOR shall make all arrangements for bypass pumping during the time when the main is shut down for any reason. System shall overcome any existing force main pressure on discharge.

Performance Requirements

A. Due to the sewer service provided to adjacent property owners, no interruption in the flow of sewage throughout the duration of the project will be allowed. To this end, the CONTRACTOR shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment; both primary and back-up units as required, conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with the work area, carry it past the work area and return it to the existing sewer downstream of the work area.

B. The design, installation and operation of the temporary pumping system shall be the CONTRACTOR's responsibility.

C. The CONTRACTOR shall provide all necessary means to safely convey the sewage past the work area. The CONTRACTOR will not be allowed to stop or impede the main flows under any circumstances.

D. The CONTRACTOR shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding.

E. The CONTRACTOR shall protect water resources, wetlands and other natural resources.

Construction Requirements

EQUIPMENT:

A. All pumps used shall be fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. All pumps used shall be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows.

B. The CONTRACTOR shall provide the necessary stop and start controls for each pump.

C. The CONTRACTOR shall include one stand-by pump of each size to be maintained on site. Back-up pumps shall be on-line, isolated from the primary system by a valve.

D. Discharge Piping - In order to prevent the accidental spillage of flows all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the INSPECTOR.

FIELD QUALITY CONTROL AND MAINTENANCE:

A. Tests: The CONTRACTOR shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to actual operation. The INSPECTOR will be given 24 hours notice prior to testing.

B. Inspection: The CONTRACTOR shall inspect bypass pumping system every two hours to ensure that the system is working correctly.

C. Maintenance Service: The CONTRACTOR shall ensure that the temporary pumping system is properly

maintained and a responsible operator shall be on hand at all times when pumps are operating.

D. Extra Materials: Spare parts for pumps and piping shall be kept on site as required. Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

PREPARATION:

A. The CONTRACTOR is responsible for locating any existing utilities in the area the CONTRACTOR selects to locate the bypass pipelines. The CONTRACTOR shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the CITY and the INSPECTOR. Relocating utilities and obtaining all approvals shall be at no additional cost.

B. During all bypass pumping operation, the CONTRACTOR shall protect the Pumping Station and main and all local sewer lines from damage inflicted by any equipment. The CONTRACTOR shall be responsible for all physical damage to the Pumping Station and main and all local sewer lines caused by human or mechanical failure.

INSTALLATION AND REMOVAL:

A. The CONTRACTOR shall remove manhole sections or make connections to the existing sewer and construct temporary bypass pumping structures only at the access location indicated on the Drawings and as may be required to provide adequate suction conduit.

B. Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that allows the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

C. When working inside manhole or force main, the CONTRACTOR shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.

D. The installation of the bypass pipelines is prohibited in all saltmarsh and wetland areas. The pipeline shall be located off streets and sidewalks and on shoulders of the roads. When the bypass pipeline crosses local streets and private driveways, the CONTRACTOR shall place the bypass pipelines in trenches and cover with temporary pavement. Upon completion of the bypass pumping operations, and after the receipt of written permission from the INSPECTOR, the CONTRACTOR shall remove all the piping, restore all property to preconstruction condition and restore all pavement.

E. No groundwater from dewatering operations shall be pumped into the sanitary sewer as part of the bypass pumping operations. Discharge lines from dewatering operations shall be pumped to the frac tanks provided onsite by IWM Consulting in accordance with the technical specifications contained herein.

Method of Measurement
No measurement will be made.

Basis of Payment
This work will be paid for at the contract lump sum price for temporary bypass pumping.

Payment will be made under:

Pay item	Pay Unit Symbol
Bypass Pumping, Temporary	LS

The cost of all equipment, labor, materials, design, mobilization, demobilization, installation, maintenance, operation, and all necessary incidentals not specified as a pay item shall be included in the cost of the temporary bypass pumping systems.

No additional payment will be made for repair, remediation, or replacement of sanitary sewer pipes or manholes associated with failure of the temporary bypass pumping system.

No additional payment will be made for off-site maintenance of traffic operations associated with the installation and operation of the temporary bypass pumping system.

32 TRENCH DEWATERING

Description
This work shall consist of the design, implementation, installation and maintenance of temporary dewatering systems for the purpose of removing groundwater from the excavation area during construction of the sanitary sewer.

Construction Requirements
CONTRACTOR shall pump all groundwater from the dewatering operations to the frac tank(s) provided, operated, and maintained by IWM Consulting. CONTRACTOR shall confirm frac tank location, intake connection point, hose diameter requirements and all other operational requirements with IWM Consulting prior to construction.

Sewer effluent from the temporary bypass pumping operations shall not be pumped into the frac tank(s) as part of the dewatering operations. Discharge lines from the temporary bypass pumping shall be pumped to the sanitary sewer in accordance with the technical specifications contained herein.

Method of Measurement
No measurement will be made.

Basis of Payment
This work will not be paid for directly but shall be included in the cost of other items.

33 SANITARY MANHOLES

Description
This work shall consist of the construction of standard sanitary manholes and sanitary doghouse manholes in accordance with 105.03.

Materials

1. Concrete Pad/Collar

   All manhole castings shall have a class ‘A’ concrete pad/collar per the construction plans.

2. Precast Concrete Manholes

Manholes shall be constructed in accordance with ASTM Specifications for "Precast Reinforced Concrete Manhole Risers and Tops", Designation C 478. The minimum wall thickness shall be five (5) inches for manholes four (4) feet in diameter. When the depth of the manhole exceeds twelve (12) feet, then the depth in excess of twelve (12) feet shall be reinforced with two cages of reinforcement the same as required for reinforced concrete sewer pipe of same diameter as the riser of the manhole per ASTM Specification Designation C 76 for Class III Pipe. The precast tops shall be of the eccentric cone type. Precast flat covers shall be not less than eight (8) inches thick and reinforced with two layers of steel with a minimum area of 0.39 square inches per linear foot in both directions in each layer. Precast flat bottoms of manholes shall also be reinforced the same as specified herein for precast flat top. Hoisting lugs or hooks shall be cast in place for handling and setting of the rings. Openings of proper sizes and suitable design shall be cast in place for receiving the sewer and/or drop pipes and connections. Adjusting riser rings shall be provided as approved by the CITY.

All manhole joints shall be tongue and groove and they shall be sealed with an O-ring and joint sealer conforming to Federal Specifications SS-S-00210 and similar to "Kent-Seal No. 2" as manufactured by the Hamilton Kent Manufacturing Co., of Kent, Ohio; "RAM-NEK" as manufactured by the K.T. Snyder Co. of Houston, Texas, or equal. Cracked or damaged barrel joints shall be rejected.

3. Manhole Steps

The steps provided shall be manufactured of reinforced plastic and shall be twelve (12) inches wide and one (1) inch square.

4. Manhole Bases

Manhole bases shall be of cast-in-place monolithic concrete or precast concrete. Where sewer lines pass through or enter manholes, the invert channels shall be smooth and semi-circular in cross section and may be formed directly in the concrete of the manhole base, may be half tile laid in the concrete, or may be constructed by laying the sewer lines continuously through the manhole and break-hardened and neatly trimming the edges. Changes of direction of flow within the manholes shall be made with a smooth curve with as long as a radius as possible. The floor of the manhole outside the channels shall be smooth and slope toward the channel not less than one (1) inch per foot.

No mortar or concrete shall be placed in water, and no water shall be allowed to flow over or against the concrete before it has set for a period of time deemed sufficient by the DPW to prevent damage to the structure. The invert channel through manholes should be made to conform in shape and slope to that of the sewer. All invert channels are to have a properly mortared apron on either side, sloped to prevent solids deposition.

5. Frame Chimney Seal

An internal or external rubber seal shall be installed on all sanitary manholes. A rubber seal extension, to cover any additional heights of chimney not covered by the seal itself, shall be used when required. The internal and external rubber seal and seal extensions shall be as manufactured by Cretex Specialty Products, or equal. The sleeves shall be extruded from a high-grade rubber compound conforming to the applicable requirements of ASTM C 923. The bands used for compressing the sleeve and extension against the manhole shall be fabricated from 16-gauge stainless steel conforming to ASTM A 240 type 304, any screws, bolts or nuts used on this band shall be stainless steel conforming to ASTM F 593 and 594, type 304.

The joint between the manhole frame and chimney or cone shall be 3/4" thick and made using cement mortar. Any sealant used between the adjustment or grade rings of the chimney shall not be used in this joint. Installation of these rubber seals shall be in accordance with the manufacturer's recommendation.

6. Pipe Connectors

Pipe connections to sanitary manholes shall be made with one of the following or approved equal:

Kor-N-Seal, Type I or II as manufactured by Trelleborg Sealing Solutions
Dura-Seal gasket as manufactured by Blackthorn, Inc.
Z-Lok or Quik-Lok as manufactured by A-Lok Products, Inc.

7. Sanitary Manhole Castings

In addition to the requirements of INDOT Standard Specifications Section 910.05, all sanitary manhole covers shall be stamped as follows: "City of Franklin Sanitary Sewer".

Standard sanitary manholes shall have a R-1772 CVH frame and lid as manufactured by Neenah Foundry or 1875-3 as manufactured by East Jordan Iron Works. Watertight sanitary manhole castings shall have a R-1916F frame and lid as manufactured by Neenah Foundry or 1045 HD as manufactured by East Jordan Iron Works. Per City of Franklin requirements, the frame for watertight castings shall be anchored through the riser rings (if provided) to the manhole cone section with four galvanized rods.

8. Adjusting Rings

Where one (1) solid riser or barrel section cannot be used, final adjustments in elevation of the frame and cover shall only be accomplished by the use of precast concrete adjusting rings conforming to ASTM C 478.

Rings shall be of a nominal thickness of not less than four (4) inches and not more than twelve (12) inches total of adjusting rings shall be allowed for adjustment of the manhole frame and cover to required elevation.

9. Structure Backfill

Sanitary sewer manholes shall be backfilled with Type 1 materials in accordance with the INDOT Standard Specifications Section 211.03.1. The material shall be deposited in lifts not to exceed 6 in. (150 mm) loose measurement, and shall be placed in accordance with the neat line limits shown on the plans. Each lift shall be mechanically compacted using a hand-held vibratory plate compactor, and shall be compacted to the requirements as specified on the backfill details of these plans.

Construction Requirements
Construction and installation requirements shall be in accordance with the plan details and Standard Specifications.

The CONTRACTOR shall check sanitary manholes by performing air tests in accordance with ASTM C1244-93, Standard Test Method for Concrete Sewer Manholes by Negative Air Pressure (Vacuum) Test.

Method of Measurement
Sanitary manholes will be measured per each unit, complete in place.

Basis of Payment
The accepted quantities of sanitary manholes and sanitary doghouse manholes will be paid for at the contract unit price per each for the manhole, complete in place.

Payment will be made under:

Pay item	Pay Unit Symbol
Sanitary Manhole	EA

The cost of excavation, installation, structural backfill, vacuum testing, and all necessary incidentals not specified as a pay item shall be included in the cost of the manhole.

The cost of all flexible boot connectors, cast-in-place gasket connections, rubber chimney seals, joint sealer, precast or cast-in-place concrete bases, class 'A' concrete for benchwalls, reinforcing steel, non-shrink grout, neoprene gasket, and all necessary incidentals not specified as a pay item shall be included in the cost of the manhole.

No additional payment will be made for repair, remediation, or replacement of manholes, backfill, or replaced pipe, and all other work associated with the repair, remediation, or replacement of manholes which do not pass vacuum testing.

34 SANITARY MANHOLE – FURNISH & ADJUST CASTING TO GRADE

Description
This work shall consist of furnishing new sanitary manhole castings and adjusting the rim elevation to grade in accordance with 105.03.

Materials

1. Concrete Pad/Collar

All manhole castings shall have a class 'A' concrete pad/collar per the construction plans.

2. Sanitary Manhole Castings

In addition to the requirements of INDOT Standard Specifications Section 910.05, all sanitary manhole covers shall be stamped as follows: "City of Franklin Sanitary Sewer".

Standard sanitary manholes shall have a R-1772 CVH frame and lid as manufactured by Neenah Foundry or 1875-3 as manufactured by East Jordan Iron Works. Watertight sanitary manhole castings shall have a R-1916F frame and lid as manufactured by Neenah Foundry or 1045 HD as manufactured by East Jordan Iron Works. Per City of Franklin requirements, the frame for watertight castings shall be anchored through the riser rings (if provided) to the manhole cone section with four galvanized rods.

Construction Requirements
Construction and installation requirements shall be in accordance with the plan details and Standard Specifications.

Method of Measurement
Sanitary manhole casting adjustments will be measured per each unit, complete in place.

Basis of Payment
The accepted quantities of sanitary manholes adjusted to grade will be paid for at the contract unit price per each for the manhole, complete in place.

Payment will be made under:

Pay item	Pay Unit Symbol
Sanitary Manhole, Furnish & Adjust Casting to Grade	EA

The cost of excavation, installation, structural backfill, vacuum testing, and all necessary incidentals not specified as a pay item shall be included in the cost of the manhole.

The cost of equipment, labor and materials necessary to complete this work including all frames, lids, adjusting rings, concrete pad/collar, and all necessary incidentals not specified as a pay item shall be included in the cost of the item.

35 SANITARY SEWER AND LATERALS

Description

This work shall consist of the construction of sanitary sewers, sanitary lateral connections and sanitary lateral cleanouts in accordance with 105.03.

Materials

All sanitary sewer pipe and fitting materials shall be provided by a manufacturer from the INDOT approved list of thermoplastic pipe manufacturers. The list will specify the manufacturer and thermoplastic pipe designation. All of these materials shall comply with the applicable AASHTO or ASTM requirements listed below and will only be accepted from qualified manufacturers. The manufacturer is defined as the plant which produces the thermoplastic pipe. The manufacturer shall become qualified by establishing a history of satisfactory quality control of these materials as evidenced by the test results performed by the manufacturer's testing laboratory. Sanitary sewer pipe materials shall conform to the following requirements:

1. Polyvinyl Chloride Pipe (PVC)

   A. Smooth Wall PVC

   All PVC pipe 15 inches or less in diameter shall meet the requirements of ASTM Designation D 3034. All PVC pipe greater than 15 inches in diameter shall meet or exceed the requirement of ASTM F 679. For diameters 15 inches or less, the pipe shall have a minimum cell classification of 12454-B and for diameters greater than 15 inches, the pipe shall have a minimum cell classification of 12454-C with all pipe having a minimum tensile strength of 7000 psi as defined in ASTM D 1784.

   All PVC pipe shall be tested in accordance with Standard Method of Test for External Loading Properties of Plastic Pipe by Parallel - Plate Loading, ASTM Designation 2412. Minimum pipe stiffness shall be 46 psi.

2. Sanitary Service Laterals & Cleanouts

   Sanitary sewer service laterals and cleanouts shall be SDR 35 PVC pipe conforming to ASTM D 3034. Joints shall be gasket push-on, compression type conforming to ASTM D 3212. Gaskets shall conform to ASTM F 477. Cleanout risers shall be HDPE meeting the requirements of ASTM Designation D 3034.

   Lateral connections to the sanitary sewer main shall only be made using manufactured wyes, tees or adapters of the bell and spigot type. No saddle connections shall be permitted.

   Connections between new and existing laterals shall be made using rubber couplings.

Concrete for type 2 sanitary lateral cleanouts shall be Class 'A'. A solid cleanout box frame cover shall be furnished and installed with each type 2 cleanout.

Construction Requirements
Contractor shall maintain sanitary sewer service to adjacent properties utilizing temporary bypass pumping in accordance with these specifications. Contractor shall field locate the active, existing sanitary laterals prior to construction to ensure reconnection to the sewer main. Abandoned sanitary laterals shall not be reconnected. Contractor shall confirm limits of the sewer lateral reconstruction with the INSPECTOR and IWM Consulting during construction. Construction and installation requirements shall be in accordance with the plan details and Standard Specifications.

The CONTRACTOR shall check pipe deflection by performing a mandrel test in accordance with 715.09 except that no pipe shall exceed a deflection of five percent (5%) or greater. The mandrel shall be pulled through the sewer by one person, by hand and without the aid of a mechanical pulling device. All pipe exceeding the maximum deflection shall be relaid or replaced.

The CONTRACTOR shall check pipe leakage by performing one of the following leakage tests:

a) A hydrostatic test with a minimum of two feet of positive head. The rate of exfiltration or infiltration shall not exceed two hundred gallons per inch of pipe diameter per linear mile per day.
b) An air test in accordance with ASTM F1417-92, Standard Test Method for Installation Acceptance of Plastic Gravity Sewer Lines Using Low-Pressure Air, for plastic pipe.

Method of Measurement
The accepted quantities of sanitary sewer pipe and sanitary lateral connections will be measured by the linear foot, complete in place.

Basis of Payment
The accepted quantities of sanitary sewer pipe and sanitary lateral connections will be paid for at the contract unit price per linear foot for pipe of the type, shape, and size specified, complete in place. The accepted quantities of sanitary lateral reconnections will be paid for at the contract unit price per each repair and/or reconnection, complete in place. The accepted quantities of sanitary lateral cleanouts will be paid for at the contract unit price per each for the cleanout type specified, complete in place.

Payment will be made under:

Pay item	Pay Unit Symbol
Pipe, Sanitary Sewer, 8 in. SDR-35 PVC	LFT
Pipe, Sanitary Sewer, 10 in. SDR-35 PVC	LFT
Pipe, Sanitary Sewer, 12 in. SDR-35 PVC	LFT
Sewer, Sanitary Lateral, Connections	LFT
Sewer, Sanitary Lateral, Reconnect	EA
Sewer, Sanitary Lateral, Cleanout, Type 1	EA
Sewer, Sanitary Lateral, Cleanout, Type 2 (Undistributed)	EA

The cost of excavation, installation, deflection testing, leakage testing, and all necessary incidentals not specified as a pay item shall be included in the cost of the pipe.

The cost of all fittings, wyes, tees, and bends shall be included in the cost of the sanitary lateral connections.

The cost of all solid covers, casting frames, concrete, aggregate for bedding and backfill, fibermesh

reinforcement, cleanout caps, wyes and bends shall be included in the cost of the sanitary lateral cleanouts of the type specified.

No additional payment will be made for repair, remediation, or replacement of pipes, backfill, video inspection of the repaired, remediated, or replaced pipe, and all other work associated with the repair, remediation, or replacement of unacceptable pipes.

36 FIELD OFFICE EQUIPMENT

The CONTRACTOR shall supply the following items and install them for the duration of the contract for use by the INSPECTOR and OWNER's representative. Each item of the following items shall be installed at both the current field office utilized by the INSPECTOR (located at 351 E. Jefferson Street); as well as, the field office to be supplied by the CONTRACTOR for use by the OWNER's Representative.

1. Computer System

a. Laptop computer
b. Processor – Intel or AMD compatible, 2.0 GHz
c. Memory – 8.0 GB, 1333 MHz
d. Hard Drive – 500 GB, 5,400 rpm or 128 GB SSD (Solid State Drive)
e. Ports – Two USB 2.0 compliant ports
f. Network/Wireless – Ethernet or wireless card to be compatible with the selected internet and office network connections
g. Graphics – Integrated graphics card
h. Display - 15 in. WX GA LCD panel
i. Battery - Nine cell Lithium ion
j. Miscellaneous - One compatible port replicator with AC adapter, one additional AC adapter, one DC adapter and one padded carrying case.

The initial condition of the computer system shall be nearly pristine. All owner installed e-mail accounts, games, spyware, online services, applications, network or other profiles previously set up on the system shall be removed prior to placement in the field office. If the system was provided for a previous contract, all software not specified shall be removed prior to placement in the current field office.

The CONTRACTOR shall provide a minimum 900 J, six-outlet surge protector for each computer system specified in the contract.

2. Computer System Equipment

a. Monitor – 22 in. widescreen digital flat panel with VGA and DVI connections
b. Keyboard – USB enhanced multimedia keyboard
c. Mouse – Optical USB 2-button scroll mouse
d. Miscellaneous - One port replicator with AC adapter, one additional AC adapter, one DC adapter that is compatible with the INSPECTOR and OWNER's representative's provided laptop or mobile device.

3. Computer Software

The CONTRACTOR shall provide software for the computer system in accordance with the minimum requirements listed below.

a. Operating System Software – Windows 10 Professional.

b. Productivity Software – Microsoft Office 2013 Small Business and Adobe Acrobat Professional XI.
c. Security Software – McAfee Virus Scan Plus.

All software shall include the most current updates and patches at the time the computer system is provided to the INSPECTOR and OWNER's representative. The CONTRACTOR shall provide for installation of updates and patches for the operating system, productivity and security software during the term of use of the computer system by the INSPECTOR and OWNER's representative.

Updates and patches shall be provided by an automatic update method.

The INSPECTOR and OWNER's representative may install and maintain proprietary software on the computer in order to run the construction management programs.

4. Miscellaneous Computer Requirements

The CONTRACTOR shall provide all cables, connections and software required to connect the computer system provided by the CONTRACTOR or by the OWNER's representative to the printer and the scanner.

The CONTRACTOR shall provide an Ethernet and a wireless office network to enable all computer systems in the field office to access the field office internet service, the printer and the scanner.

The CONTRACTOR shall provide all manuals necessary for operation of the computer system, computer system equipment and software with the system and shall include all documentation normally furnished with the equipment and software when purchased.

5. Field Office Machines

The CONTRACTOR shall provide a fully operational copier, printer, and document scanner for the OWNER's representative's exclusive use in the field office in accordance with the minimum requirements listed herein.

In lieu of separate copier, printer, and scanner, the CONTRACTOR may provide an all-in-one unit that meets all the requirements for any combination of the individual machines being provided. Separate machines shall be provided for those machine functions that are not included in an all-in-one type machine.

1. Copier

The copier shall be compatible with, and shall be connected to, the computer system provided by the CONTRACTOR or the OWNER's representative for use by the OWNER's representative in the field office. The copier shall be capable of using plain paper and of making full size, black and white copies of letter, legal and ledger US paper size original documents. The copier shall be capable of reducing and increasing copy sizes. The copier shall have a self-feeding paper tray, an automatic document feeder and be capable of producing at least 20 copies per minute.

2. Printer

The printer shall be compatible with, and shall be connected to, the computer system provided by the CONTRACTOR or by the OWNER's representative for use by the OWNER's representative in the field office. The printer shall be capable of printing single-sided, black and white letter, legal and ledger US paper size documents at a rate of 20 pages per minute and capable of automatic duplex printing. More than one printer may be used to meet this requirement.

All printers shall be set to accommodate wireless printing from the OWNER's representative's provided laptop or mobile device.

3. Document Scanner

The document scanner shall be compatible with, and shall be connected to, the computer system provided by the CONTRACTOR or the OWNER's representative for use by the OWNER's representative in the field office. The scanner shall be capable of scanning letter and legal-size documents and shall have an automatic document feeder and be capable of 200 to 600 dpi black and white resolution, preset to 200 dpi.

4. Miscellaneous Office Machine Requirements

The CONTRACTOR shall provide letter, legal and ledger size paper, ink cartridges and toner as required by the Engineer for the operation of each piece of equipment provided. If any office machine becomes defective, inoperable, damaged, or stolen, that machine shall be repaired or replaced within five business days after the CONTRACTOR is notified by the Engineer. If any of the office machines are not maintained by the CONTRACTOR as required, the Engineer may withhold partial payments until the machine is operational to the OWNER's representative's satisfaction.

6. Office Furniture

The CONTRACTOR shall provide the furniture pieces for the OWNER's representative's exclusive use in the field office in accordance with the minimum requirements listed herein.

a. 1 office desk and office chair
b. 4 File cabinet drawers
c. First-aid Kit

If any furniture becomes defective, inoperable, damaged, or stolen, that furniture shall be repaired or replaced within five business days after the CONTRACTOR is notified by the OWNER's representative.

Pay Items	**Pay Unit Symbol**
Field Office Computer System Equipment	EA

The cost necessary to provide, setup and maintain the computer system equipment and miscellaneous field office machines shall be included in the cost of the computer system equipment.

37 FIELD OFFICE

Description

This work shall consist of providing the specified facilities and supplies in accordance with 105.03.

Construction Requirements

The CONTRACTOR shall provide the OWNER's Representative with a Type 'C' Field Office in accordance with INDOT Standard Specifications Section 628. CONTRACTOR shall coordinate with the OWNER's Representative for the exact field office location, toilet facilities location and additional computer systems equipment required by the OWNER's Representative. In addition to the facilities, supplies and equipment required in accordance with these specifications and INDOT Standard Specifications, the CONTRACTOR shall provide a new, clean 21.9 cu. ft. Whirlpool (or equivalent) bottom freezer refrigerator for test sample storage.

Method of Measurement

No measurement will be made.

Basis of Payment

This work will be paid for at the contract unit price per each month that the field office in utilized.

Payment will be made under:

Pay item	**Pay Unit Symbol**
Field Office, Type C	MOS

The cost of all equipment, labor and materials necessary to setup, secure, maintain and remove the field office shall be included in the cost of the field office.

The cost of all heating, cooling, electrical service, internet service, telephone service and other miscellaneous utility bills required for the field office shall be included in the cost of the field office.

Appendix B

Design-Level Data Soil Boring Logs

and

Temporary Monitoring Well Soil Boring Logs and Construction Diagrams

LOG OF BORING DSB-1

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 11'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 11'
▽ After Completion - Not Applicable

Temp Well: DSB-1
Ground Elev.: 734.70

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0–4	CL	SILTY CLAY, medium stiff, brown, moist, trace gravel & sand	1		0.0	100
			2		0.0	100
4–8	SC	CLAYEY SAND, medium dense - loose, brown, moist, medium grained	3		0.0*	100
			4		0.0*	100
8–20	SM	SAND, brown, medium dense, with gravel & fines	5		0.0	100
10–11		Wet, traces of gravel & silt @ 11 feet	6		0.0	100
12–14			7		0.0	100
14–15		Brown-grey, medium to coarse grained @ 14 feet	8		0.0*	100
16–17		Gravelly, brown @ 17 feet	9		0.0	100
18–19		Coarse, brown-grey, with gravel @ 18.5 feet	10		0.0	100
20	ML	CLAYEY SILT, moist, brown-grey				
20–21	SP	SAND, coarse, brown-grey, wet, traces of gravel & silt	11		0.0*	100
22–25	CL	SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	12		0.0	100

Boring completed at 25.0 feet BGS.

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-1.BOR

LOG OF BORING DSB-2

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - Not Applicable

Temp Well: DSB-2
Ground Elev.: 734.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0–1	AR		ASPHALT/GRAVEL	1		0.0	100
1–3	CL		SANDY CLAY, moist, brown, traces of gravel	2		0.0	100
3–5	CL		Very Sandy @ 4 feet	3		0.0*	100
5–7	SP		SAND, medium grained, moist, brown	4		0.0*	100
7–9	SM		SAND, dense, brown, with gravel & fines, varying colors	5		0.0	100
9–11	SM			6		0.0	100
11–13	SM		Very moist, brown-grey @ 12.5 feet	7		0.0	100
13–15	SM		Wet, very coarse, with silt @ 15 feet	8		0.0*	100
15–16	SM		Reddish from 16 - 16.75 feet				
16–17	SM		Saturated, brown, gravelly, silty @ 16.75 feet	9		0.0	100
17–19	SP		SAND, grey, with clays @ 18.5 feet	10		0.0	100
19–21	SM		SAND, dense, very coarse, wet, with silt	11		0.0*	100
21–23	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	12		0.0	100
23–25			Boring completed at 24.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-2.BOR

LOG OF BORING DSB-3

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 13.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 13.5'
▽ After Completion - Not Applicable

Temp Well: DSB-3
Ground Elev.: 734.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0–1	AR		ASPHALT/GRAVEL sub-base	1		0.0	100
1–4	CL		SANDY CLAY, moist, brown, traces of gravel	2		0.0	100
4–7	CL		Very sandy @ 5 feet	3		0.0*	100
7–8	SP		SAND, medium grained, brown, moist	4		0.0*	100
8–13	SM		SAND, slightly moist, dense, brown, with gravel & fines	5		0.0	100
11–13	SM		Moist @ 11 feet	6		0.0	100
13–14	SM		Brown-grey, wet, gravelly with silt @ 13.5 feet	7		0.0	100
14–20	SM		Brown @ 14.5 feet	8		0.0*	100
17–20	SM			9		0.0	100
19–20	SM			10		0.0	100
20–22	SP		SAND, coarse, brown-grey, with traces of silt Very coarse, with gravel @ 21 feet Medium to coarse grained, poorly-sorted @ 22 feet	11		0.0*	100
23–24	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	12		0.0	100

Boring completed at 24.0 feet BGS.

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-3.BOR

LOG OF BORING DSB-4

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 17'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 17'
▽ After Completion - Not Applicable

Temp Well: DSB-4
Ground Elev.: 735.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, very soft	1		0.0	50
2			No Recovery				
3				2		-	0
4							
5	CL		SANDY CLAY, very soft	3		0.0	50
6							
7				4		0.0*	100
8			Medium stiff @ 8 feet				
9	SM		SAND, dense, slightly moist, brown, with gravel & fines	5		0.0*	100
10							
11				6		0.0	100
12							
13				7		0.0	100
14			Moist @ 14.5 feet				
15			Very moist, brown-grey, with fines @ 15 feet	8		0.0	100
16							
17			Wet, brown @ 17 feet	9		0.0*	100
18							
19				10		0.0	100
20	SP		SAND, dense, coarse, brown-grey, wet				
21				11		0.0	100
22							
23				12		0.0*	100
24	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	13		0.0	100
25			Boring completed at 25.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-4.BOR

LOG OF BORING DSB-5

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - Not Applicable

Temp Well: DSB-5
Ground Elev.: 735.40

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0–1	AR		ASPHALT/GRAVEL sub-base	1		4.2	100
1–7	CL		SANDY CLAY, soft to medium stiff, brown, moist Very Sandy @ 5 feet	2 3		0.7 0.2	100 100
7–15	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4 5 6 7 8		0.1* 0.0* 0.0 0.0 0.0	100 100 100 100 100
15–20	SM		SILTY SAND, very coarse, brown, wet, traces of gravel	9 10		0.0* 0.0	100 100
20–23	SP		SAND, medium to coarse grained, brown-grey, wet, coarsens to very coarse with depth	11 12		0.0 0.0*	100 100
23–24	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	13		0.0	100
24–25			Boring completed at 24.5 feet BGS.				

LOG OF BORING DSB-6

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 13'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 13'
▽ After Completion - Not Applicable

Temp Well: DSB-6
Ground Elev.: 735.40

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1				1		0.0	100
2			SANDY CLAY, medium stiff, brown, moist, traces of gravel				
3				2		0.0	100
4	CL		Very sandy @ 4 feet				
5				3		0.0	100
6							
7				4		0.0*	100
8			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
9				5		0.0*	100
10							
11	SP			6		0.0	100
12			Moist @ 12 feet				
13			Wet, dense @ 13 feet	7		0.0	100
14							
15			SILTY SAND, coarse, brown-grey, wet, poorly-sorted, traces of gravel	8		0.0	100
16							
17	SM			9		0.1*	100
18							
19				10		7.0	100
20			SAND, coarse, brown-grey, wet, poorly-sorted				
21				11		0.1	100
22	SP						
23				12		0.0*	100
24							
25	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	13		0.0	100

Boring completed at 25.0 feet BGS.

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-6.BOR

LOG OF BORING DSB-7

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 13'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 13'
▽ After Completion - Not Applicable

Temp Well: DSB-7
Ground Elev.: 735.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1				1		4.5	100
2	CL		SANDY CLAY, medium stiff, brown, moist, traces of gravel				
3				2		1.4	100
4			Very sandy @ 4 feet				
5				3		0.1	100
6							
7	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.1*	100
8							
9				5		0.3*	100
10							
11				6		0.2	100
12							
13			SAND, medium grained, wet, brown-grey, with silt	7		0.0	100
14							
15	SM		SILTY, coarse, poorly-sorted, traces of gravel @ 15 feet	8		0.0	100
16							
17				9		0.0*	100
18							
19				10		0.0	100
20	SP		SAND, coarse, brown-grey, wet, poorly-sorted				
21				11		0.0	100
22							
23				12		0.1*	100
24	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	13		0.1	100
25			Boring completed at 25.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-7.BOR

LOG OF BORING DSB-8

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - Not Applicable

Temp Well: DSB-8
Ground Elev.: 733.90

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0–1	AR		ASPHALT/GRAVEL sub-base	1		6.3	100
1–7	CL		SANDY CLAY, medium stiff, brown, moist, traces of gravel Very sandy @ 4 feet	2 3		4.8 0.3	100 100
7–12	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4 5 6		0.1* 0.3* 0.1	100 100 100
12–24	SM		SAND, medium grained, very moist, brown-grey, traces of silt Brown @ 14.5 feet SILTY, brown-grey, saturated, coarsens with depth to very coarse, with gravel @ 15 feet	7 8 9 10 11 12		0.1 0.1 0.1 0.1* 0.1 0.1	100 100 100 100 100 100
24–25	ML		Fine SILT, clayey with depth	13		0.0*	100
25–30	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	14 15		0.0 0.0	100 100

Boring completed at 30.0 feet BGS.

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-8.BOR

LOG OF BORING DSB-9

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/25/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-9
Ground Elev. : 733.40

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base	1		3.0	100
1–10	CL		SANDY CLAY, medium stiff, brown, moist Very sandy @ 6 feet	2 3 4		0.8 0.1 0.0*	100 100 100
8–9	SP		SAND, medium dense/dense, moist, brown, poorly-sorted, with gravel & fines	5		0.0*	100
10–25	SM		SILTY SAND, coarse, brown, wet Very coarse @ 17 feet Coarse @ 20 feet Very coarse @ 23 feet	6 7 8 9 10 11 12		0.0 0.0 0.0 0.0 0.0* 0.1 0.0	100 100 100 100 100 100 100
25–30	CL		No Recovery from 20 - 25 feet (SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand in cutting shoe)	13 14 15		0.0* - -	100 0 0
30			Boring completed at 30.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-9.BOR

LOG OF BORING DSB-10

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 12'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 12'
▽ After Completion - Not Applicable

Temp Well: DSB-10
Ground Elev.: 733.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1				1		0.1	100
2	CL		SANDY CLAY, medium stiff, brown, traces of gravel				
3				2		0.0	100
4			Very sandy @ 4 feet				
5				3		0.0	100
6							
7	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0*	100
8							
9				5		0.0*	100
10							
11				6		0.0	100
12							
13	SM		SILTY SAND, coarse, brown-grey, wet, traces of gravel	7		0.0	100
14							
15			Very coarse, less silt @ 15 feet	8		0.0	100
16							
17				9		0.0*	100
18							
19				10		0.0	100
20			Medium to coarse grained @ 20 feet Coarse @ 20.5 feet				
21				11		0.0*	100
22							
23	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	12		0.0	100
24			Boring completed at 24 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-10.BOR

LOG OF BORING DSB-11

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 12'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 12'
▽ After Completion - Not Applicable

Temp Well: DSB-11
Ground Elev.: 733.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, medium stiff, brown, moist	1		0.1	100
2				2		0.0	100
3							
4				3		0.0	100
5							
6			Very sandy @ 6 feet	4		0.0*	100
7							
8	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	5		0.0*	100
9							
10				6		0.0	100
11							
12			SILTY SAND, brown, wet, gravelly				
13	SM			7		0.0	100
14							
15				8		0.0*	100
16			Medium grained @ 16.5 feet				
17			Coarse to very coarse @ 17.5 feet	9		0.0	100
18							
19			Less silt, medium grained, brown-grey @ 19.5 feet	10		0.0	100
20							
21				11		0.0*	100
22	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & silt				
23				12		0.0	100
24			Boring completed at 24 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-11.BOR

LOG OF BORING DSB-12

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - Not Applicable

Temp Well: DSB-12
Ground Elev.: 733.20

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR	ASPHALT/GRAVEL sub-base				
1	CL	SANDY CLAY, medium stiff, moist, brown	1		0.6	100
2			2		0.1	100
3						
4						
5		Very sandy @ 5 feet	3		0.0	100
6	SP	SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0*	100
7						
8			5		0.0*	100
9						
10			6		0.0	100
11						
12	SM	SILTY SAND, rocky, very moist, with fines	7		0.0	100
13						
14						
15		Very coarse, brown, wet, with gravel @ 15 feet	8		0.0	100
16						
17			9		0.0*	100
18		Medium to coarse grained @ 18 feet	10		0.0	100
19						
20	SP	SAND, medium to fine grained, brown-grey, wet, with silt				
21		Coarse @ 21 feet	11		0.0	100
22		Medium grained @ 21.5 feet Medium fine to medium grained @ 22 feet				
23	CL		12		0.0*	100
		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & silt				
24		Boring completed at 23.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-12.BOR

LOG OF BORING DSB-13

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10.5'
▽ After Completion - Not Applicable

Temp Well: DSB-13
Ground Elev.: 733.20

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, moist, medium stiff, brown	1		4.3	100
2				2		3.7	100
3							
4				3		0.3	100
5							
6			Very sandy @ 6 feet	4		0.1*	100
7							
8	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	5		0.1*	100
9							
10	CL		SANDY CLAY, brown, stiff, moist				
11	SM		SILTY SAND, medium grained, poorly sorted, brown, wet	6		0.0	100
12							
13				7		0.0*	100
14							
15			Less silt, grades to very coarse @ 15 feet	8		0.1	100
16							
17	CL		SILTY CLAY, hard/very stiff, slightly moist, traces of gravel & sand	9		0.0*	100
18			Boring completed at 18.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-13.BOR

LOG OF BORING DSB-14

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10.5'
▽ After Completion - Not Applicable

Temp Well: DSB-14
Ground Elev.: 728.70

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, moist, medium stiff, brown	1		0.0	100
2							
3			Very sandy @ 3.5 feet	2		0.0	100
4							
5				3		0.1	100
6	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
7				4		0.0	100
8							
9			Moist @ 9 feet	5		0.0*	100
10	SM		SAND, coarse to medium grained, brown-grey, wet, traces of gravel and silt				
11				6		0.0*	100
12							
13				7		0.0*	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
15				8		0.1	100
			Boring completed at 15.0 feet BGS.				

▼

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-14.BOR

LOG OF BORING DSB-15

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-15
Ground Elev.: 728.70

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, moist, brown, medium stiff	1		0.1	100
2				2		0.0	100
3							
4				3		0.0	100
5							
6	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
7							
8				5		0.0*	100
9							
10	SM		SILTY SAND, coarse, wet, brown, traces of gravel	6		0.0*	100
11							
12	CL		SILTY CLAY, stiff, moist, brown, traces of gravel & sand	7		0.0*	100
13	SM		SILTY SAND, dense, coarse, brown, wet, traces of gravel				
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15			Boring completed at 15.0 feet BGS.				

▼ Water level at 10 feet

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-15.BOR

LOG OF BORING DSB-16

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8'
▽ After Completion - Not Applicable

Temp Well: DSB-16
Ground Elev.: 728.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, moist, medium stiff, brown	1		0.1	100
2							
3				2		0.0	100
4			Very sandy @ 4 feet				
5				3		0.0	100
6							
7				4		0.0	100
8			SILTY SAND, medium grained, brown-grey, wet				
9				5		0.0*	100
10	SM		Coarse to medium grained @ 10 feet				
11				6		0.0*	100
12							
13	CL		SILTY CLAY, brown, stiff	7		0.0*	100
14	SM		SILTY SAND, coarse to medium grained, brown-grey, wet				
15	CL		SILTY CLAY, stiff, brown	8		0.0*	100
	SM		SILTY SAND, fine grained, grey, saturated				
16	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	9		0.0	100

Boring completed at 16.5 feet BGS.

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-16.BOR

LOG OF BORING DSB-17

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8.75'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8.75'
▽ After Completion - Not Applicable

Temp Well: DSB-17
Ground Elev.: 728.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY FILL MATERIAL	1		0.7	100
2				2		0.1	100
3							
4				3		0.0	100
5							
6				4		0.0	100
7							
8			Asphalt @ 8.5 - 8.75 feet				
9	SM		SILTY SAND, coarse to medium grained, medium dense, wet, traces of gravel	5		0.0*	100
10							
11				6		0.0*	100
12			~ 2-inch silty clay seam @ 12.5 feet				
13				7		0.0*	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15			Boring completed at 15.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-17.BOR

LOG OF BORING DSB-18

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-18
Ground Elev.: 728.40

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, moist, medium stiff, brown	1		0.1	100
2							
3				2		0.0	100
4							
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	3		0.0	100
6							
7				4		0.0	100
8			Very moist @ 8.5 feet				
9				5		0.0*	100
10	SM		SILTY SAND, coarse, wet, traces of gravel				
11				6		0.0*	100
12							
13			Medium grained @ 12.75 feet	7		0.0*	100
14	CL		SILTY CLAY, brown, stiff, moist Hard/very stiff, slightly moist, grey, traces of gravel & sand @ 14.25 feet	8		0.0	100
15			Boring completed at 15.0 feet BGS.				
16							

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-18.BOR

LOG OF BORING DSB-19

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8.5'
▽ After Completion - Not Applicable

Temp Well: DSB-19
Ground Elev.: 728.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		CLAYEY FILL MATERIAL	1		4.4	50
2			No Recovery (soft material, rock pushed)	2		-	0
3							
4				3		0.0	50
5	CL		SANDY CLAY FILL MATERIAL				
6				4		0.0	100
7							
8				5		0.0*	100
9			SILTY SAND, coarse, brown-grey, wet, traces of gravel,				
10				6		0.0*	100
11	SM						
12				7		0.0*	100
13							
14			medium grained @ 13.75 feet	8		0.0	100
15	CL		SILTY CLAY, brown, moist, stiff				
	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
16			Boring completed at 15.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-19.BOR

LOG OF BORING DSB-20

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-20
Ground Elev.: 728.5

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1			SANDY CLAY, moist, medium stiff, brown	1		0.0	100
2							
3	CL			2		0.1	100
4							
5			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	3		0.0	100
6							
7	SP			4		0.0	100
8			Moist @ 8 feet				
9				5		0.2*	100
10			SILTY SAND, coarse, brown-grey, wet, poorly-sorted, traces of gravel				
11				6		0.0*	100
12	SP						
13				7		0.0*	100
14			Medium grained @ 13.5 feet				
15	CL		SILTY CLAY, brown, moist, stiff Hard/very stiff, slightly moist, grey, traces of gravel & sand @ 15 feet	8		0.0	100
16				9		0.0	100
17			Boring completed at 16.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-20.BOR

LOG OF BORING DSB-21

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-21
Ground Elev.: 728.20

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY FILL MATERIAL	1		5.1	100
2				2		0.9	100
3							
4				3		0.0	100
5	CL		SANDY CLAY, moist, medium stiff, brown				
6				4		0.0	100
7			Very moist, very sandy, some coarse sand @ 7.5 feet				
8				5		0.0*	100
9							
10	SM		SILTY SAND, coarse, wet, some silty clay seams	6		0.0*	100
11	CL		SILTY CLAY, brown, moist, stiff				
12	SM		SILTY SAND, coarse, brown, wet Grey, medium grained @ 11.5 feet				
13	CL		Very SILTY CLAY, grey, moist, stiff	7		0.0*	100
	SP		SAND, fine to medium grained, brown, wet				
14	CL		SILTY CLAY, brown, moist, stiff				
	SP		SAND, medium to fine grained, brown-grey, wet, poorly sorted	8		0.0*	100
15	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
16				9		0.0	100
17			Boring completed at 16.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-21.BOR

LOG OF BORING DSB-22

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/26/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8.5'
▽ After Completion - Not Applicable

Temp Well: DSB-22
Ground Elev.: 726.70

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY FILL MATERIAL	1		5.2	100
2	CL		SANDY CLAY, brown, moist, medium stiff	2		0.0	100
3	CL						
4	CL		Very sandy @ 4 feet	3		0.1	100
5	CL						
6	CL			4		0.0	100
7	CL		Very moist, very silty @ 7.5 feet				
8	CL		Piece of asphalt @ 8 feet				
9	SM		SAND, coarse, brown, wet, traces of gravel & silt	5		0.0*	100
10	SM						
11	SM			6		0.0*	100
12	SM		Medium to fine grained , brown-grey @ 12.25 feet				
13	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	7		0.0*	100
14	CL			8		0.0	100
15			Boring completed at 14.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-22.BOR

LOG OF BORING DSB-23

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 7.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 7.5'
▽ After Completion - Not Applicable

Temp Well: DSB-23
Ground Elev.: 724.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY FILL MATERIAL	1		20.3	100
2				2		8.0	100
3							
4							
5	CL		SANDY CLAY, moist, brown, medium stiff	3		2.6	100
6							
7				4		0.0*	100
8	SC		CLAYEY SAND, coarse, brown, soft, wet				
9				5		0.0*	100
10	SM		SILTY SAND, coarse, brown-grey, wet				
11	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	6		0.0*	100
12							
13	SM		SILTY SAND, fine grained, grey, wet	7		0.0*	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15			Boring completed at 11.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-23.BOR

LOG OF BORING DSB-24

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 6.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 6.5'
▽ After Completion - Not Applicable

Temp Well: DSB-24
Ground Elev.: 722.20

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY FILL MATERIAL	1		0.1	100
2							
3	CL		SANDY CLAY, soft to medium stiff, moist, brown	2		0.0	100
4							
5			Very moist, very sandy, soft @ 5.5 feet	3		0.0*	100
6							
7	SM		SILTY SAND, coarse, wet, traces of gravel & clay	4		0.0*	100
8			Gravelly @ 8 feet				
9				5		0.0*	100
10			Less silt, medium grained @ 9.5 feet				
11	CL		SILTY CLAY, brown, moist, stiff Hard, slightly moist, grey, traces of gravel & sand @ 10.5 feet	6		0.0	100
			Boring completed at 11.0 feet BGS.				

▼ 6.5'

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-24.BOR

LOG OF BORING DSB-25

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 6'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 6'
▽ After Completion - Not Applicable

Temp Well: DSB-25
Ground Elev.: 722.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, dark brown, soft, moist	1		23.1	100
2							
3				2		5.4	100
4							
5			Very moist @ 5 feet	3		0.0*	100
			Asphalt @ 6 feet				
6	SM		SILTY SAND, coarse, wet, brown, traces of gravel & clay				
			Gravelly @ 6.75 feet	4		0.0*	100
7	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
8							
9				5		0.0*	100
10			Boring completed at 10.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-25.BOR

LOG OF BORING DSB-26

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 6'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 6'
▽ After Completion - Not Applicable

Temp Well: DSB-26
Ground Elev.: 722.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0			No Recovery (Rock pushed, soft material)	1		-	0
2				2		-	0
4				3		0.4*	50
5	CL		SANDY CLAY, dark brown, soft, very moist Asphalt @ 6 feet				
6	SM		SILTY SAND, coarse, wet, brown-grey, traces of gravel & clay Gravelly @ 6.75 feet	4		0.0*	100
8	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	5		0.0	100
10			Boring completed at 10.0 feet BGS.				

LOG OF BORING DSB-27

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 6.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 6.5'
▽ After Completion - Not Applicable

Temp Well: DSB-27
Ground Elev.: 722.00

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, medium stiff, brown, moist	1		9.1	100
2				2		5.5	100
3							
4							
5				3		0.0*	100
6	SC		CLAYEY SAND, fine grained, very moist, dark brown-grey				
	SM		SILTY SAND, coarse, brown, wet				
7	CL		SANDY CLAY, soft, wet, brown	4		0.0*	100
	SC		CLAYEY SAND, coarse, soft, wet, brown				
8			Grades to fine soft sandy clay				
9	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	5		0.0	100
10			Boring completed at 10.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-27.BOR

LOG OF BORING DSB-28

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 5.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 5.5'
▽ After Completion - Not Applicable

Temp Well: DSB-28
Ground Elev. : 722.00

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, moist, brown, medium stiff	1		4.9	100
2				2		1.1	100
3							
4							
5				3		0.0*	100
6	SM		SILTY SAND, medium grained, wet, brown				
7	SC		SILTY CLAYEY SAND, coarse, wet, traces of gravel, brown	4		0.0*	100
8	CL		SILTY CLAY, brown, moist, stiff				
	SM		SILTY SAND, very coarse, grey, wet				
9	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	5		0.0	100
10			Boring completed at 10.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-28.BOR

LOG OF BORING DSB-29

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 5.25'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 5.25'
▽ After Completion - Not Applicable

Temp Well: DSB-29
Ground Elev. : 721.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	SP		SANDY FILL MATERIAL	1		4.9	100
2			Brick @ 2.25 Feet				
3	CL		SANDY CLAY, medium stiff to soft, dark brown, moist	2		1.0	100
4							
5	SC		CLAYEY SAND, coarse to medium grained, brown, wet	3		0.0*	100
6	CL		Very SANDY CLAY, fine grained, soft, wet, brown-grey	4		0.0*	100
7							
8	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	5		0.0	100
9							
10			Boring completed at 10.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-29.BOR

LOG OF BORING DSB-30

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 6'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 6'
▽ After Completion - Not Applicable

Temp Well: DSB-30
Ground Elev.: 721.90

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 15 30	Total PID (ppm)	Sample Recovery (%)
0	AR	ASPHALT/GRAVEL sub-base				
1	CL	SANDY CLAY FILL MATERIAL	1		22.2	100
2						
3	SC	CLAYEY SAND, medium grained, dark brown, moist, petroleum odor	2		1.7	100
4						
5	SP	SAND, medium dense/dense, moist, brown, poorly-sorted, with gravel	3		0.0*	100
6	SM	SILTY SAND, medium dense, coarse, wet, brown-grey				
7	SC	Very CLAYEY SAND, soft, wet/saturated, brown-grey	4		0.0*	100
8	CL	SILTY CLAY, brown, moist, stiff				
	SP	SAND, gravelly, grey, wet, dense				
9	CL	SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	5		0.0	100
10		Boring completed at 10.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-30.BOR

LOG OF BORING DSB-31

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 9.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.5'
▽ After Completion - Not Applicable

Temp Well: DSB-31
Ground Elev.: 721.90

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 10 20	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY FILL MATERIAL	1		5.4	100
2	SC		CLAYEY SAND, medium grained, dark brown, moist, petroleum odor	2		1.3	100
3							
4							
5	SP		SAND, medium dense/dense, moist, brown, poorly-sorted, with gravel	3		0.0*	100
6			Very moist (possible fill) @ 6.25 feet				
7				4		0.0*	100
8	SM		SILTY SAND, dense, brown-grey, grades to silty grey clay				
9				5		0.0*	100
	SP		SAND, medium to coarse grained, grey, wet, dense				
10	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
			Boring completed at 10.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-31.BOR

LOG OF BORING DSB-32

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 7'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 7'
▽ After Completion - Not Applicable

Temp Well: DSB-32
Ground Elev.: 722.20

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 10 20	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, grey, very stiff, moist	1		4.1	100
2			No Recovery	2		-	0
3							
4							
5	CL		SANDY CLAY, soft, dark brown-grey, moist	3		0.0*	50
6	SP		SAND, medium dense/dense, moist, brown, poorly-sorted, with gravel & fines	4		0.0*	100
7	SM		SILTY SAND, medium grained, wet, poorly sorted, brown-grey	5		0.0*	100
8							
9							
10	CL		SILTY CLAY, brown, stiff, moist Hard/very stiff, slightly moist, grey, traces of gravel & sand @ 10.5 feet	6		0.0	100
11			Boring completed at 11.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-32.BOR

LOG OF BORING DSB-33

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 5'
▽ After Completion - Not Applicable

Temp Well: DSB-33
Ground Elev.: 723.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 10 20	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		CLAY/SAND/GRAVEL FILL MATERIAL, petroleum odor	1		7.6	50
2			No Recovery (rock pushed)	2		-	0
3							
4							
5	SM		SILTY SAND, coarse to medium grained, wet, brown-grey, traces of gravel	3		0.0	50
6							
7				4		0.0*	100
8							
9				5		0.0*	100
10	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
11				6		0.0	100
12			Boring completed at 11.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-33.BOR

LOG OF BORING DSB-34

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8.75'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8.75'
▽ After Completion - Not Applicable

Temp Well: DSB-34
Ground Elev. : 725.50

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 10 20	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, medium stiff, dark brown-grey, moist	1		0.1	100
2							
3				2		0.1	100
4							
5			Stiff, brown @ 5 feet	3		0.0	100
6							
7				4		0.0*	100
8			Very moist, soft, brown @ 8 feet				
9	SP		SAND, coarse, wet, brown Silty, gravelly, with traces of clay @ 9 feet	5		0.0*	100
10			Less silt, coarse @ 10 feet				
11				6		0.0*	100
12	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
13				7		0.0	100
14			Boring completed at 13.5 feet BGS.				

LOG OF BORING DSB-35

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8.5'
▽ After Completion - Not Applicable

Temp Well: DSB-35
Ground Elev.: 725.10

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 10 20	Total PID (ppm)	Sample Recovery (%)
0			SILTY CLAY, medium stiff, brown, moist				
1				1		2.2	100
2	CL						
3				2		0.6	100
4							
5				3		0.0	100
6			SILTY SAND, coarse, wet, brown-grey				
7	SM		Less silt @ 7 feet	4		0.0*	100
8							
9			SILTY CLAY, hard/very stiff, slightly moist, brown, traces of gravel & sand	5		0.0*	100
10	CL		Grey @10.5 feet				
11			Soft, very moist @11.25 feet	6		0.0*	100
12	SM		SILTY SAND, medium grained, wet, grey	7		0.0	100
	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
13			Boring completed at 12.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-35.BOR

LOG OF BORING DSB-36

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8.5'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8.5'
▽ After Completion - Not Applicable

Temp Well: DSB-36
Ground Elev.: 727.40

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 10 20	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL, SANDY sub-base				
1	CL		FILL MATERIAL	1		15.0	100
2			No Recovery (rock pushed)	2		4.7	100
3							
4							
5	CL		SANDY CLAY, brown, moist, medium stiff	3		0.2	100
6				4		0.2	100
7			Soft, very moist @ 7.5 feet				
8							
9	SM		SILTY SAND, coarse, wet, brown, traces of gravel & clay	5		0.1*	100
10			Very coarse, less silt, brown-grey @ 10 feet	6		0.3*	100
11							
12			Silty, coarse @ 12 feet	7		0.1*	100
13			2" silty clay seam @ 13.5 feet				
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & silt	8		0.0	100
15			Boring completed at 15.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-36.BOR

LOG OF BORING DSB-37

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-37
Ground Elev. : 728.50

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, stiff, moist, brown	1		0.6	100
2							
3				2		0.5	100
4	SC		CLAYEY SAND, medium to fine grained, brown, moist				
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	3		0.1	100
6							
7				4		0.0	100
8							
9			Moist @ 9 feet	5		0.0*	100
10	SM		SILTY SAND, coarse to very coarse, wet, traces of gravel, brown-grey				
11				6		0.0*	100
12							
13				7		0.0*	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & silt	8		0.0	100
15			Boring completed at 15.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-37.BOR

LOG OF BORING DSB-38

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-38
Ground Elev. : 728.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, stiff, moist, brown	1		0.8	100
2				2		1.0	100
3							
4				3		0.1	100
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
6				4		0.0	100
7							
8			No Recovery	5		0.0*	100
9							
10	SM		SILTY SAND, coarse, wet, traces of gravel, brown-grey	6		0.0*	100
11							
12	CL		SILTY CLAY, brown, moist, stiff	7		0.0*	100
13	SM		SILTY SAND, coarse, wet, traces of gravel				
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15			Boring completed at 15.0 feet BGS.				

▼ (water level at 10 feet)

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-38.BOR

LOG OF BORING DSB-39

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 8'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8'
▽ After Completion - Not Applicable

Temp Well: DSB-39
Ground Elev. : 728.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, moist, brown, medium stiff	1		0.9	100
2				2		0.0	100
3							
4				3		0.1	100
5							
6			No Recovery (rock pushed)	4		0.0	100
7							
8	SM		SILTY SAND, coarse, wet, traces of gravel & clay, brown-grey	5		0.0*	100
9							
10				6		0.0*	100
11							
12				7		0.1*	100
13							
14	CL		SILTY CLAY, brown, moist, stiff				
	SM		SILTY SAND, coarse, wet, traces of gravel & clay, brown-grey	8		0.0*	100
15	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-39.BOR

LOG OF BORING DSB-40

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-40
Ground Elev. : 728.60

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		Very SANDY CLAY, moist, brown, medium stiff	1		0.0	100
2				2		0.0	100
3			Sandy @ 3 feet				
4				3		0.0	100
5							
6	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
7							
8			Very moist @ 8.5 feet	5		0.0*	100
9							
10	SM		SILTY SAND, coarse, wet, traces of gravel & clay, brown-grey	6		0.0*	100
11							
12				7		0.0*	100
13							
14	CL		SILTY CLAY, brown, moist, stiff				
	SM		SILTY SAND, coarse, wet, traces of gravel & clay, brown-grey				
15	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
16			Boring completed at 16.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-40.BOR

LOG OF BORING DSB-41

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-41
Ground Elev.: 728.70

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1			No Recovery (rock pushed)	1		-	50
2							
3				2		-	0
4							
5	CL		SANDY CLAY FILL MATERIAL	3		0.8	50
6							
7				4		0.4	100
8	CL		SANDY CLAY, moist, brown, medium stiff				
9	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	5		0.0*	100
10			SAND, coarse to medium grained, brown-grey, wet, traces of gravel & silt				
11	SM			6		0.0*	100
12							
13				7		0.0*	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
15				8		0.0	100
			Boring completed at 15.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-41.BOR

LOG OF BORING DSB-42

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 9'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9'
▽ After Completion - Not Applicable

Temp Well: DSB-42
Ground Elev. : 728.7

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		SANDY CLAY, stiff, moist, brown	1		0.0	100
2							
3				2		0.0	100
4							
5				3		0.0	100
6							
7	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
8			Moist @ 8.5 feet				
9			Wet @ 9 feet	5		0.0*	100
10	SM		SILTY SAND, coarse, wet, traces of gravel & clay, brown				
11				6		0.0*	100
12							
13				7		0.0*	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15			Boring completed at 15.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-42.BOR

LOG OF BORING DSB-43

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - Not Applicable

Temp Well: DSB-43
Ground Elev. : 728.8

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1			No Recovery (rock pushed)	1		-	50
2							
3				2		-	0
4							
5	CL		SANDY CLAY FILL MATERIAL	3		1.4	50
6	SP		SAND, medium dense/dense, very moist, brown, poorly-sorted, with gravel & fines				
7				4		0.0	100
8							
9				5		0.0*	100
10	SM		SILTY SAND, dense, medium to coarse, wet, traces of gravel & clay, brown				
11				6		0.0*	100
12							
13				7		0.0*	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
15				8		0.0	100

Boring completed at 15.0 feet BGS.

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-43.BOR

LOG OF BORING DSB-44

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 9'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9'
▽ After Completion - Not Applicable

Temp Well: DSB-44
Ground Elev. : 729.30

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1			No Recovery (rock pushed)	1		-	50
2							
3				2		-	0
4							
5				3		0.0	50
6	CL		SANDY CLAY, moist, medium stiff, brown				
7				4		0.0*	100
8	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines Very Moist @ 8 feet				
9			Wet @ 9 feet	5		0.0*	100
10			SILTY SAND, coarse, dense, wet, brown, traces of gravel				
11				6		0.0	100
12							
13	SM		Medium to fine grained @ 13 feet	7		0.0*	100
14							
15			Medium to coarse grained @ 15 feet	8		0.0*	100
16							
17	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	9		0.0	100
			Boring completed at 17.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-44.BOR

LOG OF BORING DSB-45

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/27/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 10.25'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10.25'
▽ After Completion - Not Applicable

Temp Well: DSB-45
Ground Elev. : 732.20

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1			No Recovery (rock pushed)	1		-	50
2							
3				2		-	0
4							
5				3		0.0	50
6	CL		SANDY CLAY, moist, medium stiff, brown				
7				4		0.0*	100
8			Very sandy @ 7.5 feet				
9	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	5		0.0*	100
10							
11			SILTY SAND, coarse - medium grained, poorly sorted, wet, brown	6		0.0	100
12							
13	SM			7		0.0*	100
14							
15				8		0.0*	100
16			Gravelly @ 16 feet				
17	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	9		0.0	100
			Boring completed at 17.0 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-45.BOR

LOG OF BORING DSB-46

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - Not Applicable

Temp Well: DSB-46
Ground Elev. : 733.20

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1			No Recovery (rock pushed)	1		-	50
2							
3				2		-	0
4							
5			SANDY CLAY, moist, medium stiff, brown	3		0.8	50
6	CL		Very sandy @ 6 feet				
7				4		0.4*	100
8			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
9				5		0.3*	100
10	SP						
11				6		0.0	100
12							
13			SAND, coarse, silty, gravelly, very moist	7		0.0*	100
14			Less gravel @ 14.5 feet				
15			Wet, brown, gravelly @ 15 feet	8		0.0*	100
16							
17	SM		Very coarse @ 17 feet	9		0.0	100
18							
19				10		0.0	100
20			brown-grey, traces of gravel, coarse @ 20 feet				
21				11		0.0*	100
22							
23	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	12		0.0	100
24				13		0.0	100
25			Boring completed at 24.5 feet BGS.				

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-46.BOR

LOG OF BORING DSB-47

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: NA
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - Not Applicable

Temp Well: DSB-47
Ground Elev. : 733.40

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1	CL		Very SANDY CLAY, moist, medium stiff, brown	1		0.4	100
2				2		0.1	100
3							
4							
5			Sandy @ 5 feet	3		0.0	100
6	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0*	100
7							
8				5		0.0*	100
9							
10							
11			No Recovery (rock pushed)	6		-	100
12							
13				7		-	100
14							
15	SM		SAND, SILTY, very coarse, brown-grey, with gravel	8		0.0*	100
16							
17				9		0.0	100
18							
19				10		0.0	100
20			Gravelly @ 20 feet				
21			Fine-grained, grey @ 21 feet	11		0.0*	100
22	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
23				12		0.0	100
24							
25				13		0.0	100

Boring completed at 25.0 feet BGS.

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Soil Investigation\Boring Logs\DSB-47.BOR

LOG OF BORING TW-1

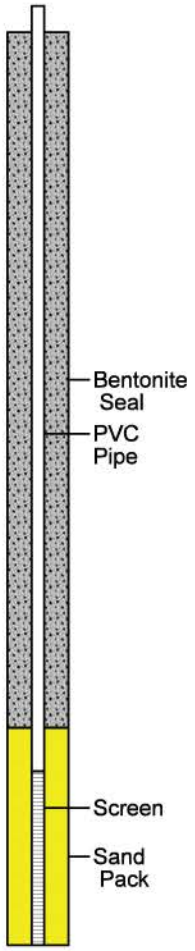
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: NA
Sampling Method	: Dual Tube	Final Water Level	: NA
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - NA
▽ After Completion - NA

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		SILTY CLAY, brown, with traces of gravel and silt, medium stiff, moist	1		0.1	100
2				2		0.1	100
3			SANDY CLAY				
4				3		0.2	100
5	SM		SAND with clay Sand with traces of gravel, coarse to medium grained, loose grading to dense with depth, coarse, slightly moist				
6				4		0.2	100
7							
8			SAND with fines and traces of gravel, dense, moist @ 8 feet	5		0.3	100
10	CL		SILTY CLAY, grey, with traces of sand and gravel, medium stiff to stiff, slightly moist	6		0.1	100
11							
12				7		0.1	100
13							
14				8		0.1	100
15			Boring completed at 15.0 feet BGS.				

Temp Well: TW-1
TOC Elev.: 728.71'



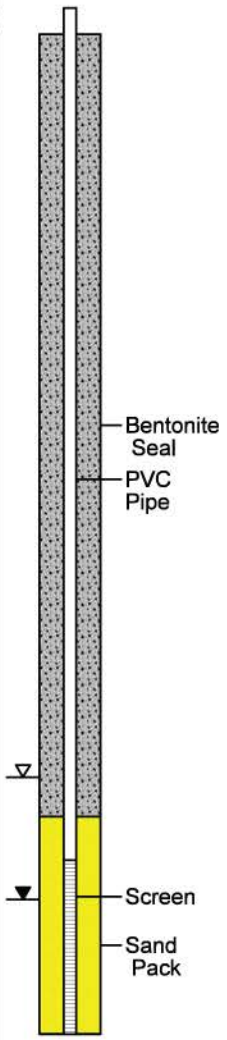
LOG OF BORING TW-2

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: ~10'
Sampling Method	: Dual Tube	Final Water Level	: 8.53'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - ~10'
▽ After Completion - 8.53'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
1	CL		SILTY CLAY with traces of gravel and silt, brown, medium stiff, moist	1		0.1	100
4	CL		SANDY CLAY, soft, moist to very moist	2		0.1	100
5	SW		SAND with fines and traces of gravel, poorly sorted, coarse, dense	3		0.0	100
10	GW		GRAVEL with silt, wet	4		0.1	100
11	SP		SILTY SAND, brown, well-sorted, coarse to medium, wet	5		0.0	100
12	CL		SILTY CLAY, grey, with traces of gravel and sand, hard, slightly moist	6		0.0	100
14			No Recovery (crumpled liner)				
15			Boring completed at 15.0 feet BGS.				



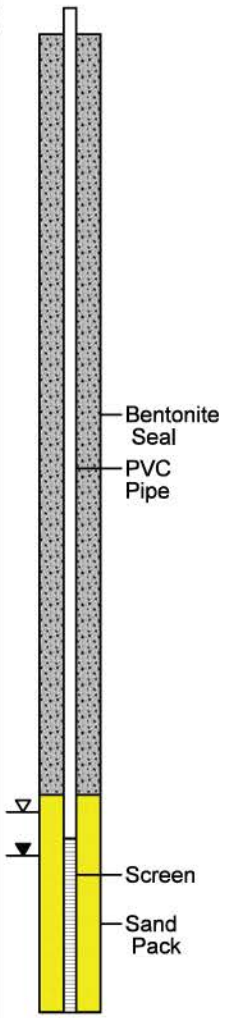
LOG OF BORING TW-3

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: ~9.5-10'
Sampling Method	: Dual Tube	Final Water Level	: 9.16
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.5 - 10'
▽ After Completion - 9.16'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0			Topsoil				
1	CL		SILTY CLAY with traces of gravel and sand, brown, medium stiff, moist	1		0.0	20
2							
3			SANDY CLAY, medium stiff to soft	2		0.0	
4							
5							
6	SP		SAND with gravel and fines, poorly sorted, coarse, dense to very dense	3		0.0	50
7							
8							
9				4		0.0	
10			very moist @ 9.5' wet @ 10'				
11				5		0.0	50
12							
13	CL		SILTY CLAY, grey, hard, slightly moist	6		0.0	
14							
15			Boring completed at 15.0 feet BGS.				



LOG OF BORING TW-4D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 15.5'
Sampling Method	: Dual Tube	Final Water Level	: 15.29'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15.5'
▽ After Completion - 15.29'

Temp Well: TW-4D
TOC Elev.: 734.72'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
1	CL		SANDY CLAY with traces of gravel and silt, brown, medium stiff, moist	1		0.0	55
2				2		0.0	
3							
4	SC		CLAYEY SAND, medium grained, well sorted, medium dense, brown				
5				3		0.0	40
6							
7	SP		SAND with gravel and fines, brown, coarse to medium grained, medium dense				
8				4		0.0	
9							
10							
11			brown-grey @ 11.5 feet	5		0.0	45
12			Brown @ 12 feet				
13							
14				6		0.0	
15			wet @15.5'				
16	SM		SILTY SAND with gravel and fines, brown-grey, coarse, poorly sorted, wet	7		0.0	50
17							
18				8		0.0	
19							
20			Well sorted, coarse @ 20 feet Traces of gravel, medium grained, moderately well sorted @ 20.25	9		0.0	100
21	CL		SILTY CLAY with traces of gravel and silt, hard, slightly moist, grey				
22			Boring completed at 21.5 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

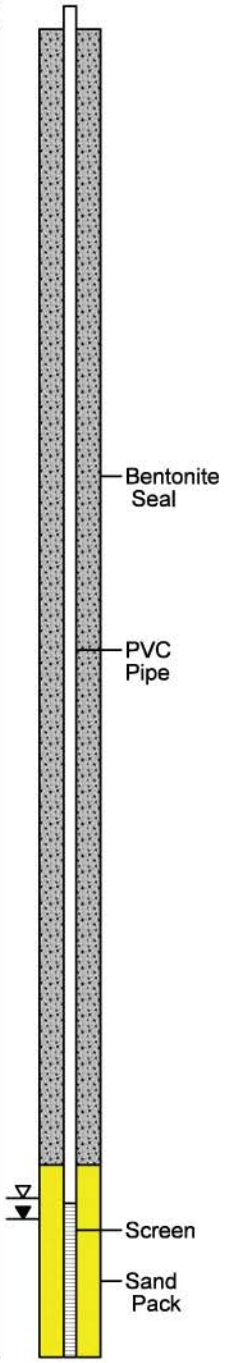
LOG OF BORING TW-4S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 15.5'
Sampling Method	: Dual Tube	Final Water Level	: 15.26'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15.5'
▽ After Completion - 15.26'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
1	CL		SANDY CLAY with traces of gravel and silt, brown, medium stiff, moist	1		0.0	100
4	SC		CLAYEY SAND, medium grained, well sorted, medium dense, brown	2		0.0	100
7	SP		SAND with gravel and fines, brown, coarse to medium grained, medium dense	3		0.0	100
8				4		0.0	100
11			brown-grey @ 11.5 feet	5		0.0	100
12			Brown @ 12 feet				
14				6		0.0	100
15			wet @15.5'				
16	SM		SILTY SAND with gravel and fines, brown-grey, coarse, poorly sorted, wet	7		0.0	100
17			Boring completed at 17.25 feet BGS.				



LOG OF BORING TW-5

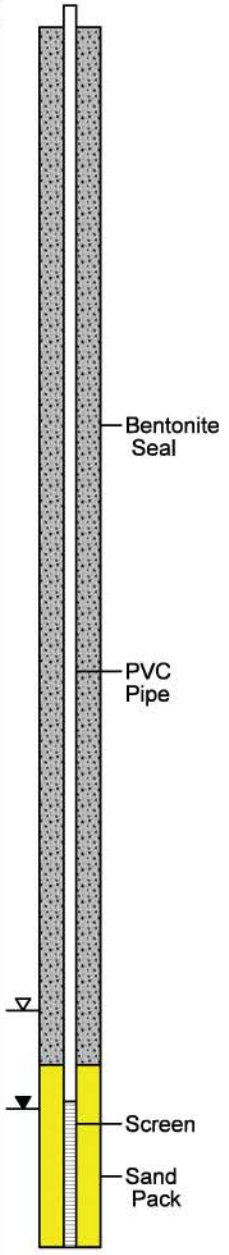
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 15.0'
Sampling Method	: Dual Tube	Final Water Level	: 13.61'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15.0'
▽ After Completion - 13.61'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT/GRAVEL sub-base				
1				1		0.0	100
2	CL		SANDY CLAY, brown, medium stiff, moist				
3				2		0.0	100
4							
5			very sandy @ 5'				
6				3		0.0	100
7							
8	SP		SAND with gravel and fines, poorly sorted, coarse to medium grained, slightly moist, medium dense/dense				
9				4		0.0	100
10							
11				5		0.0	100
12							
13			very moist @ 13 feet				
14				6		0.0	100
15			wet @ 15 feet				
16				7		0.0	100
17			gravelly @ 17 feet				
18	CL		SILTY CLAY with traces of gravel and silt, grey, hard, slightly moist	8		0.0	100
			Boring completed at 18 feet BGS.				

Temp Well: TW-5
TOC Elev.: 732.65'



04-08-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\TW-5.BOR

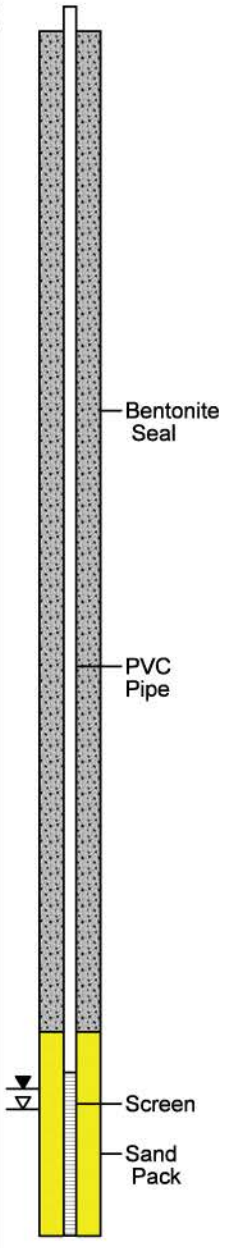
LOG OF BORING TW-6

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 13.0'
Sampling Method	: Dual Tube	Final Water Level	: 13.20'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 13.0'
▽ After Completion - 13.20'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		ASPHALT				
0	CL		SANDY CLAY,brown, medium stiff, moist	1		0.0	100
4	SC		CLAYEY SAND, medium grained, well sorted, brown, moist	2		0.0	100
				3		0.0	100
8	SP		SAND with gravel and fines, poorly sorted, coarse to medium grained, slightly moist	4		0.0	100
				5		0.0	100
13			Wet @ 13'	6		0.0	100
15	ML		SILT, grey, wet	7		0.0	100
15	CL		SILTY CLAY, grey, hard, slightly moist				
16			Boring completed at 16 feet BGS.				



LOG OF BORING TW-7D

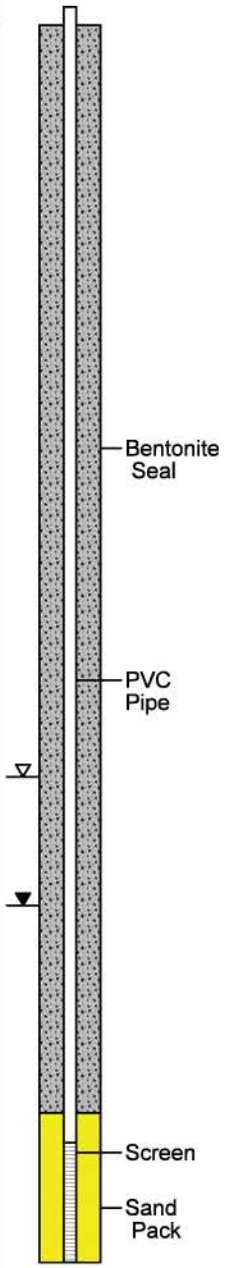
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 14.75'
Sampling Method	: Dual Tube	Final Water Level	: 12.68'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 14.75'
▽ After Completion - 12.68'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
1			SANDY CLAY, brown, medium stiff	1		0.0	100
2	CL			2		0.0	100
5	SC		grades to CLAYEY SAND @ 5 feet	3		0.0	100
8	SP		SAND with gravel and fines, brown, coarse to medium grained, poorly sorted, dense, slightly moist	4		0.0	100
11				5		0.0	100
13				6		0.0	100
15			Wet @ 14.75'	7		0.0	100
18	SM		SILTY SAND, brown-grey, poorly sorted, medium grained, saturated	8		0.0	100
20			Moderately well-sorted, coarse @ 20 feet				
21			Well sorted, very coarse @ 21 feet	9		0.0	100
22	CL		SILTY CLAY, grey, hard, slightly moist				
			Boring completed at 22 feet BGS.				

Temp Well: TW-7D
TOC Elev.: 731.52'



LOG OF BORING TW-7S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 14.75'
Sampling Method	: Dual Tube	Final Water Level	: 12.74'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 14.75'
▽ After Completion - 12.74'

Temp Well: TW-7S
TOC Elev.: 731.59'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
1	CL		SANDY CLAY, brown, medium stiff	1		0.0	100
2				2		0.0	100
3							
4							
5	SC		grades to CLAYEY SAND @ 5 feet	3		0.0	100
6							
7							
8	SP		SAND with gravel and fines, brown, coarse to medium grained, poorly sorted, dense, slightly moist	4		0.0	100
9							
10							
11				5		0.0	100
12							
13				6		0.0	100
14			Wet @ 14.75'				
15				7		0.0	100
16							
17			Boring completed at 16.5 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-7S.BOR

LOG OF BORING TW-8D

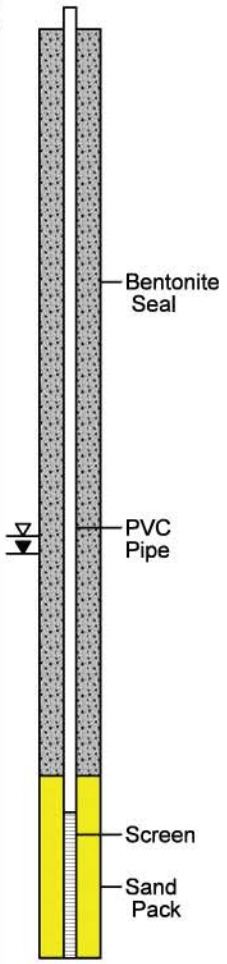
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 7.5'
Sampling Method	: Dual Tube	Final Water Level	: 7.26'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 7.5'
▽ After Completion - 7.26'

Temp Well: TW-8D
TOC Elev.: 723.69'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	GW		GRAVEL				
1	CL		SILTY CLAY with traces of gravel and sand, brown, medium stiff, moist, sandy with depth	1		0.0	100
2				2		0.0	100
3							
4							
5							
6	SP		SAND with trace gravel, medium grained, poorly sorted, medium dense grading to dense	3		0.0	100
7			Wet @7.5 feet				
8				4		0.0	100
9							
10	CL		SANDY CLAY with trace gravel and sand, medium stiff, moist				
11	SM		SILTY SAND, grey, poorly sorted, medium dense, wet	5		0.0	100
12							
13	CL		SILTY CLAY with trace gravels and silt, grey, stiff	6		0.0	100
14							
15			Boring completed at 15 feet BGS.				
16							
17							
18							



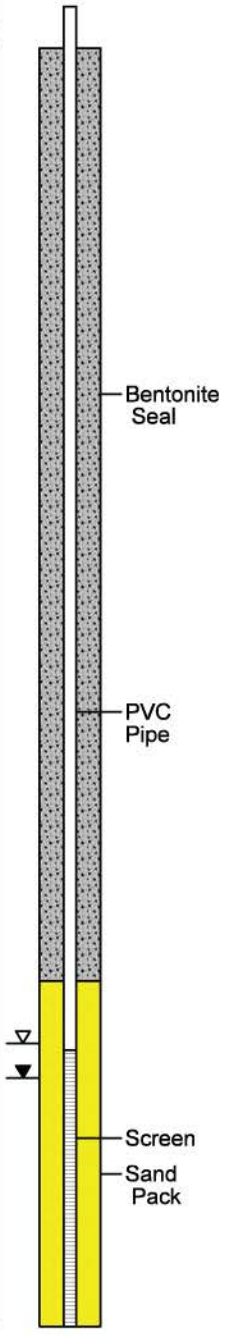
LOG OF BORING TW-8S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/24/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 7.5'
Sampling Method	: Dual Tube	Final Water Level	: 7.29'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 7.5'
▽ After Completion - 7.29'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	GW		GRAVEL				
1	CL		SILTY CLAY with traces of gravel and sand, brown, medium stiff, moist, sandy with depth	1		0.0	100
2							
3				2		0.0	100
4							
5							
6	SP		SAND with trace gravel, medium grained, poorly sorted, medium dense grading to dense	3		0.0	100
7			Wet @7.5'				
8				4		0.0	100
9			Boring completed at 9.25 feet BGS.				



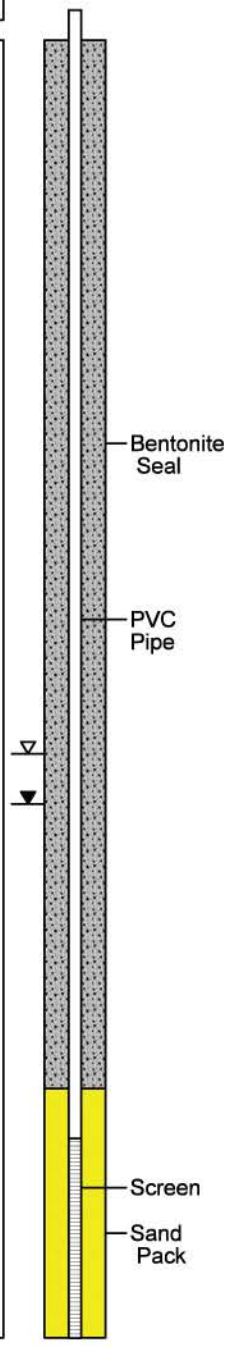
LOG OF BORING TW-9

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 7.5'
Sampling Method	: Dual Tube	Final Water Level	: 7.19'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 7.5'
▽ After Completion - 7.19'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
	AR		CONCRETE/GRAVEL				
1	CL		SILTY CLAY with traces of gravel and sand, mottled brown, medium stiff	1		0.0	100
2				2		0.0	100
3							
4							
5				3		0.0	100
6	SP		SAND with fines, brown, poorly sorted, dense, coarse				
7			Wet @7.5'				
8				4		0.0	100
9	CL		SILTY CLAY, brown-grey, stiff, moist				
10	SP		SAND with traces of gravel, grey, coarse, wet, poorly sorted	5		0.0	100
11	CL		SILTY CLAY with traces of gravel and sand, stiff to hard, slightly moist to moist				
12							
13			Boring completed at 13 feet BGS.				



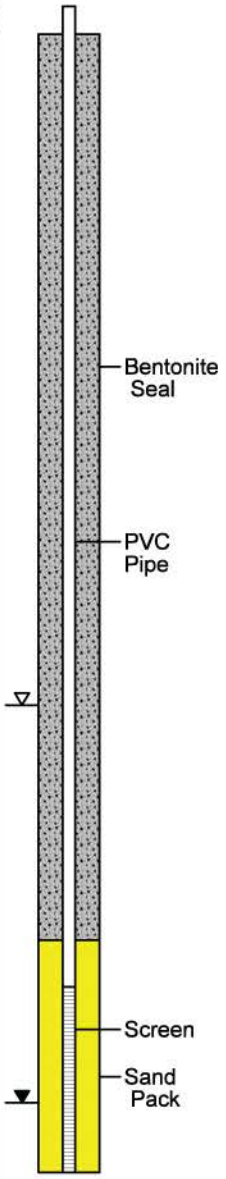
LOG OF BORING TW-10

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 11.5'
Sampling Method	: Dual Tube	Final Water Level	: 7.19'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 11.5'
▽ After Completion - 7.19'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
1	CL		SILTY CLAY , brown, moist, medium stiff	1		0.0	100
2							
3	SW		SAND with trace gravel, well sorted, brown, medium grained	2		0.0	100
4							
5				3		0.0	100
6							
7							
8	SP		SAND with gravel and fines, poorly sorted, very moist, dense	4		0.0	100
9							
10	CL		SILTY CLAY with traces of gravel and sand, brown-grey, stiff, moist	5		0.0	100
11							
12	SM		SAND with silt and traces of gravel, brown, coarse, wet				
12	CL		SILTY CLAY with traces of gravel and silt, grey, stiff, moist	6		0.0	100
13							
14	CH		Very CLAYEY SILT, dense, moist, grey				
			Boring completed at 14 feet BGS.				



LOG OF BORING TW-11

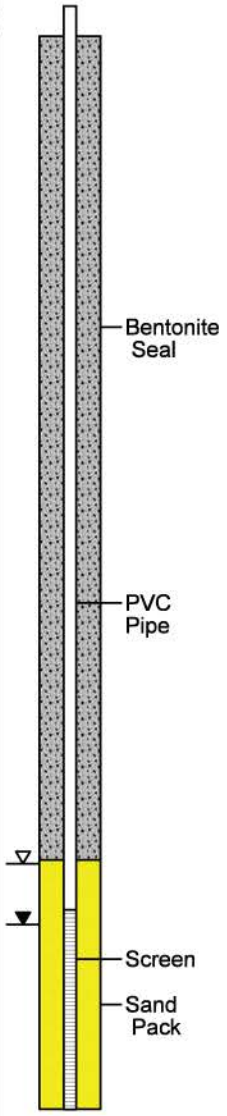
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9'
Sampling Method	: Dual Tube	Final Water Level	: 8.30'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9'
▽ After Completion - 8.30'

Temp Well: TW-11
TOC Elev.: 725.51'

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL	TOPSOIL				
1	CL	SANDY CLAY, brown, medium stiff, moist	1		0.0	100
2	CL		2		0.0	100
3	CL					
4	CL					
5	SC	CLAYEY SAND, brown, medium dense, moist				
6	SP	SAND with gravel, poorly sorted, coarse, dense, slightly moist	3		0.0	100
7	SP					
8	SP		4		0.0	100
9	SP	Wet @ 9'				
10	SP					
11	SP		5		0.0	100
12	SP					
13	CL	SILTY CLAY, grey-brown, hard, slightly moist	6		0.0	100
		Boring completed at 13 feet BGS.				



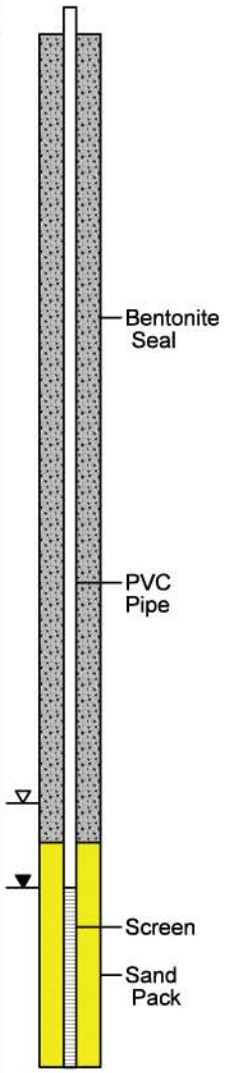
LOG OF BORING TW-12

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9.5'
Sampling Method	: Dual Tube	Final Water Level	: 8.56'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.5'
▽ After Completion - 8.56'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL				
1	CL		SILTY CLAY with trace gravel and sand, medium stiff, moist, brown	1		0.0	100
2				2		0.0	100
3							
4							
5	SP		SAND with gravel, brown, poorly sorted, coarse, slightly moist, medium dense	3		0.0	100
6							
7							
8				4		0.0	100
9			Wet @ 9.5'				
10							
11				5		0.0	100
12							
13	CL		SILTY CLAY, grey, hard, moist	6		0.0	100
14	ML		CLAYEY SILT, very dense, grey, moist				
15			Boring completed at 14.5 feet BGS.				



LOG OF BORING TW-13

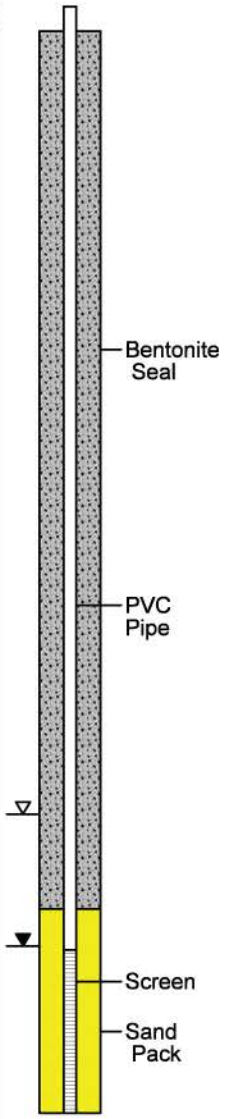
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 11.5'
Sampling Method	: Dual Tube	Final Water Level	: 9.89'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 11.5'
▽ After Completion - 9.89'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
1	CL		TOPSOIL/GRAVEL	1		0.0	100
2	CL		SANDY CLAY, brown, moist, medium stiff	2		0.0	100
3							
4							
5				3		0.0	100
6	SP		SAND with fines and gravel, poorly sorted, coarse, brown, slightly moist				
7				4		0.0	100
8							
9							
10			very moist @ 10.5'	5		0.0	100
11			Wet @ 11.5'				
12							
13				6		0.0	100
14							
15	CL		SILTY CLAY with traces of gravel and sand, very stiff, slightly moist, brown-grey				
16			Grey @ 15.5'	7		0.0	100
			Boring completed at 16 feet BGS.				

Temp Well: TW-13
TOC Elev.: 727.75'



LOG OF BORING TW-14D

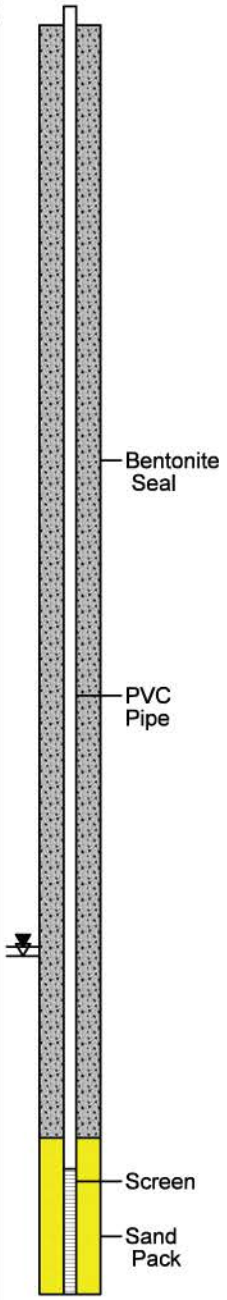
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: 15.15'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - 15.15'

Temp Well: TW-14D
TOC Elev.: 734.71'

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL	TOPSOIL/GRAVEL				
1	CL	SANDY CLAY with traces of gravel, medium stiff, moist, brown	1		0.0	100
2			2		0.0	100
3			3		0.0	100
7	SP	SAND with traces of gravel, poorly sorted, coarse to medium grained, medium dense, slightly moist	4		0.0	100
10			5		0.0	100
12		fines, very moist @ 12.5'	6		0.0	100
15		Wet @ 15'	7		0.0	100
17	SM	SILTY SAND with gravel, brown-grey, wet, dense	8		0.0	100
20	CL	SILTY CLAY with trace gravel and sand, grey, hard, slightly moist	9		0.0	100
21		Boring completed at 21 feet BGS.				



LOG OF BORING TW-14S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 10/23/2018	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 15'
Sampling Method	: Dual Tube	Final Water Level	: 15.23'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 15'
▽ After Completion - 15.23'

Temp Well: TW-14S
TOC Elev.: 734.77'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		TOPSOIL/GRAVEL				
1	CL		SANDY CLAY with traces of gravel, medium stiff, moist, brown	1		0.0	100
2				2		0.0	100
3							
4							
5				3		0.0	100
6							
7							
8	SP		SAND with traces of gravel, poorly sorted, coarse to medium grained, medium dense, slightly moist	4		0.0	100
9							
10							
11				5		0.0	100
12			fines, very moist @12.5'				
13							
14				6		0.0	100
15			Wet @ 15'				
16				7		0.0	100
17			Boring completed at 17 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-08-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\TW-14S.BOR

LOG OF BORING TW-15D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: 8.73'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - 8.73'

Temp Well: TW-15D
TOC Elev.: 729.15'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		GRAVEL				
1	CL		SANDY CLAY, brown, stiff, moist	1		0.0	100
2				2		0.0	100
3							
4							
5							
6	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	3		0.0	100
7							
8				4		0.0	100
9			Moist @ 9 feet				
10	SM		SILTY SAND, coarse, wet, with traces of gravel and clay	5		0.0	100
11							
12			Less silt, medium				
13				6		0.0	100
14							
15			silty, coarse, with traces of gravel and clay @ 14.75 feet Less silt, medium				
16			Coarse @ 15.75 feet	7		0.0	100
17	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, with traces of gravel and sand				
18			Boring completed at 17.5 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

LOG OF BORING TW-15S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: 8.76'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - 8.76'

Temp Well: TW-15S
TOC Elev.: 729.23'

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR	GRAVEL				
1	CL	SANDY CLAY, brown, stiff, moist	1		0.0	100
2			2		0.0	100
3						
4						
5			3		0.0	100
6	SP	SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
7						
8						
9		Moist @ 9 feet	4		0.0	100
10	SM	SILTY SAND, coarse, wet, with traces of gravel and clay				
11			5		0.0	100
12		Less silt, medium				

Bentonite
Riser Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-15S.BOR

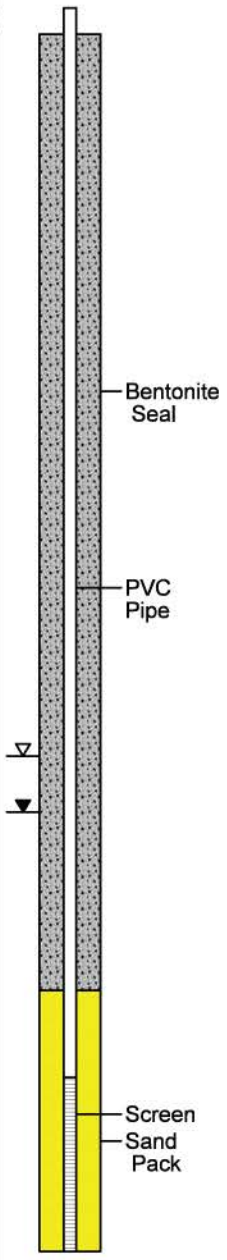
LOG OF BORING TW-16D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9'
Sampling Method	: Dual Tube	Final Water Level	: 8.43'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9'
▽ After Completion - 8.43'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0			SANDY CLAY, dark brown, moist, medium stiff				
1				1		0.0	100
2							
3	CL			2		0.0	100
4							
5				3		0.0	100
6			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
7				4		0.0	100
8	SP		Moist @ 8 feet				
9			Coarse , wet, dense @ 9 feet	5		0.1	100
10			SILTY SAND with traces of gravel and clay, brown, wet, dense @ 10 feet				
11				6		0.0*	100
12	SM						
13				7		0.0*	100
14			SILTY CLAY, hard/very stiff, slightly moist, grey, with traces of gravel & sand				
15	CL			8		0.0	100
			Boring completed at 15 feet BGS.				



LOG OF BORING TW-16S

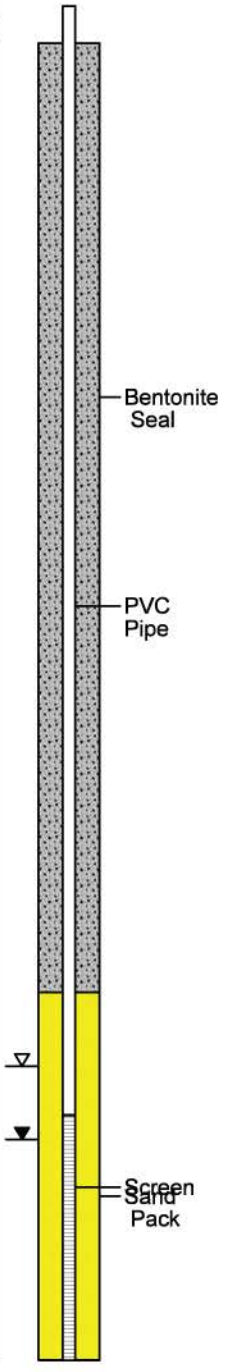
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 02/28/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9'
Sampling Method	: Dual Tube	Final Water Level	: 8.48'
Field/Office Logged	: CN/LL	Selected for Analysis	: *
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9'
▽ After Completion - 8.48'

Temp Well: TW-16S
TOC Elev.: 728.10

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL	SANDY CLAY, dark brown, moist, medium stiff	1		0.0	100
1						
2			2		0.0	100
3						
4			3		0.0	100
5						
6	SP	SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
7						
8		Moist @ 8 feet				
9		Coarse, wet, dense @ 9 feet	5		0.1*	100
10	SP	SILTY SAND with traces of gravel and clay, brown, wet, dense @ 10 feet	6		0.0*	100
11		Boring completed at 10.75 feet BGS.				



04-08-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\1Q19 Investigation\TW-16S.BOR

LOG OF BORING TW-17D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: 8.32'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - 8.32'

Temp Well: TW-17D
TOC Elev.: 728.61

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		GRAVEL				
1			SANDY CLAY, moist, medium stiff, brown	1		0.0	100
2				2		0.0	100
3	CL						
4			Very sandy @ 4 feet	3		0.0	100
5							
6				4		0.0	100
7			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
8	SP			5		0.0	100
9			Moist @ 8.75 feet				
10			SILTY SAND, coarse, wet, brown to brown-grey, traces of gravel & clay	6		0.0	100
11							
12	SM			7		0.0	100
13							
14				8		0.0	100
15			SAND, coarse, brown-grey, wet, poorly-sorted, traces of gravel & silt				
16				9		0.0	100
17	SP						
18			Medium to fine @ 17.75 to 18.25 feet	10		0.0	100
19	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
			Boring completed at 19 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-08-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\1Q19 Investigation\TW-17D.BOR

LOG OF BORING TW-17S

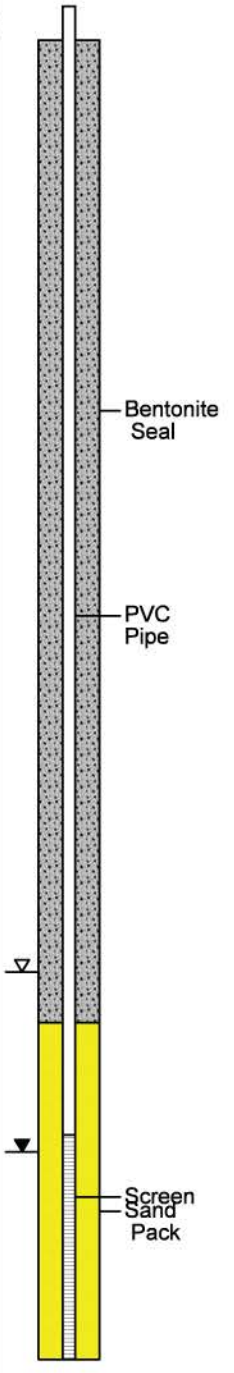
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: 8.47'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - 8.47'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		GRAVEL				
1			SANDY CLAY	1		0.0	100
2							
3				2		0.0	100
4	CL		Very sandy @ 4 feet				
5				3		0.0	100
6							
7			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
8	SP						
9			Moist	5		0.0	100
10			SILTY SAND, coarse, wet, brown to brown-grey, traces of gravel & clay				
11	SM			6		0.0	100
12							

Temp Well: TW-17S
TOC Elev.:



04-02-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\1Q19 Investigation\TW-17S.BOR

LOG OF BORING TW-18D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10.25'
Sampling Method	: Dual Tube	Final Water Level	: 8.35'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10.25'
▽ After Completion - 8.35'

Temp Well: TW-18D
TOC Elev.: 728.11

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		GRAVEL				
1			SANDY CLAY, stiff, moist, brown	1		0.0	100
2	CL			2		0.0	100
3							
4				3		0.0	100
5			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines				
6				4		0.0	100
7			Moist @ 6.75 feet				
8	SP		Coarse, brown-grey, very moist @ 8 feet	5		0.0	100
9			Medium to fine grained @ 8.5 feet				
10				6		0.0	100
11			SILTY SAND, wet, coarse, with trace gravel and clay, brown-grey, dense				
12				7		0.0	100
13	SM						
14				8		0.0	100
15			SAND, dense, brown-grey, coarse, wet				
16				9		0.0	100
17	SP						
18			Silty and gravelly @ 17.75 feet	10		0.0	100
19	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
			Boring completed at 19 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-18D.BOR

LOG OF BORING TW-18S

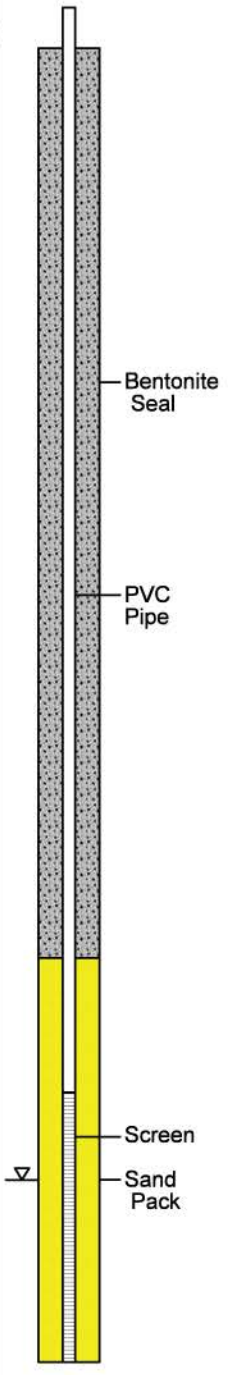
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10.25'
Sampling Method	: Dual Tube	Final Water Level	: 8.30'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10.25'
▽ After Completion - 8.30'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		GRAVEL				
			SANDY CLAY, stiff, moist, brown	1		0.0	100
2	CL			2		0.0	100
4							
5			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	3		0.0	100
6							
			Moist @ 6.75 feet	4		0.0	100
7	SP						
8			Coarse, brown-grey, very moist @ 8 feet				
			Medium to fine grained @ 8.5 feet	5		0.0	100
9							
10							

Temp Well: TW-18S
TOC Elev.: 728.13



LOG OF BORING TW-19D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: 9.18'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - 9.18'

Temp Well: TW-19D
TOC Elev.: 729.01

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR	GRAVEL				
1		No Recovery (Rock pushed)	1		-	25
2						
3			2		-	0
4						
5			3		0.0	100
6	CL	SANDY CLAY, stiff, brown, moist Very sandy @ 6 feet				
7			4		0.0	100
8	SP	SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines Moist @ 8 feet				
9			5		0.0	100
10						
11		SILTY SAND, coarse, wet, brown-grey, traces of gravel & clay	6		0.0	100
12						
13		Medium to coarse, less silt @ 15 feet	7		0.0	100
14						
15			8		0.0	100
16	SM					
17			9		0.0	100
18						
19			10		0.0	100
20		Coarse to very coarse @ 20 feet				
21			11		0.0	100
22						
23	CL	SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	12		0.0	100
24		Boring completed at 23.5 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

LOG OF BORING TW-19S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10'
Sampling Method	: Dual Tube	Final Water Level	: 8.66'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10'
▽ After Completion - 8.66'

Temp Well: TW-19S
TOC Elev.: 728.64

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	AR		GRAVEL				
1			No Recovery (Rock pushed)	1		-	25
2							
3				2		-	0
4							
5	CL		SANDY CLAY, stiff, brown, moist	3		0.0	100
6			Very sandy @ 6 feet				
7	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
8			Moist @ 8 feet				
9				5		0.0	100
10	SM		SILTY SAND, coarse, wet, brown-grey, traces of gravel & clay				
11				6		0.0	100
12							

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-19S.BOR

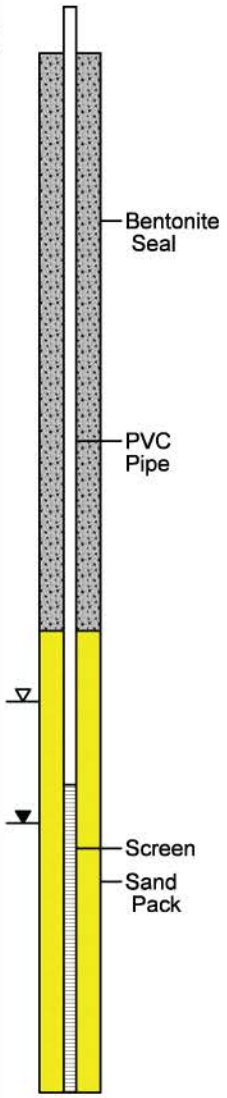
LOG OF BORING TW-20

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 5'
Sampling Method	: Dual Tube	Final Water Level	: 4.23'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 5'
▽ After Completion - 4.23'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
1	CL		SILTY CLAY, brown, medium stiff, moist	1		0.0	100
2							
3	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel and fines	2		0.0	100
4			Moist @ 4 feet				
5	CL		SILTY CLAY, brown, medium stiff, moist	3		0.0	100
6	SM		SILTY SAND, fine grained, wet, grey Grades to brown-grey, coarse, medium dense, silty sand				
7	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	4		0.0	100
8				5		0.0	100
			Boring completed at 8.5 feet BGS.				



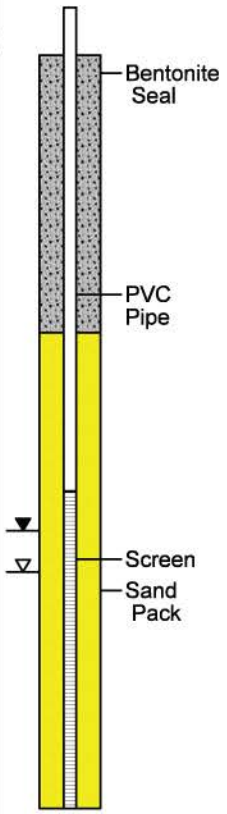
LOG OF BORING TW-21

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 3'
Sampling Method	: Dual Tube	Final Water Level	: 3.22'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 3'
▽ After Completion - 3.22'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
	CL		SILTY CLAY, medium stiff, brown, moist	1		0.0	100
1							
	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, traces of gravel & fines				
2			Moist @ 2.5 feet	2		0.0	100
3			SILTY SAND, fine to medium grained, wet, brown				
4							
	SM		Coarse @ 5 feet	3		0.0	100
5							
6			More gravel and clay @ 6.25 feet				
7	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	4		0.0	100
8			Boring completed at 8 feet BGS.				



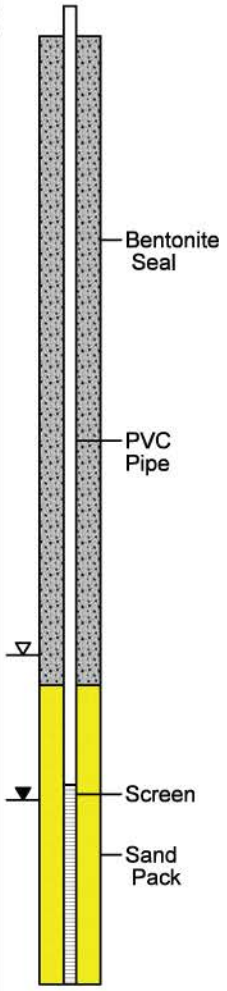
LOG OF BORING TW-22

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 7.75'
Sampling Method	: Dual Tube	Final Water Level	: 6.25'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 7.75'
▽ After Completion - 6.25'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		SILTY CLAY, brown, medium stiff, moist				
1			No Recovery (Rock pushed)	1		0.0	100
2							
3				2		-	0
4							
5	CL		SANDY CLAY, brown, medium stiff, moist	3		0.0	100
6							
7	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel and fines	4		0.0	100
8	SM		SILTY SAND, coarse to medium grained, wet, traces of gravel	5		0.0	100
9							
10			Coarse, brown-grey, with traces of gravel & silt @ 10 feet	6		0.0	100
11							
12	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	7		0.0	100
13			Boring completed at 13 feet BGS.				



LOG OF BORING TW-23

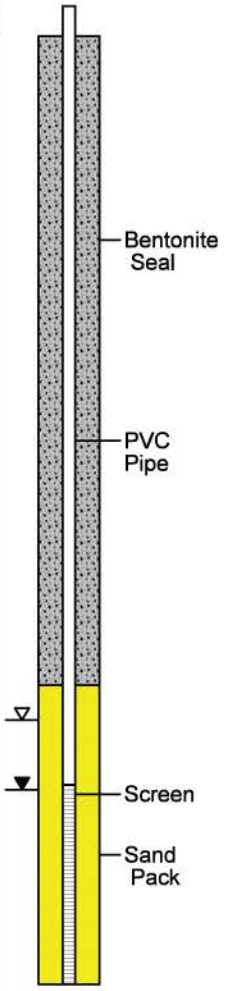
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/01/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 7.5'
Sampling Method	: Dual Tube	Final Water Level	: 6.78'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 7.5'
▽ After Completion - 6.78'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
1	CL		SANDY CLAY	1		0.0	100
2							
3				2		0.0	100
4							
5				3		0.0	100
6	SP		SAND, medium grained, moist				
7			Very moist @ 7 feet	4		0.0	100
8	SM		SAND, silty to coarse, wet, brown-grey, traces of gravel & clay	5		0.0	100
9							
10							
11	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	6		0.0	100
12				7		0.0	100
13			Boring completed at 13 feet BGS.				

Temp Well: TW-23
TOC Elev.:



LOG OF BORING TW-24

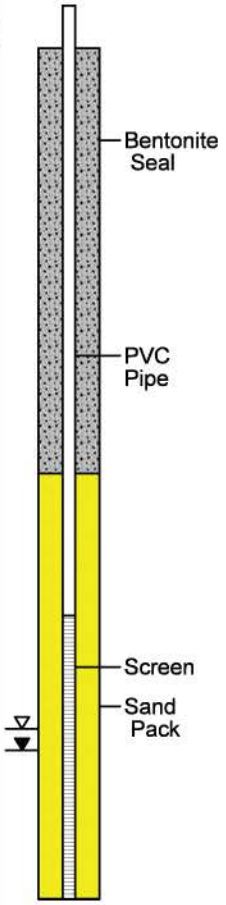
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/06/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 5'
Sampling Method	: Dual Tube	Final Water Level	: 4.80'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 5'
▽ After Completion - 4.80'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0			SANDY CLAY, brown, medium stiff, moist				
1				1		0.0	100
2	CL						
3				2		0.0	100
4			Very moist, very sandy @ 4.75 feet				
5	SP		SAND, medium dense/dense, wet, brown, poorly-sorted, traces of gravel & fines	3		0.0	100
6			SILTY CLAY, soft-medium stiff, moist, grey, traces of gravel & sand				
7	CL		hard/very stiff, slightly moist @ 7.25 feet	4		0.0	100
8				5		0.0	100
9			Boring completed at 9 feet BGS.				

Temp Well: TW-24
TOC Elev.: 720.34



LOG OF BORING TW-25

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

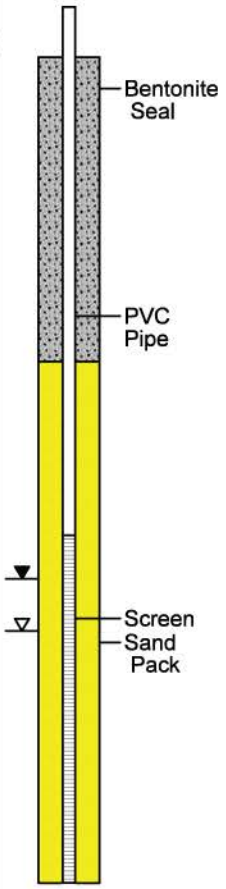
Date Completed	: 03/06/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 3'
Sampling Method	: Dual Tube	Final Water Level	: 3.32'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 3'
▽ After Completion - 3.32'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
1	CL		SANDY CLAY, brown, medium stiff, moist	1		0.0	100
2							
3	SP		SAND, medium dense/dense, wet, brown, poorly-sorted, traces of gravel & fines	2		0.0	100
4							
5	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	3		0.0	100
6							
7				4		0.0	100

Boring completed at 7.5 feet BGS.

Temp Well: TW-25
TOC Elev.: 720.05



04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-25.BOR

LOG OF BORING TW-26D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9.5'
Sampling Method	: Dual Tube	Final Water Level	: 8.47'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.5'
▽ After Completion - 8.47'

Temp Well: TW-26D
TOC Elev.: 728.11

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0			No Recovery (Rock pushed)	1		-	0
2				2		-	0
4							
5	CL		SANDY CLAY, brown, medium stiff, moist	3		0.0	100
6	SP		SAND, medium dense/dense, slightly moist, brown, poorly sorted, traces of gravel & silt	4		0.0	100
8							
9			Very moist @ 9 - 9.5 feet	5		0.0	100
10	SM		SILTY SAND, coarse, brown-grey, wet, medium dense	6		0.0	100
12							
13				7		0.0	100
14							
15			Gravelly, dense @ 15 feet	8		0.0	100
16							
17	CL		SILTY CLAY, brown, stiff, moist	9		0.0	100
18	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
			Boring completed at 18 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-26D.BOR

LOG OF BORING TW-26S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9.5'
Sampling Method	: Dual Tube	Final Water Level	: 8.78'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.5'
▽ After Completion - 8.78'

Temp Well: TW-26S
TOC Elev.: 728.43

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0			No Recovery (Rock pushed)	1		-	0
1							
2				2		-	0
3							
4							
5	CL		SANDY CLAY, brown, medium stiff, moist	3		0.0	100
			SAND, medium dense/dense, slightly moist, brown, poorly sorted, traces of gravel & silt				
6							
7	SP			4		0.0	100
8							
9			Very moist @ 9 feet	5		0.0	100
			SILTY SAND, coarse, brown-grey, wet, medium dense				
10							
11	SM			6		0.0	100
12							

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-26S.BOR

LOG OF BORING TW-27

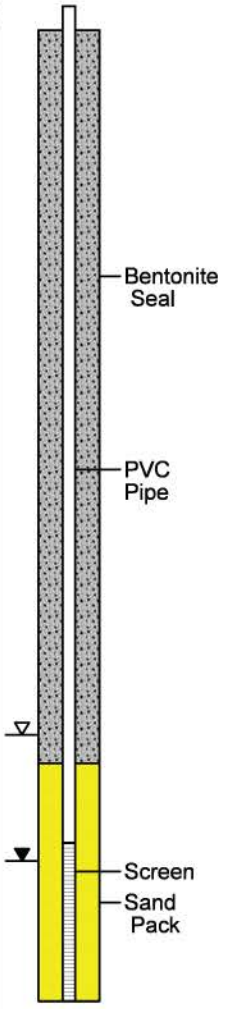
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 10.5'
Sampling Method	: Dual Tube	Final Water Level	: 8.88'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 10.5'
▽ After Completion - 8.88'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
1	CL		SANDY CLAY, medium stiff, brown, moist	1		0.0	100
2				2		0.0	100
3							
4							
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, traces of gravel & fines	3		0.0	100
6				4		0.0	100
7							
8							
9			Moist @ 9.5 feet	5		0.0	100
10							
11	SM		SILTY SAND, brown-grey, wet, traces of gravel & clay, dense	6		0.0	100
12							
13				7		0.0	100
14							
15	CL		SILTY CLAY, hard/very stiff, slightly moist, brown-grey, traces of gravel & sand	8		0.0	100
16			Grey @ 15.75 feet	9		0.0	100
17			Boring completed at 16.5 feet BGS.				

Temp Well: TW-27
TOC Elev.: 728.36



04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-27.BOR

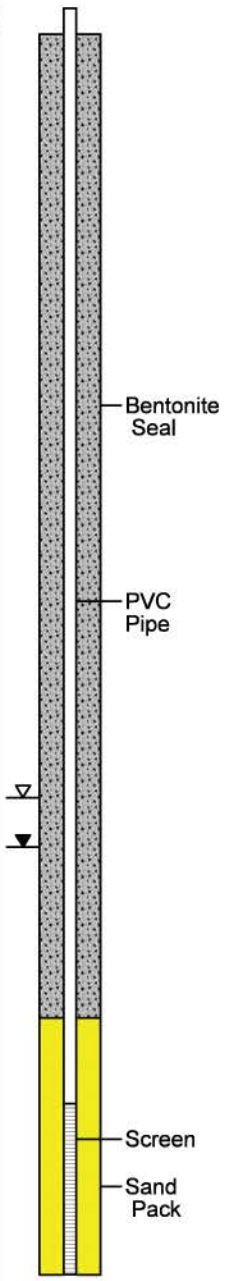
LOG OF BORING TW-28D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9.75'
Sampling Method	: Dual Tube	Final Water Level	: 8.97'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.75'
▽ After Completion - 8.97'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0			No Recovery (Rock pushed)				
1				1		-	0
2				2		-	0
3							
4							
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, traces of gravel & fines	3		0.0	100
6							
7			Moist @ 7.5 feet	4		0.0	100
8							
9				5		0.0	100
10			SILTY SAND, coarse, wet, traces of gravel & clay Very coarse, less silt from 10 - 11 feet				
11				6		0.0	100
12	SM						
13				7		0.0	100
14							
15	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
			Boring completed at 15.0 feet BGS.				



LOG OF BORING TW-28S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9.75'
Sampling Method	: Dual Tube	Final Water Level	: 8.95'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.75'
▽ After Completion - 8.95'

Temp Well: TW-28S
TOC Elev.: 728.34

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0			No Recovery (Pushed a rock)				
1				1		-	0
2				2		-	0
3							
4							
5			SAND, medium dense/dense, slightly moist, brown, poorly-sorted, traces of gravel & fines	3		0.0	100
6							
7	SP		Moist @ 7.5 feet	4		0.0	100
8							
9				5		0.0	100
10			SILTY SAND, coarse, wet, traces of gravel & clay Very coarse, less silt from 10 - 11 feet				
11	SM			6		0.0	100
12							

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-28S.BOR

LOG OF BORING TW-29D

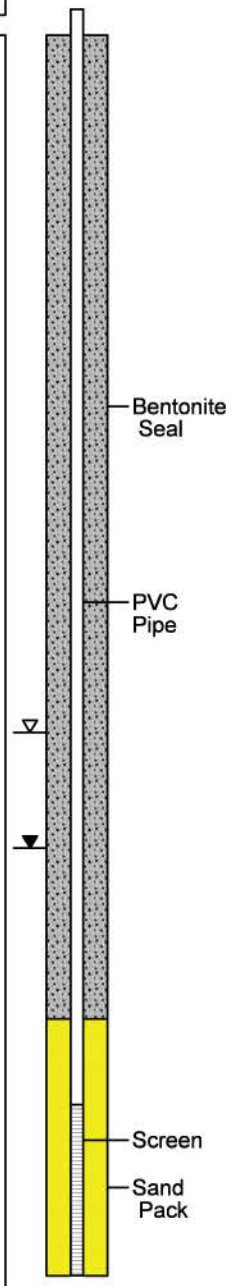
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9.75'
Sampling Method	: Dual Tube	Final Water Level	: 8.08'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.75'
▽ After Completion - 8.08'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
1	CL		SANDY CLAY, brown, medium stiff, moist	1		0.0	100
2				2		0.0	100
3							
4				3		0.0	100
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, traces of gravel & fines				
6				4		0.0	100
7			Moist @ 7.5 feet				
8				5		0.0	100
9							
10	SM		SILTY SAND, coarse, wet, traces of gravel & clay Very coarse, less silt from 10 - 11 feet	6		0.0	100
11							
12				7		0.0	100
13							
14				8		0.0	100
15	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand				
			Boring completed at 15.0 feet BGS.				

Temp Well: TW-29D
TOC Elev.: 727.38



04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-29D.BOR

LOG OF BORING TW-29S

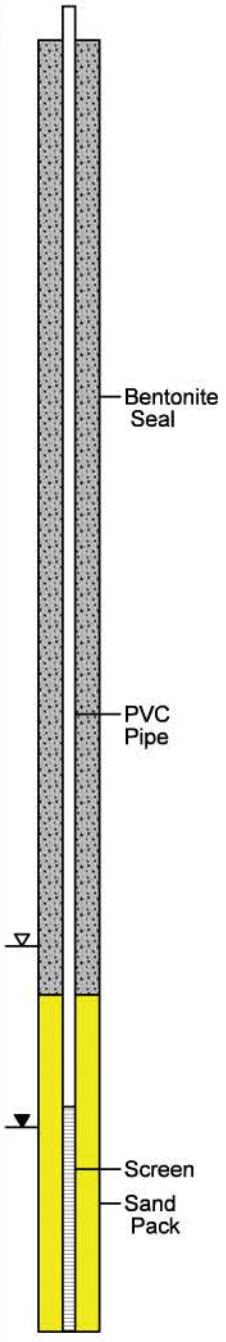
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 9.75'
Sampling Method	: Dual Tube	Final Water Level	: 8.00'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 9.75'
▽ After Completion - 8.00'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0	CL		SANDY CLAY, brown, medium stiff, moist	1		0.0	100
2				2		0.0	100
4				3		0.0	100
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, traces of gravel & fines				
6				4		0.0	100
7			Moist @ 7.5 feet				
8				5		0.0	100
9							
10	SM		SILTY SAND, coarse, wet, traces of gravel & clay Very coarse, less silt from 10 - 11 feet				
11				6		0.0	100
12							

Temp Well: TW-29S
TOC Elev.: 727.29



LOG OF BORING TW-31

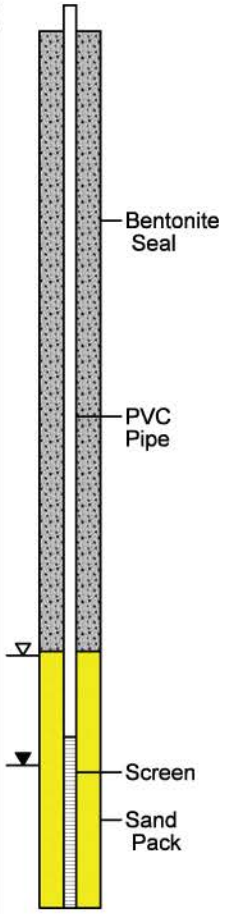
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 8.5'
Sampling Method	: Dual Tube	Final Water Level	: 7.28'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8.5'
▽ After Completion - 7.28'

Depth in feet	USCS	GRAPHIC	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0							
1	CL		SANDY CLAY, brown, medium stiff, moist	1		0.0	100
2							
3				2		0.0	100
4							
5	SP		SAND, medium dense/dense, slightly moist, brown, poorly-sorted, traces of gravel & fines	3		0.0	100
6							
7				4		0.0	100
8			Wet, medium grained, poorly sorted @ 8.5 feet				
9				5		0.0	100
10	SM		SILTY SAND, coarse, wet, traces of gravel & clay, brown-grey				
11				6		0.0	100
12							
13	CL		SILTY CLAY, brown, stiff, moist	7		0.0	100
14	CL		SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15			Boring completed at 15.0 feet BGS.				

Temp Well: TW-31
TOC Elev.: 726.36



LOG OF BORING TW-30D

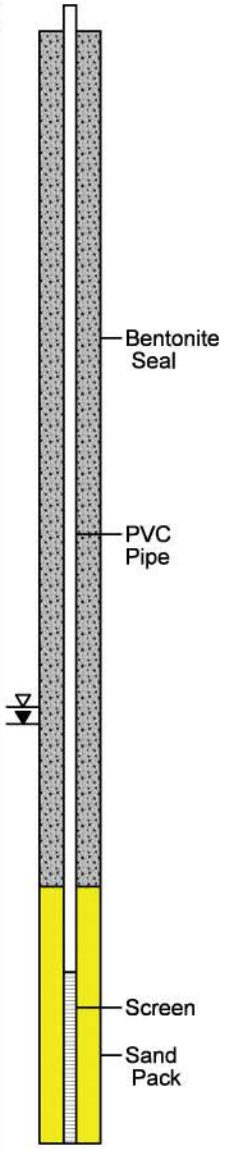
Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 8'
Sampling Method	: Dual Tube	Final Water Level	: 7.94'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8'
▽ After Completion - 7.94'

Temp Well: TW-30D
TOC Elev.: 727.08

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0–5	CL	SANDY CLAY, brown, medium stiff, moist	1		0.0	100
			2		0.0	100
			3		0.0	100
5–8	SP	SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
8–12	SM	SILTY SAND, coarse, wet, traces of gravel & clay	5		0.0	100
			6		0.0	100
12–12.5	CL	SILTY CLAY, brown, stiff, moist				
12.5–13	SM	SILTY SAND, coarse, wet, traces of gravel and clay	7		0.0	100
13–15	CL	SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15		Boring completed at 15.0 feet BGS.				



LOG OF BORING TW-30D

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 8'
Sampling Method	: Dual Tube	Final Water Level	: 7.94'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8'
▽ After Completion - 7.94'

Temp Well: TW-30D
TOC Elev.: 727.08

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0–5	CL	SANDY CLAY, brown, medium stiff, moist	1		0.0	100
			2		0.0	100
			3		0.0	100
5–8	SP	SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	4		0.0	100
8–12	SM	SILTY SAND, coarse, wet, traces of gravel & clay	5		0.0	100
			6		0.0	100
12–12.5	CL	SILTY CLAY, brown, stiff, moist				
12.5–13	SM	SILTY SAND, coarse, wet, traces of gravel and clay	7		0.0	100
13–15	CL	SILTY CLAY, hard/very stiff, slightly moist, grey, traces of gravel & sand	8		0.0	100
15		Boring completed at 15.0 feet BGS.				

Bentonite Seal
PVC Pipe
Screen
Sand Pack

04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-30.BOR

LOG OF BORING TW-30S

Former Amphenol Corporation
980 Hurricane Road
Franklin, IN
EPA ID # IND 044 587 848

Date Completed	: 03/04/2019	Casing Size	: 2"
Drilling Method	: Direct Push	Initial Water Level	: 8'
Sampling Method	: Dual Tube	Final Water Level	: 8.05'
Field/Office Logged	: CN/LL	Selected for Analysis	: NA
Hole Diameter	: 2.25"	Drilling Contractor	: EnviroDynamics

Water Levels
▼ During Drilling - 8'
▽ After Completion - 8.05'

Temp Well: TW-30S
TOC Elev.: 727.21

Depth in feet	USCS	DESCRIPTION	Samples	Total PID (ppm) 0 5 10	Total PID (ppm)	Sample Recovery (%)
0–5	CL	SANDY CLAY, brown, medium stiff, moist	1		0.0	100
			2		0.0	100
5–8	SP	SAND, medium dense/dense, slightly moist, brown, poorly-sorted, with gravel & fines	3		0.0	100
			4		0.0	100
8–10	SM	SILTY SAND, coarse, wet, traces of gravel & clay	5		0.0	100

Bentonite Seal
PVC Pipe
Screen
Sand Pack

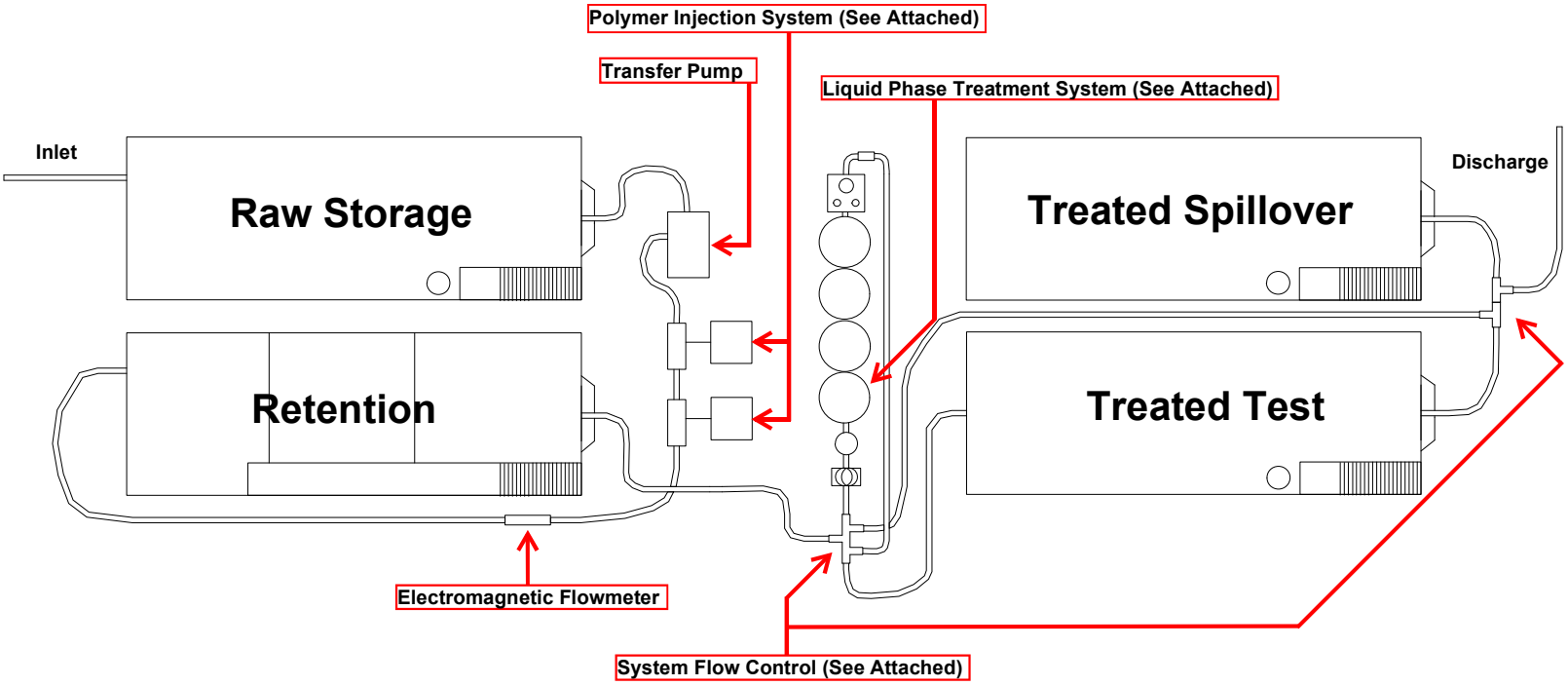
04-15-2019 I:\Indy Environmental\Project Files\AMPHENOL\Work Plans_2018\Off-Site Groundwater Investigation\Boring Logs\TW-30S.BOR

Appendix D

Groundwater Treatment System Components and Drawings

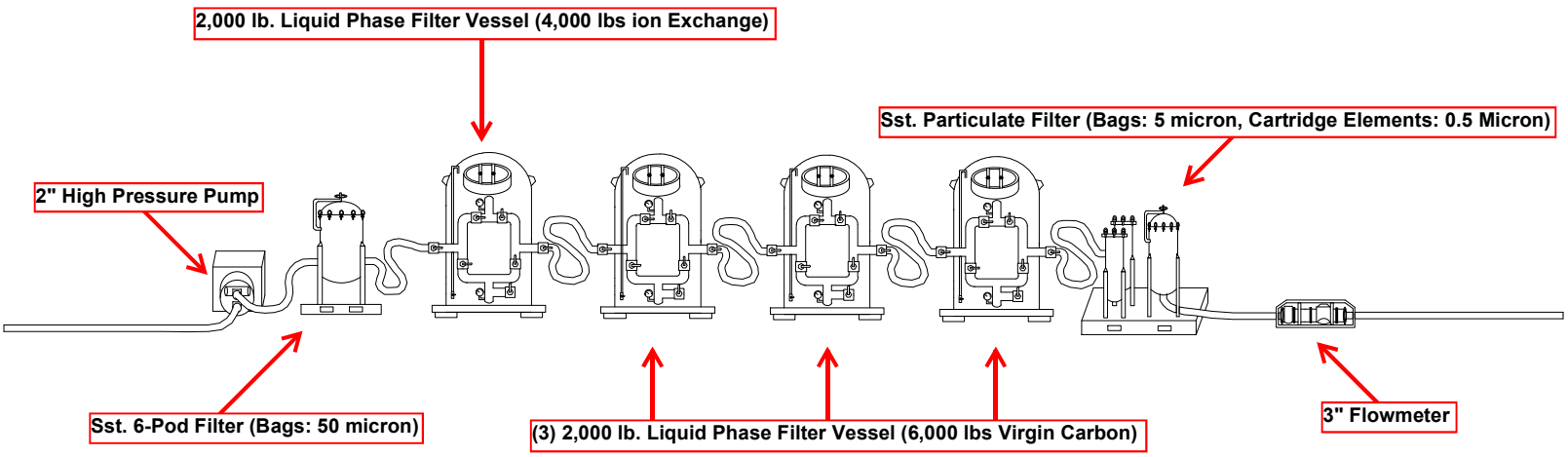
IWM Consultants

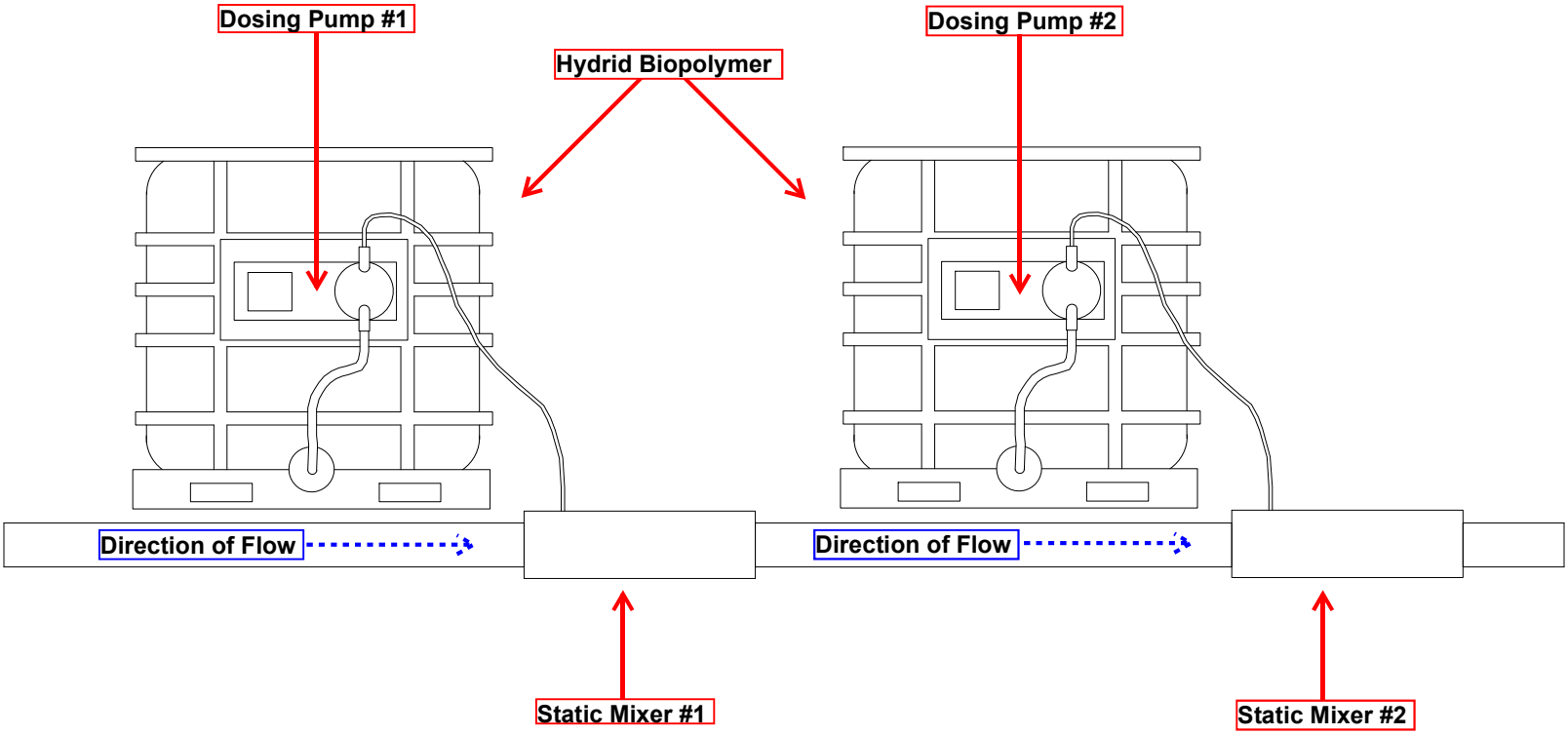
Franklin, IN Filtration / Treatment System



IWM Consultants

Franklin, IN Filtration / Treatment System




Dosing Pump #1
Hydrid Biopolymer
Dosing Pump #2
Direction of Flow
Direction of Flow
Static Mixer #1
Static Mixer #2

Appendix E

Ambient Air Monitoring Plan

Former Amphenol

Perimeter and Work Area Air Monitoring and Sampling Plan

Franklin, Indiana

June 18, 2019

Version 1.0

Perimeter and Work Area Monitoring and Sampling Plan

Former Amphenol
Franklin, Indiana

Prepared for:
Amphenol

Prepared by:
Groundwater & Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA 19341
800-426-9871
www.gesonline.com

GES Project:
1704073

Date:
June 18, 2019

Thomas M. Baylis, CIH
Vice President, HSSE

Robert Elliott
Principle Environmental Scientist

Joseph Keller
Vice President, Client Programs

Table of Contents

Appendix A

Mini RAE 3000 Data Sheet
Area RAE Plus Data Sheet
GasMet DX4040 Data Sheet

Appendix B

Attachment 1 – Perimeter Air Monitoring Form
Attachment 2 – Work Area Monitoring Form

1 Purpose/Scope

This plan describes the air quality monitoring and sampling which will occur during the removal and replacement of sanitary sewer sections associated with the former Amphenol Site remediation in Franklin, Indiana. The plan will be implemented to ensure that staff performing excavation activities are not exposed to airborne concentrations of Contaminants of Concern above the established exposure limits for Trichloroethylene (TCE) and Perchloroethylene (PCE). The plan will also be implemented to ensure the residences and businesses established along the perimeter of the work activities are not affected by offsite migration of the Contaminants of Concern (TCE or PCE).

The plan will address the following approach for monitoring and sampling activities for Volatile Organic Compounds (VOC) of concern:

- Continuous Perimeter Monitoring
- Periodic Perimeter Monitoring
- Work Area Continuous Monitoring

In addition to the VOC monitoring, the plan will also describe the approach for monitoring perimeter airborne particulate levels.

2 Definitions

Action Level (AL) – an airborne concentration of a Contaminant of Concern (CoC) that requires staff onsite to implement a response to prevent worker exposure or impact to non-work areas.

Employee exposure – Exposure to airborne TCE or PCE above an exposure limit that would occur if an individual was not using respiratory protective equipment.

Exposure Limit - is a level of **exposure** established for a chemical substance or physical agent that will prevent an adverse health or other negative effect.

Indiana Department of Environmental Management (IDEM) Remediation Closure Guide for Residential Indoor Air Screening Levels – Established air concentrations that represent a minimal risk for individuals to experience an adverse health effect if exposure occurs at or below these concentrations. The IDEM standard for TCE is currently 0.4 parts per billion (ppb). The IDEM standard for PCE is 6.1 ppb. These conservative IDEM indoor air quality standards will be used to determine the AL for the outdoor perimeter air quality monitoring.

Levels of Protection (personal protective equipment): Levels of protection consist of the personal protective equipment (PPE) that is required for work activities when chemical exposure is possible. For this project, two levels of protection may be worn, Environmental Protection Agency (EPA) level D or EPA level C PPE. EPA level D PPE will consist of the following equipment:

- Hardhat
- Safety Glasses with side-shields
- Steel-toed boots
- Standard work uniform (pants and shirts with sleeves)
- High visibility clothing such as DOT Level II vest
- Leather or similar work-gloves

EPA level C PPE will consist of the following equipment:

- Hardhat
- Steel toed boots
- Respiratory protection consisting of an either a half-face or full-face air purifying respirator with organic vapor cartridges. However, if a half-face air-purifying respirator is worn, then staff must also wear safety glasses with side-shields
- Chemical protective coverall such as Tyvek or similar protective coverall.
- DOT Level II vest
- Latex or similar protective over-boots
- Nitrile chemical protective gloves over nitrile surgical gloves

Mini RAE and Area RAE – these are both direct reading instruments known as photoionization detectors (PIDs). A PID is an efficient detector for many Volatile Organic Compounds (VOCs).

PIDs produce instantaneous readings, operate continuously, and are commonly used as hand-held portable instruments. Mini RAEs and Area RAEs are capable of detecting total concentrations of VOCs at ppb levels. These instruments measure total VOCs and do not specify what VOCs are detected. Refer to Appendix A for equipment description data sheets.

Monitoring Technician - The individual who will be responsible for implementing and conducting the required monitoring and sampling described in this plan.

Screening level - an airborne concentration of a CoC that requires staff onsite to conduct additional monitoring to determine if a specific chemical compound (TCE or PCE) is present above or below the AL.

Threshold Limit Value (TLV) – is a Time Weighted Average (TWA) level established by the American Conference of Governmental Industrial Hygienist (ACGIH) for worker protection from VOC exposure. The TLV for PCE is currently 25 parts per million (ppm). The TLV for TCE is currently 10 ppm. These ACGIH standards will be used to determine a work area AL for each CoC.

Time Weighted Average - is the **average** workplace exposure to any hazardous contaminant or agent using the baseline of an 8 hour day or 40 hours per week work schedule.

GasMet DX4040 – is a Fourier Transform Infrared Spectroscopy (FTIR) Gas Analyzer that monitors multiple gases simultaneously and identify specific gas with its stored library. The GasMet DX4040 can specify whether or not a specific VOC is present at ppb levels. Refer to Appendix A for equipment description data sheets.

3 Perimeter Monitoring and Sampling Requirements

3.1 Continuous Perimeter Monitoring

Continuous perimeter monitoring will be implemented during excavation site activities. Perimeter monitoring will consist of the following approach:

1. Each day during excavation activities, an Area-RAE that is capable of detecting VOCs at ppb levels will be placed at two downwind and one upwind locations. The Area-RAE is capable of providing data-logging over 12-hours of continuous readings and has a GPS feature which will allow the perimeter location to be defined with GPS coordinates.
2. At the conclusion of each work shift, data collected will be downloaded for daily documentation of work area conditions.
3. Each perimeter location will be positioned within 20 feet of the work area approximately 4 to 5 feet above ground level. The two downwind locations will be positioned 40 feet apart along the downwind perimeter of the sewer right of way.
4. The wind direction will be determined by using a National Weather Service application (app) and/or the onsite weather station on an hourly basis and the locations downwind and upwind adjusted based on the prevailing wind direction.
5. As the excavation activities proceed along the right of way and street location, the perimeter monitoring stations will be relocated so that the air quality along the perimeter will continue to be evaluated immediately adjacent to the construction activity.
6. Each Area RAE will be calibrated daily in accordance with manufacture's instruction. In addition, because Area RAEs are not capable of detecting specific VOCs, the Area RAEs will be adjusted to alarm at a screening level of 5 ppm total VOCs.
7. If the Area RAE alarms at an established perimeter location, a GasMet DX4040 direct-reading instrument will be used to confirm the presence or absence of PCE or TCE.
8. If either TCE or PCE is confirmed at an AL that exceeds 10 ppb, then work activities will be stopped until appropriate vapor control actions are implemented or levels are permitted to dissipate below the established AL. Vapor control methods that could be introduced to the work area may include but are not limited to vapor suppressant foam or similar material.
9. All readings will be captured on the Perimeter Air Monitoring Form provided as Attachment 1.

3.2 Periodic Perimeter Monitoring

Periodic perimeter monitoring will be required during excavation activities to verify work area perimeter conditions have not exceeded the AL stated in section 3.1. Periodic monitoring will consist of the following approach:

1. The monitoring technician will be responsible for confirming VOC concentrations at each perimeter monitoring location at 60 minute intervals.

2. Perimeter periodic monitoring will be conducted with a mini RAE. Although a mini RAE has data logging capability, readings collected during the periodic perimeter monitoring will be recorded on the Perimeter Air Monitoring form provided as attachment 1. Data collected will include the date, time, instrument reading, the designation of the perimeter location, and the current weather conditions including wind direction.
3. The AL stated for the continuous monitoring will be implemented during periodic monitoring. If the screening level of 5 ppm is reached at an established perimeter location, a GasMet Dx4040 direct-reading instrument will be used to confirm the presence or absence of TCE or PCE.
4. If either TCE or PCE is confirmed at a level that exceeds 10 ppb by the GasMet Dx4040, then the actions indicated in section 3.1 number 8 must be implemented.

4 Work Area Continuous Monitoring

During excavation activities, continuous work area monitoring will be conducted to ensure that staff engaged in excavation activities are not exposed above the TLV for TCE of 10 ppm or the TLV for PCE of 25 ppm. The following approach will be implemented for work area monitoring to ensure that worker exposure does not occur:

1. Continuous work area air monitoring will be conducted using a Mini RAE with the monitoring instrument positioned as close as practical to the excavator/excavation activity without impacting the safety of the monitoring technician.
2. If 10 ppm of total VOCs is detected by the Mini RAE, the monitoring technician will monitor the area with the GasMet Dx4040 to determine whether TCE or PCE is detected at 10 ppm or greater. If 10 ppm or greater of either TCE or PCE is detected:
    1) Then work must stop until levels have dissipated below the AL of 10 ppm.
    2) Vapor suppression methods are implemented to the reduce TCE and PCE emissions, or
    3) Staff will have upgraded to EPA Level C protection.
3. If TCE and PCE levels are detected below the AL, then work can continue; however, air quality checks that are established at 30 minute intervals for up to 2 hours must be conducted to ensure that TCE and PCE levels remain below the AL of 10 ppm.
4. All readings will be captured on the Work Area Monitoring Form provided as Attachment 2.

5 Continuous Perimeter Particulate Monitoring

Particulate monitoring will be conducted using a real-time aerosol monitor (MIE pDR-1000 Data-RAM or similar device). This device (particulate monitor) is capable of measuring airborne particulate of less than 10 micrometers in size and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The monitoring equipment will be equipped with an audible alarm to indicate exceedance of the action level.

During excavation activities, a perimeter particulate monitor will be stationed at the upwind and two downwind site perimeter locations next to the Area RAE. In addition, visible fugitive dust migration will be visually assessed during all work activities. The following approach will be implemented for the work area particulate monitoring:

1. Each particulate monitor will be placed at 4 to 5 feet above ground level.
2. In addition to the stationary particulate monitors with the data-logger, the monitoring technician will measure hourly particulate levels at each designated location. Particulate levels will be documented on the "Perimeter Air Monitoring Form" "Attachment 1"
3. If the downwind particulate levels exceed 1.0 mg/M^3 greater than the upwind perimeter location for a 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques will be employed by applying water (wetting) to the work area surface. Work will continue with dust suppression techniques provided that the downwind particulate levels do not exceed 1.0 mg/M^3 above the upwind level and provided that no visible particulate is migrating from the work area.
4. If, after the implementation of dust suppression such as using a water spray to dampen the soil and excavated material, the downwind particulate levels remain greater than 1.0 mg/M^3 above the upwind level, work will be stopped and re-evaluation of activities initiated. Work will resume provided that dust suppression measures and other engineering controls are successful in reducing the downwind particulate concentration to ≤ 1.0 mg/M^3 of the upwind level and there is no visible dust migration

Appendix A

Mini RAE 3000 Data Sheet

Area RAE Plus Data Sheet

GasMet Dx4040 Sheet

Honeywell

THE POWER OF **CONNECTED**

MiniRAE® 3000 +

Portable Handheld VOC Monitor

The MiniRAE 3000 + is a comprehensive handheld VOC (Volatile Organic Compound) monitor that uses a third-generation patented PID technology to accurately measure one of the highest levels of ionizable chemicals available on the market. The MiniRAE 3000 + is a comprehensive handheld VOC (Volatile Organic Compound) monitor that uses a third-generation patented PID technology to accurately measure one of the highest levels of ionizable chemicals available on the market.

It provides full-range measurement from 0 to 15,000 ppm of VOCs. The MiniRAE 3000 + has a built-in wireless modem that allows real-time data connectivity with the command center located up to 2 miles (3 km) away through a Bluetooth connection to a RAELink 3* portable modem or optionally via Mesh Network.

Workers can quickly measure VOCs and wirelessly transmit data

- Highly accurate VOC measurements
- Reflex PID Technology™
- Low maintenance—easy access to lamp and sensor
- Low cost of ownership
- 3-year 10.6eV lamp warranty
- BLE module & dedicated APP for Enhanced Datalogging capability

FEATURES & BENEFITS

- Third-generation patented PID technology
- Reflex PID Technology™
- VOC detection range from 0 to 15,000 ppm
- 3-second response time
- Humidity compensation with built-in humidity and temperature sensors
- Six-month datalogging
- Highly connectivity capability through multiple wireless module options
- Large graphic display with integrated flashlight
- Multi-language support with 10 languages encoded
- IP- 67 waterproof design

APPLICATIONS

- Oil and Gas
- HazMat
- Industrial Safety
- Civil Defense
- Environmental and Indoor Air Quality

Download on the App Store

GET IT ON Google Play

Instrument Specifications

Size	10" L x 3.0" W x 2.5" H (25.5 cm x 7.6 cm x 6.4 cm)
Weight	26 oz (738 g)
Sensors	Photoionization sensor with standard 10.6 eV or optional 9.8 eV or 11.7 eV lamp
Battery	• Rechargeable, external field-replaceable Lithium-Ion battery pack • Alkaline battery adapter
Running time	16 hours of operation (12 hours with alkaline battery adapter)
Display Graphic	4 lines, 28 x 43 mm, with LED backlight for enhanced display readability
Keypad	1 operation and 2 programming keys, 1 flashlight on/off
Direct Readout	Instantaneous reading • VOCs as ppm by volume (mg/m3) • High values • STEL and TWA • Battery and shutdown voltage • Date, time, temperature
Alarms	95dB at 12" (30 cm) buzzer and flashing red LED to indicate exceeded preset limits • High: 3 beeps and flashes per second • Low: 2 beeps and flashes per second • STEL and TWA: 1 beep and flash per second • Alarms latching with manual override or automatic reset • Additional diagnostic alarm and display message for low battery and pump stall
EMC/RFI	Compliant with EMC directive (2004/108/EC) EMI and ESD test: 100MHz to 1GHz 30V/m, no alarm Contact: ±4kV Air: ±8kV, no alarm
IP Rating	• IP-67 unit off and without flexible probe • IP-65 unit running
Datalogging	Standard 6 months at one-minute intervals
Calibration	Two-point or three-point calibration for zero and span. Reflex PID Technology™ Calibration memory for 8 calibration gases, alarm limits, span values and calibration dates
Sampling Pump	• Internal, integrated flow rate at 500 cc/mn • Sample from 100' (30m) horizontally or vertically
Low Flow Alarm	Auto pump shutoff at low-flow condition
Communication & Data Download	• Download data and upload instrument set-up from PC through charging cradle or using BLE module and dedicated APP • Wireless data transmission through built-in RF modem
Wireless Network	Mesh RAE Systems Dedicated Wireless Network
Wireless Range (Typical)	Up to 15ft (5m) for BLE EchoView Host: LOS > 660 ft (200 m) ProRAE Guardian & RAEMesh Reader: LOS > 660 ft (200 m) ProRAE Guardian & RAELink3 Mesh: LOS > 330 ft (100 m)
Safety Certifications	**US and Canada:** CSA, Classified as Intrinsically Safe for use in Class I, Division 1 Groups A, B, C, D **Europe:** ATEX II 2G EEx ia IIC T4
Temperature	-4° to 122° F (-20° to 50° C)
Humidity	0% to 95% relative humidity (non-condensing)

Instrument Specifications

Attachments	Durable bright yellow rubber boot
Warranty	3 years for 10.6 eV lamp, 1 year for pump, battery, sensor and instrument
Wireless Frequency	ISM license-free band. IEEE 802.15.4 Sub 1GHz
Wireless Approvals	FCC Part 15, CE R&TTE, Others[1]
Radio Module	Supports BLE or Bluetooth or RM900

[1] Contact RAE Systems for country-specific wireless approvals and certificates. Specifications are subject to change.

Sensor Specifications

Gas Monitor	Range	Resolution	Response Time T90
VOCs	0 to 999.9 ppm 1,000 to 15,000 ppm	0.1 ppm 1 ppm	< 3 s < 3 s

MONITOR ONLY INCLUDES:

- MiniRAE 3000 + Monitor, Model PGM-7320
- Wireless communication module built in, as specified
- Datalogging with ProRAE Studio II Package
- Charging/download adapter
- RAE UV lamp, as specified
- Flex-I-Probe™
- External filter
- Rubber boot
- Alkaline battery adapter
- Lamp-cleaning kit
- Tool kit
- Soft leather case

OPTIONAL CALIBRATION KIT ADDS:

- 100 ppm isobutylene calibration gas, 34L
- Calibration regulator and flow controller

OPTIONAL GUARANTEED COST-OF-OWNERSHIP PROGRAM:

- 4-year repair and replacement warranty
- Annual maintenance service

For more information
www.honeywellanalytics.com
www.raesystems.com

Europe, Middle East, Africa
Life Safety Distribution GmbH
Tel: 00800 333 222 44 (Freephone number)
Tel: +41 44 943 4380 (Alternative number)
Middle East Tel: +971 4 450 5800 (Fixed Gas Detection)
gasdetection@honeywell.com

Americas
Honeywell Analytics Distribution Inc.
Tel: +1 847 955 8200
Toll free: +1 800 538 0363
detectgas@honeywell.com
Honeywell RAE Systems
Phone: +1 408 952 8200
Toll Free: +1 888 723 4800

Asia Pacific
Honeywell Analytics Asia Pacific Tel:
+82 (0) 2 6909 0300
India Tel: +91 124 4752700
China Tel: +86 10 5885 8788-3000
analytics.ap@honeywell.com

Technical Services
EMEA: HAexpert@honeywell.com
US: ha.us.service@honeywell.com
AP: ha.ap.service@honeywell.com

Datasheet_MiniRAE 3000_+_DS-1018-_EN

Honeywell

RAE SYSTEMS

AreaRAE Plus

Multiple gas threats. One easy-to-use transportable area detector.

AreaRAE Plus

Visibility on more threats than ever – all in one flexible area detector with remote monitoring

AreaRAE Plus is a wireless, transportable area monitor that can simultaneously detect toxic and combustible gases, volatile organic chemicals, and meteorological factors that affect the speed and direction of the gas.

Whether you need to protect your community by monitoring a fence line, protect your employees during a maintenance turnaround, or protect your fire and hazmat team during emergency response, the AreaRAE Plus alerts you to threats with local audible and visual alarms. Plus, it works with Honeywell's remote monitoring software to give you a real-time view of threat readings from a safe location.

AreaRAE Plus delivers flexibility for your changing requirements:

- **Up to six 4R+ sensors for toxic and combustible gas.**

Choose from a mix of up to 20 sensors based on your needs and switch them out whenever your needs change.

- **7R+ photoionization detector.**

Monitor VOCs in parts per million, with built-in compensation for temperature and humidity.

- **Optional meteorological sensor for tracking toxic plumes.**

Honeywell's compact RAEMet sensor sits at the top of the AreaRAE Plus and measures wind speed, wind direction, temperature and humidity. This information is then modeled in Honeywell's real time monitoring software which integrates the ALOHA hazard monitoring program.

Applications

- Industrial emergency response teams
- Maintenance turnarounds / Shutdowns
- Fence line monitoring
- Clearing a confined space for entry
- Wastewater pipeline rehabilitation
- Site remediation
- Fumigation, excavation and other environmental liabilities

Ease & Flexibility

- Available in Rapid Deployment Kit for quick threat assessment
- User-friendly interface; turn it on and go
- Flexible power options for short and long-term deployments
- Easy to hear and see, with 108-decibel alarm
- Easy USB connection to configuration software
- Built-in Mesh modem for short range comminution with RAE Systems wireless portable detectors.
- Device Management with Honeywell Sotera™

Remote Visibility on Threats

- Delivers real-time readings to Honeywell's remote monitoring software, so you can instantly determine the location and severity of a threat
- Map-based display is accessible from any computer with an internet connection — or from our laptop as a turnkey host
- Enables coordination and data sharing in joint operations

Specifications

DIMENSIONS	314 x 306 x 166 mm (with rubber boot) 12.36" x 12.04" x 6.53" (with rubber boot)
WEIGHT	6.3 kg (13.88 lb) full option configuration 6.5 kg (14.33 lb) full option configuration (+RAEMet)
GAS SENSORS SLOTS	up to 7; see Sensor list
ADDITIONAL SENSOR	RAEMet (Wind Speed, Wind Direction, Temperature & Humidity)
GPS	Standard equipment in every unit
BATTERY	Rechargeable 7.2 V / 10 Ah Li-ion battery pack with built-in charger Alkaline Battery Adapter
OPERATING HOURS	~20 hours with wireless connectivity on Li-ion battery pack
	Specification at room temperature (20°C)
DISPLAY	Large 240 x 320 pixel LCD backlit display
	64 x 85 mm / 2.5" x 3.33"
KEYPADS	3 operation and programming keys
ALARMS	Multi-tone 108 dB buzzer @ 3.3 ft / 1 m, Bright LED 360 degree view and on-screen indication of alarm conditions
	Additional diagnostic alarm and display message for low battery
	Wireless connectivity alarm
DATA LOGGING	Continuous data logging (90 days for 7 gas sensors, 1 Gamma sensor, 1 RAEMet (wind speed & direction, temp and RH), and GPS at 1 min intervals, 24/7)
DATA STORAGE	24M bytes (memory full action: stop when full or Wrap around)
DATA INTERVAL	User-configurable from 1 to 3,600 sec
WIRELESS[1]	Standard Bluetooth Low Energy module (BT4.0) and GPS
	Primary radio module: - Long range ISM License Free 900 MHz or 2.4 GHz radio - IEEE 802.11 b/g Wi-Fi
	Secondary radio module: Short range IEEE 802.15.4 900 MHz or 868MHz Mesh Radio
	Wireless range[3]: Up to 2 miles (3 km) for ISM 900 MHz; Up to 1.2 miles (2 km) for ISM 2.4 GHz; Up to 330 ft (100m) for Wi-Fi; Up to 660 ft (200m) for Mesh secondary radio; Up to 15 ft (5m) for BLE.
	Wireless Approval: FCC Part 15, CE R&TTE, Others[4]
COMMUNICATION	Communicates to ProRAE Studio II via USB cable to PC;
	Wireless data and alarm status transmission via Wi-Fi or ISM modem;
	Act as gateway to connect up to 8 remote instruments (using secondary radio module)
SAFETY CERTIFICATION	US / Canada: Class 1, Division 2 Groups A, B, C, D
SAMPLING PUMP	Built-in pump, typical flow rate 450 cc/min
TEMPERATURE	-20 °C to +50 °C / (- 4 °F to +122 °F)
HUMIDITY	0% to 95% relative humidity (non-condensing)
INGRESS PROTECTION (IP)	IP 65
PERFORMANCE TESTS	MIL-STD-810G and 461F
	LEL CSA C2.2No. 152, ISA-12.13.01
WARRANTY[2]	Four years for O_2 Liquid Oxygen sensors Three years for CO, and H_2S sensors Two years for non-consumable components, catalytic LEL sensor and 10.6eV 7R+ PID lamp One year on all other sensors, battery, and other consumable parts Six months for 9.8eV lamp PID sensor

RAEMet SPECIFICATIONS (Optional)	
WIND SPEED	Range: 0 to 20 m/s (0 to 44 mph) Start Speed: 0.1 m/s (0.22 mph)
WIND DIRECTION	Range: 360° (No dead band)
TEMPERATURE	-20 °C to 60 °C (-4 °F to 140 °F) Resolution 0.1 °C (1.8 °F)
HUMIDITY	10 to 95% RH Resolution 1% RH
COMPASS	Resolution 1°
POWER	Power supplied by the AreaRAE Plus

[1]Additional equipment and/or software licenses may be required to enable remote wireless monitoring and alarm transmission
[2]Against factory defects
[3]Receiving > 80%
[4]Contact RAE Systems for country specific wireless approvals and certificates
Specifications are subject to change

Supported Sensors

SENSOR	RANGE	RESOLUTION
PID SENSORS		
7R+; 10.6 eV ppm	0 to 5,000 ppm	0.1 ppm
4R+; 9.8 eV*	0 to 2,000 ppm	0.1 ppm
COMBUSTIBLE SENSOR		
CATALYTIC BEAD SENSOR	0 to 100% LEL	1% LEL
NDIR SENSOR		
Carbone Dioxide (CO_2)	0 to 50,000 ppm	100 ppm
ELECTROCHEMICAL SENSORS		
AMMONIA (NH_3)	0 to 100 ppm	1 ppm
CARBON MONOXIDE (CO)	0 to 500 ppm	1 ppm
CARBON MONOXIDE EXT. (CO HR)	0 to 2,000 ppm	10 ppm
CARBON MONOXIDE H_2 Comp (CO H_2 Comp)	0 to 2,000 ppm	10 ppm
CHLORINE (Cl_2)	0 to 50 ppm	0.1 ppm
CHLORINE DIOXIDE (ClO_2)	0 to 1 ppm	0.03 ppm
ETHYLENE OXIDE (ETO-A)	0 to 100 ppm	0.5 ppm
ETHYLENE OXIDE (ETO-B)	0 to 10 ppm	0.1 ppm
ETHYLENE OXIDE (ETO-C)	0 to 500 ppm	10 ppm
HYDROGEN (H_2)	0 to 2,000 ppm	10 ppm
HYDROGEN CHLORIDE (HCl)	0 to 15 ppm	1 ppm
HYDROGEN CYANIDE (HCN)	0 to 50 ppm	0.5 ppm
HYDROGEN FLUORIDE (HF)	0.5 to 10 ppm	0.1 ppm
HYDROGEN SULFIDE (H_2S)	0 to 100 ppm	0.1 ppm
HYDROGEN SULFIDE EXT. (H_2S HR)	0 to 1,000 ppm	1 ppm
OXYGEN (O_2)	0 to 30 %	0.10 %
SULFUR DIOXIDE (SO_2)	0 to 20 ppm	0.1 ppm
NITRIC OXIDE (NO)	0 to 250 ppm	0.5 ppm
NITROGEN DIOXIDE (NO_2)	0 to 20 ppm	0.1 ppm
PHOSPHINE (PH_3)	0 to 20 ppm	0.1 ppm

Honeywell Gas Detection

Honeywell is able to provide gas detection solutions to meet the requirements of all applications and industries.
Contact us in the following ways:

HEADQUARTERS

Europe, Middle East, Africa
Life Safety Distribution GmbH
Javastrasse 2
8604 Hegnau
Switzerland
Tel: +41 (0)44 943 4300
Fax: +41 (0)44 943 4398
gasdetection@honeywell.com
Customer Service:
Tel: 00800 333 222 44 (Freephone number)
Tel: +41 44 943 4380 (Alternative number)
Fax: 00800 333 222 55
Middle East Tel: +971 4 450 5800 (Fixed Gas Detection)
Middle East Tel: +971 4 450 5852 (Portable Gas Detection)

Americas
RAE Systems by Honeywell
3775 North First Street
San Jose, CA 95134
USA
Tel: +1 877 723 2878

Honeywell Analytics Distribution Inc.
405 Barclay Blvd.
Lincolnshire, IL 60069
USA
Tel: +1 847 955 8200
Toll free: +1 800 538 0363
Fax: +1 847 955 8210
detectgas@honeywell.com

Asia Pacific
Honeywell Industrial Safety
7F SangAm IT Tower,
434, Worldcupbuk-ro, Mapo-gu,
Seoul 03922
Korea
Tel: +82 (0) 2 6909 0300
Fax: +82 (0) 2 2025 0328
India Tel: +91 124 4752700
China Tel: +86 10 5885 8788 3000
analytics.ap@honeywell.com

www.honeywellanalytics.com
www.raesystems.com

Please Note:
While every effort has been made to ensure accuracy in this publication, no responsibility can be accepted for errors or omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards, and guidelines. This publication is not intended to form the basis of a contract.

AreaRAE Plus_DS01166_V4_EN
06-18

Device Management with
Honeywell Sotera™

honeywellanalytics.com/products/Honeywell-Sotera

Honeywell

FOURIER TRANSFORM INFRARED SPECTROSCOPY (FTIR) ANALYSIS

- Identification of both organic & inorganic compounds
- Multi-compound analysis as standard (max. 25 compounds analyzed simultaneously with *Calcmet Lite*)
- Cross-interferences automatically compensated for in the analysis
- Possibility to store sample spectra for post-measurement analysis with Laptop PC and *Calcmet Pro* (250 compound chemical library available for identification of unknowns)

LOW OPERATING COSTS AND RUGGED CONSTRUCTION

- No sensors etc. that would need replacing on regular basis
- Corrosion & contamination resistant materials
- Calibration checks are not needed; only zero calibration with nitrogen or air

QUICK TO SET-UP AND EASY TO USE

- No sample preparation needed
- Battery operated with several hours of operating time
- Truly portable with wireless connection between analyzer and handheld PDA

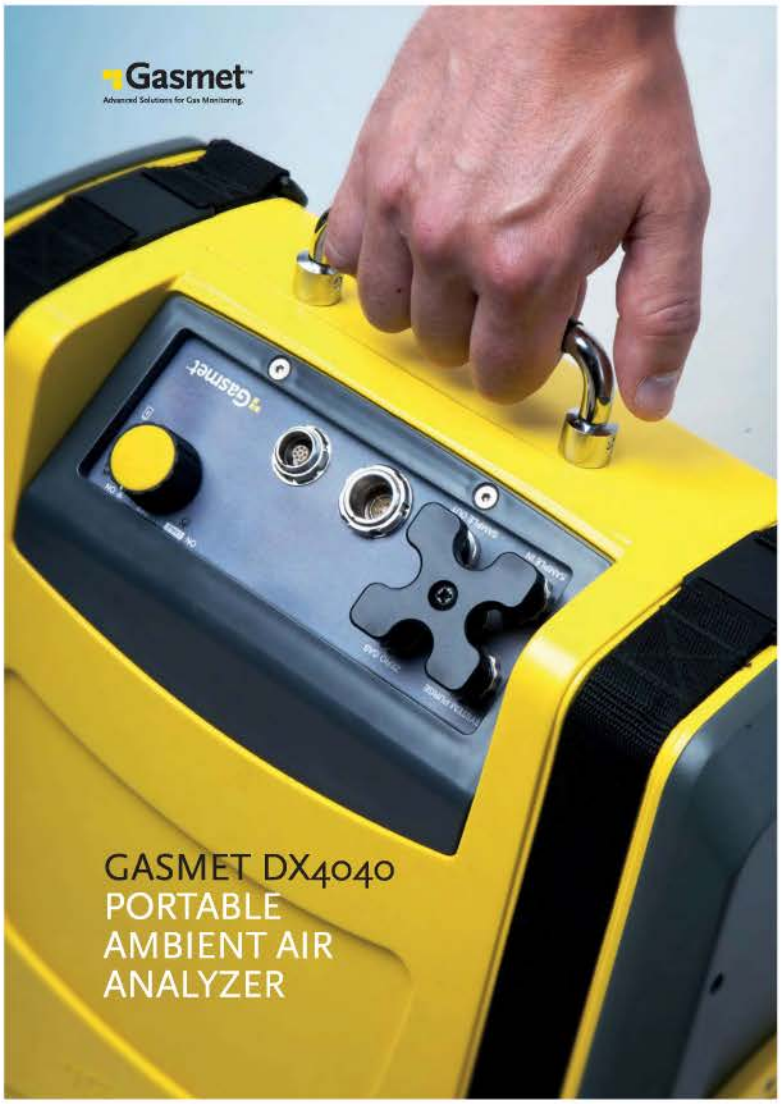
Gasmet DX4040 is standard equipped with an IP67 rated PDA and Calcmet Lite software. Large touch screen buttons and keypad are easy to use even in demanding field conditions. All measured data is stored on the PDA and can be sent as e-mail messages with the built-in 3G modem and Wireless LAN adapter.

Gasmet™
Advanced Solutions for Gas Monitoring.

Gasmet Technologies Oy
Pulttitie 8 a, 00880 Helsinki, Finland
Tel. +358 9 7590 0400 Fax +358 9 7590 0435
e-mail: *contact@gasmet.fi*
www.gasmet.fi

Gasmet Technologies Inc
North America
Tel. +1866 685 0050
e-mail: *sales@gasmet.com*
www.gasmet.com

Gasmet Technologies (Asia) Ltd
Hong Kong
Tel. +852 3568 7586
e-mail: *sales@gasmet.com.hk*
www.gasmet.fi



The advanced, easy-to-use Gasmet DX4040 FTIR Gas Analyzer is one of the most powerful instruments available for gas analysis.

BRING THE LABORATORY TO THE SITE

The Gasmet DX4040 FTIR gas analyzer can detect up to 25 gases simultaneously providing validated results in 25 seconds. Fourier Transform Infrared Spectroscopy (FTIR) provides reliable measurements with low detection limits & true multi-compound analysis capability. The library of measured gases can be changed by the user through an easy to use interface, providing exceptional flexibility and ability to respond to any measurement requirement in the field.

Measurement with the DX4040 is easy; sample gas is drawn into the analyzer with a built-in pump through a handheld particle filter and Tygon tubing. The analyzer runs in continuous mode, measuring time-weighted averages of user definable length from 1 second to 5 minutes. The Gasmet DX4040 is capable of sub-ppm detection limits without using sorbent traps for sample pre-concentration, which guarantees fast response times. Zero calibration with clean air or nitrogen is the only calibration required, carrier gases, special test gases or other consumables are not needed.

EXTENSIVE LIBRARY

Gasmet DX4040 comes with a rugged PDA with Calcmet software. Single button operation and on-screen instructions in Calcmet Lite make the instrument easy to use, while Calcmet Professional lets power users take full control of the FTIR instrument.

MULTIPLE USES

Gasmet DX4040 can be used in a variety of ways. Short measuring times (5 sec) allow quick identification of gases while longer measuring times (1 – 3 min) enable trace gas analysis.

Built-in GPS and digital camera can be used to link measurements to geographic coordinates and photographs of emission sites.

AREAS OF APPLICATION

INDUSTRIAL HYGIENE

Workplace Air Quality measurement of Volatile Organic Compounds for regulatory compliance testing

HOSPITALS

Anesthetic gases, sterilizer gases, laboratory solvents

LEAK DETECTION

VOC's, Freons, inorganic gases – all with a single analyzer

FUMIGANTS

Detection of residual fumigants.

SOIL GAS MEASUREMENTS

Identification of Chlorinated Hydrocarbons and BTEX at remediation sites

FIRST RESPONDERS & HAZMAT TEAMS

Identification and Quantification of Toxic Industrial Chemicals and Chemical Warfare Agents.

Appendix B

Attachment 1- Perimeter Air Monitoring Form

Attachment 2 – Work Area Monitoring Form

Attachment 3 – Confirmation Data Form

Attachment 1 – Perimeter Air Monitoring Form

PERIMETER AIR MONITORING FORM

Site Location and Address _____

Sample Point	Date	Time Collected (a.m./p.m.)	Wind Direction/Speed	Current Temperture (F)	Current Weather Conditions	Mini RAE PID Reading Action Level 5 ppm (ppm)	GasMet DX4040 Reading Action Level 0.01 ppm (ppm)	Particulate Monitoring Meter Action Level 1.0 mg/M3 (mg/M3)	Comments
Sample Point 1 (GPS Coordinates)									
Sample Point 2 (GPS Coordinates)									
Sample Point 3 (GPS Coordinates)									
Sample Point 4 (GPS Coordinates)									
Sample Point 5 (GPS Coordinates)									
Sample Point 6 (GPS Coordinates)									
Sample Point 7 (GPS Coordinates)									
Sample Point 8 (GPS Coordinates)									

PID Calibration

Mini RAE

Pre Calibration _____ppm

Post Calibration _____ppm

Entire form must be completed per the Air Monitoring Plan. The GasMet DX4040 readings are to be noted when Mini RAE total VOCs detects 5 ppm.

Signature: _____ Date: _____

Attachment 2 – Work Area Monitoring Form

WORK AREA AIR MONITORING FORM

Site Location and Address _____

Sample Point	Date	Time Collected (a.m./p.m.)	Wind Direction/Speed	Current Temperture (F)	Current Weather Conditions	Mini RAE PID Reading Action Level 10 ppm (ppm)	GasMet DX4040 Reading Action Level 0.01 ppm (ppm)	Comments
Sample Point A (GPS Cordinates)								
Sample Point B (GPS Cordinates)								
Sample Point C (GPS Cordinates)								
Sample Point C (GPS Cordinates)								
Sample Point D (GPS Cordinates)								
Sample Point E (GPS Cordinates)								
Sample Point F (GPS Cordinates)								
Sample Point G (GPS Cordinates)								

PID Calibration

Mini RAE

Pre Calibration _____ppm

Post Calibration _____ppm

Entire form must be completed per the Air Monitoring Plan. The GasMet DX4040 readings are to be noted when Mini RAE total VOCs detects 10 ppm.

Signature: _____ Date: _____