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REMEDIAL ACTION PLAN

Park Station

29558 Great Cove Road
Fort Littleton, Dublin Township
Fulton County, Pennsylvania

MEI 039.0001

May 2020

Prepared for:

Park Station
29558 Great Cove Road
Fort Littleton, Pennsylvania

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TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION AND BACKGROUND

Park's Station is a retail fuel facility complete with a convenience store located at 29558 Great Cove Road in Fort Littleton, Pennsylvania (Site). A routine potable water sample collected and submitted for monthly analyses per the FDA reportedly contained a fuel odor. A subsequent water sample was collected and analyzed for fuel parameters. The analytical report revealed exceedances of the PADEP Medium-Specific Concentrations (MSCs) for Non-Residential, used Aquifers (NR-U). Therefore, a Site Characterization was requested by the PaDEP to assess the subsurface conditions.

Currently there are 13 overburden monitoring wells (MW-1 through MW-13) and two (2) vapor monitoring wells. It is unknown whether or not the Site potable well was advanced into weathered bedrock. Historically, dissolved-phase 1,2,4-trimethylbenzene (124-TMB), 1,3,5-trimethylbenzene (135-TMB), benzene, ethylbenzene, MTBE, naphthalene, and toluene have been detected in concentrations above the PADEP MSCs (NR-U) in soil and/or groundwater.

Currently, the only sensitive receptor identified downgradient of the Site is an unnamed tributary to the Little Aughwick Creek. The feasibility of remedial methods/technology are detailed in this report.

2.0 SITE LOCATION AND SETTING

2.1 Facility Location

The Site is currently operational and sits east of Great Cove Road (SR 522) and in between it and the Pennsylvania Turnpike. The Site is located in Dublin Township, Fulton County, Pennsylvania and can be located on the Burnt Cabins, Pennsylvania, 7.5-minute, U.S.G.S. Topographic Quadrangle Map, at an approximate latitude of N 40*03'10.46" and an approximate longitude of W 77*57'35.03" (**Figure 1**). The Site layout is presented in **Figure 2**.

2.2 Facility Description

The subject property slopes severely east behind the Site. Concrete covers the majority of the property surface between Great Cove Road and the Site building. The Site has municipal sewer and a potable well located beneath the Site. The building foundation itself has a slab-on-grade foundation and is constructed of concrete block and wood-frame.

2.3 Surrounding Property Use

The Site is situated in a limited developed area outside of Fort Littleton. Forested areas and agricultural fields dominate the surrounding areas beyond the nearby turnpike exit.

2.4 Geology

As shown on the PaDCNR geologic map, the Site is underlain by the Mississippian-aged Mauch Chunk Formation (Mmc). The Mauch Chunk consists of grayish-red shale and siltstone, brown, gray, and white sandstone, and some conglomerate (Edmunds and others, 1979; McElroy, 2001).

Although the groundwater monitoring wells were terminated at the bedrock interface, the bedrock type was not confirmed. The site potable well was reportedly hand excavated to a depth that is similar to the site groundwater monitoring wells. It is currently unknown if the potable well was extended into bedrock.

The mapped soil type for the Site are identified by the United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey, as Atkins silt loam and Klinesville shaly silt loam. The Atkins series soils consists of very deep, poorly drained soils formed in acid alluvium washed from upland soils that formed in shale and sandstone. The Klinesville series consists of

shallow, somewhat excessively drained soils formed in residuum derived from red shale, siltstone, slate, and fine-grained sandstone.

The limited amounts of soils observed during the well installations were similar to those of the Klinesville series in their reddish-gray color and sandy nature.

2.5 Hydrogeology

The unconfined water table beneath the Site occurs in the unconsolidated sediments at an average depth of 13.71 feet below ground surface along the top of drill auger refusal/weathered bedrock. The predominant groundwater flow direction is to the east/southeast toward an unnamed tributary to the Little Aughwick Creek. The groundwater flow characteristics of the Site are considered to be convergent.

3.0 SITE CHARACTERIZATION

The environmental history of the Site is summarized as follows. The boring logs and monitoring well construction diagrams for the Site investigations are provided in **Appendix A**.

3.1 Soil Investigations

Soil samples have been collected from soil borings and groundwater monitoring wells installed around the Site. Impacted soil has been identified at depths ranging from 8-25 feet below ground surface at the termination depth of the borings.

Test pits were excavated at either end of the current dispenser island. Soils within the test pits contained strong odors from 4-12 feet below ground surface where the test pits were terminated. Static water levels in the adjacent groundwater monitoring well MW-1 was recorded at approximately 14 feet below groundwater surface. Therefore, the test pits were terminated just above the groundwater interface. Please see **Figure 3** for the approximate impacted soil footprint.

Soil samples were collected from the borings, monitoring wells, and test pits and analyzed for 124-TMB, 135-TMB, Benzene, Toluene, Ethylbenzene, Xylenes, MTBE, Cumene, and Naphthalene by EPA Methods 8260B. **Table 1** contains a summary of the soil sampling results. Throughout the sampling events, 124-TMB, Benzene, and Toluene have persisted as the Constituents of Concern (COCs) in soil.

3.2 Groundwater Investigations

The Site groundwater has been characterized surrounding the perceived source well MW-1. The impacted groundwater footprint appears to be located within the center of the Site, including the potable well. The plume appears to have migrated beyond the property boundary to MW-9. To date, MW-11, the furthest downgradient groundwater monitoring well located adjacent to the stream, has shown impact slightly above is respective MSCs. Please see **Figure 4** for the approximate extent of the impacted groundwater plume.

3.3 Groundwater Sampling and Gauging

Groundwater levels were gauged periodically from June 21, 2019 through March 12, 2020. **Table 3** lists the gauging data collected from the on- and off-site groundwater monitoring wells. Depth to water for on-site and off-site wells ranged from 4.15 to 24.77 feet below top of casing (TOC),

averaging 13.71 feet below TOC. Groundwater flow direction is convergent and is generally southeast toward an unnamed tributary to the Little Aughwick Creek. The approximate groundwater gradient from the northern portion of the Site to the southern portion of the site averages 0.137 feet/foot, based upon 2020 data. **Figure 5** illustrates the most recent groundwater contour map from March 2020.

Groundwater samples were collected from the monitoring wells and analyzed for 124-TMB, 135-TMB, Benzene, Toluene, Ethylbenzene, Xylenes, MTBE, Cumene, and Naphthalene by EPA Methods 8260B. **Table 2** contains a summary of the groundwater sampling results for the on- and off-site monitoring wells. Throughout the sampling events, 124-TMB, 135-TMB, Benzene, Ethylbenzene, MTBE, Naphthalene, and Toluene have persisted as the COCs in groundwater.

4.0 SITE CONCEPTUAL MODEL

Based on the data acquired during characterization activities, a release has impacted the Site soils and groundwater. The nature and extent of the release and the migration pathways for the petroleum hydrocarbons were evaluated using the above soil and groundwater data with respect to the Site geological and hydrogeological setting. Results of this evaluation are discussed in the following sections.

4.1 Nature and Extent of the Releases

In general, petroleum hydrocarbons in the subsurface exist in two phases:

- Dissolved in the groundwater
- Adsorbed to the subsurface soil

The on-site source location for the hydrocarbon contamination is likely beneath the UST field as the dispenser lines were excavated and observed to be compliant with no shallow soil impact. Soil samples collected from around the UST field and dispenser island revealed concentrations of fuel parameters that exceed their respective MSCs laterally and vertically. Furthermore, samples collected from the dispenser line investigation revealed deep soils impact and not shallow, indicating a deep release. Moreover, the UST field is located just upgradient of the groundwater monitoring well MW-1 and the potable well, and the plume is following the groundwater migration. Therefore, it is believed that the release occurred through failed spill buckets that were recently replaced per DEP request.

The extent of the release to soils is shown on **Figure 3** while the groundwater isoconcentration diagrams are shown in **Figures 6A-F**. A large portion of the center of the Site has impacted soil and groundwater beneath it.

4.2 Soil Quality

4.2.1 Constituents of Concern

COCs in soil are defined as regulated substances whose concentrations exceed current standards. Based upon the data acquired during the Site investigations, the soil COCs include those listed in **Table 1**, with **1,2,4-Trimethylbenzene, Benzene,** and **Toluene** being the exceedances.

4.3 Groundwater Quality

4.3.1 Constituents of Concern

COCs in groundwater are defined as regulated substances whose concentrations exceed current standards. Based upon the data acquired during the Site investigations, the groundwater COCs include those listed in **Table 2**, with **1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, Benzene, Ethylbenzene, MTBE, Toluene, Xylenes,** and **Naphthalene** being the exceedances.

4.3.2 Dissolved-Phase Constituent Distribution

Benzene

Data acquired during the groundwater sampling events identified Benzene-impacted groundwater across the majority of the Site. Historical Benzene concentrations detected in the plume (MW-1 through MW-5, MW-9, MW-11, and MW-12) ranged from 5.85 µg/L in MW-11 to 7,110 µg/L in MW-4 in March 2020. Refer to **Figure 6A** for the most recent Benzene Isoconcentration Map and to **Table 2** for the Groundwater Analytical Results. These areas are considered to be the geographical remedial targets for the Site.

124-TMB

Data acquired during the groundwater sampling events identified 124-TMB-impacted groundwater across the majority of the Site. Historical 124-TMB concentrations detected in the plume (MW-1 through MW-4, MW-9, and MW-12) ranged from 350 µg/L in MW-12 to 2,100 µg/L in MW-4 in March 2020. Refer to **Figure 6B** for the most recent Benzene Isoconcentration Map and to **Table 2** for the Groundwater Analytical Results. These areas are considered to be the geographical remedial targets for the Site.

Ethylbenzene

Data acquired during the groundwater sampling events identified Ethylbenzene-impacted groundwater across the majority of the Site. Historical Ethylbenzene concentrations detected in the plume (MW-1 and MW-4) ranged from 1,300 µg/L in MW-1 to 4,480 µg/L in MW-4 in March 2020. Refer to **Figure 6C** for the most recent Ethylbenzene Isoconcentration Map and to **Table 2** for the Groundwater Analytical Results. These areas are considered to be the geographical remedial targets for the Site.

MTBE

Data acquired during the groundwater sampling events identified MTBE-impacted groundwater across the center of the Site. Historical MTBE concentrations detected in the plume (MW-1 and MW-9) ranged from 54 µg/L in MW-9 to 106 µg/L in MW-1 in March 2020. Refer to **Figure 6D** for the most recent Ethylbenzene Isoconcentration Map and to **Table 2** for the Groundwater Analytical Results. These areas are considered to be the geographical remedial targets for the Site.

Naphthalene

Data acquired during the groundwater sampling events identified Naphthalene-impacted groundwater across a portion of the center of the Site. Historical Naphthalene concentrations detected in the plume (MW-1, MW-3, MW-4, MW-9, and MW-12) ranged from 113 µg/L in MW-12 to 504 µg/L in MW-4 in March 2020. Refer to **Figure 6E** for the most recent Ethylbenzene Isoconcentration Map and to **Table 2** for the Groundwater Analytical Results. These areas are considered to be the geographical remedial targets for the Site.

Toluene

Data acquired during the groundwater sampling events identified Toluene-impacted groundwater across a portion of the center of the Site. Historical Toluene concentrations detected in the plume (MW-1 and MW-4) ranged from 3,540 µg/L in MW-1 to 4,480 µg/L in MW-4 in March 2020. Refer to **Figure 6F** for the most recent Toluene Isoconcentration Map and to **Table 2** for the Groundwater Analytical Results. These areas are considered to be the geographical remedial targets for the Site.

4.3.3 SPL

Based upon the data acquired during the Site investigations, separate-phase liquid hydrocarbons (SPL) have been found within groundwater monitoring well MW-4 during the last several monitoring events.

4.4 Fate and Transport

As the result of historical facility operations, COCs in the form of dissolved-phase hydrocarbons have impacted the groundwater at the site. The predominant forms of contaminant transport appear to be groundwater convection.

A F&T analysis has not been performed to date as the characterization data has shown the impact has crossed the Site and migrated off-site. Furthermore, the Site soils have not been sufficiently identified due to the amount of fill material placed throughout the Site. Additional soil investigations will be done for physical characteristics during the recovery well installations and pilot tests, etc.

5.0 REMEDIAL TECHNOLOGY EVALUATION

5.1 Remedial Feasibility Testing

5.1.1 Proposed Pump Test

Based on the extreme groundwater concentrations and the widespread soil and groundwater impact, a total of four (4) recovery wells will be installed across the rear of the Site in locations best suited to recover groundwater leaving the Site. Following installation of the wells, a short-term pump test will be conducted on the wells. A pump will be installed in one of the central wells while transducers will be placed in the others to verify radial influence and the ability to suppress the water table. The pump test will run for approximately five to seven hours to account for variability. Following the test, an approximate sustainable yield for the wells will be determined.

Future testing for evaluating other supplemental remedial alternatives may be conducted based on the success of the primary remedial method. These supplemental alternatives would be used in conjunction with the primary proposed remedial method and only after removal of mass contaminant levels.

5.2 Remedial Option Evaluation

Site investigations have indicated that soil impacts are present in the vadose zone and SPL have been observed within MW-4. Therefore, the evaluation of remedial options is focused not only on groundwater remediation. The following have been considered:

- *Groundwater Extraction:* Groundwater extraction is a practical remedial technology to gain hydraulic control and to retard downgradient migration of dissolved-phase hydrocarbons. However, groundwater extraction as a sole remediation technology appears to be inadequate, as it may lead to many years of system operation and maintenance before cleanup standards are achieved.

- *Dual Phase Extraction (DPE):* A DPE system extracts soil vapor and groundwater simultaneously using a vacuum pump and downhole pumps in recovery wells. The DPE system addresses soil contamination and will depress the water table to draw toward the Site recovery wells, thus containing and removing adsorbed-, dissolved-, and separate-phase hydrocarbons. DPE application for the Site will be accomplished via vacuum extraction through vapor recovery wells and downhole pumps for groundwater extraction. Due to the anticipated limited sustained yield of Site monitoring wells, a DPE system would promote

higher recovery rates and larger radius of influence that would be expected. MEI is proposing the use of this remedial method in order to remove the bulk of contaminant mass and may be utilized in conjunction with an alternate *in situ* methods following an adequate time of operation to evaluate its effectiveness.

- *Air Sparge /Soil Vapor Extraction (AS/SVE):* AS/SVE is generally an effective combination for the removal and capture of dissolved-phase and adsorbed-phase hydrocarbons below the water table. However, AS/SVE systems are typically used in homogeneous sediments because heterogeneous formations, such as this Site, may create preferential air flow pathways.

- *Oxidation:* Oxidants, such as ozone, peroxides, permanganates, and oxygen can promote both biological activity and chemical oxidation. Additional testing would be required to determine the applicability and feasibility of this remedial approach; however, oxidizing agents that create excessive heat will not be considered due to proximity of underground utilities and SPL. This testing would be conducted if the DPE method alone becomes ineffective and will account for any geochemical changes in the groundwater that may occur due to contaminant mass removal.

- *In Situ Bioremediation*: Bioremediation involves the introduction of nutrients, such as nitrogen, phosphorous, and oxygen to the groundwater to enhance microbial growth. Petroleum hydrocarbons are typically amenable to biodegradation, but additional studies would be needed to determine the specific nutrient mix and oxygen requirements. These studies would be conducted if DPE methods become ineffective and will account for any geochemical changes in the groundwater that may occur due to contaminant mass removal.

- *Monitored Natural Attenuation:* Natural attenuation relies upon natural subsurface process (e.g., microbial) to reduce contaminant concentrations to acceptable levels. Consideration of this option requires extensive sampling and modeling to establish contaminant reduction and degradation by product trends. Natural attenuation is eliminated from consideration due to the elevated concentrations of dissolved-phase hydrocarbons, the presence of SPL, and because the impacted plume has migrated off-site.

6.0 CONCEPTUAL REMEDIAL APPROACH

MEI has contracted an engineering firm to design the remedial system to fit Site characteristics. Based on the requirements of the system, additional testing will be performed to attain site-specific parameters. Therefore, information gathered during the Site investigations and MEI's experience with other sites in similar hydrogeologic settings was used to develop the following performance standards for the remediation system:

Parameter	Performance Standard
Air flow	~30 cfm per well ~150 cfm total
Vacuum	~22 inches Hg
Influent Liquid Flow Rate	Up to 2 gpm per well 10 gpm maximum

cfm = cubic feet per minute

Remedial activities, including pilot tests, etc., will begin after the PADEP approves the final RAP (this document). Based upon Site characteristics, MEI believes that the application of DPE is the most appropriate and expedient for site cleanup.

Groundwater and soil vapor extraction will be implemented to recover adsorbed-, dissolved-, and vapor-phase petroleum hydrocarbons. The extraction of groundwater will depress the water table and expose additional soil for vapor and adsorbed-phase remediation. DPE will address residual vapor- and adsorbed-phase hydrocarbons that are beneath the Site, effecting additional hydrocarbon mass removal. Groundwater extraction will also remove dissolved-phase hydrocarbons directly.

Site characteristics suggest that the aquifer has a limited sustained yield (likely < 2 gpm). The proposed recovery well layout will likely include installing four (4) recovery wells (RW-1 through RW-4) at least four-inch diameter wells to accommodate vacuum tubes and sampling equipment along with increased volume. A reducing coupler will be fitted on the recovery wells to mate with the two-inch diameter transfer piping anticipated to be used as part of the remediation system. The recovery wells will be screened from 5 to ~35 feet bgs. The system will be designed to extract from these four recovery wells to address the entire impacted area of the property and prevent further offsite migration. **Figure 7** shows the proposed recovery well locations. The radius of

influence from the recovery wells is expected to increase with time and with the addition of vapor extraction which typically enhances groundwater recovery rates.

6.1 Recovery Well Installation and Vault Construction

MEI will subcontract a PA-certified well driller to perform recovery well installation and other monitoring wells that are planned to be used in the remedial well network. The recovery wells will be installed to a depth of approximately 35 feet below grade, and will be completed using 0.020"-inch slotted screen and solid schedule 40 PVC casing. Surface completion will be within a 2' x 2' vault. PA One Call will be notified at least three (3) working days in advance of any subsurface work at the Site. The newly-installed recovery wells will be surveyed by a Pennsylvania-licensed surveyor for horizontal and elevation control. The location of the new wells will be plotted on a revised Site map.

6.2 DPE System

The remediation system designed for this Site will simultaneously extract soil vapor using a high power vacuum pump from soil borings installed in select locations **(Figure 7)**. Soil vapor will be removed from the extraction well through drop tubes. The end of the drop tubes will initially be placed at a depth a few feet above the typical water levels.

Liquids will be treated in a liquid processing system for onsite water treatment and discharge of the treated ground water to the local sanitary sewer system if available. The extraction and treatment components will be housed in a utility shed.

Although a vacuum is used to extract impacted vapor from the Site, it is important to note that the primary remedial technology is groundwater withdrawal with soil vapor extraction (SVE) utilized as a secondary mechanism to remediate dewatered portions of the aquifer following water table drawdown.

6.3 DPE Treatment System

6.3.1 Air

Vapor withdrawn from the subsurface will be routed to a carbon steel air/liquid separator equipped with a Level Switch – Low (LSL), and Level Switch – High (LSH), and two (2) Level Switches – High/High (LSHH). The LSL turns the pump off when the liquid levels within the separator decrease to a preset level. The LSH activates the pump when the liquid levels within

the separator increase to a preset level. The LSHH monitors alarm conditions and activates as necessary.

From the air/water separator, the air stream will be routed through vapor-phase GAC units plumbed in series and discharged to the atmosphere under *de minimis* conditions, pending permit determination from PADEP.

6.3.2 Liquid

Due to the presence of SPL beneath the Site, the raw water entering the treatment system will be routed through an oil/water separator complete with a skimmer. The floating product will be collected in a grounded 55-gallon drum. Additionally, the treatment building itself will be designed to provide an explosion-proof atmosphere through specialized fittings and automatic exhaust fans.

Following the oil/water separator, the liquid withdrawn from the subsurface will be routed to an air/liquid separator tank. A transfer pump will then pump the water through sediment filters. From the sediment filters, the water will be routed through a shallow tray air stripper which will attain an approximate 90% removal rate of initial predicted influent concentrations using a regenerative blower. Effluent water from the air stripper will be treated by two GAC units plumbed in series and discharged to the sanitary sewer if available. Otherwise, it will be discharged to the environment per a PADEP NPDES permit.

The wastes expected to be generated during operation of the remediation system are listed in the following table, which includes a description of the material handling processes.

Material	Handling
Petroleum hydrocarbon contaminated soil vapor	To be treated in the remediation system using vapor phase GAC
Petroleum hydrocarbon contaminated ground water	To be treated in the remediation system using 1) an air stripper followed by 2) vapor phase carbon
Spent sediment filter bags	To be containerized and properly disposed
Spent GAC, both vapor and liquid phase	To be containerized and properly disposed
Separate phase liquids skimmed off the raw water surface	To be containerized and properly disposed

6.4 Construction Details

Subsurface piping to the DPE wells will be installed to 6 inches below frost line and backfilled with gravel to approximately 1-1/2 feet above the piping. The piping will be pressure-tested prior to backfilling. Excavated soil will be replaced in the trench to about 6 inches below grade – the remainder of the trench will be completed with like surface materials. All trenching and excavating will be performed under OSHA 29 CFR 1926 regulations. Manways will be installed at each DPE extraction well head to allow for well head adjustments of vacuum, drop tube depth, and groundwater sampling, if necessary.

6.5 Equipment Specifications

While the remedial system is still being designed, the following equipment is proposed for installation and use at the Site at as of yet undetermined sizes and volumes:

Air Liquid Separator	Carbon steel with site glass and pump switch control arm
Vapor Sample Pump	Low flow rate air pump
Vapor Phase Carbon Canisters	Carbon steel canisters to contain granular activated carbon
Vacuum pump	Rotary claw type blower with 3 phase XP motor
Silencer	Exhaust muffler
Transfer pumps	Centrifugal or moyno type
Sediment Filters	Plastic filter housings with 50 micron polypropylene filter bags
Air Stripper	Up to 50 gpm design flow rate, using regenerative blower rated for 150 cfm
Liquid Phase Carbon Canisters	Fiberglass canisters to contain 200 pounds of granular activated carbon

6.6 Remedial System Shelter

The remediation system controls and most of the equipment will be housed in a prefabricated vinyl-sided building. The building will be constructed on a concrete pad. **Figure 7** depicts a plan view of the proposed building and treatment system. Location of the shelter will be finalized with the property owner but will most likely be placed in the southern corner of the Site between the current groundwater monitoring wells MW-12 and MW-4. A power drop to the equipment shelter will be coordinated with the local utility provider.

6.7 Remedial System Permitting

Mechanical and electrical work will conform to applicable federal, state, and local codes and ordinances. A water discharge permit will be obtained from the local municipality for discharge of treated groundwater. MEI will inquire with PADEP regarding the necessity of obtaining a permanent air discharge permit for the proposed remedial activities given the use of best management practices for treating extracted air.

6.8 Remedial System Installation

MEI and its qualified subcontractors will provide all labor, materials, and equipment to install and operate the remediation system. All work will be performed in accordance with standard and accepted engineering and construction practices. Prior to any intrusive work at the Site, the Pennsylvania One-Call will be contacted for utility mark out. Upon PADEP's approval of the RAP, MEI will commence preparations for the installation and immediately begin the process of obtaining the necessary discharge permits and approvals.

6.9 Remedial System Startup and Operation and Maintenance (O&M)

Following the completion of the remedial system installation, a system startup will commence at which time all equipment fail-safes and equipment will be checked for proper operation. MEI estimates that the startup phase of the remediation program will consist of the following schedule:

DATE	SCOPE	FREQUENCY
Week 1	System O&M, adjust equipment, sample influent, mid-fluent, and effluent air and water streams (twice during this week).	Daily
Week 2 through Week 4	System O&M, adjust equipment, sample influent, mid-fluent, and effluent air and water streams (twice per week).	2X per week
Week 5 (Month 2)	System O&M, adjust equipment, sample influent, mid-fluent, and effluent air and water streams (twice monthly).	Once per week

The table below lists the system components that require periodic maintenance, defines the maintenance actions to be taken, and lists the frequency of each action.

Component	Maintenance Action	Frequency
Air / Liquid Separator	Inspect elbow at bottom of sight tube for sediment buildup, clean as necessary.	Dependent on influent sediment concentration
Vacuum Sample Pump	Inspect pump, replace as necessary	Yearly
Rotary Claw Vacuum Pump	Grease bearings	Twice Monthly
	Change oil	Every 1,000 hours of continuous operation
Transfer Pumps	Inspect check valve, ensure proper operation	Yearly
	Inspect and clean Y strainers	Monthly or more frequently based on sediment throughput
Sediment Filters	Change bag filters	Monthly or more frequently based on sediment throughput
Air Stripper	Monitor pressure differential across stripper to detect tray fouling, clean trays as necessary	Monthly or more frequently based on mineral content of ground water
Vapor Phase GAC	Change out	Based on analytical results
Liquid Phase GAC	Monitor pressure differential across canisters to detect mineral buildup, back flush as necessary	Monthly or more frequently based on mineral content of ground water
	Change out	Based on analytical results

6.10 Groundwater Monitoring

To evaluate the progress of the remediation (and to ensure additional contamination is not migrating away from the Site), MEI will continue to sample all groundwater monitoring wells quarterly. Groundwater will be analyzed for BTEX, MTBE, cumene, naphthalene, 124-TMB, and 135-TMB by EPA Method 8260B.

6.11 Reporting

MEI will prepare quarterly Remedial Action Progress Reports describing Site activities and findings. The reports will include data on the operation of the remedial system and the quarterly groundwater sampling results. The reports will also include the results of waste management and discharge monitoring and sampling. Copies of the reports will be submitted to the municipality, as appropriate.

7.0 REMEDIAL GOALS

The goals of the remediation at the Site are the attainment of the PADEP MSCs for Residential, Used (NR-U) Aquifers. However, currently those standards are not available due to the off-site impact.

The remediation system will operate to attain the MSCs for groundwater. However, if asymptotic levels above the PADEP MSCs are reached, the system and/or remediation standards may be modified as appropriate.

8.0 REMEDIAL ACTION COMPLETION

8.1 Groundwater Attainment Demonstration

When the PADEP MSCs (NR-U) have been attained or the system operation has been deemed no longer effecient, the PADEP will be notified that the remediation system will be shut down. MEI will then commence post-remediation groundwater monitoring for eight (8) consecutive calendar quarters to demonstrate attainment of the groundwater MSCs. If exceedences of the MSCs are detected during the post-remediation groundwater monitoring, confirmatory samples will be collected within thirty (30) days of the exceedence samples. Quarterly groundwater monitoring reports will be provided to the PADEP during the post-remediation groundwater monitoring.

8.2 Remedial Action Completion Report (RACR)

Results of the groundwater and soil attainment demonstrations will be provided to the PADEP in a Remedial Action Completion Report (RACR). The RACR will contain the following information, at a minimum:

- Description of treatment, removal, or decontamination procedures performed during the remediation;
- Results of the post-remediation groundwater monitoring; and
- Results of attainment demonstration sampling and analysis.

8.3 Post-Remediation Actions

Following approval of the RACR by the PADEP and receipt of a release from liability for the Site, the remediation system will be dismantled and the monitoring wells abandoned in accordance with PADEP guidelines. A letter report documenting the system and monitoring well abandonment will be submitted to the PADEP and to the appropriate municipal authorities.

Table 1
Soil Sample Analytical Results - Site Characterization Samples
Park Station
Fort Littleton, Pennsylvania
Soil Results in milligrams per kilogram (mg/kg)

Sample I.D. (Field)	Soil Samples								SOIL MSCs	SOIL MSCs
	SB-0620-01@15'	SB-0620-01@18'	SB-0620-02@15'	SB-0620-02@20'	SB-0620-03@15'	SB-0620-04@15'	SB-0620-04@10'	SB-0620-04@20'		
Sample Depth (Below grade)	15'	18'	15'	20'	15'	15'	10'	20'	RESIDENTIAL	NON-
Sample Date	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS										
1,3,5-Trimethylbenzene	<0.0042	<0.0042	**1.98**	**0.525**	<0.0050	**2.43**	**5.71**	**2.15**	**74**	**210**
1,2,4-Trimethylbenzene	<0.0042	<0.0042	**3.49**	**2.45**	<0.0050	**7.89**	**92.2**	**6.50**	**8.4**	**35**
Benzene	**0.0043**	<0.0042	<0.185	<0.143	<0.0020	<0.211	<0.169	**0.431**	**0.5**	**0.5**
Ethylbenzene	<0.0042	<0.0042	**7.21**	**0.775**	**0.0326**	**2.55**	**28.1**	**1.86**	**70**	**70**
Isopropylbenzene	<0.0042	<0.0042	**1.21**	<0.358	<0.0050	<0.529	**2.95**	<0.381	**600**	**2500**
Methyl tert-butyl ether	<0.0042	<0.0042	<0.461	<0.358	<0.0050	<0.529	<0.422	<0.381	**2**	**2**
Naphthalene	<0.0042	<0.0042	**2.90**	**0.710**	**0.0119**	**1.29**	**13.3**	**1.40**	**25**	**25**
Toluene	<0.0042	<0.0042	<0.461	<0.358	<0.0050	<0.529	<0.422	**0.525**	**100**	**100**
Xylenes	<0.0084	<0.0085	**1.05**	**0.715**	<0.0101	**3.66**	**6.27**	**9.87**	**1000**	**1000**

Sample I.D. (Field)	Soil Samples								SOIL MSCs	SOIL MSCs
	SB-0620-05@15'	SB-0620-05@20'	SB-0620-06@15'	SB-0620-06@18'	SB-0620-06@20'	SB-0620-07@15'	SB-0620-07@10'	SB-0620-07@15'		
Sample Depth (Below grade)	15'	15'	15'	18'	20'	15'	10'	15'	RESIDENTIAL	NON-
Sample Date	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS										
1,3,5-Trimethylbenzene	**2.06**	**5.87**	**0.0124**	**2.11**	<0.0053	**23.1**	**20.8**	**0.0160**	**74**	**210**
1,2,4-Trimethylbenzene	**6.32**	**21.3**	**0.0313**	**5.90**	**0.0059**	**72.1**	**63.6**	**0.0593**	**8.4**	**35**
Benzene	**0.0794**	**0.28**	**0.0051**	<0.143	**0.0092**	<0.147	**1.45**	**0.125**	**0.5**	**0.5**
Ethylbenzene	**2.43**	**5.93**	**0.0288**	**1.05**	**0.0065**	**26.6**	**22**	**0.0444**	**70**	**70**
Isopropylbenzene	**0.0353**	**0.887**	<0.0036	<0.358	<0.0053	**3.54**	**3.15**	<0.0055	**600**	**2500**
Methyl tert-butyl ether	<0.0041	<0.447	<0.0036	<0.358	<0.0053	<0.367	<0.438	**0.0062**	**2**	**2**
Naphthalene	**1.43**	**4.37**	**0.0607**	**1.27**	**0.0083**	**20.1**	**20.6**	**0.0524**	**25**	**25**
Toluene	**0.111**	**2.41**	<0.0036	<0.358	<0.0053	**4.64**	**2.33**	**0.0265**	**100**	**100**
Xylenes	**9.23**	**31.3**	**0.0742**	**4.66**	**0.0271**	**130**	**118**	**0.174**	**1000**	**1000**

Sample I.D. (Field)	Soil Samples							SOIL MSCs	SOIL MSCs
	SB-0620-07@20'	SB-0620-07@25'	SB-0620-08@15'	SB-0620-08@25'	MW-4 @ 25'	MW-4 @ 35'	MW-5 @ 35'		
Sample Depth (Below grade)	20'	25'	15'	25'	25'	35'	35'	RESIDENTIAL	NON-
Sample Date	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19	6/20/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS									
1,3,5-Trimethylbenzene	**8.88**	<0.444	<0.567	**0.013**	**7.88**	**1.24**	<0.0064	**74**	**210**
1,2,4-Trimethylbenzene	**26.3**	<0.444	<0.567	**0.029**	**26.9**	**3.57**	<0.0064	**8.4**	**35**
Benzene	**0.442**	<0.178	**0.0323**	**0.426**	**0.55**	**1.00**	**0.0029**	**0.5**	**0.5**
Ethylbenzene	**7.20**	<0.444	<0.567	**0.0573**	**7.00**	**1.79**	<0.0064	**70**	**70**
Isopropylbenzene	**1.40**	<0.444	**0.0219**	<0.0050	**1.07**	<0.415	<0.0064	**600**	**2500**
Methyl tert-butyl ether	<0.461	<0.444	<0.0041	**0.0112**	<0.424	<0.415	<0.0064	**2**	**2**
Naphthalene	**5.35**	<0.444	<0.567	**0.0234**	**4.28**	**0.605**	<0.0064	**25**	**25**
Toluene	<0.461	<0.444	**0.0061**	**0.676**	**2.88**	**1.39**	<0.0064	**100**	**100**
Xylenes	**23.7**	<0.889	<1.13	**0.295**	**42.3**	**8.65**	<0.0128	**1000**	**1000**

Notes:

- <0.023= Parameter not detected at the detection limit.

22.4	Parameter exceeding Residential Standard
225.00	Parameter exceeding both Residential and Non-Residential Standard

- Medium-Specific Concentrations (MSCs) were established in the Technical Guidance Manual dated December 1997 and were derived from the Non-Residential MSCs listed in Appendix A, Tables 3 and 4, of 25 PA Code Section 250, Administration of the Land Recycling Act (Act 2) dated August 16, 1997, and as revised November 24, 2001.

Table 1
Soil Sample Analytical Results - Site Characterization Samples
Park Station
Fort Littleton, Pennsylvania
Soil Results in milligrams per kilogram (mg/kg)

Sample I.D. (Field)	Soil Samples			SOIL MSCs	SOIL MSCs
	Soil Investigation Lines	Soil Investigation TP-1 @10'	Soil Investigation TP-2 @12.5'		
Sample Depth (Below grade)	<1'	10'	12.5'	RESIDENTIAL	NON-
Sample Date	12/9/19	12/10/19	12/10/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS					
1,3,5-Trimethylbenzene	<0.453	**21.7**	**0.683**	**74**	**210**
1,2,4-Trimethylbenzene	<0.453	**64.9**	**2.13**	**8.4**	**35**
Benzene	<0.181	**1.12**	**2.14**	**0.5**	**0.5**
Ethylbenzene	<0.453	**19.9**	**1.59**	**70**	**70**
Isopropylbenzene	<0.453	**3.53**	<0.608	**600**	**2500**
Methyl tert-butyl ether	<0.453	<0.425	<0.608	**2**	**2**
Naphthalene	<0.453	**13.4**	**7.72**	**25**	**25**
Toluene	<0.453	**0.699**	**0.806**	**100**	**100**
Xylenes	<0.905	**54.3**	**7.38**	**1000**	**1000**

Sample I.D. (Field)	Soil Samples								SOIL MSCs	SOIL MSCs
	SB-1220-08@9'	SB-1220-08@10'	SB-1220-08@15'	SB-1220-09@10'	SB-1220-09@14'	SB-1220-10@10'	SB-1220-10@14'	SB-1220-11@10'		
Sample Depth (Below grade)	9'	10'	15'	10'	14'	10'	14'	10'	RESIDENTIAL	NON-
Sample Date	12/20/19	12/20/19	12/20/19	12/20/19	12/20/19	12/20/19	12/20/19	12/20/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS										
1,3,5-Trimethylbenzene	<0.523	**1.76**	**35.0**	<0.0046	<0.0048	<0.0044	<0.0057	**34.1**	**74**	**210**
1,2,4-Trimethylbenzene	<0.523	**8.33**	**29.0**	<0.0046	<0.0048	**0.0061**	<0.0057	**101**	**8.4**	**35**
Benzene	<0.209	<0.411	**1.13**	**0.002**	<0.0019	<0.0018	<0.0023	**10.9**	**0.5**	**0.5**
Ethylbenzene	<0.523	**2.67**	**41.9**	<0.0046	<0.0048	<0.0044	**0.0071**	**42.3**	**70**	**70**
Isopropylbenzene	<0.523	<1.03	**1.09**	<0.0046	**0.0077**	<0.0044	**0.0078**	**5.57**	**600**	**2500**
Methyl tert-butyl ether	<0.523	<1.03	<0.502	<0.0046	**0.0508**	<0.0044	<0.0057	<4.43	**2**	**2**
Naphthalene	<0.523	**1.06**	**4.64**	<0.0046	**0.0210**	<0.0044	<0.0057	**24.8**	**25**	**25**
Toluene	<0.523	<1.03	**9.02**	<0.0046	<0.0048	<0.0044	<0.0057	**81.2**	**100**	**100**
Xylenes	<1.05	**2.12**	**233**	<0.0046	<0.0096	<0.0089	<0.0114	**232**	**1000**	**1000**

Sample I.D. (Field)	Soil Samples						SOIL MSCs	SOIL MSCs
	SB-1220-11@15'	SB-1220-11@19'	SB-1220-12@10'	SB-1220-12@15'	SB-MW-8	SB-MW-9		
Sample Depth (Below grade)	15'	19'	10'	10'	9'	9'	RESIDENTIAL	NON-
Sample Date	12/20/19	12/20/19	12/20/19	12/20/19	12/20/19	12/20/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS								
1,3,5-Trimethylbenzene	**6.15**	**35.8**	<0.0046	<0.0048	<0.0037	**3.76**	**74**	**210**
1,2,4-Trimethylbenzene	**19.2**	**109**	<0.0046	<0.0048	<0.0037	**11.40**	**8.4**	**35**
Benzene	**1.91**	**18.3**	<0.0018	**0.002**	<0.0015	**1.31**	**0.5**	**0.5**
Ethylbenzene	**6.83**	**46**	<0.0046	<0.0048	<0.0037	**5.31**	**70**	**70**
Isopropylbenzene	<2.47	<7.02	<0.0046	<0.0048	<0.0037	<0.161	**600**	**2500**
Methyl tert-butyl ether	<2.47	<7.02	<0.0046	<0.0048	<0.0037	<0.161	**2**	**2**
Naphthalene	**3.96**	**21.5**	<0.0046	<0.0048	<0.0037	**2.600**	**25**	**25**
Toluene	**5.28**	**117**	<0.0046	**0.0053**	<0.0037	**1.83**	**100**	**100**
Xylenes	**32.7**	**250**	<0.0092	<0.0048	<0.0074	**26.40**	**1000**	**1000**

Notes:

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22.4	Parameter exceeding Residential Standard
225.00	Parameter exceeding both Residential and Non-Residential Standard

- Medium-Specific Concentrations (MSCs) were established in the Technical Guidance Manual dated December 1997 and were derived from the Non-Residential MSCs listed in Appendix A, Tables 3 and 4, of 25 PA Code Section 250, Administration of the Land Recycling Act (Act 2) dated August 16, 1997, and as revised November 24, 2001.

Table 2
Groundwater Sample Analytical Results - Site Characterization
Park Station
Fort Littleton, Pennsylvania
Water Results in micrograms per liter (ug/L)

Sample I.D. (Field)	Groundwater Samples										
	MW-1	MW-2		MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	GW MSCs
Sample Depth (Below grade)	NA	NA		NA	NA	NA	NA	NA	NA	NA	RESIDENTIAL
Sample Date	6/21/19	6/21/19		7/8/19	7/8/19	7/8/19	7/8/19	7/8/19	7/8/19	7/8/19	
VOLATILE ORGANIC COMPOUNDS											
1,3,5-Trimethylbenzene	**364**	**3.22**		**848**	**1.31**	**49.9**	**150**	**8.33**	<1.0	<1.0	**420**
1,2,4-Trimethylbenzene	**1480**	**9.75**		**2900**	**2.76**	**148**	**292**	**18.6**	<1.0	<1.0	**15**
Benzene	**6030**	**7.68**		**4940**	**2.75**	**84.7**	**3330**	**59.8**	<1.0	**2.11**	**5**
Ethylbenzene	**2620**	**8.17**		**2720**	**3.10**	**167**	**505**	**6.7**	<1.0	<1.0	**700**
Isopropylbenzene	**89.8**	**1.07**		**162**	**1.49**	**22.6**	**23.8**	**2.32**	<1.0	<1.0	**840**
Methyl tert-butyl ether	**169**	<1.0		**148**	<1.0	<1.0	**20.6**	**22.2**	<1.0	**6.09**	**20**
Naphthalene	**552**	**4.57**		**1030**	**1.63**	**80**	**99.5**	**3.7**	<1.0	<1.0	**100**
Toluene	**10300**	**16.1**		**8320**	**3.17**	**15.5**	**1580**	**1.18**	<1.0	<1.0	**1000**
Xylenes	**12200**	**36.4**		**12400**	**9.43**	**234**	**2690**	**20**	<2.0	<2.0	**10000**

Sample I.D. (Field)	Groundwater Samples								
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	GW MSCs	GW MSCs
Sample Depth (Below grade)	NA	NA	NA	NA	NA	NA	NA	RESIDENTIAL	NON-
Sample Date	9/9/19	9/9/19	9/9/19	9/9/19	9/9/19	9/9/19	9/9/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS									
1,3,5-Trimethylbenzene	**425**	<1.0	**28.2**	**79.6**	**2.96**	<1.0	<1.0	**420**	**1200**
1,2,4-Trimethylbenzene	**1520**	**1.16**	**137**	**286**	**5.2**	<1.0	<1.0	**15**	**62**
Benzene	**4290**	<1.0	**130**	**3450**	**111**	<1.0	<1.0	**5**	**5**
Ethylbenzene	**1740**	**1.38**	**337**	**639**	<1.0	<1.0	<1.0	**700**	**700**
Isopropylbenzene	**80.2**	**2.24**	**25.4**	**19.8**	**1.89**	<1.0	<1.0	**840**	**3500**
Methyl tert-butyl ether	**136**	<1.0	<5.00	<10.0	**5.08**	<1.0	**4.85**	**20**	**20**
Naphthalene	**533**	**1.07**	**97.7**	**104**	**2.9**	<1.0	<1.0	**100**	**100**
Toluene	**6980**	<1.0	**26.2**	**2560**	**1.55**	<1.0	<1.0	**1000**	**1000**
Xylenes	**9130**	<2.0	**263**	**2800**	**34.8**	<2.0	<2.0	**10000**	**10000**

Notes:

- <0.023= Parameter not detected at the detection limit.

22.4	Parameter exceeding Residential Standard
225.00	Parameter exceeding both Residential and Non-Residential Standard

- Medium-Specific Concentrations (MSCs) were established in the Technical Guidance Manual dated December 1997 and were derived from the Non-Residential MSCs listed in Appendix A, Tables 3 and 4, of 25 PA Code Section 250 were derived from the Non-Residential MSCs listed in Appendix A, Tables 3 and 4, of 25 PA Code Section 250, Administration of the Land Recycling Act (Act 2) dated August 16, 1997, and as revised November 24, 2001.

Table 2
Groundwater Sample Analytical Results - Site Characterization
Park Station
Fort Littleton, Pennsylvania
Water Results in micrograms per liter (ug/L)

Sample I.D. (Field)	Groundwater Samples											
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	**GW MSCs**	**GW MSCs**
Sample Depth (Below grade)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	RESIDENTIAL	NON-
Sample Date	12/27/19	12/27/19	12/27/19	12/27/19	12/27/19	12/27/19	12/27/19	12/27/19	12/27/19	12/27/19		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS												
1,3,5-Trimethylbenzene	**271**	<1.0	**29.8**	**1410**	**67.2**	<1.0	**12.2**	<1.0	**104**	<1.0	**420**	**1200**
1,2,4-Trimethylbenzene	**1060**	**2.06**	**184**	**5000**	**181**	<1.0	**38.2**	<1.0	**428**	<1.0	**15**	**62**
Benzene	**2560**	<1.0	**23.4**	**2740**	**118**	<1.0	**7.33**	<1.0	**1100**	<1.0	**5**	**5**
Ethylbenzene	**1260**	**1.38**	**361**	**2290**	**98.8**	<1.0	**18.6**	<1.0	**580**	<1.0	**700**	**700**
Isopropylbenzene	<100	<1.0	**26.9**	<250	**13.4**	<1.0	**1.79**	<1.0	**35.5**	<1.0	**840**	**3500**
Methyl tert-butyl ether	**94**	<1.0	<1.75	**<87.5**	**65.8**	<1.0	**4.98**	**1.56**	**59.2**	**8.80**	**20**	**20**
Naphthalene	**632**	<1.0	**107**	**1250**	**29.9**	<1.0	**4.13**	<1.0	**251**	<1.0	**100**	**100**
Toluene	**3880**	<1.0	**18.0**	**4360**	87.1	<1.0	**22**	<1.0	**290**	<1.0	**1000**	**1000**
Xylenes	**5820**	**2.73**	**276**	**3650**	551	<2.0	**99.4**	<2.0	**1440**	<2.0	**10000**	**10000**

Sample I.D. (Field)	Groundwater Samples				
	MW-11	MW-12	MW-13	**GW MSCs**	**GW MSCs**
Sample Depth (Below grade)	NA	NA	NA	RESIDENTIAL	NON-
Sample Date	2/21/20	2/21/20	2/21/20		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS					
1,3,5-Trimethylbenzene	<1.0	**16.0**	<1.0	**420**	**1200**
1,2,4-Trimethylbenzene	<1.0	**47.8**	**2.68**	**15**	**62**
Benzene	**5.31**	**121**	**1.25**	**5**	**5**
Ethylbenzene	<1.0	**822**	**1.87**	**700**	**700**
Isopropylbenzene	<1.0	**73**	<1.0	**840**	**3500**
Methyl tert-butyl ether	**2.05**	<3.5	<1.0	**20**	**20**
Naphthalene	<1.0	**248**	**1.21**	**100**	**100**
Toluene	<1.0	<10.0	**1.72**	**1000**	**1000**
Xylenes	<2.0	**47.2**	**7.45**	**10000**	**10000**

Notes:

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22.4	Parameter exceeding Residential Standard
225.00	Parameter exceeding both Residential and Non-Residential Standard

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Table 2
Groundwater Sample Analytical Results - Site Characterization
Park Station
Fort Littleton, Pennsylvania
Water Results in micrograms per liter (ug/L)

Sample I.D. (Field)	Groundwater Samples														
	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	**GW MSCs**	**GW MSCs**
Sample Depth (Below grade)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	RESIDENTIAL	NON-
Sample Date	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20	3/12/20		RESIDENTIAL
VOLATILE ORGANIC COMPOUNDS															
1,3,5-Trimethylbenzene	**372**	**106**	**123**	**600**	<5.0	<1.0	<1.0	<1.0	**152**	<1.0	<1.0	**107**	**DRY**	**420**	**1200**
1,2,4-Trimethylbenzene	**1140**	**330**	**473**	**2100**	**9.15**	<1.0	<1.0	<1.0	**524**	<1.0	<1.0	**350**	—	**15**	**62**
Benzene	**2910**	**75**	**88.1**	**7110**	**56**	<1.0	**1.05**	<1.0	**1350**	<1.0	**5.85**	**257**	—	**5**	**5**
Ethylbenzene	**1300**	**155**	**599**	**4480**	<5.0	<1.0	<1.0	<1.0	**496**	<1.0	<1.0	**332**	—	**700**	**700**
Isopropylbenzene	**95.5**	**21.8**	**55.6**	**97.5**	<5.0	<1.0	<1.0	<1.0	**28**	<1.0	<1.0	**28.8**	—	**840**	**3500**
Methyl tert-butyl ether	**106**	<1.0	<1.75	<17.5	**3.55**	<1.0	**6.37**	<1.0	**54**	**13.6**	**1.29**	<3.5	—	**20**	**20**
Naphthalene	**426**	**59.1**	**200**	**504**	**12.7**	**1.55**	<1.0	<1.0	**203**	<1.0	<1.0	**113**	—	**100**	**100**
Toluene	**3540**	**152**	**166**	**4480**	<5.0	<1.0	<1.0	<1.0	**333**	<1.0	<1.0	**236**	—	**1000**	**1000**
Xylenes	**5320**	**761**	**1080**	**9500**	<10.0	<2.0	<2.0	<2.0	**2060**	<2.0	<2.0	**898**	—	**10000**	**10000**

Notes:

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Table 3
Groundwater Gauging Data
Park Station
Fort Littleton, PA

WELL ID	DATE	TOC ELEVATION (Feet ATBM)	DEPTH TO GROUNDWATER (Feet)	TOTAL DEPTH (Feet)	GW ELEVATION (Feet ATBM)
MW-1	06/21/19	749.15	21.74	24.17	727.41
	07/08/19	749.15	12.65	24.17	736.50
	09/09/19	749.15	13.10	24.17	736.05
	10/14/16	749.15	13.76	24.17	735.39
	11/16/19	749.15	14.21	24.17	734.94
	12/27/19	749.15	14.92	24.17	734.23
	02/21/20	749.15	15.01	24.17	734.14
	03/12/20	749.15	14.96	24.17	734.19
MW-2	06/21/19	748.57	8.96	24.21	739.61
	07/08/19	748.57	9.63	24.21	738.94
	09/09/19	748.57	11.45	24.21	737.12
	10/14/16	748.57	12.22	24.21	736.35
	11/16/19	748.57	13.89	24.21	734.68
	12/27/19	748.57	12.52	24.21	736.05
	02/21/20	748.57	12.74	24.21	735.83
	03/12/20	748.57	13.13	24.21	735.44
MW-3	07/08/19	748.59	9.56	24.30	739.03
	09/09/19	748.59	11.92	24.30	736.67
	10/14/16	748.59	12.38	24.30	736.21
	11/16/19	748.59	13.00	24.30	735.59
	12/27/19	748.59	13.08	24.30	735.51
	02/21/20	748.59	13.08	24.30	735.51
	03/12/20	748.59	13.35	24.30	735.24
MW-4	07/08/19	748.80	19.83	33.80	728.97
	09/09/19	748.80	20.17	33.80	728.63
	10/14/16	748.80	20.56	33.80	728.24
	11/16/19	748.80	21.19	33.80	727.61
	12/27/19	748.80	21.74	33.80	727.06
	02/21/20	748.80	22.22	33.80	726.58
	03/12/20	748.80	22.33	33.80	726.47
MW-5	07/08/19	748.22	20.73	34.00	727.49
	09/09/19	748.22	21.48	34.00	726.74
	10/14/16	748.22	21.50	34.00	726.72
	11/16/19	748.22	22.30	34.00	725.92
	12/27/19	748.22	22.00	34.00	726.22
	02/21/20	748.22	22.24	34.00	725.98
	03/12/20	748.22	22.53	34.00	725.69
MW-6	07/08/19	748.02	19.66	27.80	728.36
	09/09/19	748.02	19.68	27.80	728.34
	10/14/16	748.02	19.71	27.80	728.31
	11/16/19	748.02	19.73	27.80	728.29
	12/27/19	748.02	19.82	27.80	728.20
	02/21/20	748.02	19.85	27.80	728.17
	03/12/20	748.02	19.94	27.80	728.08

Notes:

- ATBM = Above Temporary Bench Mark.
- GW = Groundwater.
- TOC = Top of Casing.
- NG = Not Gauged.

Table 3
Groundwater Gauging Data
Park Station
Fort Littleton, PA

MW-7	07/08/19	747.76	23.23	31.94	724.53
	09/09/19	747.76	24.11	31.94	723.65
	10/14/16	747.76	24.62	31.94	723.14
	11/16/19	747.76	24.77	31.94	722.99
	12/27/19	747.76	24.48	31.94	723.28
	02/21/20	747.76	24.72	31.94	723.04
	03/12/20	747.76	24.95	31.94	722.81
MW-8	12/27/19	724.75	5.11	9.00	719.64
	02/21/20	724.75	5.71	9.00	719.04
	03/12/20	724.75	4.70	9.00	720.05
MW-9	12/27/19	723.63	6.56	9.00	717.07
	02/21/20	723.63	5.61	9.00	718.02
	03/12/20	723.63	5.76	9.00	717.87
MW-10	12/27/19	719.32	7.51	9.00	711.81
	02/21/20	719.32	4.15	9.00	715.17
	03/12/20	719.32	4.22	9.00	715.10
MW-11	02/21/20	718.85	4.66	9.00	714.19
	03/12/20	718.85	4.77	9.00	714.08
MW-12	02/21/20	747.72	16.82	9.00	730.90
	03/12/20	747.72	16.85	9.00	730.87
MW-13	02/21/20	753.68	12.20	9.00	741.48
	03/12/20	753.68	12.74	9.00	740.94

Notes:
- ATBM = Above Temporary Bench Mark.
- GW = Groundwater.
- TOC = Top of Casing.
- NG = Not Gauged.

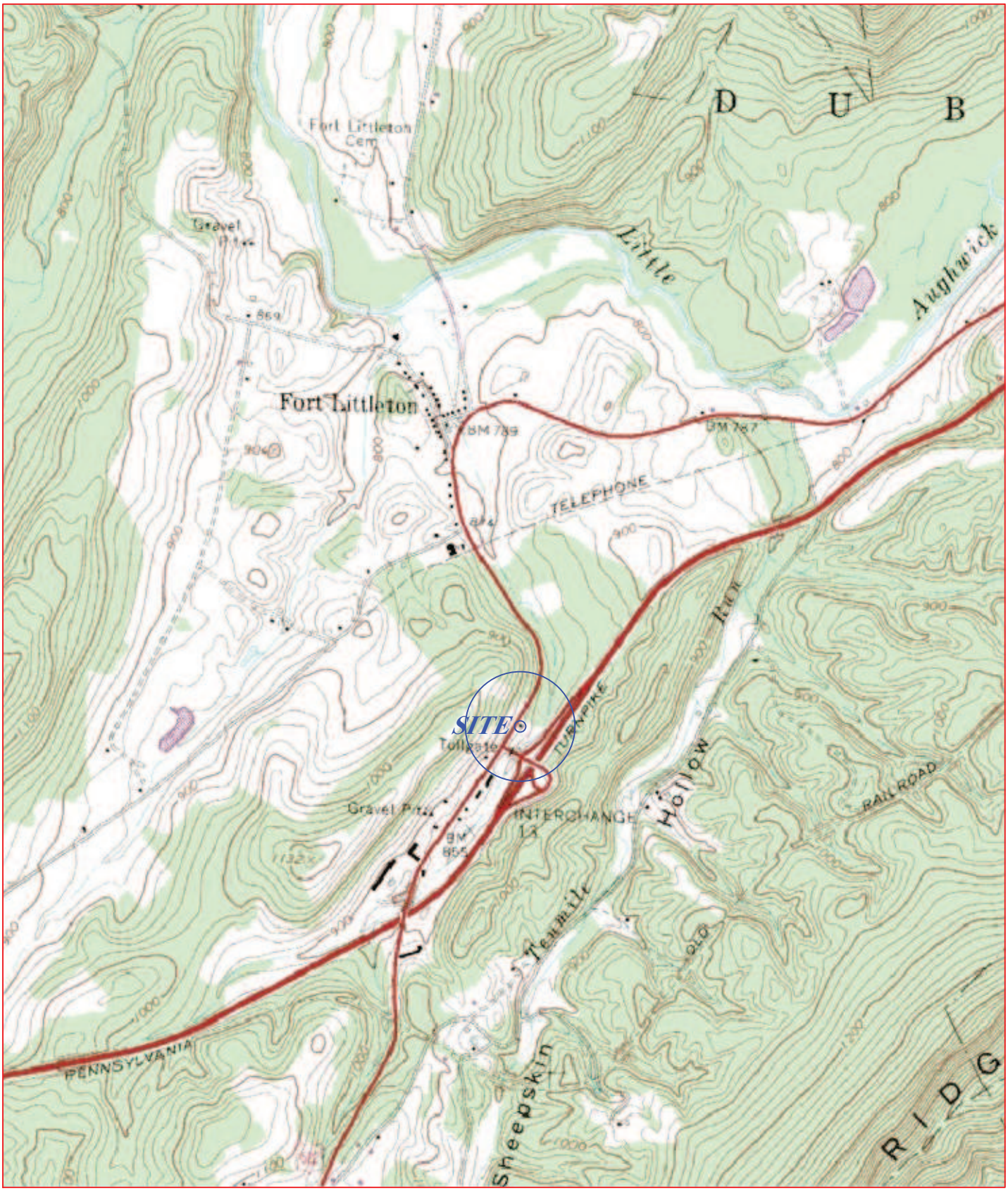


FIGURE 1

SITE TOPOGRAPHIC MAP

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

REMEDIAL ACTION PLAN

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PENNSYLVANIA

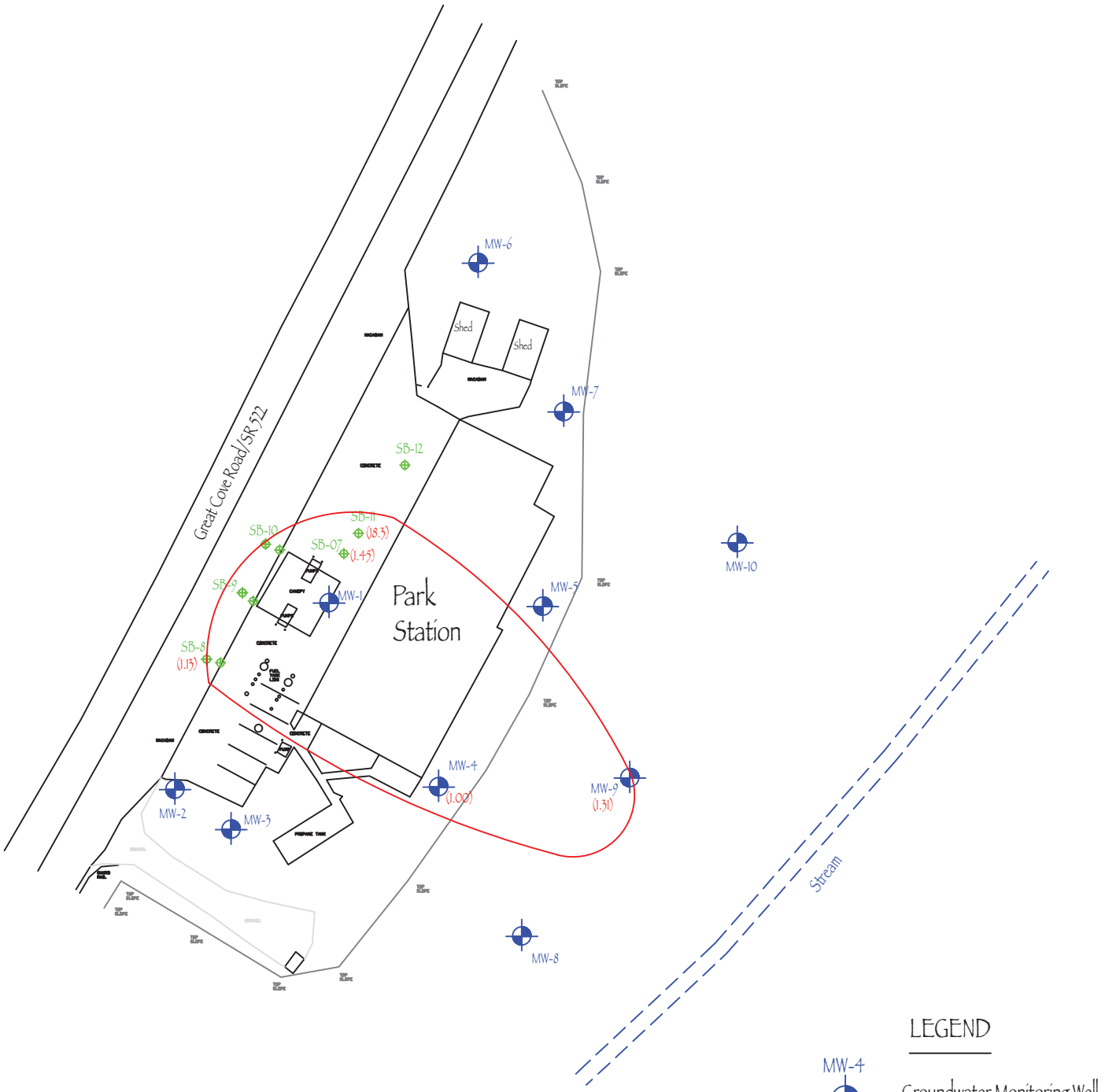
FIGURE 2

SITE LAYOUT
FORT LITTLETON,
PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

REMEDIAL ACTION PLAN

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PENNSYLVANIA



DATE:	5/28/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 3

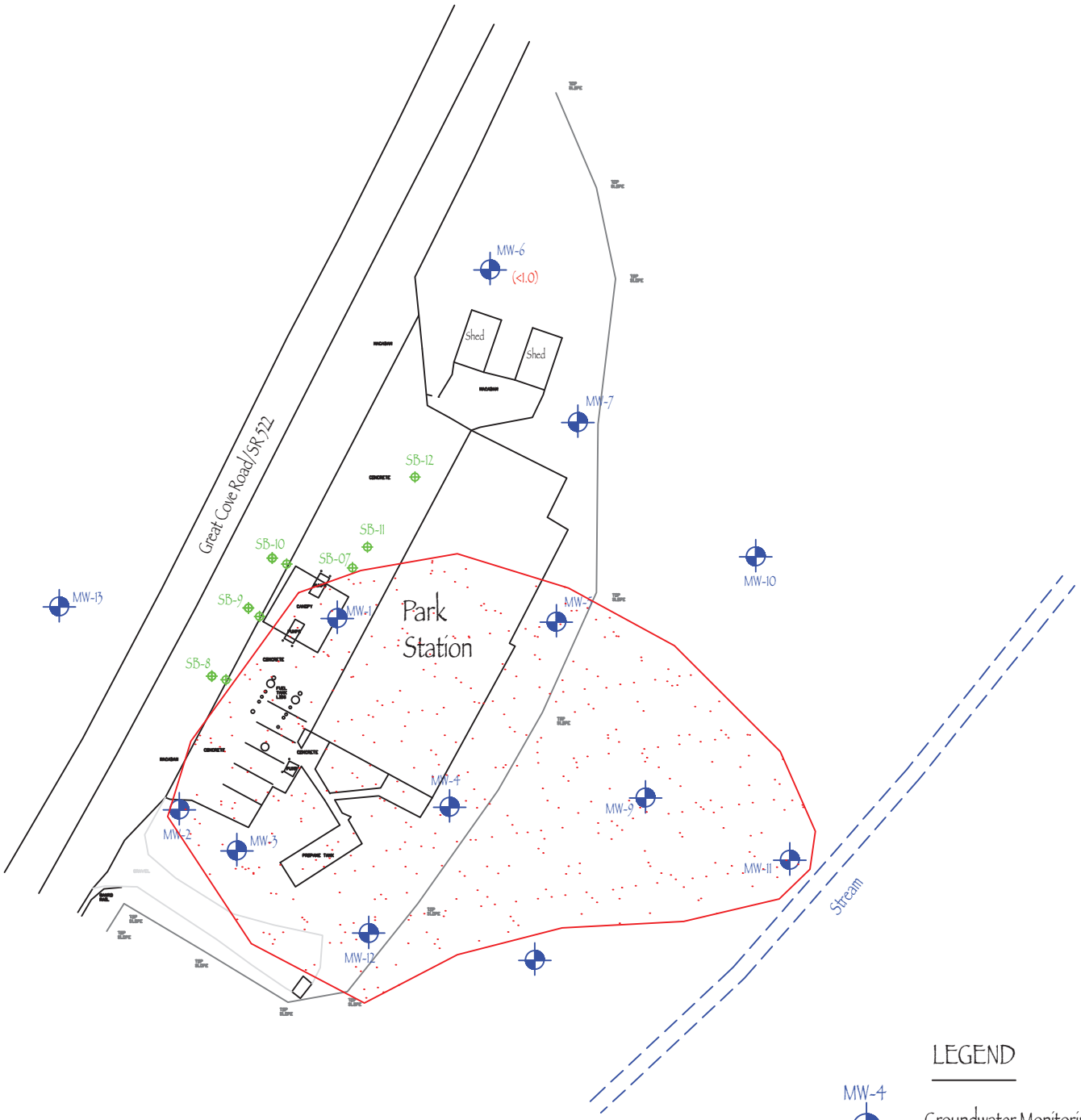
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

APPROXIMATE IMPACTED SOIL FOOTPRINT

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



LEGEND

MW-4 Groundwater Monitoring Well

Groundwater Plume

DATE:	5/28/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 4

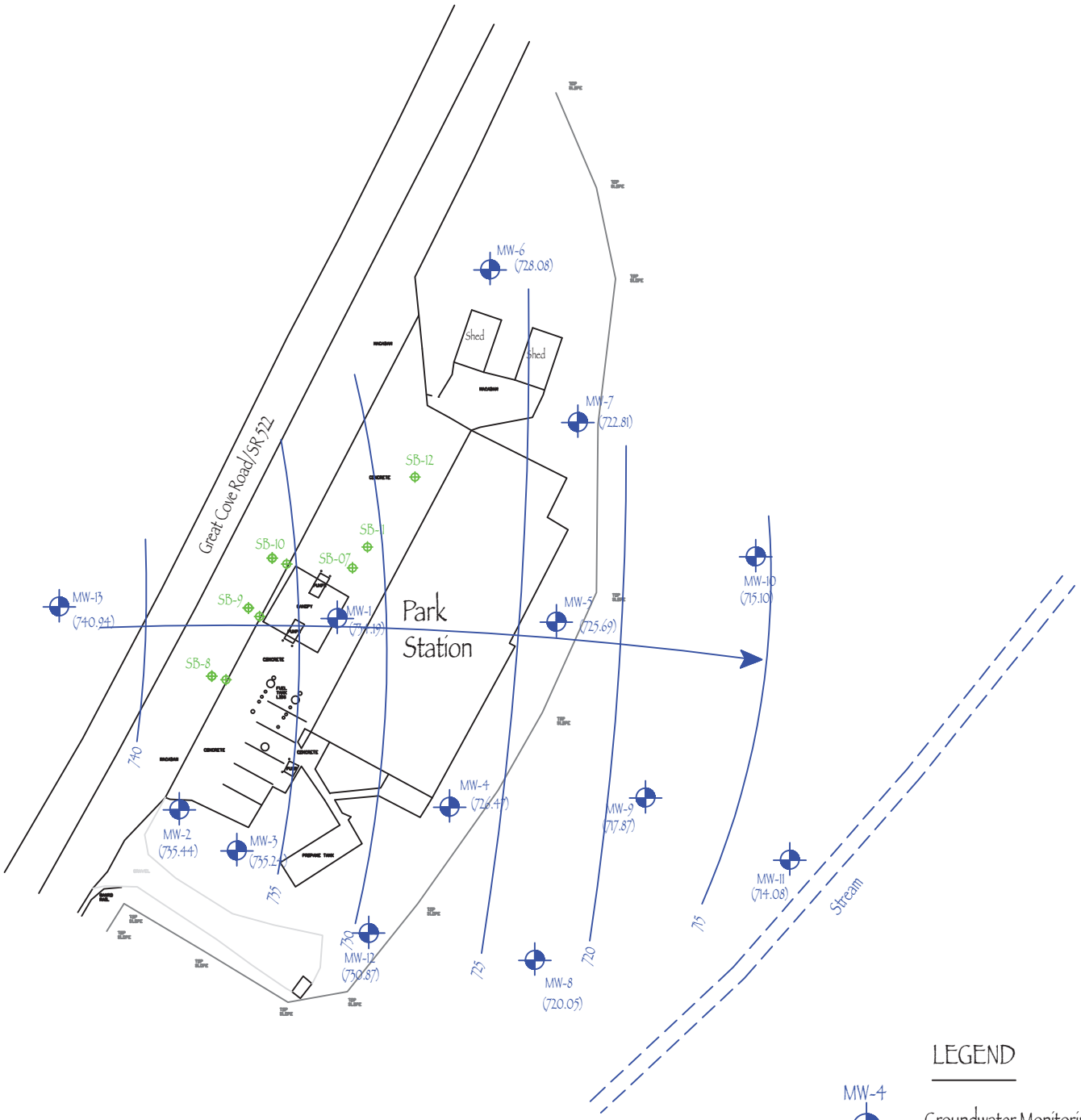
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

APPROXIMATE IMPACTED GROUNDWATER FOOTPRINT

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



LEGEND

MW-4 — Groundwater Monitoring Well

(741.48) — Groundwater Elevation

740 — Groundwater Contour Line and Elevation

DATE:	5/28/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 5

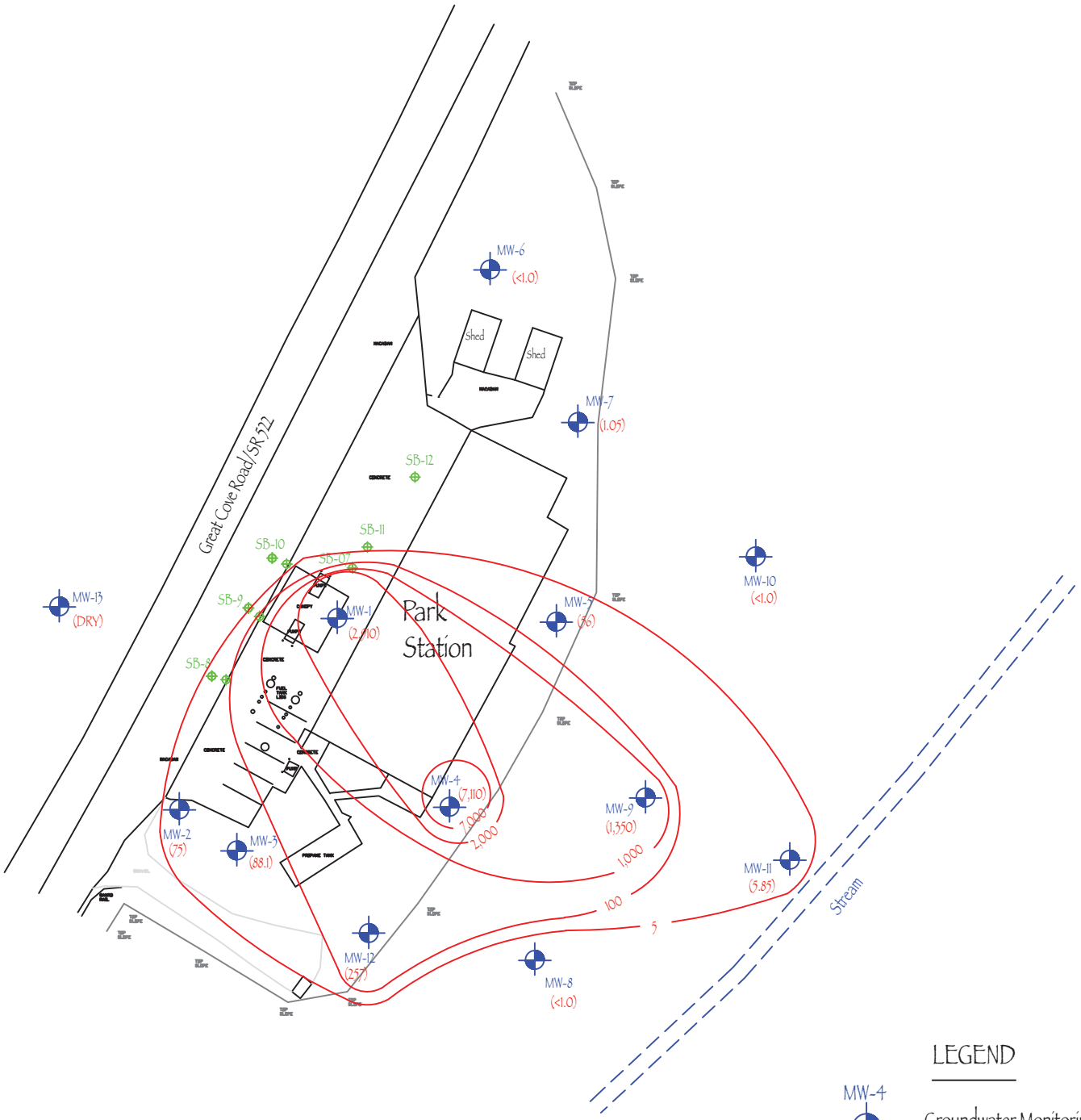
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

GWC DIAGRAM
MAR 12, 2020

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



DATE:	5/28/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 6A

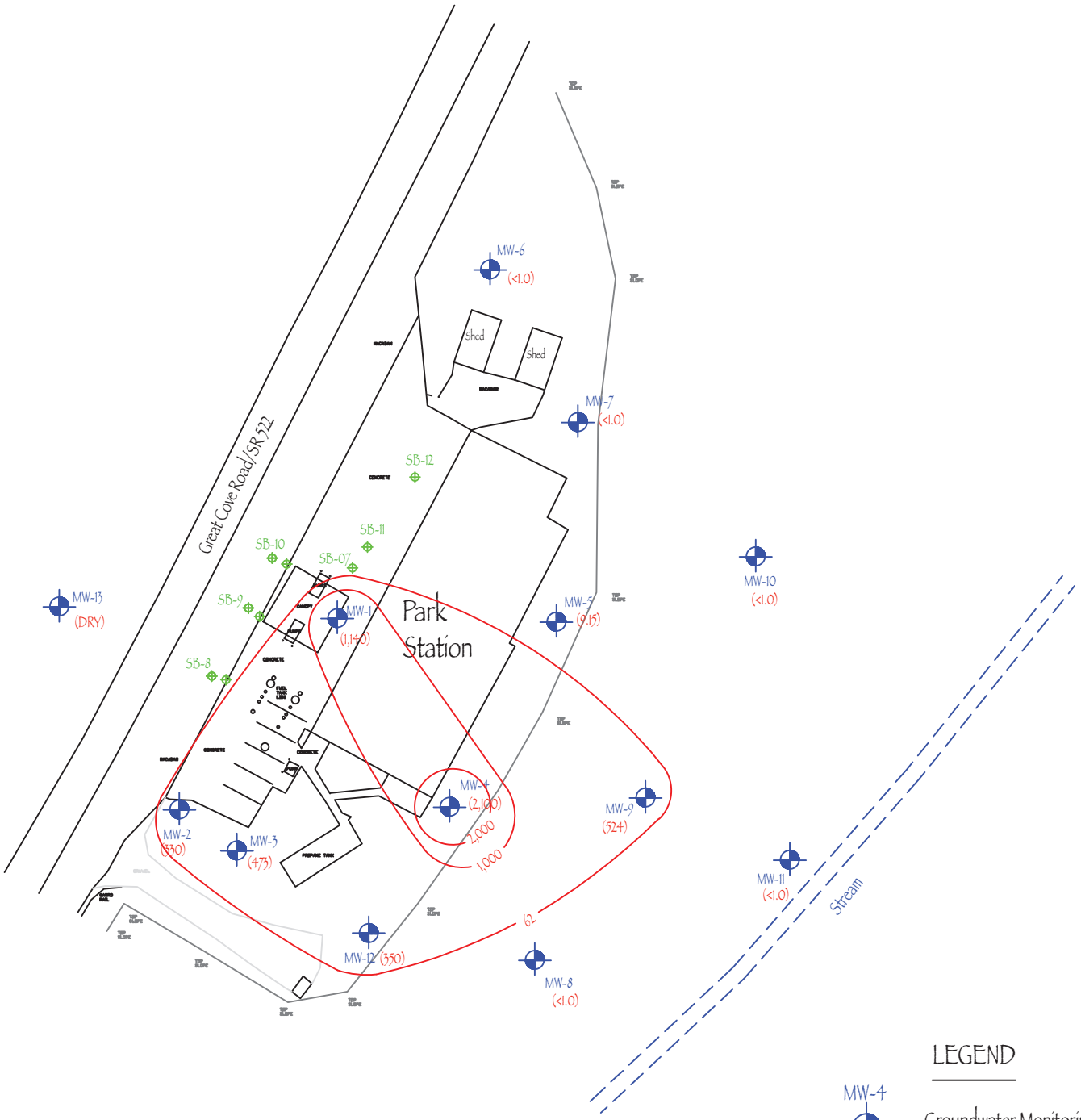
McKee Environmental, Inc.

SITE CHARACTERIZATION

GROUNDWATER ISOCON BENZENE - MAR 2020

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



LEGEND

MW-4 Groundwater Monitoring Well

(1,000) Groundwater Concentration

Isoconcentration Lines

DATE:	5/28/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 6B

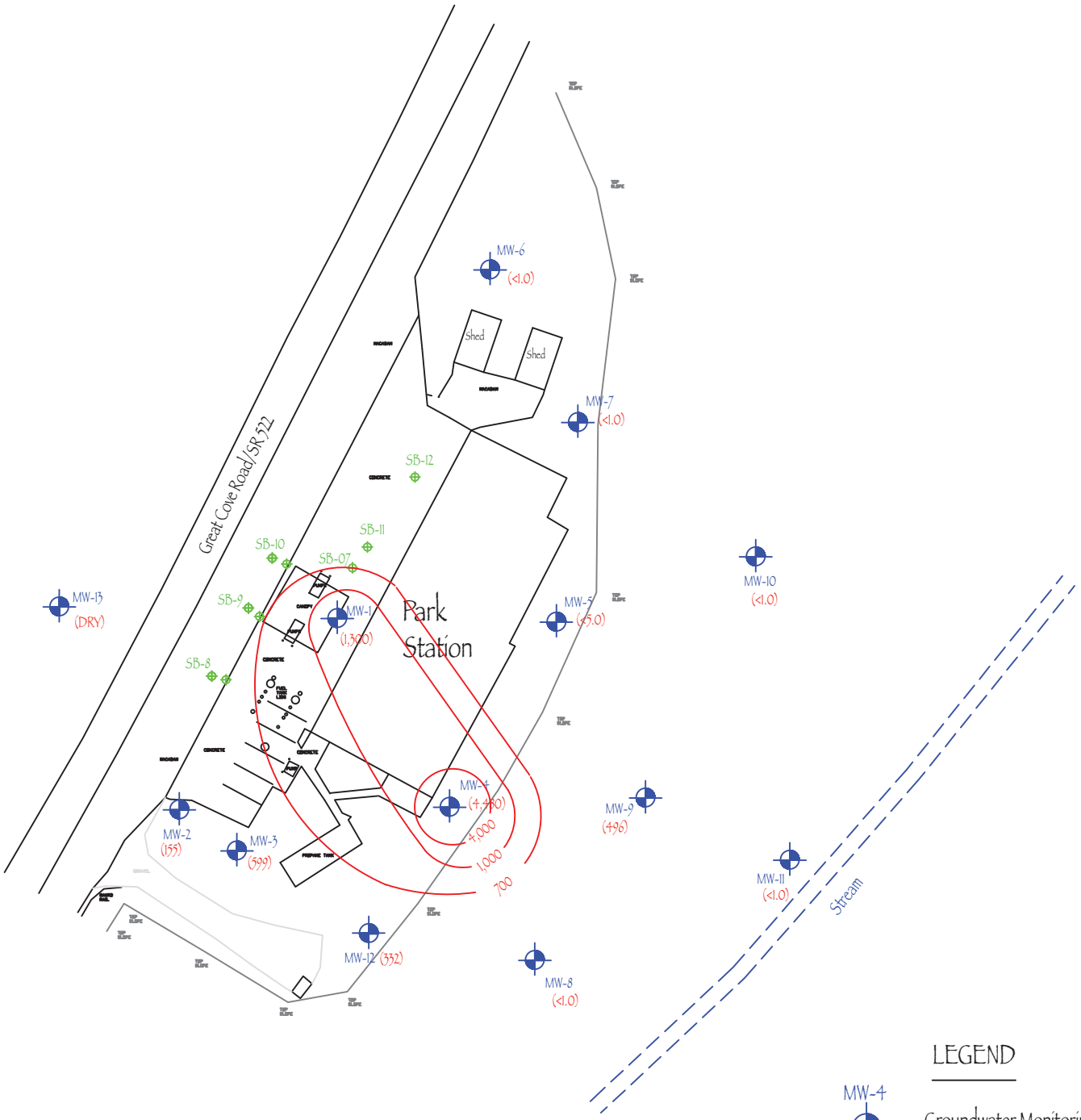
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

GROUNDWATER ISOCON 1,2,4 TMB - MAR 2020

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



DATE:	5/27/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 6C

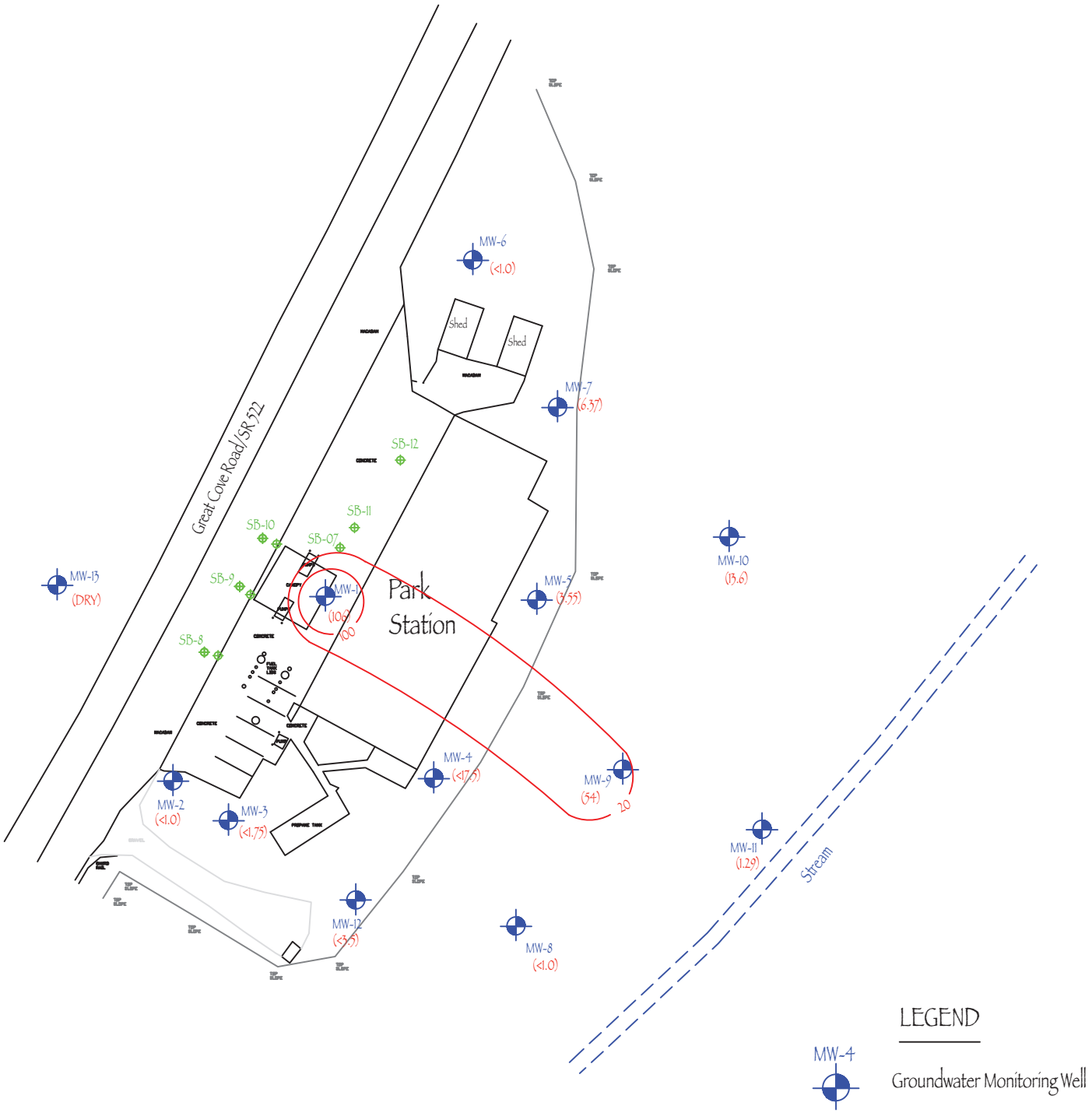
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

GROUNDWATER ISOCON ETHYLBENZENE - MAR 2020

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



DATE:	5/30/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 6D

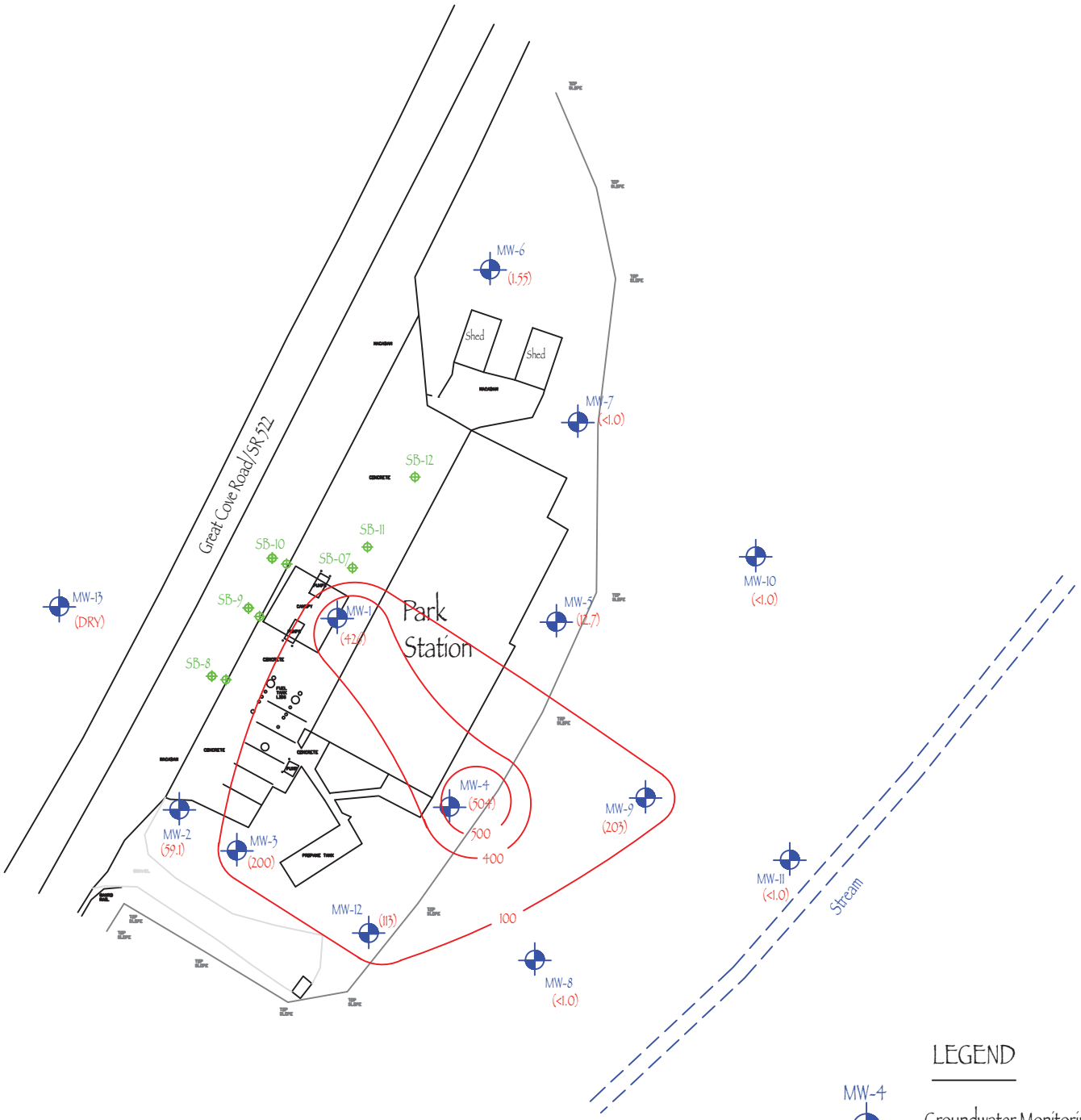
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

GROUNDWATER ISOCON MTBE - MAR 2020

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



DATE:	5/30/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 6E

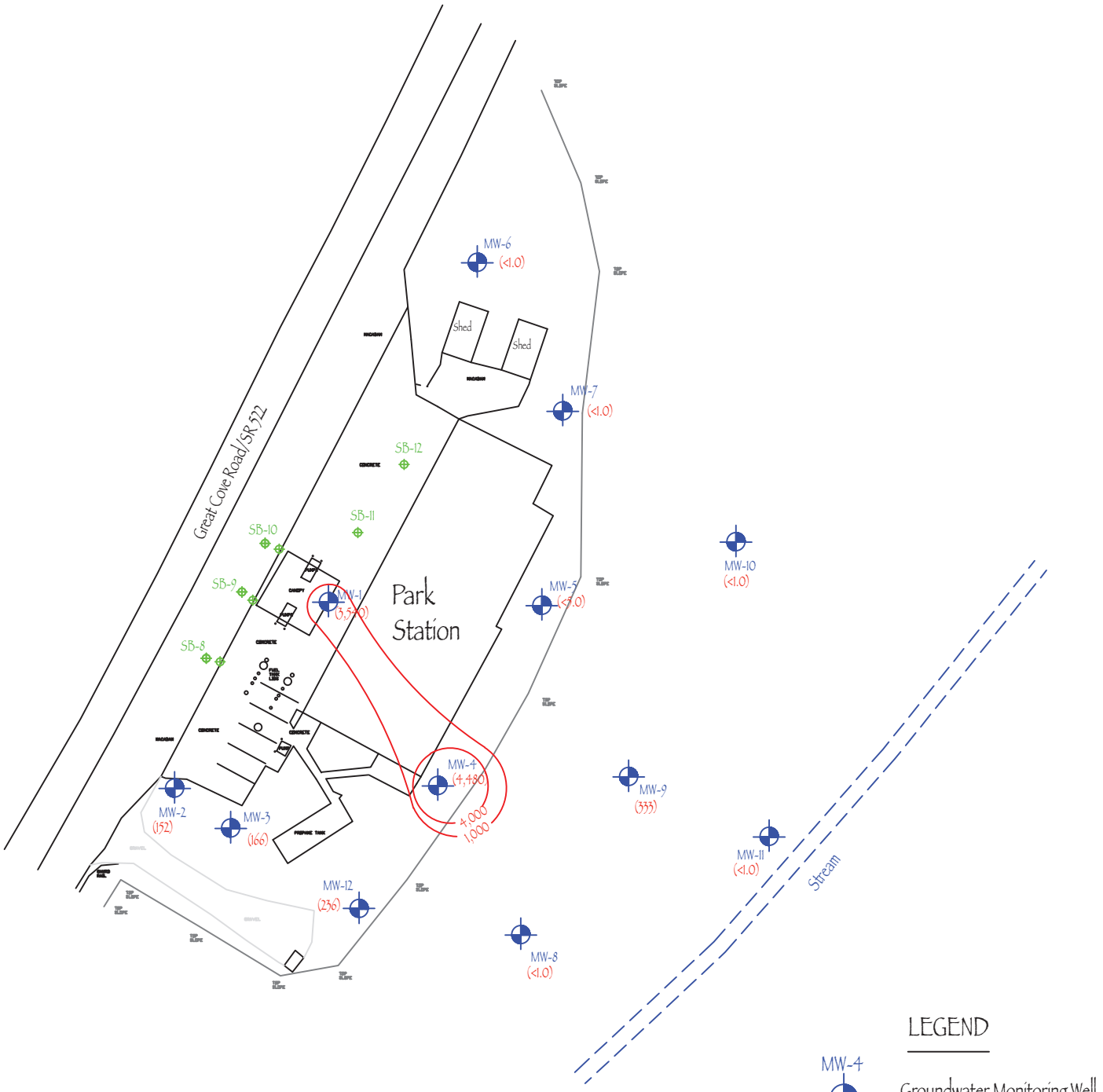
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

GROUNDWATER ISOCON NAPHTHALENE - MAR 2020

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



DATE:	5/30/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 6F

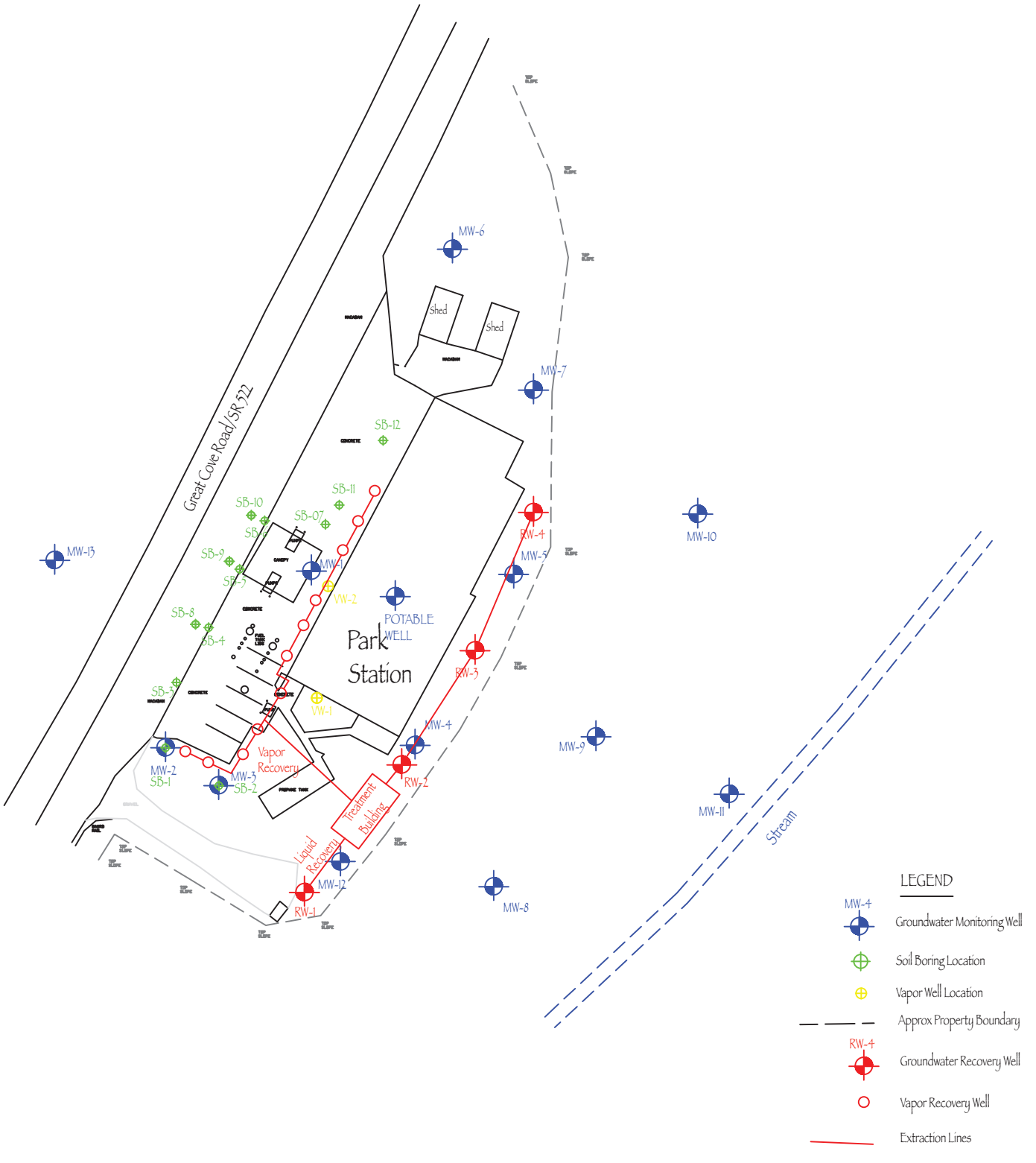
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

GROUNDWATER ISOCON TOLUENE - MAR 2020

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



DATE:	5/31/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 7

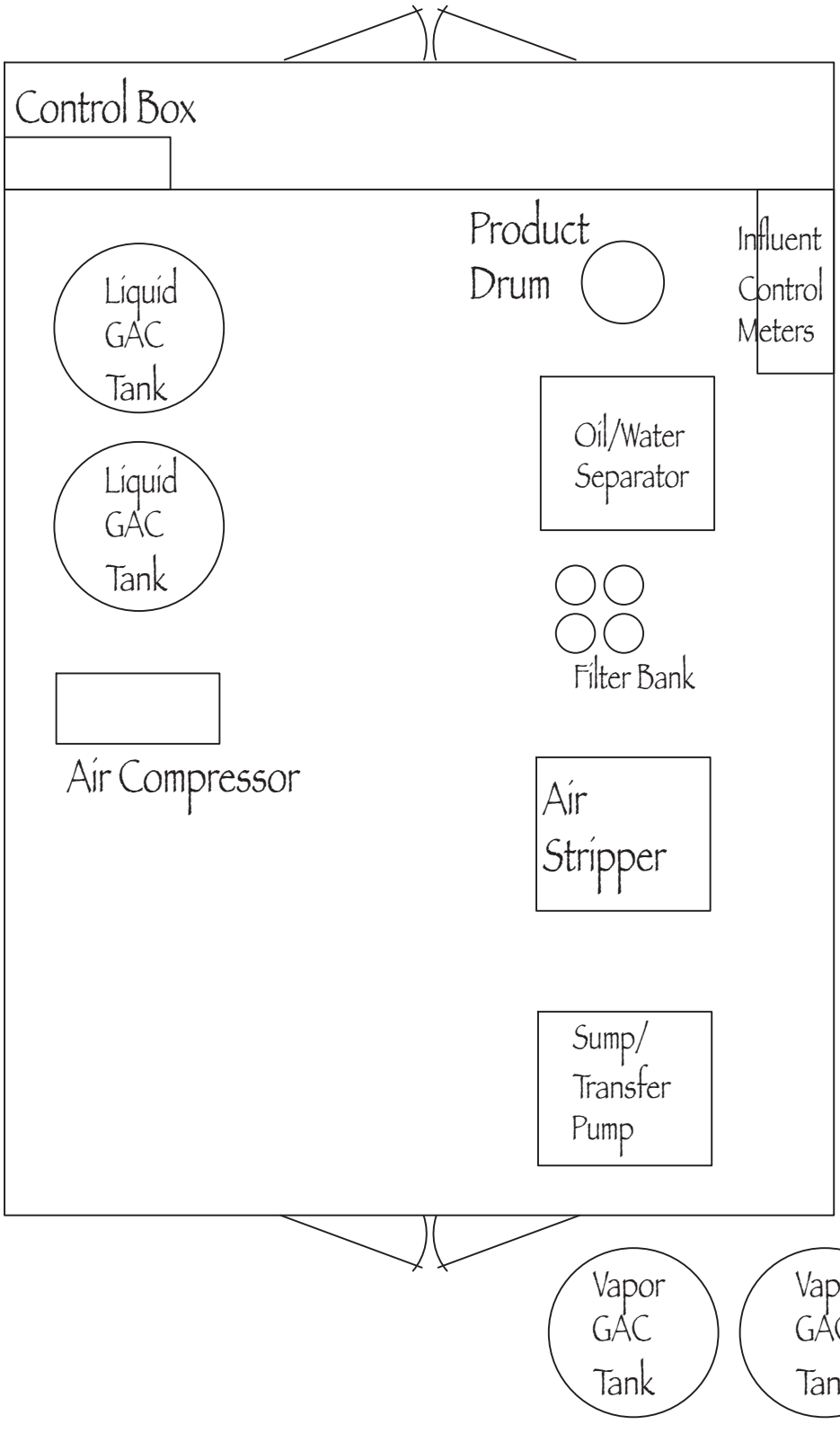
McKee Environmental, Inc.

REMEDIAL ACTION PLAN

PROPOSED REMEDIAL SYSTEM LOCATION PLAN

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126



DATE:	5/30/2020
DRAWN BY:	DSM
SCALE:	1" = 20'
	FIGURE 8

McKee Environmental, Inc.

REMEDIAL ACTION PLAN

PROPOSED TREATMENT SYSTEM BUILDING LAYOUT

PARK'S STATION
29558 GREAT COVE ROAD
FORT LITTLETON, PA 17223-9636

86 QUARTZ DRIVE BELLEFONTE, PA 16823 (814) 380-7126

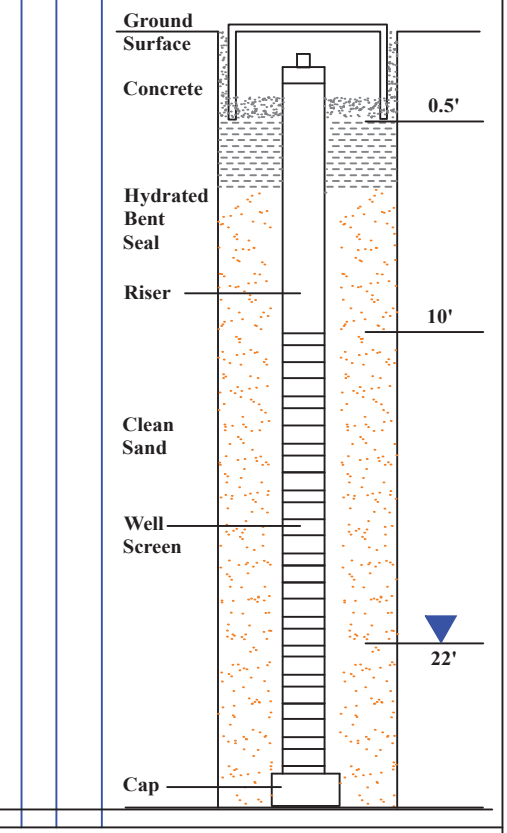
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-1

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0			STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry; Fuel Odor		0	100+			
	5		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		5				
	10		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		10	100+			
	15				15	100+	X		
	20		Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor						
	25		Orange Brown Silty CLAY Moist to Wet; Tight Strong Fuel Odor		25	100+	X		



End of Boring: 25 feet

LEGEND

MW-1 Groundwater Monitoring Well Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-1

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

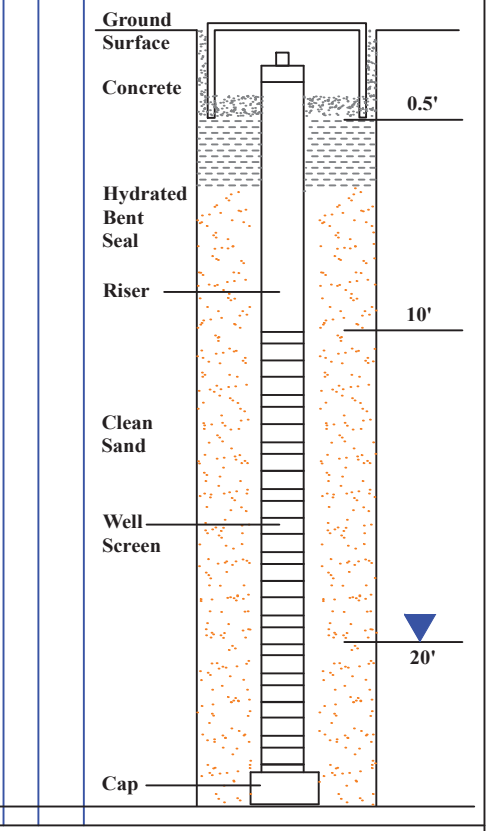
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-2

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000
			GROUND SURFACE					
0			STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0		
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5			
5								
10			Gray Soft SILT; Moist; Fuel Odor Brown Stout CLAY, Mottled, Moist, Thick			100+		
15			Orange Brown Silty CLAY; Moist		15	100+	X	
					18	100+	X	
20								
25			Orange Brown Silty CLAY; Moist to Wet			100+		



LEGEND

MW-2 Groundwater Monitoring Well Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-2

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

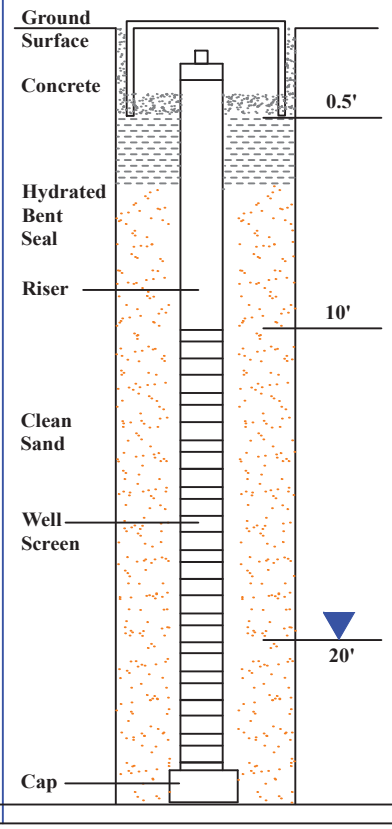
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-3

BORING DATE: June 21, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0				0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5	0			
5									
	10								
10									
	15		Orange Brown Silty CLAY; Moist		15	0			
15									
	20					0			
20									
	25		Orange Brown Silty CLAY; Moist to Wet			0			
25									



LEGEND

MW-2 Groundwater Monitoring Well Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-3

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

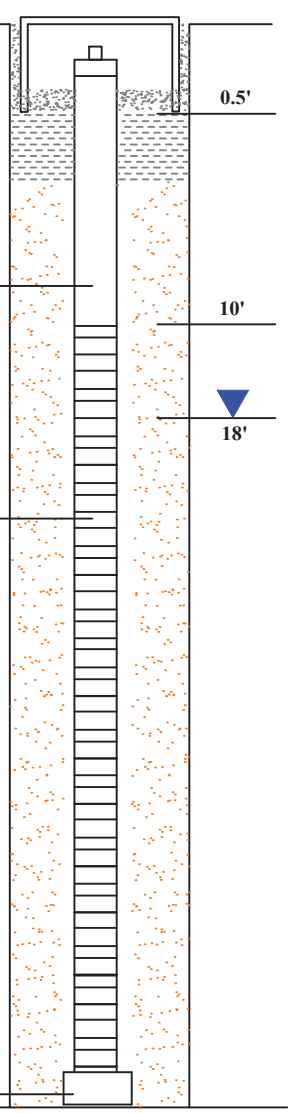
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-4

BORING DATE: June 21, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
0	0		GROUND SURFACE		0	0			Ground Surface
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5	0			Concrete 0.5'
5									Hydrated Bent Seal
									Riser
10									10'
									Clean Sand
									18'
15			Orange Brown Silty CLAY; Moist		15	0			Well Screen
20						0			
			Orange Brown Silty CLAY; Moist to Wet						
25						0			
30									
35									Cap



BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-4

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-5

BORING DATE: June 21, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
0	0		GROUND SURFACE		0	0			Ground Surface; Concrete; 0.5'
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5	0			Hydrated Bent Seal; Riser; 10'
5	10								Clean Sand; 18'
10	15		Orange Brown Silty CLAY; Moist		15	0			Well Screen
15	20					0			
20	25		Orange Brown Silty CLAY; Moist to Wet			0			
25	30								
30	35								Cap
35									

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-5

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

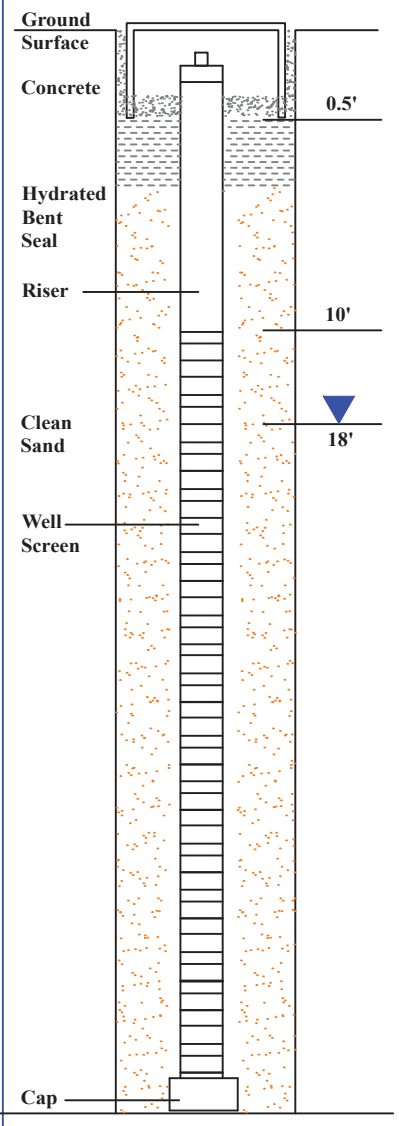
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-6

BORING DATE: June 21, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
0	0		GROUND SURFACE		0	0			Ground Surface; Concrete 0.5'; Hydrated Bent Seal; Riser 10'; Clean Sand 18'; Well Screen; Cap
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5	0			
5	5								
10	10								
15	15		Orange Brown Silty CLAY; Moist		15	0			
20	20					0			
			Orange Brown Silty CLAY; Moist to Wet						
25	25					0			
30	30								
35	35								



BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-6

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

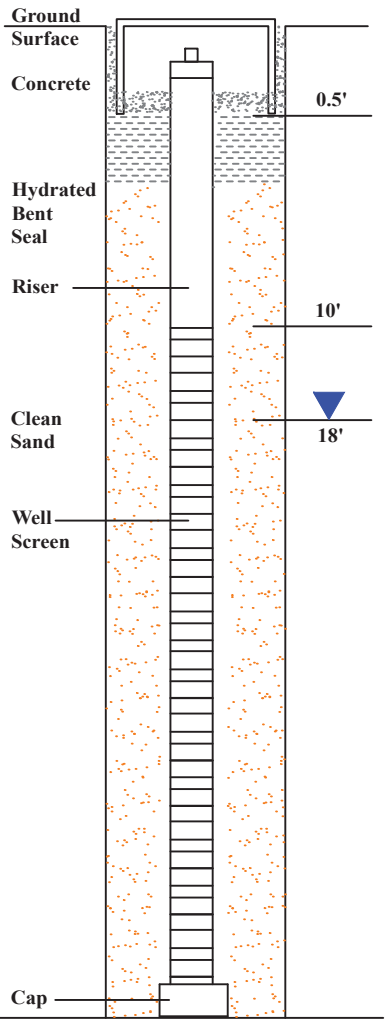
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-7

BORING DATE: June 21, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE		0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5	0			
			Orange Brown Silty CLAY; Moist		15	0			
						0			
			Orange Brown Silty CLAY; Moist to Wet			0			
0	0								
	5								
	10								
	15								
	20								
	25								
	30								
	35								



BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-7

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

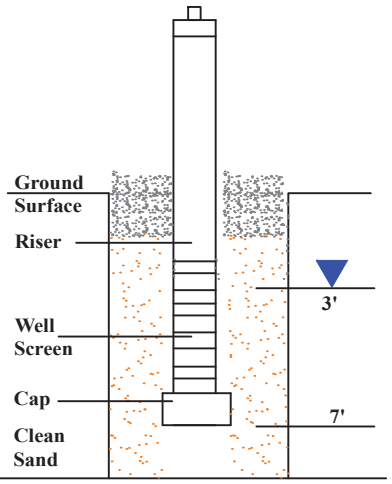
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-8

BORING DATE: December 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
0	0		GROUND SURFACE		0	0			
			Orange Brown Silty CLAY; Dry		5	0			
5			Dark Grey Shale at the bottom; Saturated						
10									
15									



BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-8

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

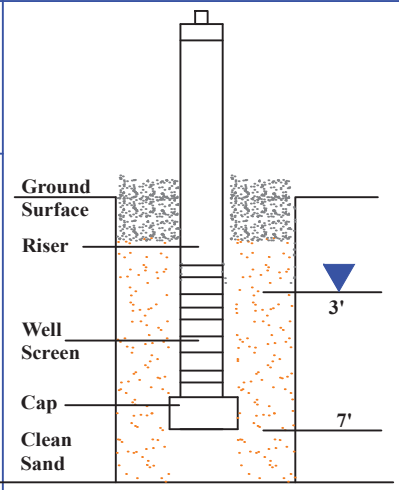
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-9

BORING DATE: December 20, 2019 **DATUM:** GROUND SURFACE

SCALE (METERS / FEET)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES: PID	SOIL SAMPLE	CONCENTRATION: PID (0 250 500 750 1,000)	COMMENTS
0 / 0		GROUND SURFACE		0	0			
		Orange Brown Silty CLAY; Dry		5	0			
5 /		Dark Grey Shale at the bottom; Saturated; STRONG ODORS		9	250+			
10 /								
15 /								



BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-9

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

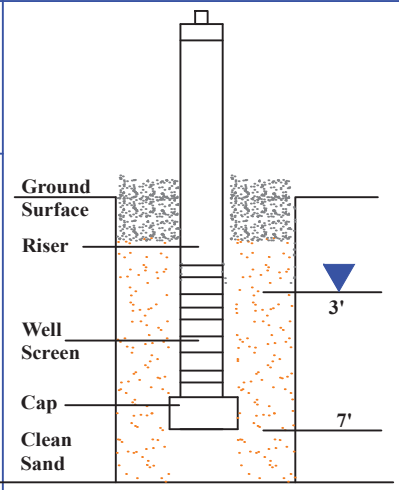
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-10

BORING DATE: December 20, 2019 **DATUM:** GROUND SURFACE

SCALE (METERS / FEET)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES: PID	SOIL SAMPLE	CONCENTRATION: PID (0 250 500 750 1,000)	COMMENTS
0 / 0		GROUND SURFACE		0	0			
		Orange Brown Silty CLAY; Dry		5	0			
5 /		Dark Grey Shale at the bottom; Saturated						
10 /								
15 /								



BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-10

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-11

BORING DATE: Feb 14, 2020 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
0	0		GROUND SURFACE						
			Orange Brown Silty CLAY; Dry		0	0			
			Dark Grey Shale at the bottom; Saturated		5	0			
5	5								
10	10								
15									

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-11

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

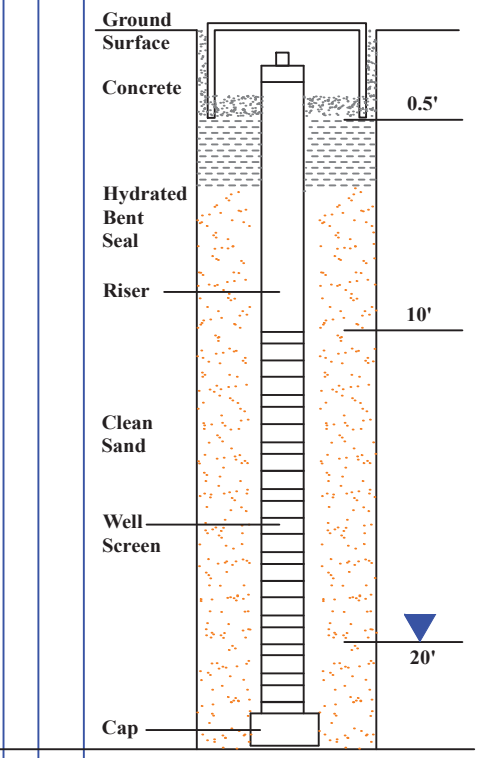
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-12

BORING DATE: Feb 14, 2020 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
0	0		GROUND SURFACE		0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5	0			
5	10				10				
			Orange Brown Silty CLAY; Moist		15	0			
10	20				20	0			
			Orange Brown Silty CLAY; Moist to Wet		23	0			
15	25								



LEGEND

MW-12 Groundwater Monitoring Well Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-12

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

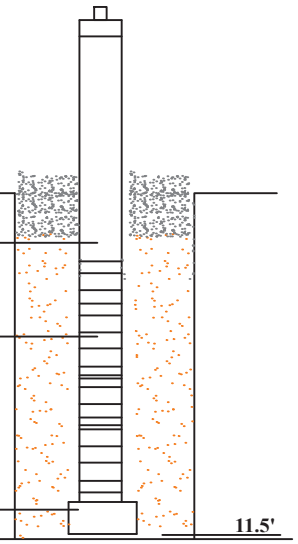
PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

MW-13

BORING DATE: December 20, 2019 **DATUM:** GROUND SURFACE

SCALE (METERS / FEET)	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES: PID	SOIL SAMPLE	CONCENTRATION: PID (0 250 500 750 1,000)	COMMENTS
0		GROUND SURFACE		0	0			
5		Orange Brown Silty CLAY; Dry		5	0			
10		Dark Grey Shale at the bottom		11.5	0			
15								



BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

GW CONSTRUCTION LOG: MW-13

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-01

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5				
5	5								
10	10		Gray Soft SILT; Moist; Fuel Odor Brown Stout CLAY, Mottled, Moist, Thick			100+			
15	15		Orange Brown Silty CLAY; Moist		15	100+	X		Soil Sampled (SB-0620-01@15'). Obvious fuel odors.
					18	100+	X		Soil Sampled (SB-0620-01@18'). Obvious fuel odors.
20	20								
			Orange Brown Silty CLAY; Moist to Wet			100+			
25	25								

LEGEND

SB-0620-01 Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-01

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-02

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5				
5			Crushed ROCK-No Recovery						
10			Gray Silty Soft CLAY; Moist; Strong Fuel Odor @15' Grey/Orange Brown Silty CLAY, Moist,			100+			
15					15	100+	X		Soil Sampled (SB-0620-01@15'). Obvious fuel odors.
			Greenish/Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor @18'		20	100+	X		Soil Sampled (SB-0620-02@20'). Obvious fuel odors.
20									
25									

LEGEND

SB-0620-02 Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-02

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-03

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5				
5			Crushed ROCK-No Recovery						
	10		Gray Silty Soft CLAY; Moist; Strong Fuel Odor @15' Grey/Orange Brown Silty CLAY, Moist,			100+			
	15				15	100+	X		Soil Sampled (SB-0620-01@15'). Obvious fuel odors.
			Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor @18'		20	100+	X		Soil Sampled (SB-0620-02@20'). Obvious fuel odors.
10	20								
	25								

LEGEND

SB-0620-03 — Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-03

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-04

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5				
5			Greyish Green/Brown Silty CLAY; Moist to Wet; Strong Fuel Odor						
10			Gray Silty Soft CLAY; Moist; Strong Fuel Odor @15' Grey/Orange Brown Silty CLAY, Moist,		10	100+	X		Soil Sampled (SB-0620-04@10'). Obvious fuel odors.
15					15	100+	X		Soil Sampled (SB-0620-04@15'). Obvious fuel odors.
20			Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor @18'		20	100+	X		Soil Sampled (SB-0620-04@20'). Obvious fuel odors.
25									

LEGEND

SB-0620-04 Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-04

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-05

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
			Orange Brown Silty CLAY; Crushed Stone; Moist throughout		5				
5			Brown Silty CLAY; Moist to Wet; Strong Fuel Odor						
10	10		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @15' Grey/Orange Brown Silty CLAY, Moist,		10	100+			
15	15				15	100+	X		Soil Sampled (SB-0620-05@15'). Obvious fuel odors.
20	20		Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor @20'		20	100+	X		Soil Sampled (SB-0620-05@20'). Obvious fuel odors.
25	25								

LEGEND

SB-0620-05 Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-05

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-06

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry; Fuel Odor		0	100+			
5	5		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		5				
10	10		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		10	100+			
15	15				15	100+	X		Soil Sampled (SB-0620-06@15'). Obvious fuel odors.
20	20		Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor @18'		18	100+	X		Soil Sampled (SB-0620-06@18'). Obvious fuel odors.
25	25				20	100+	X		Soil Sampled (SB-0620-06@20'). Obvious fuel odors.

LEGEND

SB-0620-06 Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-06

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-07

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry; Fuel Odor		0	100+			
5	5		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		5				
10	10		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		10	100+			Soil Sampled (SB-0620-07@10'). Obvious fuel odors.
15	15		Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor		15	100+	X		Soil Sampled (SB-0620-07@15'). Obvious fuel odors.
20	20				20	100+	X		Soil Sampled (SB-0620-07@20'). Obvious fuel odors.
25	25		Orange Brown Silty CLAY Moist to Wet; Tight Strong Fuel Odor		25	100+	X		Soil Sampled (SB-0620-07@25'). Obvious fuel odors.

LEGEND

SB-0620-07 Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-07

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-0620-08

BORING DATE: June 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry; Fuel Odor		0	100+			
5	5		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		5				
10	10		Orange Brown Silty CLAY; Moist; Strong Fuel Odor @8'		10	100+			
15	15		Orange Brown Silty CLAY Moist to Wet Strong Fuel Odor		15	100+	X		Soil Sampled (SB-0620-08@15'). Obvious fuel odors.
20	20								
25	25		Orange Brown Silty CLAY Moist to Wet; Tight Strong Fuel Odor		25	100+	X		Soil Sampled (SB-0620-08@25'). Obvious fuel odors.

LEGEND

SB-0620-08 Soil Boring Location

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-0620-08

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-1220-09

BORING DATE: Dec 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
					4.5	0			
3			Orange Brown Silty CLAY; Dry						
6									
			Multi-colored Silty CLAY; Dry to Moist; Strong Odor at 10'		9	250			
9					10	250	X		Soil Sampled (SB-1220-09@10'). Strong fuel odors.
12			Soft Fill-type Material to 14'; Possible Original Orange Brown Silty CLAY; Dry to Moist; Strong Odor 12-15'						
					14	500	X		Soil Sampled (SB-1220-09@14'). Strong fuel odors.
15									

LEGEND

Soil Boring Location

SB-1220-09

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-1220-09

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-1220-10

BORING DATE: Dec 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0			STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
					4.5	0			
3			Orange Brown Silty CLAY; Dry						
6			Multi-colored Silty CLAY; Dry to Moist; Slight Odor at 10'		9				
9					10	50	X		Soil Sampled (SB-1220-10@10'). Slight fuel odors.
12			Soft Fill-type Material to 14'; Possible Original Orange Brown Silty CLAY; Dry to Moist; Slight Odor 12-15'		14	50	X		Soil Sampled (SB-1220-10@14'). Slight fuel odors.
15									

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-1220-10

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-1220-11

BORING DATE: Dec 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	SAMPLES PID	SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0	0		STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
	3								
					4.5	0			
	6		Orange Brown Silty CLAY; Dry						
			Orange Brown Silty CLAY; Dry to Moist; Strong Odor at 10'		9				Soil Sampled (SB-1220-11@10'). Strong fuel odors.
	9								
12			Grey Orange Brown Silty CLAY; Dry to Moist; Strong Odor at 10'		12	200	X		Soil Sampled (SB-1220-11@15'). Strong fuel odors.
	12								
	15								
18			Possible Original Orange Brown Silty CLAY; Dry to Moist; Strong Odor 15-19'						
19					19	500	X		Soil Sampled (SB-1220-11@19'). Strong fuel odors.

LEGEND

Soil Boring Location

SB-1220-11

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-1220-11

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA

PROJECT: Park Station

LOCATION: 29558 Great Cove Road Fort Littleton, PA

SB-1220-12

BORING DATE: Dec 20, 2019 **DATUM:** GROUND SURFACE

SCALE METERS	SCALE FEET	BORING METHOD	SOIL PROFILE DESCRIPTION	STRATA	DEPTH B.G.S.FT	PID	SAMPLES SOIL SAMPLE	CONCENTRATION PID 0 250 500 750 1,000	COMMENTS
			GROUND SURFACE						
0			STONE/FILL- Crushed Gravel; Dark Grey to Black; Dry		0	0			
	3								
			Orange Brown Silty CLAY; Dry		4.5	0			
	6								
			Orange Brown Silty CLAY; Dry to Moist; Strong Odor at 10'						
	9				10	0	X		Soil Sampled (SB-1220-11@10'). Strong fuel odors.
12			Grey Orange Brown Silty CLAY; Dry to Moist; Strong Odor at 10'		12	0			
			Possible Original Orange Brown Silty CLAY; Dry to Moist; Strong Odor 15-19'		19	0	X		Soil Sampled (SB-1220-12@15'). No fuel odors.
15									

LEGEND

Soil Boring Location

SB-1220-12

BORING LOGS

FORT LITTLETON, PENNSYLVANIA
FULTON COUNTY

McKee Environmental, Inc.

SOIL BORING: SB-1220-12

PARK STATION
29558 GREAT COVE ROAD
FORT LITTLETON , PENNSYLVANIA