CORRECTIVE ACTION PLAN MODIFICATION (CP-29)

Reb Oil Company of Alabama, LLC
Supermart #195
ADEM Facility ID: 22873-015-012398
UST Incident Number: UST14-10-01
2030 U. S. Highway 78 East
Oxford, Alabama 36203
(Calhoun County)

October 8, 2020
(revised December 28, 2020)

Prepared for:
Reb Oil Company of Alabama, LLC
1000 Portside Drive
Edgewater, New Jersey 07020

Prepared by:
SPHERE 3 ENGINEERING, INC
(Alabama General Contractor #49971)
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Hoover, Alabama 35216
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SPHERE 3 File: REB.SM195.29

SPHERE 3
ENGINEERING, INC

CERTIFICATION PAGE

I certify under penalty of law that this Corrective Action Plan Modification and all specifications, and technical data submitted within were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiring of the person or persons who directly gathered the enclosed information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information.

Signature

Greg Hoagland, P.E.

21581

Registration Number

October 8, 2020
(revised December 28, 2020)

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I. ADEM UST INCIDENT FORMS

Underground Storage Tank (UST) Release Fact Sheet

GENERAL INFORMATION:

SITE NAME: **Supermart #195**

ADDRESS: **2030 U.S. Highway 78 East; Oxford, Calhoun County, AL**

FACILITY I.D. NO.: **22873-015-012398**

UST INCIDENT NO.: **UST14-10-01**

RESULTS OF EXPOSURE ASSESSMENT:

How many private drinking water wells are located within 1,000 feet of site? **None**

How many public water supply wells are located within 1 mile of site? **Two (2)**

Have any drinking water supply wells been impacted by contamination from this release? **No**

Is there an imminent threat of contamination to any drinking water wells? **No**

Have vapors or contaminated groundwater posed a threat to the public? **No**

Are any underground utilities impacted by the release? **No**

Have surface waters been impacted by the release? **No**

Is there an imminent threat of contamination of surface waters? **No**

What is the type of surrounding population? **Commercial/Residential**

CONTAMINATION DESCRIPTION:

Type of contamination at site: {**X**} Gasoline { } Diesel { } Waste Oil { } Kerosene { } Other _____

Free product present in wells? {**X**} Yes { } No

Max. benzene/MTBE/naphthalene concentrations measured in soil:
15.000 mg/kg benzene / 0.157 mg/kg MTBE / 54.000 mg/kg naphthalene

Max. benzene/MTBE/naphthalene concentrations measured in groundwater:
202.000 mg/L benzene / 1.210 mg/L MTBE / 461.000 naphthalene

ADEM UST Site Classification System Checklist

Please read all of the following statements and mark either yes or no if the statement applies to your site. If you have conducted a Preliminary or Secondary Investigation, all questions should be answered. Closure site assessment reports may not provide you with all the necessary information, but answer the statements with the knowledge obtained during the closure site assessment.

SITE NAME:	Supermart #195
SITE ADDRESS:	2030 U.S. Highway 78 East
	Oxford (Calhoun County) Alabama 36203
FACILITY I.D. NO.:	22873-015-012398
UST INCIDENT NO.:	UST14-10-01
OWNER NAME:	Reb Oil Company of Alabama, LLC
OWNER ADDRESS:	1000 Portside Drive; Edgewater, New Jersey 07020
NAME & ADDRESS OF PERSON COMPLETING THIS FORM:	Greg Hoagland, P.E. SPHERE 3 Engineering, Inc.
	3433 Sierra Drive; Hoover, Alabama 35216

CLASSIFICATION	***DESCRIPTION***	***YES***	***NO***
CLASS A	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
A.1	Vapor concentrations at or approaching explosive levels that could cause health effects, are present in a residence or building.	☐	☒
A.2	Vapor concentrations at or approaching explosive levels are present in subsurface utility system(s), but no buildings or residences are impacted.	☐	☒
CLASS B	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
B.1	An active public water supply well, public water supply line, or public surface water intake is impacted or immediately threatened.	☐	☒
B.2	An active domestic water supply well, domestic water supply line or domestic surface water intake is impacted or immediately threatened.	☐	☒
B.3	The release is located within a designated Wellhead Protection Area I.	☒	☐
CLASS C	IMMEDIATE THREAT TO HUMAN HEALTH, HUMAN SAFETY OR SENSITIVE ENVIRONMENTAL RECEPTOR		
C.1	Ambient vapor/particulate concentrations exceed concentrations of concern from an acute exposure, or safety viewpoint.	☐	☒
C.2	Free product is present on the groundwater, at ground surface, on surface water bodies, in utilities other than water supply lines, or in surface water runoff.	☒	☐

CLASSIFICATION	***DESCRIPTION***	***YES***	***NO***
CLASS D	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
D.1	There is a potential for explosive levels, or concentrations of vapors that could cause acute effects, to accumulate in a residence or other building.	☐	☒
D.2	A non-potable water supply well is impacted or immediately threatened.	☐	☒
D.3	Shallow contaminated surface soils are open to public access, and dwellings, parks, playgrounds, day care centers, schools or similar use facilities are within 500 feet of those soils.	☐	☒
CLASS E	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
E.1	A sensitive habitat or sensitive resources (sport fish, economically important species, threatened and endangered species, etc.) are impacted and affected.	☐	☒
CLASS F	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
F.1	Groundwater is impacted and a public well is located within 1 mile of the site.	☒	☐
F.2	Groundwater is impacted and a domestic well is located within 1,000 feet of the site.	☐	☒
F.3	Contaminated soils and/or groundwater are located within designated Wellhead Protection Areas (Areas II or III).	☐	☒
CLASS G	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
G.1	Contaminated soils and/or groundwater are located within areas vulnerable to contamination from surface sources.	☒	☐
GLASS H	SHORT TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
H.1	Impacted surface water, stormwater or groundwater discharges within 500 feet of a surface water body used for human drinking water, whole body water-contact sports, or habitat to a protected or listed endangered plant and animal species.	☐	☒
CLASS I	LONG TERM THREAT TO HUMAN HEALTH, SAFETY, OR SENSITIVE ENVIRONMENTAL RECEPTORS		
I.1.	Site has contaminated soils and/or groundwater but does not meet any of the above mentioned criteria.	☐	☒

ADDITIONAL COMMENTS:

Complete the classification evaluation questions listed above. Upon completion, determine the highest rank of the site (A.1 is the highest rank) based on the statements answered with a yes.

Enter the determined classification ranking:	B.3

II. INTRODUCTION

General

SPHERE 3 Engineering, Inc. (SPHERE 3) was retained by REB Oil Company of Alabama, LLC to prepare a Corrective Action Plan (CAP) Modification for their Alabama Tank Trust Fund (ATTF) Underground Storage Tank (UST) incident UST14-10-01 associated with their former facility known as Supermart #195 located at 2030 U.S. Highway 78 East in Oxford, Alabama (see Figures 1 and 2). The objective of the CAP Modification is to design a Soil Vapor Extraction (SVE) and Groundwater Pump & Treat (P&T) corrective action system to efficiently remediate the subsurface soils and local groundwater to the Site Specific Target Levels (SSTLs). The CAP Modification has been prepared in accordance with the Alabama Department of Environmental Management (ADEM) regulation R: 335-6-15-.08, .27 and .29 and the Alabama UST Release Investigation and Corrective Action Guidance Manual. Costs associated with development and implementation of the CAP Modification are eligible for reimbursement by the ATTF.

III. PROPOSED REMEDIATION METHODS

Soil, Free Product, and Groundwater Remediation Methods

As part of the CAP Modification discussions, SPHERE 3 recommended a combination of a SVE and a P&T system to remediate the subsurface soils and local groundwater. The design of the SVE and a P&T system will be conservatively interpreted from the pilot testing data generated at facilities with a similar lithology.

The majority of the dissolved Chemicals of Concern (COCs) and free product plume associated with this incident extends from the central portion of the facility property (as defined by monitor wells MW-1 and RW-2) to and beyond the central portion of the southern property boundary (as defined MW-11 and RW-3. If piloted, P&T would likely yield a respectable reach (radius of influence) of approximately 30 feet. Significant soil impact is noted over a depth range of roughly 10 feet bgs to 25 feet bgs. If piloted in a single Type II monitor well constructed with a screen to expose the entire column of impacted soils, SVE would likely yield a limited radius of influence of 20 feet. Long term, sustained application of SVE technology in an appropriately designed network of Type II monitor wells would likely yield a more favorable influence of as much as 35-30 feet.

SVE technology is particularly effective when applied to granular and semi-granular lithologies. Granular soils exhibit higher absolute porosity values, which is the leading indicator of the success of a SVE application. The success of a SVE application is determined predominantly from the

measured distribution of the applied vacuum. In consistent lithologies, the applied vacuum is typically distributed in a radial pattern. The radial distribution of the applied vacuum is commonly referred to as the "radius of influence".

A typical practice of defining the radius of influence of a SVE pilot study is to measure the distance to which a pressure change (or induced vacuum) of 1% of application vacuum can be observed. For practical purposes, this distance may be determined by plotting of the curve of the induced vacuum pressure at each observation point versus the distance to that observation point as measured radially from the application point. From this curve, the radius of influence is identified as the intersection of the curve and the corresponding radial distance at which 1% of the application pressure is noted.

In coarse, granular soils (gravels and sands), the radius of influence can be as large as 80-100 feet. The presence of silts and clays retards the distribution of the vacuum and commonly reduces the radius of influence to a range of 15-40 feet. In lithologies consisting predominantly of clays, the distribution of vacuum is usually prevented. For this facility, a conservative radius of influence of 20 feet will be estimated.

A typical extraction rate (per application point) for a 20 feet distribution is approximately 25-35 cfm for an application pressure of approximately 40-50 inches of H_2O.

SVE and P&T System Design

For the abatement of the source area soils, SPHERE 3 proposes the construction of a SVE system and associated vacuum well network consisting of six (6) vacuum extraction wells. For the abatement of the source area groundwater and recovery of the source area free product, SPHERE 3 proposes the construction of a P&T system and associated pumping well network consisting of four (4) 4-inch recovery wells.

The proposed pumping well network will consist of existing Type II recovery wells RW-2 and RW-3 and three (3) newly constructed recovery wells (see Figure 8). The three (3) new recovery wells will be installed near the midpoint between existing recovery wells RW-5 and RW-3, near the midpoint of existing recovery wells RW-4 and RW-3, and near the midpoint of existing monitor wells MW-14 and MW-15. Each new recovery well will be installed to a depth of 35 feet bgs, constructed with 4-inch diameter PVC well materials including 25 feet of well screen with 0.01-inch slots. Soil sampling is not proposed. Each newly installed pumping well will be developed, allowed to recharge for a minimum of 48 hours, and purged and sampled for dissolved COCs. The initial dissolved COCs concentrations will establish a baseline data set used to measure the progress of the Corrective Action system.

All pumping wells will be enclosed in a flush mount nominal 24-inch x 24-inch painted steel, traffic rated, bolt-down manhole. Each manway will be secured in a minimum 36-inch x 36-inch concrete pad poured about the center of each well. A schematic of a typical pumping well construction is presented in Figure 9.

Each pumping well will be equipped with a submersible total fluids pneumatic pump with a discharge capacity of approximately 4.8 gallons-per-minute (gpm). Compressed air will be delivered to each pump through a dedicated 1-inch diameter conduit constructed of schedule 40 PVC materials (below grade) and schedule 80 PVC materials (above grade). The fluids generated by each pump will be returned to the pumping system through a separate conduit constructed of both 1.5-inch diameter schedule 40 PVC materials.

The compressed air and recovered fluids headers will be buried in a series of excavated trenches and directional borings. The excavated trenches will be dug to approximately 24 inches deep and 24 inches wide. A nominal 3 inches of self-compacting bedding material (3/4" crushed stone) will be placed at the base of the trenches. After installation of the header piping, a nominal 4 inches of 3/4" crushed stone will be placed over the header pipes. The uppermost portion of the trenches will be backfilled with 6 inches of 4,000 psi concrete (or re-compacted soils to complete the trenches excavated within a landscaped area). Cross Sections A-A' (see Figure 12) is a diagram of a typical compressed air and recovered fluids header trench.

All compressed air headers will be individually plumbed to a common manifold. Each individual leg of the compressed air manifold will be constructed with 1-inch diameter schedule 80 PVC materials. Each leg of the compressed air manifold will be equipped with an isolation (ball) valve and a pressure gauge. A schematic of a typical compressed air manifold is presented as Figure 11.

The compressed air manifold will interface a series of schedule 80 PVC pipes plumbed from an upright 7.5-horsepower (hp) air compressor capable of producing adequate compressed air to each of the proposed pumps. The air compressor will likely require 230-volt three phase power. The compressor motor will be mounted at a distance of at least 18 inches above the finished grade to satisfy all explosion hazard criteria. The air compressor will be equipped with a high-pressure pop-off valve, an automatic condensation drain valve, a coalescing filter, and an electrical thermal overload switch.

All recovered fluids headers will be individually plumbed to a common manifold. Each leg of the recovered fluids manifold will be constructed with 1.5-inch diameter schedule 40 PVC materials. Each leg of the recovered fluids manifold will be equipped with a check valve and a section of clear PVC piping for observing each pumping well's production. A schematic of a typical recovered fluids manifold is presented as Figure 11.

The recovered fluids manifold will interface an oil/water separator through a series of schedule 40 PVC pipes. The separator will remove any free product and discharge the groundwater at a total BTEX concentration of 10 mg/L or less. The oil/water separator will have a 15 gpm capacity and will be equipped with a 20 micron coalescing filter, a weir, and gravity skimmer. The skimmer will interface with a 55-gallon free product storage tank equipped with a liquid level shut-off switch.

Groundwater treated in the oil/water separator will flow under gravitational conditions to a shallow tray air stripper. The stripper will be equipped with an explosion-proof blower, likely requiring 230-volt three-phase power. The blower will be equipped with a high (vacuum) pressure spring valve, a

high (positive) pressure shut-off switch, and an electrical thermal overload switch. The blower will force clean ambient air through the stripper trays as the groundwater flows downward under gravitational conditions. The stripper will remove the dissolved BTEX at 99.9% efficiency. Groundwater treated in the air stripper will be pumped through a particulate (silt, iron and calcium) filter to ultimately to the final outfall. Emissions control monitoring is specified in report section *V. Operations & Maintenance Activities*.

The SVE vacuum well network has been designed using the radius of influence estimated as 20 feet. The conceptual design consists of six (6) vacuum points, which are located in the areas where the highest soil COCs concentrations exist. The SVE vacuum well network will consist of existing Type II monitor wells MW-1, MW-11, MW-14 and MW-15 and two (2) newly constructed Type II SVE monitor wells (see Figure 8). The two (2) new SVE monitor wells will be installed near the midpoint between existing monitor wells MW-1 and MW-11 and near the midpoint of existing monitor wells MW-14 and MW-18. Each new SVE monitor well will be installed to a depth of 25 feet bgs, constructed with 2-inch diameter PVC well materials including 15 feet of well screen with 0.01-inch slots. Soil sampling is not proposed. Each newly installed vacuum well will be developed, allowed to recharge for a minimum of 48 hours, and purged and sampled for dissolved COCs. The initial dissolved COCs concentrations will establish a baseline data set used to measure the progress of the Corrective Action system.

Each vacuum well will yield approximately 25-35 cfm of air/vapors. A vacuum header will connect just below the top of well casing to each vacuum extraction well using 2-inch diameter schedule 40 PVC materials. Each vacuum well will be enclosed in a flush mount nominal 8-inch diameter, traffic rated, bolt-down typical well cover. Each well cover will be secured in a minimum 24-inch x 24-inch concrete pad poured about the center of each well. A schematic of a typical vacuum well construction is presented in Figure 9.

Each vacuum header will be constructed with 2-inch diameter schedule 40 PVC materials. A typical section of a vacuum header piping will be twenty (20) feet in length with a 4-inch (long) bell-shaped, slip coupling. Header piping couplings will be sealed with PVC bonding agents to reduce the risk of short circuitry. Each header will be individually plumbed to a common manifold. Each leg of the extraction manifold will be equipped with an isolation (ball) valve and a vacuum pressure gauge. A schematic of a typical SVE manifold is presented as Figure 10.

The extraction header piping will be buried in a series of excavated trenches and directional borings. The trenches will be excavated approximately 24 inches deep and 24 inches wide. A nominal 3 inches of self-compacting bedding material (3/4" crushed stone) will be placed at the base of the trenches. After installation of the header piping, a nominal 4 inches of 3/4" crushed stone will be placed over the header pipes. The uppermost portion of the trenches will be backfilled with 6 inches of 4,000 psi concrete (or re-compacted soils to complete the trenches excavated within a landscaped area). Cross Sections A-A' (see Figure 12) is a diagram of the proposed vacuum header trench.

Prior to reaching the SVE vacuum blower, the recovered vapors will advance through a moisture separator to remove air moisture. The moisture separator (40-gallon capacity) will be equipped

with an automatic high liquid level shut-off switch to prevent fluids from entering the blower. A particulate filter, vacuum gauge, and vacuum-relief valve will be installed between the moisture separator and the blower.

The blower size will be selected by comparing various blower performance curves to the application pressure and the anticipated extracted airflow rate. The estimated extracted airflow was estimated to be approximately 30-45 cfm per vacuum well. As the vacuum well network will consist of six (6) vacuum wells, the blower should be capable of producing a flow rate of approximately 210 cfm (6 wells x 35 cfm) at a vacuum pressure of 50 inches of H_2O (40 inches of H_2O for the application pressure and an additional 10 inches of H_2O to overcome the friction generated from the header piping, fittings and particulate filters. The blower will likely require 230-volt three phase power.

In consideration of the physical properties of the local subsurface soils, which will substantially govern the volumetric air emissions of a proposed SVE system, emissions generated from the operation of the blower will be controlled with vapor-phase carbon. The extracted vapors will be advanced through the carbon under negative pressure conditions. The carbon will be stored in two (2) 400-pound capacity vessels arranged in parallel. Actual system emissions (prior to vapor-carbon treatment) will be determined at system start-up. Emissions control monitoring is specified in report section *V. Operations & Maintenance Activities*.

All SVE and P&T equipment components will be housed within a portable, heated equipment building approximately 16 feet in length, 8.5 feet wide, and 8 feet tall. The portable building will have an access door and removable wall panels to aid in servicing and maintaining the system equipment. The system building, emissions control components, and the vacuum, compressed air and recovered fluids manifolds will be secured within a gated equipment compound. The equipment compound will be constructed with galvanized fencing materials. Due to accessibility limitations, the compound will be constructed with an aerial configuration similar to a “jewel” shape, with the two longest adjacent sides being approximately 24 feet in length each. The perimeter fencing will be constructed to a height of 6 feet high (minimum) and capped with continuous strands of barbed wired. The perimeter fencing will be finished with all-weather privacy slats and an 8-foot (double panel) access gate. The perimeter fence of the compound will be supported with 2” diameter galvanized fence posts spaced on 8 feet (maximum) centers. Within the compound, SPHERE 3 will utilize the existing asphalt surface as the support slab. Details of the equipment compound construction are illustrated on Figure 13.

The equipment compound will be serviced with a 200-amp, 3-phase electrical service extending aerially from a existing utility pole located in the immediate vicinity of existing monitor well MW-10. Telecommunications service required for the system telemetry module will be achieved through the area’s cellular network.

The SVE system will consist of a 5.2-horsepower regenerative vacuum blower capable of producing a 280 ACFM airflow at an operating pressure of 50 inches of H_2O, an air water separator and an emission control component. The P&T system will consist of five (5) downhole pneumatic pumps capable of producing 4.8 gpm, a 7.5-horsepower air compressor, a shallow

tray SA15 stripperator, rated for up to 15 gallons per minute, and a coalescing oil/water separator, a particulate filtering component, and a polishing carbon component. The system will be equipped with an integrated telemetry system, which may be used to remotely monitor and limitedly control the system. Details of the system and the system components are presented as Appendix A.

The treated groundwater effluent generated by the P&T system will be discharged, under the State's General National Pollutants Discharge Elimination System (NPDES) permit, to a local storm sewer which empties into an unnamed tributary of Choccolocco Creek, which is located approximately 2,900 feet northwest of the facility at an approximate elevation of 620 feet above mean sea level (amsl). See Figure 1. A NPDES permit application will be executed upon approval of the CAP.

The groundwater effluent will be sampled (monthly) and reported in accordance with the ADEM Permits and Services Division permit requirements. At a minimum, the General NPDES permit requires the following discharge specifications:

pH:	6.0 to 8.5 standard units (su) daily minimum/maximum;
Oil & Grease:	15 mg/L daily maximum;
MTBE:	report the daily maximum in μg/L;
Benzene:	15.5 μg/L daily maximum;
Toluene:	8,723 μg/L daily maximum;
Ethylbenzene:	1,244 μg/L daily maximum;
Total Xylenes:	report the daily maximum in μg/L;
Flow:	report the daily maximum in gpd.

To improve the system's ability to meet the requirements of the State's General NPDES permit, the groundwater processed by the system will be treated with an oil/water separator, an aggressive, high-volume air stripper, and a triple-bag suspended mineral and particulate filter. System discharge control monitoring will be specified in report section *V. Operations & Maintenance Activities.*

A 4-inch diameter schedule 40 PVC discharge (effluent) line will be constructed from the equipment compound to an outfall location within a local storm sewer network located approximately 150 feet west of the proposed equipment compound (see Figure 8). The discharge conduit will be extended through a directional boring originating at the equipment compound and terminating at drop inlet which receives runoff waters from the facility property and the adjacent restaurant property situated to the west.

Emissions generated by the proposed SVE system, will be controlled with vapor-phase carbon granules. SVE influent air samples (prior to vapor-phase carbon treatment, one at each vacuum well) and a SVE exhaust air sample (after vapor-phase carbon treatment, emissions) will be collected at system start-up and each month of operations. The results of the SVE air influent and emission samples will be included in each Corrective Action System Effectiveness Monitoring Report (SEMR). The SVE air emissions will be controlled using two (2)

replenishable 400-pound carbon vessels arranged in parallel. Compliant to ADEM Air Department regulations, emissions of volatile organic compounds (VOCs) shall not exceed 2,000 pounds life-time or 15 pounds per day at maximum rate of 3 pounds per hour. For gasoline UST remediation projects, VOCs are equivalent to gasoline range (C-12 to C-6) organics. System emissions control monitoring will be specified in Section *V. Operations & Maintenance Activities.*

Estimated Duration of Clean-up

The estimated time (or duration) of clean-up has been based on the removal of free product dissolved COCs. The remediation of the subsurface plume will be governed by the system's ability to capture and treat the local groundwater and free product within the footprint of the highest concentrations of dissolved COCs. According to Figure 6, the aerial extent of the dissolved COCs plume with an estimated concentration of 1 milligrams per liter (mg/L) benzene or greater (which includes the estimated aerial extent of free product) has a surface area of 3,614 square feet (ft^2).

As specified, five (5) groundwater pumping wells are proposed. Assuming uniformity of the subsurface soils, consistency of the horizontal and vertical groundwater velocities and that each pump will capture groundwater at the same efficiency, each pump will have an ultimate capture area of 725 ft^2/pump

According to the lateral distribution of the dissolved COCs plume, a estimated local Darcy velocity of roughly 3.5 feet/year can be assumed. Assuming a uniform thickness of the dissolved COCs plume, an equal, consistent drawdown at each pump, and assuming the capture area water gradient will as much as double due to the pumping influence, a unit availability of 153.9 ft^2/year/pump can be estimated as the circular area defined by the "pumping influenced" Darcy velocity [$(3.5 \text{ feet} \times 2)^2 \times \pi$].

The estimated time for clean-up may be expressed in consideration of the ultimate capture area of each pump and the unit availability of the LPH/DPH plume:

$$\text{Duration}_{\text{Clean-up}} = \text{Area}_{\text{Capture}} \div \text{Availability}_{\text{Darcy (Pumping Influenced)}}$$

$$\text{Duration}_{\text{Clean-up}} = 725 \text{ ft}^2\text{/pump} \div 153.9 \text{ ft}^2\text{/year/pump}$$

$$\text{Duration}_{\text{Clean-up}} = \sim 4.7 \text{ years}$$

This duration calculation also assumes that all soil-to-groundwater leaching process will be eliminated with the activation of the SVE blower.

Construction and Equipment Costs Comparisons

To provide a competitive cost analysis for the purchase of the Corrective Action system equipment associated with the Corrective Action system, SPHERE 3 solicited two (2) separate bids for the equipment purchase.

The equipment bids were solicited from Sepco of Madison, Mississippi and MK Environmental of Lombard, Illinois. The quotes were received as follows:

- MK Environmental $129,082.00
- Sepco $131,490.00

The equipment quotes are presented in Appendix B. Each bid includes comparable equipment components, which met or exceeded the specifications proposed herein.

In an effort to conduct a competitive cost comparison for the installation of the proposed Corrective Action system, SPHERE 3 invited three (3) separate general contractors to provide quotes. One of the contractors refused the offer after a site meeting and another failed to attend their scheduled site meeting.

Supermart #195, now an Express Mart owned and operated by Samco, was recently remodeled in 2016. The new dispenser island area and canopy cover the heaviest portion of the incident plume. The incident plume also extends directly beneath the main entrance to the facility convenience store. To limit the exposure to store patrons and limit the impact to the normal business activities of the Express Mart, the proposed CAP construction will incorporate the use of a directional boring contractor in addition to normal surface “cut & trench” procedures. Use of directional boring procedures in the area beneath the canopy and the pedestrian way which bridges the canopy area with the store entrance will preserve the integrity of the new concrete and significantly limit the “open excavation” exposure to store patrons.

The nature of this project, with a heavy pedestrian presence, trench excavating, and directional boring beneath the dispenser canopy and under and around the product lines and electrical lines that service the dispensers and card readers, has significantly limited the number of available qualified general contractors. In that light, the project demands a certified UST installer to be present in the event an incident occurs where UST equipment is inadvertently compromised. Fortunately, SPHERE 3 has worked closely with a reputable and cost conscience UST installer on many of their UST incident construction projects, Curtis Service, Inc. of Oneonta, Alabama. Curtis Service company provides exceptional quality construction services, usually below or far below the price of the closest competitor.

For this project, Curtis Service, Inc. will work concurrently with Delta Directional of Newton, Mississippi, a directional boring services company. The directional boring procedures will extend the corrective action headers (piping) from an area east of the facility building to the targeted application wells beneath and beyond (to the west) the dispenser canopy using an access excavation at the point of entry (west of the facility building) and small access

excavations at each existing or proposed application well. Application points outside of the canopy area will be surface trenched.

The Curtis Services/Delta Directional quotes total: $69,509.96

and includes:

1. construction of the SVE, compressed air, and recovered fluids header network trenches;
2. construction of the treated water (NPDES) effluent conduit and outfall;
3. construction of the SVE, compressed air, and recovered fluids manifolds;
4. construction of the equipment compound and support timbers, and;
5. crane placement and anchoring of all equipment.

The construction services quotes are presented in Appendix B. The quotes include comparable materials and services, which met or exceeded the specifications proposed herein.

The construction of the electrical service will require an electrician experienced in Class 1, Division 1 construction, operating under a separate license, permit and inspection procedures. For an electrical service quote, SPHERE 3 invited Tortorice Electrical Service, Inc. of Trussville, Alabama, an extensively experienced ATTF corrective action system construction company, to provide a quote. The quote from Tortorice Electrical is provided in Appendix B:

- Tortorice Electrical Service, Inc. $3,850.00

Because substantial fluctuations are possible in the costs of materials generated by processes which rely on the use of crude oil products or include copper, all installation and electrical service construction bids are guaranteed for only 30 days.

SPHERE 3 and its personnel will provide the materials necessary for and the construction of:

1. the manifolds to system enclosure connections;
2. the vapor phase carbon (from the SVE blower) connection;
3. the exhaust stack at the effluents of the vapor phase carbon vessels;
4. the particulate filter (from the air stripper) connection;
5. the treated water discharge connection, and;

Required Utilities
The proposed SVE and P&T components will require 200 amps of 3-phase, 230 volts of electricity, supplied through a closed delta transformer arrangement. The area is serviced by Alabama Power Company (APCO). SPHERE 3 personnel have notified APCO of the probable requirements. In response, APCO representatives have stated that he believed that a APCO equipment upgrade would not be required but could not make an absolute statement until an assessment of the existing APCO equipment could be made by their engineers. The APCO assessment cannot be conducted until an official order for service is made.

In the past, SPHERE 3 has received electrical service construction costs ranging from $800.00 to $17,000.00. Most electrical service construction quotes tend to come in closer to the bottom of that range and many are provided at no additional cost. In that consideration, SPHERE 3 has opted to estimate the APCO service construction cost as $0.00 (zero dollars). If a cost is incurred as part of the APCO construction, the amount charged by APCO plus the standard passthrough charge will be sought for reimbursement and an addendum will be prepared upon receipt of the APCO invoice.

The proposed Corrective Action system will also require a telecommunications service. Telecommunications service will be achieved through the area's cellular network.

Operations Permitting

The proposed Corrective Action system will require Notices of Intent (NOIs) filed with the ADEM Air Division and the ADEM Permits and Services Division (NPDES Permit). The NOIs will be filed immediately upon approval of the CAP by the ADEM – UST Corrective Action Section.

IV. RATIONALE FOR SELECTION OF REMEDIATION ALTERNATIVES

Selection of the site remediation methods is based on a number of factors. Several of the main factors considered for the selection of the remedial action system include the exposure assessment, the site hydrogeology, the feasibility of implementing a selected corrective action based on previously conducted Corrective Action, cost, operation and maintenance, disposal options, and site location.

The majority of the dissolved hydrocarbon (COCs) and free product plume associated with this incident is situated in the central portion of the facility property. The main source area appears to be centered about monitor wells MW-1 and RW-2, while extending beneath the facility building and off-site onto the Wendy's restaurant property located immediately south of the incident property.

While a Multiphase Extraction (MPE) application is widely believed to be a more aggressive technology, P&T technology can generate a larger and more consistent reach (radius of influence) in long term applications. That extended reach will prove beneficial in affecting the dissolved plume beneath the Wendy's property without a direct application, while the supplementation of a SVE application addresses soil COCs and residual free product at the source areas.

V. OPERATIONS AND MAINTENANCE ACTIVITIES

Routine Operations and Maintenance

To maintain the integrity of the system during operation, the routine operations and maintenance (O&M) will be scheduled to include seven (7) site visits per quarter. The O&M activities will begin the week following the initial start-up, "dial-in" and initial air quality sampling activities included with system installation and will be implemented according to the following schedule of tasks:

Visit One:	General Maintenance
Visit Two:	Progress Maintenance
Visit Three:	General Maintenance
Visit Four:	General Maintenance
Visit Five:	Progress Maintenance
Visit Six:	General Maintenance
Visit Seven:	Quarterly Cleaning, Vapor Sampling, and Groundwater Monitoring

Where the tasks are defined as follows:

<u>General Maintenance:</u>

1. Field measure the emission rate at the exhaust of the SVE Blower;
2. Collection of ambient temperature and barometric pressure;
3. Collection of applied vacuum pressure data at each extraction point and vacuum well;
4. Collection of SVE exhaust temperature and flow conditions data;
5. Collection of SVE vacuum reduction temperature and flow conditions data;
6. Cleaning and Disposals as necessary;
7. System operation adjustments as necessary;

<u>Progress Maintenance:</u>

8. All included in a General Maintenance visit;
9. Collection of SVE influent air samples from each vacuum well (a total of 6);
10. Collection of a SVE exhaust sample;
11. Analysis of the SVE influent air samples for BTEX, MTBE and TPH;
12. The collection of an influent (pre-treatment) and effluent water sample (post-treatment);
13. The laboratory analysis of the influent and effluent water sample for BTEX/MTBE/Naphthalene by method 8260B. The effluent sample will also be analyzed for pH (measured in the field), Oil & Grease, and possibly total Lead;
14. The collection of volumetric flow data of the effluent water (NPDES discharge);

<u>Quarterly Cleaning, Vapor Sampling, and Groundwater Monitoring:</u>

15. All included in a Progress Maintenance visit;
16. Collection of groundwater elevations from all facility monitor wells;
17. Collection of groundwater samples from select or all facility monitor wells;
18. Analysis of each groundwater sample for BTEX, MTBE and naphthalene by method 8260B, and;
19. Thorough cleaning of the compound area.

Periodically, the system's oil/water separator and air stripper (the stripperator) will require evacuation of oily sludge and precipitated mineral deposits. The sludge and mineral deposits occur as part of the normal operation of the stripperator and must be conducted by vendor with the capacity to manage and dispose of such waste. The frequency of the sludge and mineral evacuation will be determined after the system has been operational of a period of approximately 60 days. Initially, funding for cleaning the stripperator will be requested in the form of an addendum to a current ATTF Cost Proposals. As the cleaning frequency is confirmed, the costs will be included in the appropriate ATTF Cost Proposals.

Operations and Maintenance Personnel

The General & Progress Maintenance routines will be performed by an experienced, qualified technician who is familiar the particular system. The same technician and an accompanying support technician will perform each quarterly monitoring event. All on-site personnel will be qualified as a Hazardous Materials Handling representatives trained under the OSHA standard 29 CFR 1910.

VI. PROPOSED REPORTING REQUIREMENTS

A schedule of implementation will be submitted within fifteen (15) days of the approval of the CAP. All data and findings associated with the operations & maintenance of the corrective action system will be reported in quarterly reports.

VII. SCHEDULE OF IMPLEMENTATION

The CAP will be implemented within 60 days of approval.

VIII. QUALITY ASSURANCE/QUALITY CONTROL PLAN

Air Sampling

Air samples are collected utilizing a "Pulse Pump" (air sampling) pump. The pump is primed, prior to collection of each sample, to displace any trapped air or gases with the targeted air make-up. The air is drawn in and exits through polyethylene tubing. The sample is stored a Tedlar® air/gas sampling bag. The pump is also used to extract air/gases from a vacuum and drive them into a field screening instrument. The air sample collection and screening protocols are described below.

Air Screening

Air screening is conducted to provide a field indication of the levels of hydrocarbon gases in vapor phase. The air/gases are screened with a Photoionization Detector (PID) equipped with a methane filter. As stated above, the air/gases are driven into the PID with the air sampling pump. The samples are immediately screened at ambient conditions and the data recorded onto a headspace analysis worksheet.

The field screening test form contains the following information:

1. The project name (client and location);
2. Table number;
3. Personnel collecting the samples;
4. Field screening instrument used and I.D. number;
5. Calibration information;
6. Description of field screening method;
7. Sample identification information; and
8. Field screening data including time collected, time screened, ambient temperature, and field screening reading;

Air Sampling Protocols

Each air sample is submitted for laboratory analysis of BTEX, MTBE and TPH (GRO) by EPA method 18. The air samples are transferred, along with an ample supply of ice, in a cooler to an analytical laboratory following appropriate preservation and chain-of-custody protocols. Preservation protocols are not required for BTEX, MTBE and TPH analysis of air samples.

Soil Sampling

Soil samples are collected from all soil exploration borings following one of the following ASTM Standard Methods: D-1452 (Practice for Soil Investigation and Sampling by Auger Borings); D-1586 (Method for Penetration Test and Split -Barrel Sampling of Soils); or D-1587 (Practice for Thin-Walled Tube Sampling of Soils) (Note: samples collected from the upper 5 feet of each boring are collected with hand auger equipment). Soil samples are typically collected on either a continuous basis or on five-foot centers (i.e. samples intervals 3'-5', 8'-10', 13'-15', etc.). Each soil sample is divided into two portions. One portion is prepared for field screening and one portion is prepared for analytical testing. The soil sample collection and screening protocols are described below.

Soil Screening

Soil screening is conducted to provide a field indication of the relative levels of soil constituent concentrations. In the event that the boring depth is dependent upon the results of the soil screening (vertical extent investigations), the soil samples will be field screened immediately upon collection. Otherwise, the soil samples will be allowed to equilibrate to ambient conditions greater than 60 degrees Fahrenheit for at least one hour prior to soil screening.

The portion of the soil sample collected for field screening is placed in a pint or quart mason type glass jar until the jar is approximately half full. The top of the jar is then sealed with aluminum foil and a threaded lid ring. The sample is screened by puncturing the aluminum seal with the instrument probe and measuring the headspace of the ambient samples. The instrument currently used by SPHERE 3 is a PID. The PID are calibrated prior to headspace sampling and rechecked upon completion of headspace analysis each day. The PID is calibrated to a benzene standard.

Generally, the soil samples with the highest PID readings collected from the unsaturated zone are selected for analytical testing. If groundwater is not encountered in the boring, two soil samples are analyzed from each boring. Typically the deepest soil sample and the sample yielding the highest field screening value are selected for analytical testing. Additional soil samples may be selected for analytical testing, depending on site specific conditions.

Soil Sampling Protocol

All undisturbed soil samples are collected using either split spoon sampler (ASTM D-1586) or a Shelby Tube sampler (ASTM D-1587) (Note: soil samples collected from the upper 3 feet in each boring are collected with hand auger equipment). The sampling is conducted by advancing the borehole to the desired depth using a flight auger or hollow-stem auger. A clean split spoon or Shelby tube sampler is then advanced to the bottom of the hole and hammered or pushed into the soil. The sampler is then retrieved. The split spoon samples are removed by opening the split spoon and removing the sample using a clean stainless steel knife. The Shelby tube samples are removed with a hydraulic extruder. After being removed from the sampler, the sample is then placed on disposable foil-lined sample catchers for classification and analytical preparation. Upon completion of the sample collection, the boring is advanced to the depth of the next sample using the hollow stem or flight augers and the sampling procedure is repeated.

The soil samples selected for analytical testing are placed in laboratory grade container and submitted for appropriate COCs analysis. The sample jars are packed full with soil in an effort to minimize headspace. Each container is sealed with a Teflon® lined cap. Each sample jar is labeled, placed in bubble pack and an airtight "Ziploc" bag, and immediately stored, along with an ample supply of ice, in a cooler. Each sample label includes the site location, sample identification number, name of collector, date and time of collection, and parameter(s) requested (if space permits).

All sample handling is conducted with disposable latex gloves. Between individual samples, all disposable items are discarded and all non-disposable equipment (knives, spatulas, cheese cutters, split spoon samplers and Shelby Tube samplers) are decontaminated utilizing the following procedure:

1) Rinse with potable water to remove bulk solids;
2) Wash with laboratory-grade detergent and potable water solution;
3) Rinse with deionized water;
4) Wash with isopropanol; and
5) Rinse with deionized water.

The soil samples are transferred, along with an ample supply of ice, in a cooler to an analytical laboratory following appropriate preservation and chain-of-custody protocols. Preservation protocols for COCs soil samples include maintaining samples temperatures at or below 4 degrees Celsius at all time. Additional preservatives are not necessary for soil samples.

Groundwater Sampling
Groundwater samples are collected approximately 7 to 14 days after monitor well development. Collecting groundwater samples from monitor wells includes the following activities: 1) gauging for the presence of LPH; 2) measurement of static water level; 3) calculation of standing water volume; 4) well purging; 5) sample collection; and 6) equipment cleaning. The results of the sampling activities are recorded on a monitor well sampling record form. The details of these six activities are described in the following sections.

Free Product Measurements
Free product thicknesses (if present) are measured prior to purging and sampling the well with a hydrocarbon/water interface probe. The thickness is measured by lowering the probe slowly into the well until a tone is heard (Note: an intermittent tone indicates the presence of water and a constant tone indicates the presence of free product). The first point, as the probe is lowered into a well, at which a constant tone is first heard, is considered as the top of the free product. The distance from the top of the PVC well casing to the top of the free product is recorded. This distance is confirmed by re-measuring. The probe is then slowly lowered further into the well until an intermittent tone is heard. Upon hearing an intermittent tone, the probe is slowly pulled upward until the constant tone is heard again. This is considered the free product/water table interface. The distance from the top of the PVC casing to the free product/water table interface is recorded. This distance is confirmed by re-measuring.

The free product thickness is determined by calculating the difference between these two distances (Note: the interface probe measures product and water levels to an accuracy of +/- 0.01 feet). If free product is identified by the interface probe, a clear bailer is lowered in the well to collect a sample of the free product for a visual confirmation.

Static Groundwater Elevation Measurements
The static groundwater levels are measured with the hydrocarbon/water interface probe. The measurements are recorded as the distance from the top of the PVC well casing to the point at which an intermittent tone is emitted from the probe. This distance is confirmed by re-measuring. Subsequently, each measurements is converted to an elevation with respect to either an arbitrary elevation of 100 feet established at the site or to mean sea level as determined from the associated USGS topography map.

Calculations of Standing Water Volumes
The standing water volume in each well is calculated as the volume of a cylinder:

$$\text{Volume} = \pi \times \text{diameter}^2 \div 4 \times \text{height},$$

Where the diameter considered is that of the well casing and the height considered is the length of the water column present in the well.

Well Purging
The well purging process is implemented after the static water level is measured and the standing water volume has been calculated. Well purging is generally achieved with an appropriate bailer.

Well purging with a bailer is conducted by attaching new nylon line to the bailer then lowering the bailer in to the well until the bailer is submerged. The bailer is then retrieved from the well in such a manner that the bailer and nylon line does not come into contact with any potential source of hydrocarbon constituents. In order to determine the amount of water removed from the well, the contents of the bailer is poured into a graduated bucket. This procedure is repeated until three well volumes of water are removed or the well is purged dry.

Groundwater Sample Collection
Groundwater samples are collected from monitor wells not containing LPH. The bailer is lowered into the well to a depth were the bailer is completely submerged. The bailer is then retrieved from the well in such a manner that the bailer and nylon line does not come into contact with any potential source of hydrocarbon constituents. The water is then immediately poured slowly into the sample containers.

Each groundwater sample is submitted for laboratory analysis of BTEX, MTBE & naphthalene by method 8260B. The groundwater is poured slowly down the side of the sample vial to avoid aeration. The sample vial is a laboratory grade 40-ml glass vial with a Teflon® septum cap. Sample is added until a convex meniscus is formed at the top of vial. A Teflon® septum cap is placed and threaded secure on the container. The container is then upended and checked for the presence of trapped air. If air is present, more sample is added and the process repeated until an air-free sample is attained. The preservation of the BTEX, MTBE & naphthalene groundwater samples includes both ice and hydrochloric acid.

Following the collection of groundwater samples, each is labeled, placed in bubble pack and stored, along with an ample supply of ice, in a cooler. Each label includes the site location, sample identification number, name of collector, date and time of collection, and parameter(s) requested (if space permits). The cooler is then sealed and transported overnight to the laboratory follow appropriate chain of custody protocols.

Cleaning of Groundwater Sampling Equipment
All equipment used for sampling is either well dedicated or discarded following the completion of the groundwater sampling activities.

Chain-of-Custody

Sample custody begins with the subcontracted laboratory as sample kits are prepared and submitted to SPHERE 3. Responsibility for sample container materials and preparation lies with the subcontracted laboratory. Sample containers and kits are normally shipped to SPHERE 3 by common carrier. Upon receipt of the kits, SPHERE 3 personnel complete an inventory of its contents to determine adequacy for the sampling program. Sample bottles may be pre-labeled and contain proper preservative. The sample kits are then resecured until ready for use.

Field sampling operations do not normally involve a transfer of sample custody during the project activities. The samples will remain in the custody of the SPHERE 3 personnel until delivered to the subcontract laboratory or dispatched via common carrier for shipment. In cases where samples leave the control of SPHERE 3, such as shipment to a laboratory by a common carrier (e.g. airfreight), a custody seal(s) will be placed on the shipping container. These seals act as a deterrent against vandalism.

To establish the documentation necessary to trace sample possession from time of collection, a chain-of-custody record will be filled out and will accompany every sample. The record contains the following types of information:

- Sample number
- Signature of collector
- Date and time of collection
- Sample type (e.g., ground water, immiscible layer)
- Identification of well
- Number of containers
- Parameters requested for analysis
- Signature of person(s) involved in the chain of possession

Field and Laboratory Quality Control

SPHERE 3 conducts internal quality control checks of sampling procedures and laboratory analyses. Described below is the field and laboratory QA/QC program.

Field QA/QC Program

Groundwater samples may be warranted by means of a trip blank. A trip blank is a field blank that is transported from the laboratory to the sampling site, handled the same as other samples, then returned to the laboratory for analysis in determining QA/QC of sample handling procedures. The trip blank should be filled with distilled water in the laboratory at a frequency of one (1) per cooler.

The results of the analysis of the blanks will not be used to correct the groundwater data. If constituents are found in the blanks, an attempt to identify the source will be initiated and corrective action, including resampling, will be evaluated.

After completion of each sampling program, the field data package (field logs, calibration records, chain-of-custody forms, etc.) will be reviewed by the project manager for completeness and accuracy. The review will include but are not limited to the following:

- A completeness review of field data contained on water and soil sampling logs;
- A verification that sampler rinsate blanks, field blanks, and trip blanks were properly prepared, identified, and analyzed;
- A check on field analyses for equipment calibration and condition;
- A review of chain-of-custody forms for proper completion, signatures of field personnel, and the laboratory sample, custodian, and dates.

Laboratory QA/QC Program

The selection of a contract laboratory is typically based upon several factors including cost; laboratory certification; quality data and reporting; and turn-around time. The most critical factor in the selection of an analytical laboratory is the quality of analysis and reporting.

As an analytical report is received by SPHERE 3, validation of the analytical data package will be reviewed by the project manager. The review will include but not be limited to the following:

- A comparison of the Data Package to the reporting level requirements designed for the project, to ensure completeness;
- A comparison of sampling dates, laboratory extraction dates, and analysis dates to determine if samples were extracted and/or analyzed within the proper holding times;
- A review of analytical methods and required detection limits to verify confirmation with the established parameters;
- A review of the laboratory blank(s) to evaluate handling procedures. The preparation techniques and frequencies, and the analytical results (if appropriate) will be considered.

IX. SELECT REFERENCES

SPHERE 3 Engineering, Inc., February 5, 2014, *Preliminary Investigation Report (CP-1), Supermart #195; ADEM Facility ID: 22873-015-012398; UST Incident Number: UST14-10-01; 2030 US Highway 78 East; Oxford, Alabama 36203*, unpublished report.

SPHERE 3 Engineering, Inc., October 14, 2014, *Secondary Investigation Report (CP-2), Supermart #195; ADEM Facility ID: 22873-015-012398; UST Incident Number: UST14-10-01; 2030 US Highway 78 East; Oxford, Alabama 36203*, unpublished report.

SPHERE 3 Engineering, Inc., September 10, 2015, *Additional Monitor Well Installation Report (CP-3), Supermart #195; ADEM Facility ID: 22873-015-012398; UST Incident Number: UST14-10-01; 2030 US Highway 78 East; Oxford, Alabama 36203*, unpublished report.

SPHERE 3 Engineering, Inc., (in draft), *Mobile Enhanced Multiphase Extraction Supplemented Natural Attenuation Monitoring Report (CP-28) (Field Period: May 1, 2020 through July 31, 2020), Supermart #195; ADEM Facility ID: 22873-015-012398; UST Incident Number: UST14-10-01; 2030 US Highway 78 East; Oxford, Alabama 36203*, unpublished report

U.S. Geological Survey, 7.5-minute topographic map, Oxford, Alabama.

X. LIMITATIONS OF THIS PLAN

SPHERE 3 has prepared this Corrective Action Plan for facility known as Supermart #195 located at 2030 U.S. Highway 78 East in Oxford, Alabama in accordance with the ADEM specifications.

The conclusions contained in this report are based upon conditions at the site during the field investigation and on the assumption that the exploratory borings are representative of the subsurface conditions throughout the site.

Reporting and interpretation is based solely on data obtained within this prescribed scope of work performed. Environmental conditions at this site not identifiable with this conducted work scope, if any, should not be considered the responsibility of SPHERE 3.

The only warranty made by SPHERE 3 in connection with the services provided is that we have used the degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

XI. SITE HEALTH AND SAFETY PLAN

SPHERE 3 ENGINEERING, INC
3433 Sierra Drive • Hoover, Alabama 35216 • Phone: (205) 403-3317 • Fax: (205) 403-3318

SITE HEALTH and SAFETY PLAN
Corrective Action System Installation

SUBMIT TO: Mr. Greg Hoagland, P.E.; SPHERE 3 Engineering, Inc.; President

PROJECT NAME: Supermart #195
Corrective Action System Installation

PROJECT NUMBER: REB.SM195.XX (where XX denotes the ATTF CP number)

DESCRIPTION OF WORK: Trenching, Excavating, Directional Boring, Construction

CLIENT CONTACT(S): Mr. Fred Daibes
Reb Oil Company of Alabama, LLC
1000 Portside Drive
Edgewater, New Jersey 07020

PROJECT SITE LOCATION: Supermart #195
2030 U.S. Highway 78 East
Oxford, Alabama 36203

PROJECT SITE CONTACTS: Mr. Phillip Johnson, Maintenance Supervisor
Samco/Express Mart
1237 W. Hamric Drive
Oxford, Alabama 36203
Cell: (256) 591-6653

PROJECT SUBCONTRACTORS:

Curtis Service Company	Tortorice Electrical
Mr. Michael Curtis	Mr. Charles Tortorice
Cell: (205) 212-8868	Cell: (205) 965-4066

PROJECT MANAGER: Greg Hoagland, SPHERE 3 Engineering, Inc.
Phone: (205) 403-3317 Cell: (205) 288-4896

ON-SITE MANAGER(S): Tres Bond, SPHERE 3 Engineering, Inc.
Phone: (205) 403-3317 Cell: (205) 288-7460

WORK SCHEDULE: Generally 7:00 a.m. through 5:00 p.m. each visit

SITE DESCRIPTION:
Located in Marion, Alabama, the site and contiguous properties are of commercial and residential designation. The facility property is improved with an active convenience store, retailing sundry items and motor fuels. Refer to attached area map showing location.

PLANNED SITE ACTIVITIES:

1. Excavating;
2. Directional Boring;
3. Trenching, and;
4. General Construction.

KNOWN CHEMICAL HAZARDS:

Component	Location	Media	TWA TLV*	TLV STEL**
Petroleum Distillates	All Site	SWA	400 ppm	--
Gasoline	All Site	SWA	300 ppm	500 ppm
Benzene	All Site	SWA	0.1 ppm	5 ppm
Toluene	All Site	SWA	100 ppm	150 ppm
Xylenes	All Site	SWA	100 ppm	150 ppm
Ethylbenzene	All Site	SWA	100 ppm	125 ppm

Notes:

Values per American Conference of Government Industrial Hygienists (ACGIH) or, 20 CFR Part 1910 (OSHA) whichever is most stringent.
S - soil; W - water; A - air

* The Threshold Limit Value (TLV) is the time weighted average concentration for a normal eight-hour day and forty-hour work week, to which all workers may be repeatedly exposed, day after day, without adverse effect.

** The Short-Term Exposure Limit (STEL) is the concentration at which workers can be exposed continuously for a short period of time. Exposures at the STEL should not be longer than 15 minutes and should not be repeated more than four times in an eight-hour period. There should be at least one hour between each 15 minute exposure at the STEL.

OTHER SUSPECTED CHEMICAL HAZARDS:
No other known. If encountered or suspected, contact Office Safety Manager.

CONCENTRATION MEASUREMENT METHODS:

Activity	Location	Detector*	Survey Method**
Air/Gases Sampling	All Site	PID & LEL	Work area breathing zone
Borehole Installation and Sampling	All Site	PID	Work area breathing zone
Groundwater Sampling	Specific	PID	Sources

Notes:
PID - Photoionization Detector.
* Instruments to be calibrated daily.
** Readings to be taken at a minimum of one per hour and more frequently in more contaminated areas or during critical activities.

ACTION LEVELS:

Activity	Location	Action Level	Precaution
All On-Site	All Site	>50 ppm	Cease activities until levels decrease

POTENTIAL PHYSICAL HAZARDS:

1. Overhead electric lines.
2. Underground electric and natural gas lines, gasoline product transfer lines, etc. (Note: all known utility line locations will be marked by a line-locating company prior to initiating the site activities).
3. Falling objects from the drilling rig (i.e. augers, drill rods, slide hammer, etc.).
4. Potential for explosive conditions.

REQUIRED HEALTH AND SAFETY APPAREL AND PROCEDURES:

All project activities will be conducted under OSHA Health & Safety Level D. Protective equipment will include:

1. Hard hat
2. Safety glasses
3. Steel toe safety boots
4. Orange Safety Vest with Reflectant Tape
5. Sleeved shirt, long pants (coveralls optional).
6. Latex and/or nitrile gloves, if phase material encountered (Tyvek Suits optional).

Smoking is prohibited at the worksite and facility properties. Explosion proof or intrinsically safe equipment must be used in areas designated as hazardous (potentially explosive). At least one class ABC fire extinguisher will be placed in a safe area, accessible to site activities. Access to the work area will be restricted except to essential personnel. A safe distance will be maintained between the work area and public roads and appropriate traffic control will be implemented.

CONTINGENCY PLANS:

If the vapor levels in the general work area are found to meet or exceed any of the action levels, then work will be discontinued and the work site evacuated as directed by the Project Manager (SPHERE 3 representative). The work area periphery will be monitored by the On-Site Manager and work will resume when vapor levels drop below the action levels. If vapor levels continue to meet or exceed action levels, work will cease and the work site will be secured and evaluated. Work shall not continue until the Site Safety Plan is appropriately revised to meet the new conditions.

Should persistent safety hazards, accident or fire occur, take appropriate immediate action if required (i.e., extinguish the fire, give first aid, etc.) and contact emergency personnel immediately, and then contact appropriate SPHERE 3 Safety personnel.

This plan does not override any existing client or site specific safety plan. All subcontractors used on these projects are required to submit safety plans applicable to their prescribed activities.

EMERGENCY CONTACTS AND PROCEDURES:

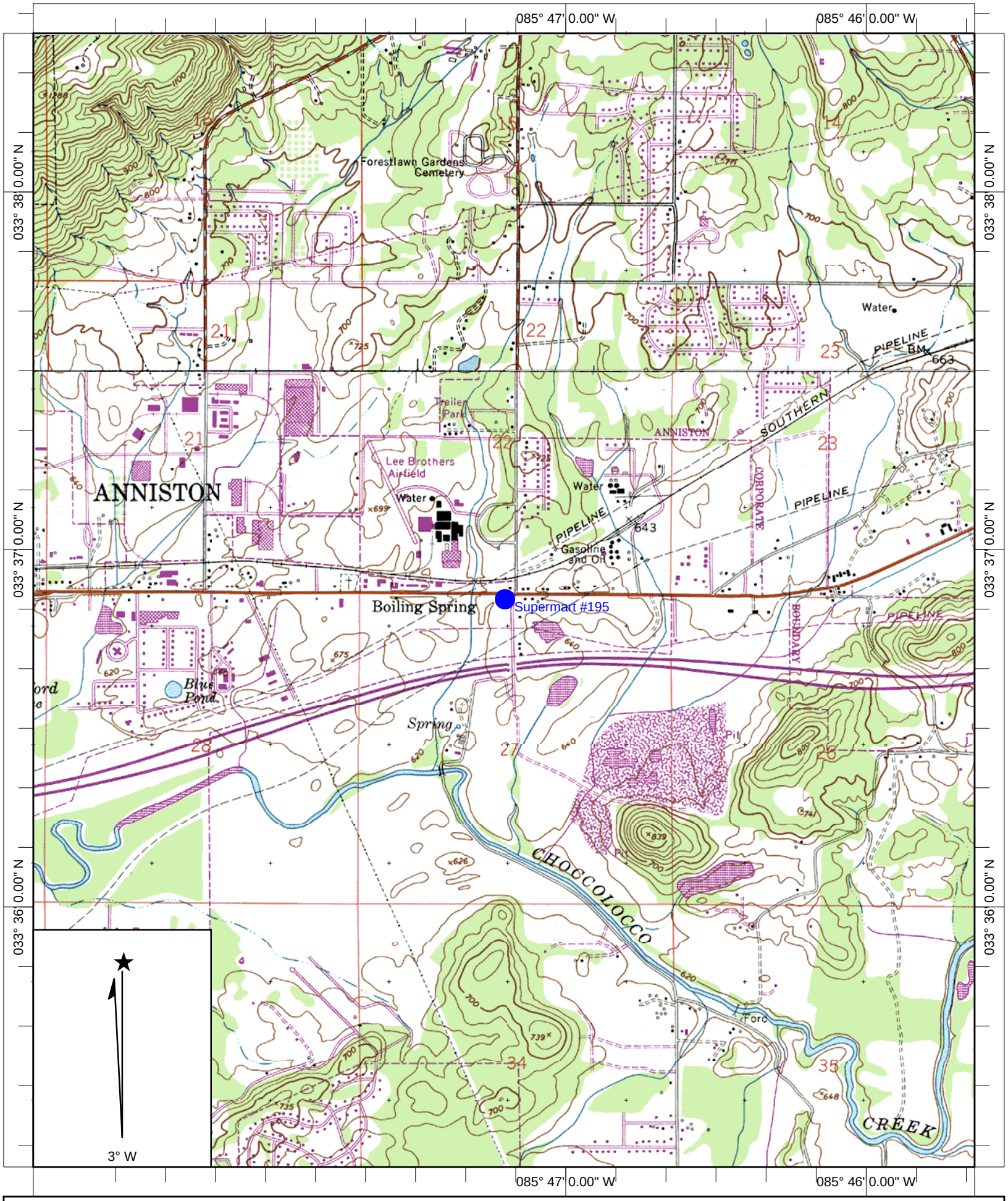
Should any situation or unplanned occurrence require outside or support services, the appropriate contact from the following list should be made.

In Case of Emergency, Dial **911**, other contacts listed below:

Agency	**Person to Contact**	**Telephone**
Fire & Rescue	Emergency Dispatcher	911
Police:	Emergency Dispatcher	911
Underground Utilities	Receptionist	1-800-292-8525
SPHERE 3 Project Manager	Greg Hoagland	(205) 403-3317
	Cell	(205) 288-4896

SPHERE 3
ENGINEERING, INC

figures



Name: OXFORD
Date: 1/31/2014
Scale: 1 inch equals 2000 feet

Location: 033° 36' 51.5" N 085° 47' 12.3" W
Caption: FIGURE 1
Area Vicinity (Topo) Map
Supermart #195

CADD FILE NO.: REB.SM195

CHECKED BY

MEP

DRAWN BY

LEGEND

Source: Google Earth

POE - (Projected) Point of Exposure

← Estimated Groundwater Flow Direction

DATE	NO.	REVISION	BY

SPHERE 3
ENGINEERING, INC

REB OIL COMPANY

EDGEWATER, NEW JERSEY

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U.S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203

SITE VICINITY MAP

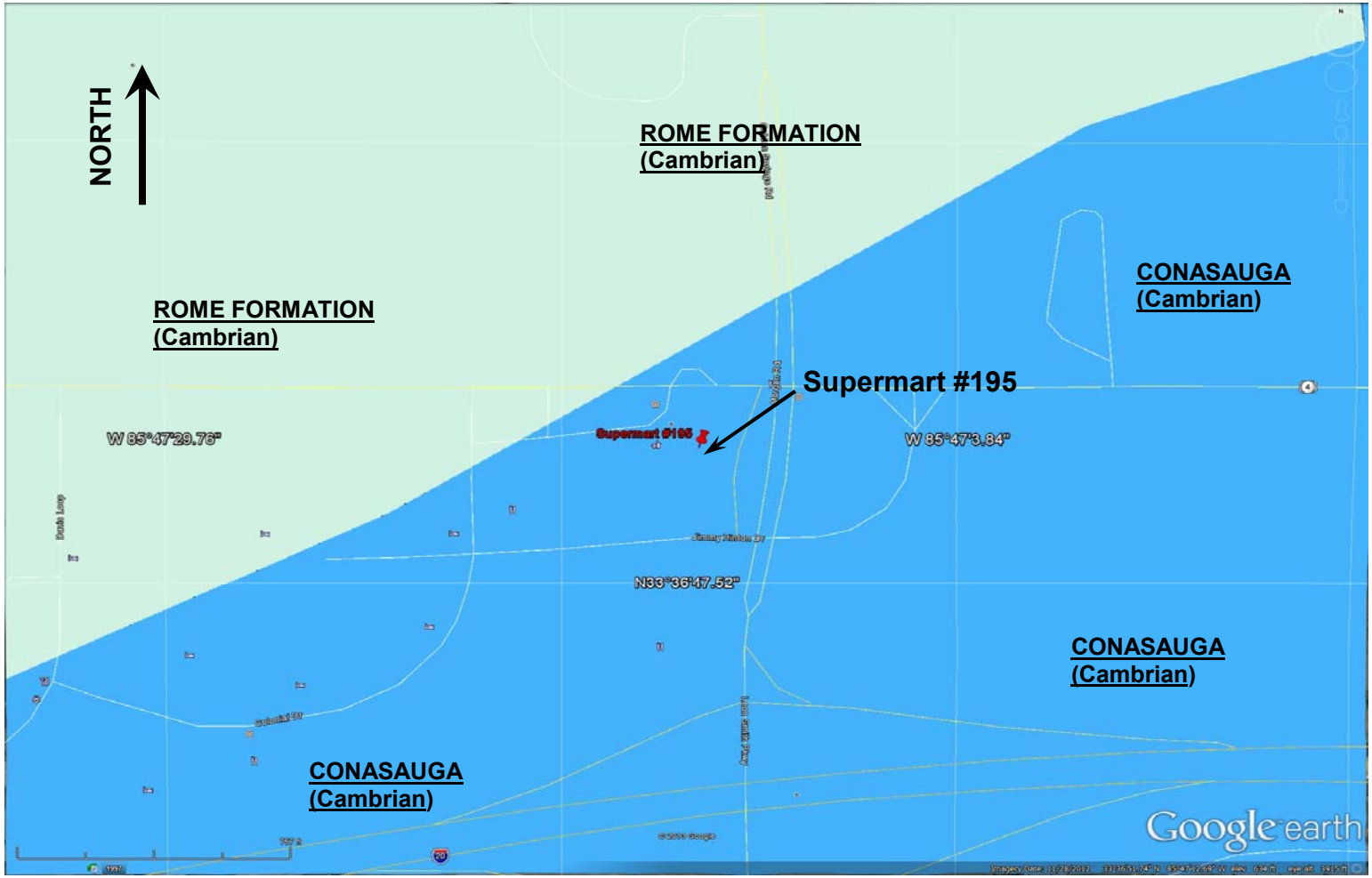
2
Figure

CADD FILE NO.: REB.SM195

CHECKED BY

MEP

DRAWN BY



LEGEND

Source: Google Earth

DATE	NO.	REVISION	BY

SPHERE 3
ENGINEERING, INC

REB OIL COMPANY
EDGEWATER, NEW JERSEY

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U.S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203

GEOLOGIC MAP

3
Figure

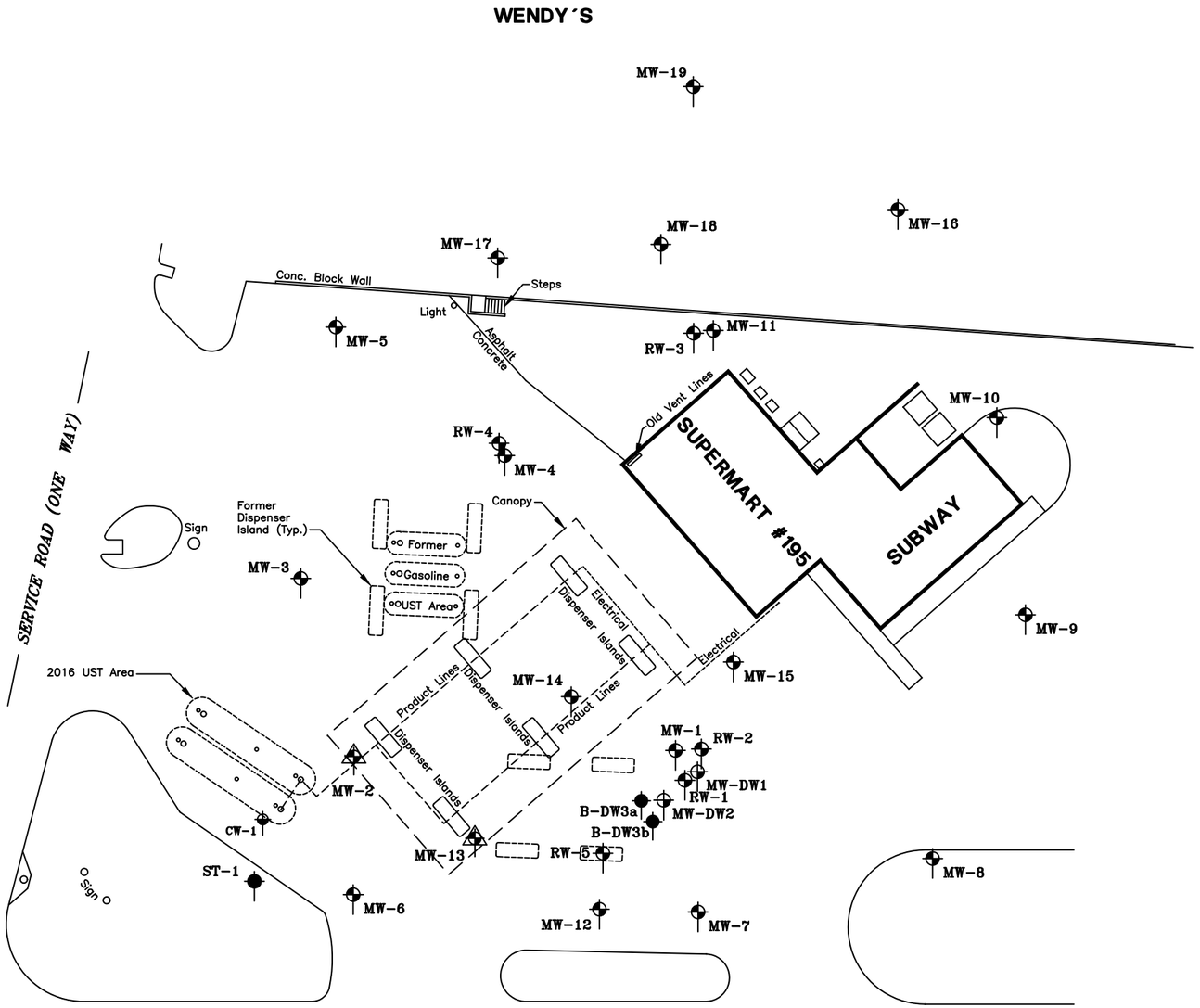
CADD FILE NO.: REB.SM195

CHECKED BY

M.E.P.

DRAWN BY

NORTH



LEGEND

- Soil Exploration Boring
- Soil Exploration Boring/Type II Monitor Well
- Soil Exploration Boring/Type III Monitor Well
- UST Pit Observation Wells
- Abandoned Soil Exploration Boring/Type II Monitor Well

0 Feet 40
Scale

SPHERE 3
ENGINEERING, INC

DATE	NO.	REVISION	BY

REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U. S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
Project Title

SITE PLAN

4
Fig. No.

CADD FILE NO.: REB.SM195

CHECKED BY

M.E.P.

DRAWN BY

NORTH

	9–11	14–16	19–21
B	<0.005	<0.005	<0.005
T	<0.005	<0.005	<0.005
E	<0.005	<0.005	<0.005
X	<0.015	<0.015	<0.015
MTBE	<0.005	<0.005	0.009
NAPH	<0.005	<0.005	<0.005

WENDY´S

	10	15
B	0.007	0.030
T	0.175	0.472
E	0.680	0.535
X	3.590	2.740
MTBE	<0.005	0.007
NAPH	3.330	2.590

	20	25
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.005	<0.005
NAPH	<0.005	<0.005

	15	25
B	<0.005	0.007
T	<0.005	<0.005
E	<0.005	0.011
X	<0.015	0.024
MTBE	<0.005	<0.005
NAPH	<0.005	0.027

	10	15
B	2.270	0.048
T	39.500	0.015
E	13.900	0.041
X	66.500	0.068
MTBE	0.060	0.043
NAPH	2.550	0.064

	15	20
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.005	<0.005
NAPH	<0.005	<0.005

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	0.025	<0.015
MTBE	<0.015	<0.015
NAPH	0.035	<0.005

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.015	<0.015
NAPH	<0.005	<0.005

	10	15
B	<0.005	0.005
T	0.005	0.009
E	0.048	0.112
X	0.180	0.510
MTBE	0.012	<0.005
NAPH	0.130	0.830

	10	15
B	0.013	0.024
T	<0.005	0.021
E	0.060	0.118
X	0.223	0.531
MTBE	<0.005	<0.005
NAPH	0.015	0.117

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.005	<0.005
NAPH	<0.005	<0.005

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	0.007	0.008
X	0.016	<0.015
MTBE	<0.005	0.011
NAPH	<0.005	<0.005

	5	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.005	<0.005
NAPH	<0.005	<0.005

	10	15
B	<0.005	<0.005
T	0.007	<0.005
E	0.540	0.010
X	0.324	0.015
MTBE	<0.005	<0.005
NAPH	0.265	<0.005

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.015	<0.015
NAPH	<0.005	<0.005

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.015	<0.015
NAPH	<0.005	<0.005

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	0.114	0.006
X	0.100	<0.015
MTBE	<0.005	0.013
NAPH	0.079	<0.005

	20	25
B	<0.005	15.000
T	0.007	149.000
E	0.009	123.000
X	0.044	368.000
MTBE	0.017	<0.005
NAPH	<0.005	54.000

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.015	<0.015
NAPH	<0.005	<0.005

	10	20
B	0.099	0.088
T	0.670	0.635
E	1.080	0.805
X	4.290	3.370
MTBE	0.157	0.065
NAPH	3.240	2.820

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.015	0.021
NAPH	<0.005	<0.005

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.015	<0.015
NAPH	<0.005	<0.005

	5	10
B	0.152	0.145
T	<0.005	0.820
E	0.100	0.419
X	0.019	2.090
MTBE	0.010	0.027
NAPH	0.028	0.173

	10	15
B	<0.005	0.047
T	0.006	<0.005
E	0.045	0.012
X	0.068	0.019
MTBE	<0.005	0.005
NAPH	0.066	<0.005

	10	15
B	0.105	0.047
T	2.740	0.331
E	3.970	0.570
X	9.860	2.150
MTBE	0.005	0.050
NAPH	7.920	2.710

	10	15
B	<0.005	<0.005
T	<0.005	<0.005
E	<0.005	<0.005
X	<0.015	<0.015
MTBE	<0.015	<0.015
NAPH	<0.005	<0.005

MW-19, MW-18, MW-17, MW-16, MW-5, MW-11, RW-3, MW-10, RW-4, MW-4, MW-3, MW-14, MW-15, MW-9, MW-1, RW-2, MW-DW1, RW-1, MW-DW2, B-DW3a, B-DW3b, MW-2, CW-1, MW-13, RW-5, MW-8, ST-1, MW-6, MW-12, MW-7

Conc. Block Wall

Steps

Light

Asphalt Concrete

Old Vent Lines

SUPERMART #195

SUBWAY

Canopy

Former Dispenser Island (Typ.)

Former

Gasoline

UST Area

Dispenser Islands

Electrical

Product Lines

Sign

2016 UST Area

SERVICE ROAD (ONE WAY)

U. S. HIGHWAY 78

0 Feet 40

Scale

LEGEND

- Soil Exploration Boring
- Soil Exploration Boring/Type II Monitor Well
- Soil Exploration Boring/Type III Monitor Well
- UST Pit Observation Wells
- Abandoned Soil Exploration Boring/Type II Monitor Well

	Sample Collection Depth (feet bgs)
B	Benzene Concentration (mg/kg)
T	Toluene Concentration (mg/kg)
E	Ethylbenzene Concentration (mg/kg)
X	Total Xylenes Concentration (mg/kg)
MTBE	Methyl–Tertiary–Butyl–Ether Concentration (mg/kg)
NAPH	Naphthalene Concentration (mg/kg)

bgs — below the ground surface

(mg/kg) — Milligrams per Kilogram

SPHERE 3 ENGINEERING, INC

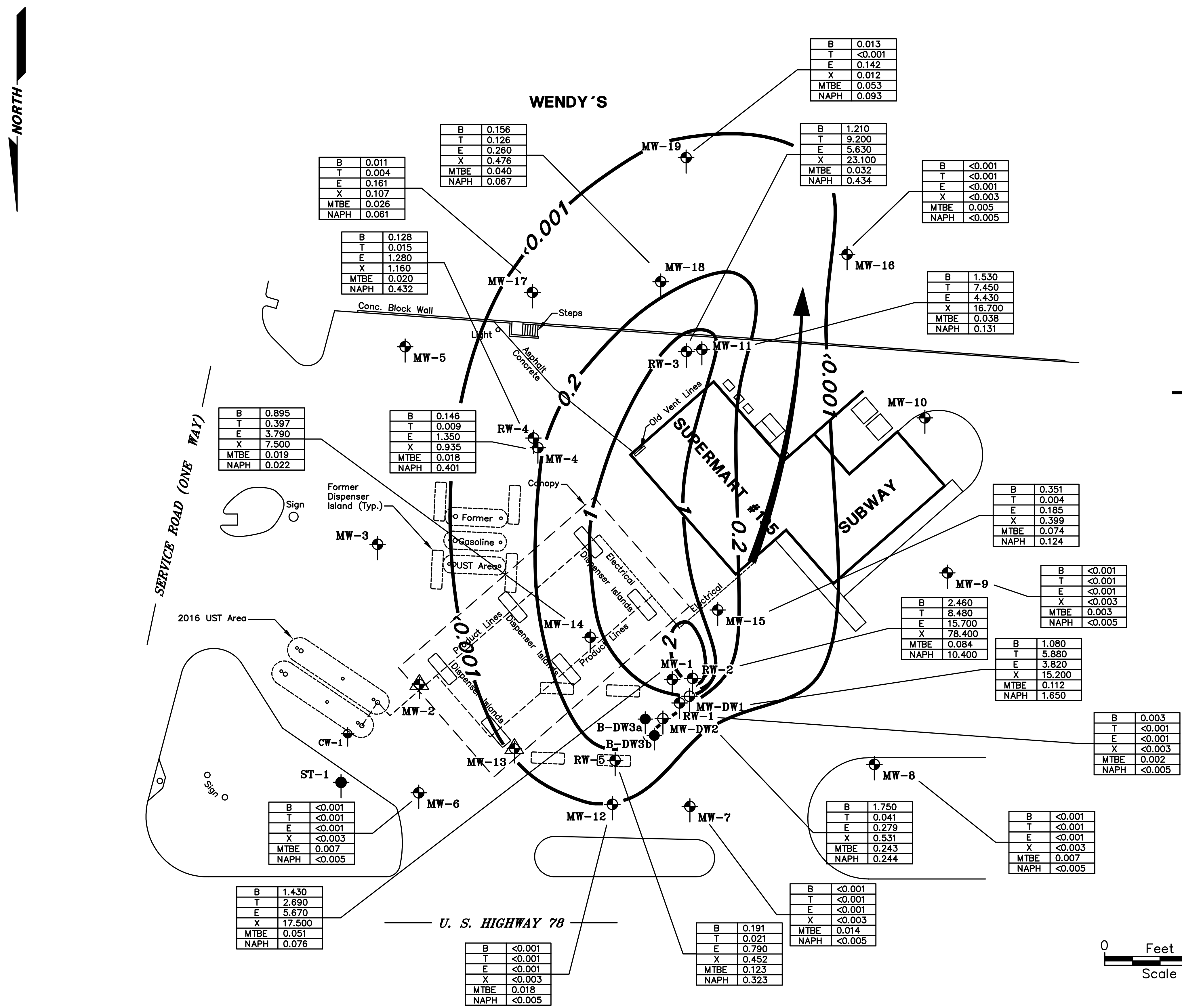
DATE	NO.	REVISION	BY

REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U. S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
Project Title

SOILS COCs CONCENTRATIONS MAP

Fig. No. 5



B	0.013
T	<0.001
E	0.142
X	0.012
MTBE	0.053
NAPH	0.093

B	0.156
T	0.126
E	0.260
X	0.476
MTBE	0.040
NAPH	0.067

B	1.210
T	9.200
E	5.630
X	23.100
MTBE	0.032
NAPH	0.434

B	0.011
T	0.004
E	0.161
X	0.107
MTBE	0.026
NAPH	0.061

B	<0.001
T	<0.001
E	<0.001
X	<0.003
MTBE	0.005
NAPH	<0.005

B	0.128
T	0.015
E	1.280
X	1.160
MTBE	0.020
NAPH	0.432

B	1.530
T	7.450
E	4.430
X	16.700
MTBE	0.038
NAPH	0.131

B	0.895
T	0.397
E	3.790
X	7.500
MTBE	0.019
NAPH	0.022

B	0.146
T	0.009
E	1.350
X	0.935
MTBE	0.018
NAPH	0.401

B	0.351
T	0.004
E	0.185
X	0.399
MTBE	0.074
NAPH	0.124

B	<0.001
T	<0.001
E	<0.001
X	<0.003
MTBE	0.003
NAPH	<0.005

B	2.460
T	8.480
E	15.700
X	78.400
MTBE	0.084
NAPH	10.400

B	1.080
T	5.880
E	3.820
X	15.200
MTBE	0.112
NAPH	1.650

B	0.003
T	<0.001
E	<0.001
X	<0.003
MTBE	0.002
NAPH	<0.005

B	<0.001
T	<0.001
E	<0.001
X	<0.003
MTBE	0.007
NAPH	<0.005

B	1.750
T	0.041
E	0.279
X	0.531
MTBE	0.243
NAPH	0.244

B	<0.001
T	<0.001
E	<0.001
X	<0.003
MTBE	0.007
NAPH	<0.005

B	1.430
T	2.690
E	5.670
X	17.500
MTBE	0.051
NAPH	0.076

B	<0.001
T	<0.001
E	<0.001
X	<0.003
MTBE	0.014
NAPH	<0.005

B	0.191
T	0.021
E	0.790
X	0.452
MTBE	0.123
NAPH	0.323

B	<0.001
T	<0.001
E	<0.001
X	<0.003
MTBE	0.018
NAPH	<0.005

LEGEND

- Soil Exploration Boring
- Soil Exploration Boring/Type II Monitor Well
- Soil Exploration Boring/Type III Monitor Well
- UST Pit Observation Wells
- Abandoned Soil Exploration Boring/Type II Monitor Well

B	Dissolved Benzene Concentration (mg/L)
T	Dissolved Toluene Concentration (mg/L)
E	Dissolved Ethylbenzene Concentration (mg/L)
X	Dissolved Total Xylenes Concentration (mg/L)
MTBE	Dissolved Methyl–Tertiary–Butyl–Ether Concentration (mg/L)
NAPH	Dissolved Naphthalene Concentration (mg/L)

—2— Dissolved Benzene Isoconcentration Contour (mg/L)

Groundwater Flow Direction (6/27/2020)

(mg/L) Milligrams per Liter

[0.00] Free Product Thickness (feet)

Estimated Aerial Extent of Free Product

CADD FILE NO.: REB.SM195

CHECKED BY | M.E.P. | DRAWN BY

DATE	NO.	REVISION	BY

REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U. S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
Project Title

SPHERE 3
ENGINEERING, INC

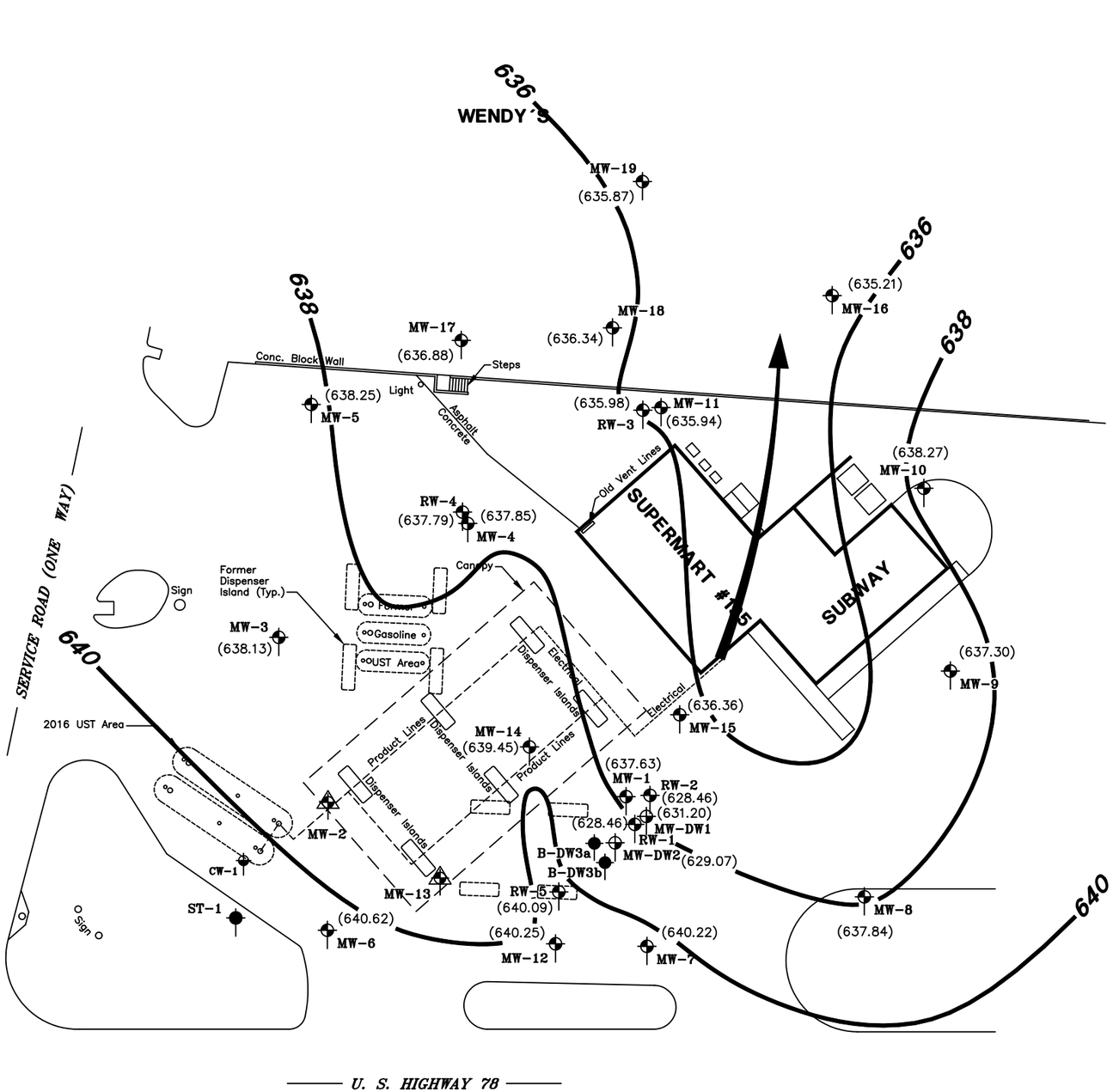
DISSOLVED COCs CONCENTRATIONS MAP (6/27/2020)

6
Fig. No.

CADD FILE NO.: REB.SM195

M.E.P.	CHECKED BY	DRAWN BY

NORTH



LEGEND

- Soil Exploration Boring
- Soil Exploration Boring/Type II Monitor Well
- Soil Exploration Boring/Type III Monitor Well
- UST Pit Observation Wells
- Abandoned Soil Exploration Boring/Type II Monitor Well
- (637.63) Potentiometric Surface Elevation (feet a.m.s.l.)
- 638 Isopotentiometric Surface Elevation Contour (feet a.m.s.l.)
- Groundwater Flow Direction (6/27/2020)
- (NG) Not Gauged

0 Feet 40
Scale

SPHERE 3
ENGINEERING, INC

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EDGEWATER, NEW JERSEY
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SUPERMART #195 (UST14-10-01)
2030 U. S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
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POTENTIOMETRIC SURFACE ELEVATION MAP
(6/27/2020)

7
Fig. No.

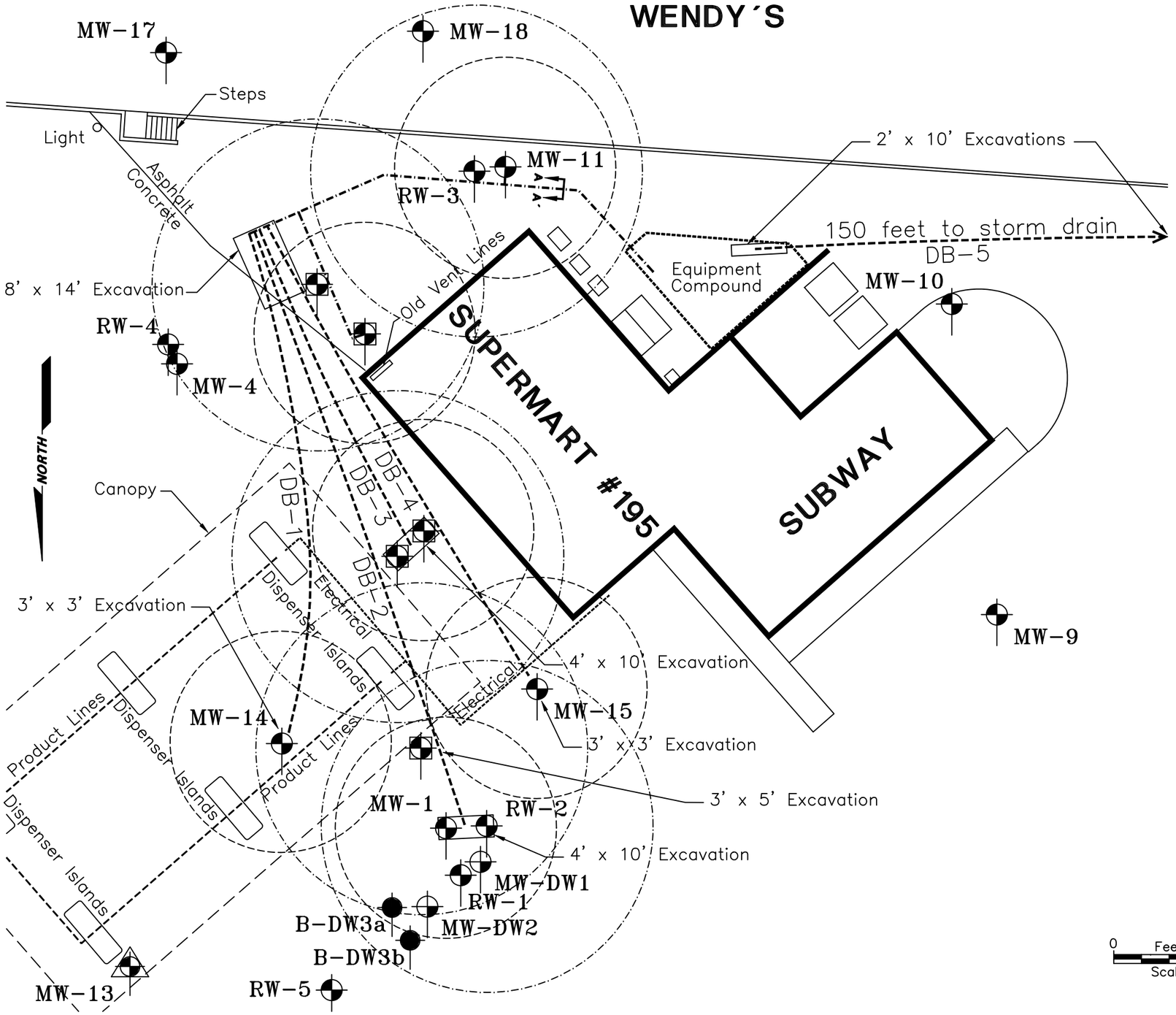
CADD FILE NO.: REB.SM195

CHECKED BY

M.E.P.

DRAWN BY

WENDY´S



LEGEND

- Soil Exploration Boring
- Soil Exploration Boring/Type II Monitor Well
- Soil Exploration Boring/Type III Monitor Well
- UST Pit Observation Wells
- Destroyed Soil Exploration Boring/Type II Monitor Well
- Proposed Soil Exploration Boring/Type II Monitor Well
- Estimated Long Term Pumping Radius of Influence
- Estimated Radius of Influence of Vacuum Extraction Application
- Surface Excavated Trench
- Trench Section Line – See Figure 12
- Directional Boring Installed Conduit

DB–# Directional Boring, where # equals:
1 – One 2–inch Conduit
2 – One 2–inch, two 1–inch, and two 1.5–inch Conduits
3 – One 2–inch, one 1–inch, and one 1.5–inch Conduits
4 – One 2–inch Conduit
5 – One 4–inch Conduit

0 Feet 20
Scale

SPHERE 3
ENGINEERING, INC

DATE	NO.	REVISION	BY

REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U. S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
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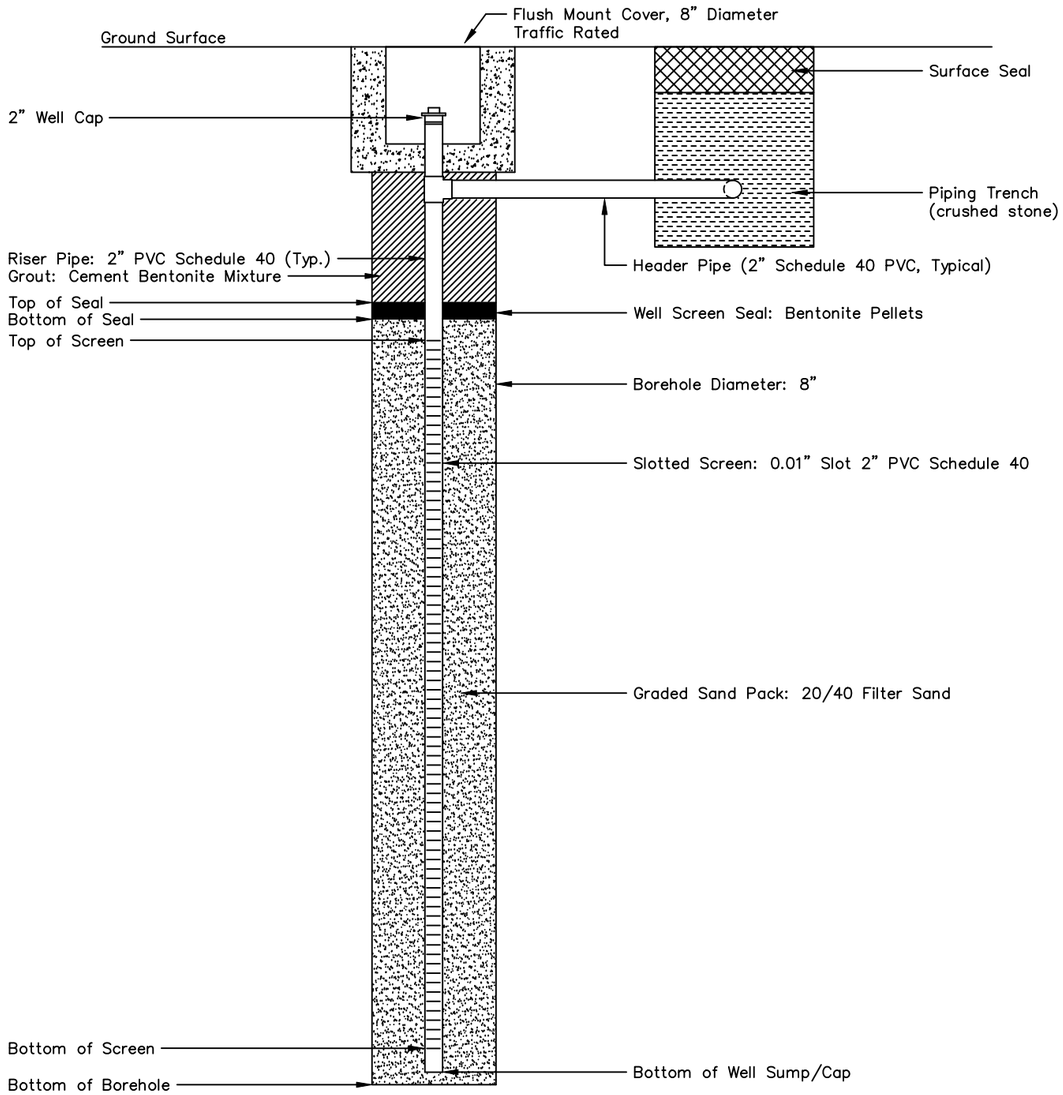
PUMP & TREAT AND SOIL VACUUM EXTRACTION PLAN

8
Fig. No.

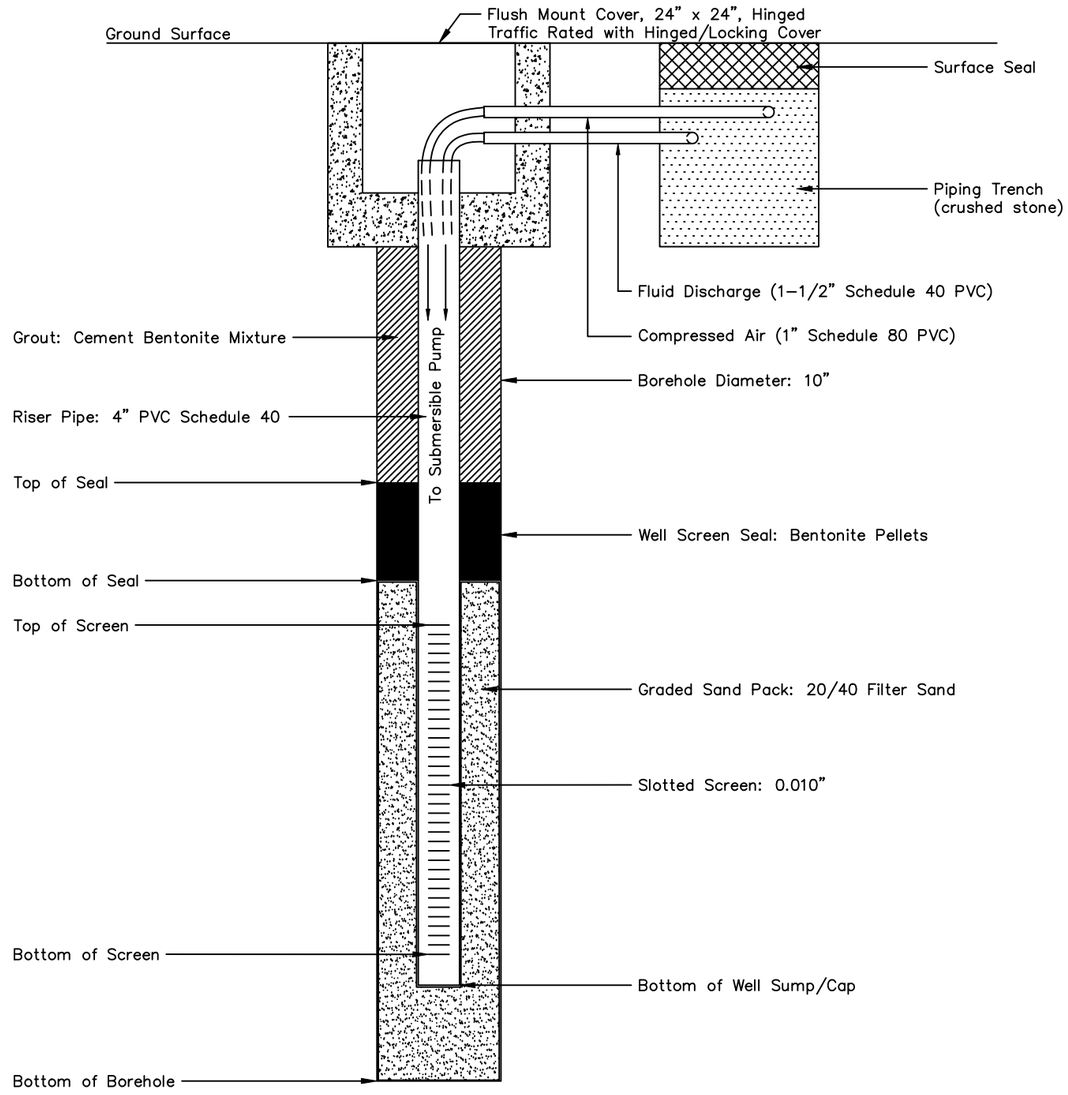
DRAWN BY: EB | CHECKED BY: MEP | JGH | CADD FILE NO. REB.SM195



Section View

VACUUM EXTRACTION WELL CROSS-SECTION

NO SCALE



Section View

PUMPING WELL CROSS-SECTION

NO SCALE

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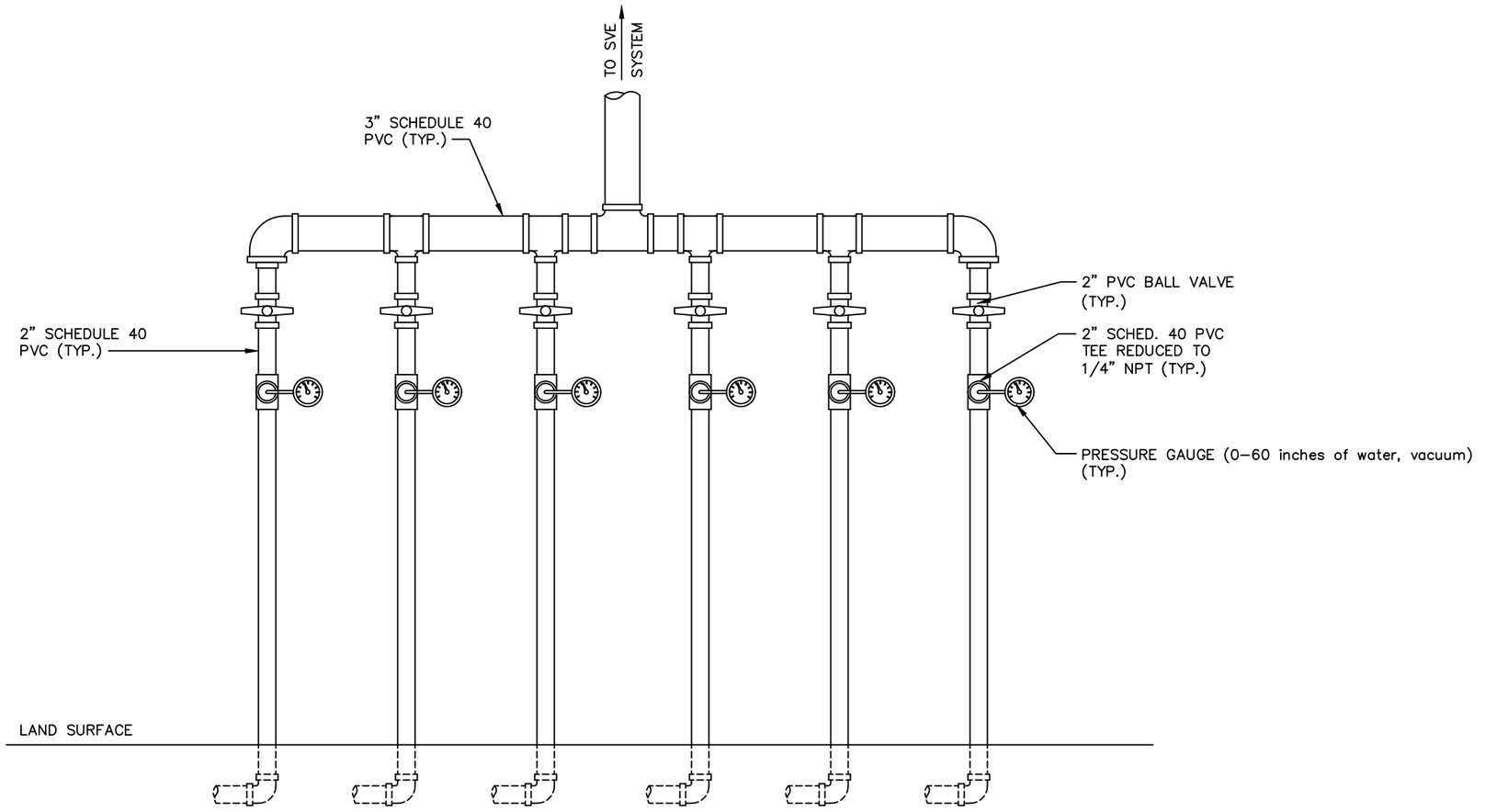
REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U.S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
Project Title

TYPICAL VACUUM EXTRACTION/PUMPING WELL CONSTRUCTION

9
Fig. No.

DRAWN BY	MEP	CHECKED BY	CADD FILE NO. REB.SM195



SVE MANIFOLD DETAIL

NO SCALE

SPHERE 3 ENGINEERING, INC

DATE	NO.	REVISION	BY

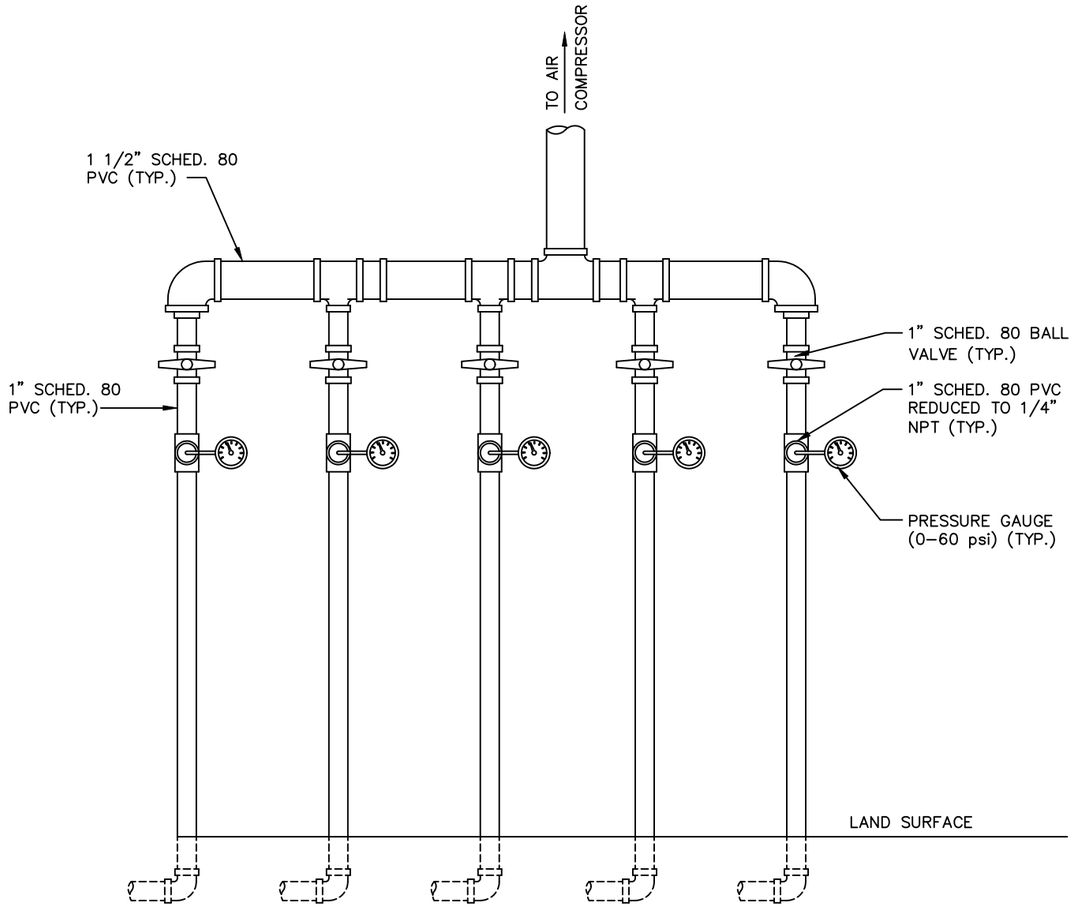
REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U.S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
Project Title

TYPICAL SVE MANIFOLD CONSTRUCTION

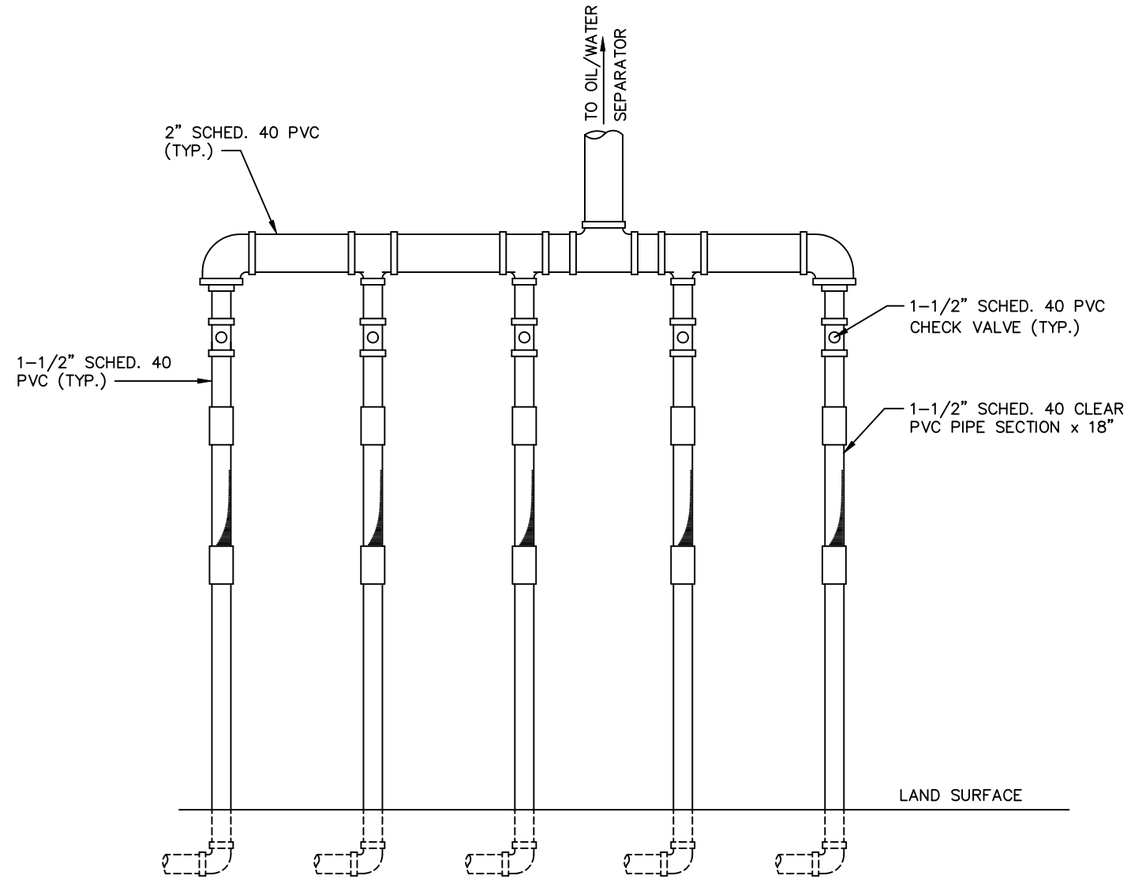
10
Fig. No.

DRAWN BY | CHECKED BY | MEP | CADD FILE NO. REB.SM195



COMPRESSED AIR MANIFOLD DETAIL

NO SCALE



RECOVERED FLUIDS MANIFOLD DETAIL

NO SCALE

SPHERE 3 ENGINEERING, INC

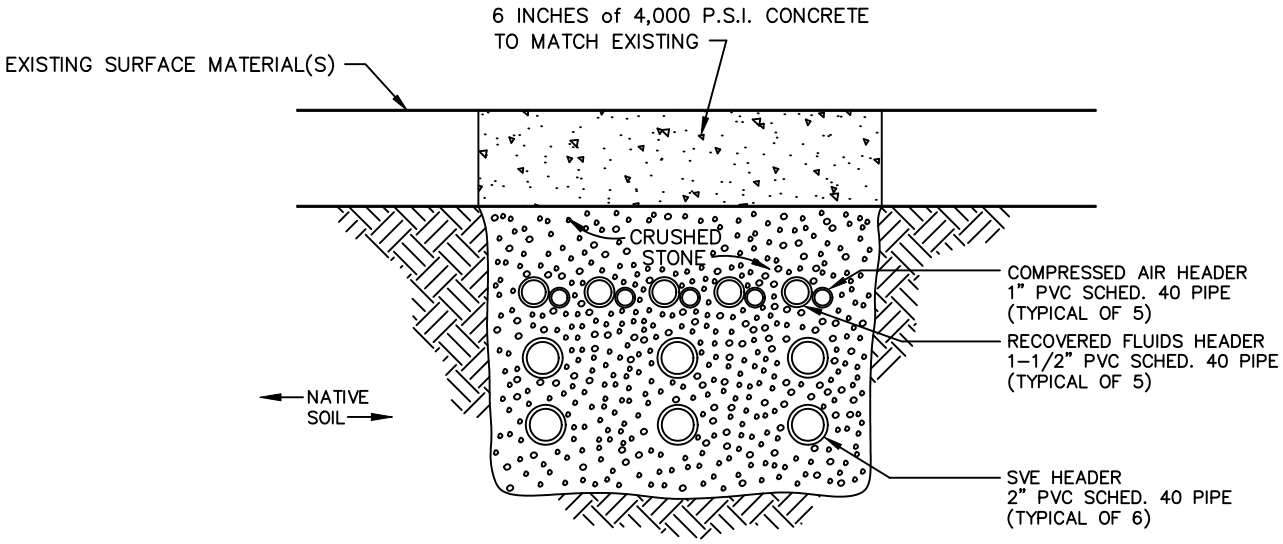
DATE	NO.	REVISION	BY

REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U.S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
Project Title

TYPICAL COMPRESSED AIR / RECOVERED FLUIDS MANIFOLD CONSTRUCTION

11
Fig. No.



CROSS SECTION A-A´

SPHERE 3 ENGINEERING, I NC

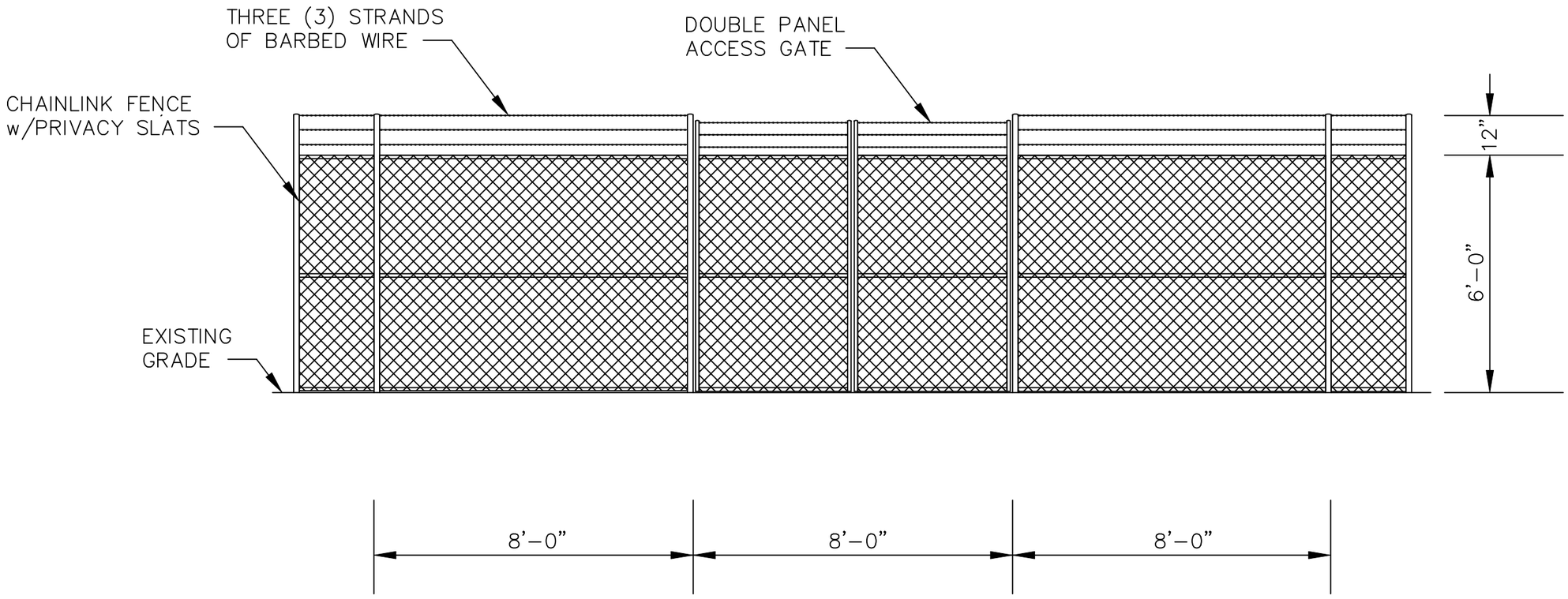
Reb Oil Company
Supermart #195 (UST14-10-01)
2030 U.S. Highway 78 East
Oxford, Alabama 36203

Project No.	Date:	Scale:	Drawn By:
REB.SM195	11/13/2020	NTS	MEP

PIPING TRENCH DETAILS

Figure No.: 12

DRAWN BY	M. E. P.	CHECKED BY	CADD FILE NO. REB.SM195



NORTH ELEVATION

SCALE: 1" = 4'–0"

SPHERE 3
ENGINEERING, INC

DATE	NO.	REVISION	BY

REB OIL COMPANY
EDGEWATER, NEW JERSEY
Client

CORRECTIVE ACTION PLAN MODIFICATION
SUPERMART #195 (UST14-10-01)
2030 U.S. HIGHWAY 78 EAST
OXFORD, ALABAMA 36203
Project Title

EQUIPMENT COMPOUND ELEVATION/DETAILS

13
Fig. No.

SPHERE 3
ENGINEERING, INC

MK ENVIRONMENTAL INC.

765 Springer Drive
Lombard, IL. 60148-6412
615-392-7737

jgiltz@mkenv.com

QUOTATION

Date	12/14/2020
Quote No.	220052B
Reference	Supermart #195
Page No.	1 of 3
Freight	Included
Terms	PWP Net 180
Ship Via	FLATBED
F.O.B.	Factory

Quotation valid for 60 days

SOLD TO:	SHIP TO:
Greg Hoagland Sphere 3 Engineering, Inc. 3433 Sierra Drive Hoover, AL. 35216 205-403-3317 205-403-3317 (fax)	UST141001 Supermart # 195

QUANTITY		UNIT PRICE	AMOUNT
	200 amp 3/60/230 volt 4 wire plus ground electrical service Brought to NEMA 3R control Panel Interior electrical will comply with NEC requirements for Class 1, Division 2, Group D Hazardous locations Motors will be TEFC construction		
1	Soil Vapor Extraction System Regenerative blower Busch Samos model SB 530 D or equal 280 ACFM @ 50" w.c. vacuum (64" w.c. vacuum max) 4.6 kW (6.2 HP) 3/60/230-460 volt, TEFC motor Direct drive motor 100 gallon Air/water separator with level control switches Clean out ports with vacuum rated quick release lid Liquid filled vacuum gauge Vacuum assist hose 2" drain valves Vacuum relief valve Dilution valve with filter/silencer with rotameter Inlet screen Inlet filter Exhaust temperture gauge Exhaust temperture switch Discharge silencer	14,818.00	$14,818.00
1	1.5 hp transfer pump, 3450 rpm, TEFC motor Cast Iron housing with composite impeller, anti air lock design manual "Pump ON" button inside building for sampling		
1	MKE Model SA15B STRIPPERATOR 15 GPM oil/water Separator and Air stripper treatment system Coalescing separator with skimming weir and water sump tank Low profile air stripping system with nylon aeration tubes and dual pattern diffusers 2.0 HP aluminum blower, AMCA B rated spark resistant Air pressure gauge Intrinsically safe high-high sump level and low blower pressure alarm switches Air stripper blower silencer to reduce the noise level outside the trailer unit	22,102.00	$22,102.00
1	3.0 hp transfer pump, 3450 rpm, TEFC motor Cast Iron housing with composite impeller, anti air lock design manual "Pump ON" button inside building for sampling		
1	Groundwater flow totalizer with pulse output for remote totalization Flow calibration button		
2	Bag filter housings piped in parallel 304 stainless steel construction, size 2. Includes a case of 25-micron replacement bag filters		
1	Pneumatic Groundwater Pumping System	22,506.00	$22,506.00
1	Compressed Air System 7.5 HP, TEFC Motor 23 CFM @ 100 PSI Two stage industrial reciprocating industrial compressor system with inlet filter, motor & belt drive, ASME code receiver with automatic drain valve, pressure gauge, relief valve and 3-way solenoid operated air valve for automatic shut off of pneumatic pumps upon fault condition. 1/2" main regulator with gauge, general purpose filter and auto drain		

MK ENVIRONMENTAL INC.

Greg Hoagland
Sphere 3 Engineering, Inc.

Date 12/14/2020
Quote No. 220052B
Reference Supermart #195

QUANTITY		UNIT PRICE	AMOUNT
5	Pneumatic Pumps Model AP3 Short Pneumatic AutoPumps Top fill inlet with hose barbs Down well hoses and sell seal provided by others Installed by others		
1	Master Control Panel System, Including: NEMA 3R control panel with blank front cover Swing out sub panel for gauges, control operators, and switches IEC Magnetic motor starters, safety switches, H-O-A controls Control transformer (8) intrinsically safe relays, (8) alarm indicator LED's, (12) output channels Hard wired relay logic (1) exterior GFCI utility outlet SVE run time totalizing hour meter Blower low pressure alarm Anti-falsing alarm circuit to prevent nuisance tripping Auto-release restart timer for remote restarts via telemetry Three phase voltage and phase monitor Emergency E-stop LED red indicator light located on swing out sub panel Set of buck boost transformers. 208 volt incoming to 230 volt outgoing <u>SVE & GW Pumps automatic shut down upon:</u> AWS1 high liquid level SVE high temperature alarm Air stripper blower low pressure Air stripper sump High liquid level alarm Phase fault condition Interior Emergency Stop Mushroom button with twist to release detent	22,124.00	$22,124.00
1	Fused Main Disconnect system for the SVE with P&T Includes: 200 amp disconnect boxe mounted to the system building (1) Weatherhead with extension pole and bracket support (1) 200 amp Electric meter socket base installed		
1	FleetZOOM FZ300 Cellular Wireless Monitoring Unit or Equal 14 Digital Inputs, 4 Digital Outputs, 2 Analog Input plus internal temperature and DC power monitoring. Includes: Cellular antenna, wiring diagrams, setup forms. Web based monitoring capabilities with graphing and data export. Email & SMS alarming capabilities. One full year of service starting at time of installation. Real Time Alarm Monitoring & Notification, Real Time Status Monitoring. Maximum of 500 alarm or status change events per month, plus sampling of all signals, transmitted every 60 minutes.		
1	Vacuum transducer integrated into telemetry system for real time monitoring, 4-20mA		
1	System building 8.5'W x 16'L x 9.5'H aluminum/steel enclosure, fully insulated with Removable sliding wall panels for ease of maintenance Exterior grade plywood floor, structural steel frame Includes 100 watt XP interior light, and removable center grate for ease of maintenance The breaker panel and control panel will be mounted on a vertical steel bracket attached to platform end. The bracket, panels and all conduits will allow for the removal of the enclosure panels by one person. 10" structural steel base with 4" steel cross members Steel corner posts and roof frame Continuous sheet aluminum roof for superior protection Includes stainless piano hinges on the building corners.	35,732.00	$35,732.00
1	12,000 BTU XP heater with XP thermostat. All components fully piped, wired and factory tested		
1	Building vent fan, div 2 location		

MK ENVIRONMENTAL INC.

Greg Hoagland
Sphere 3 Engineering, Inc.

Date 12/14/2020
Quote No. 220052B
Reference Supermart #

QUANTITY		UNIT PRICE	AMOUNT
1	Equipment Electrical Installation Includes XP wiring, XP seal off connectors, liquid tight flexible conduit UL listed equipment.		
1	Equipment Mechanical Installation Includes mounting, piping and connectors Brass fittings, sample ports, pressure gauges and sight glasses		
1	Vapor Phase Carbon Treatment	6,800.00	$6,800.00
2	Vapor Phase Carbon Vessels - Dual phase offgas - piped in series VR-400 lbs drums 400 lb initial load each 4" plain pipe fitting Off loading, placement & piping provided by others Installed outside the system building by others		
1	AWS3 knock out tank prior to oxidizer to minimize condensed liquids from entering burner or vapor phase carbon bed.		
1	Third Party MET Certification The entire remediation building to be third party certified at MK Environmental factory. National Recognized Testing Lab (NRL)		

Notes:

1. Pneumatic Autopump airline and GW return line manifolds by others.

2. Pneumatic AutoPumps downwell hoses and well seals by others.

3. All vapor carbon vessels to be installed and piped outside the system building by others.

4. Wireless monitoring telemetry unit annual renewel will be supported and billed through MKE.
   One full year included with system purchase starting at time of installation.
   Billed Monthly there-after @ $65 / Mo (subject to change)

EQUIP. SUB TOTAL		$124,082.00
EQUIP. SALES TAX		
START UP/TRAINING		$2,500.00
FREIGHT		$2,500.00
NET TOTAL		$129,082.00

Does not include permits, fees, etc…
Offloading & placement by others.

Jerry Giltz,
MK ENVIRONMENTAL, INC.

SOUTHEASTERN ENVIRONMENTAL PRODUCTS, INC.

832 Pickford Point Madison, MS 39110

Greg Hoagland, PE SPHERE 3 Engineering, Inc 3433 Sierra Drive Hoover, AL 35216 (O) 205.403.3318 (M) 205.277.4896 greg@sphere3.com	Supermart #195 UST 141001	August 25, 2020 Page 1 of 4

We are pleased to offer the following:

VAPOR EXTRACTION SYSTEM

- □□High airflow with medium vacuum or equal pump
- □□280 ACFM @ 3.7" Hg. Condition point
- □□Roots URAI-47 PD blower with 7.5 hp TEFC Motor or equal
- □□100 Gallon Condensate Knock out tank
- □□Knock out tank clean out port
- □□Inlet filter and dilution throttling valve
- □□Transfer pump1.0 hp groundwater transfer pump, TEFC motor
- □□Transfer pump level controls
- □□High exhaust temperature switch
- □□Exhaust silencer

GROUNDWATER PUMPS

- □□(4) Pneumatic AutoPumps
- □□Top fill, short, AP3 or equal
- □□Down well hoses and well head accessories provided by others

AIR COMPRESSR (for pneumatic GW pumps)

- □□7.5 HP, 230/460 volt, 3-Phase reciprocating air compressor
- □□Ingersoll-Rand or equal
- □□23 CFM and 125 PSI maximum pressure
- □□80 gallon receiver tank with drain
- □□3-way outlet solenoid valve

CONTROL SYSTEM

- NEMA 4 EXTERIOR MOUNTED CONTROLS
- breaker panel with individual branch breakers for all major components
- control panel with magnetic starters, groundwater pump controls, high level shut off system controls, and all additional control circuits required for the system
- INTERLOCK CONTROL PANEL
- latching pump shut-off relay w/manual reset
- GFCI Utility outlet with breaker for hand tools
- Incoming power monitor and Emergency kill switch
- 200 Amp disconnect switch with fuses with meter base, installed

TELEMETRY SYSTEM

- Sensaphone SCADA 3000 Remote Monitoring Package
- 16 universal inputs channels
- 8 output channels
- Expandable to 144 I/O points
- Data logging and event log
- 7 system status LESs and 8 output LEDs
- Password secured user access
- Surge protector
- Battery backup
- Corded hand held telephone
- Fully programmed
- Remote restart and shutdown capability

EQUIPMENT HOUSING

- Sized to accommodate equipment quoted, except the vapor phase carbon vessels
- 16’ foot long by 8-1/2 feet wide
- Steel frame building with aluminum exterior
- Man door access
- XP lighting
- XP heater with thermostat control
- XP vent fan
- Installation of all equipment specified in this proposal

OIL WATER SEPARATOR SYSTEM – 15 GPM

- Coalescing pack
- Effluent sump
- Transfer pump 1.5 hp groundwater transfer pump, TEFC motor
- Transfer pump level controls
- Product high level float switch. Drum provided by others

LOW PROFILE AIR STRIPPER – 15 GPM

- 1-tray stripping unit
- Transfer pump 3.0 hp groundwater transfer pump, TEFC motor
- Transfer pump level controls
- High/Low Air Supply Switch
- High Sump Level Switch
- aluminum blower
- air pressure gauge
- Integral Effluent Sump, 80 gallon capacity
- inspection/clean out hatch
- Stainless Steel Construction
- latched and gasketed lid
- epoxy coated carbon steel construction
- Final effluent flow meter
- Blower silencer
- Final effluent totalizing flow meter

GROUNDWATER FITRATION

- (2) bag filter housings in parallel to protect the carbon filtration
- (1) case of 25 micron filter bags
    - Pressure gauge and sample ports

VAPOR PHASE CARBON (located outside the system building)

- (2) 400 lb drums in series for the dual phase exhaust stream
- Condensate drum to collect moisture prior to carbons

MISCELLANEOUS ITEMS

- Third party certification of the building and control panel included.
- Includes system start-up assistance with 3 weeks prior notice
- Includes freight to jobsite. Off loading and placement by others.
- Included (2) O&M manuals

AIR SUPPLY MANIFOLD FOR GROUNDWATER PUMPS

- By others

GROUNDWATER PUMP RETURN MANIFOLD

- By others

SYSTEM LIST PRICE……$ 131,490.00

Payment terms: 30% down payment with order, 30% prior to shipping, remainder Net 30 days.
Delivery: 10-12 weeks after ARO

FOB: FACTORY

Total does not include taxes, permits, fees, etc.

Dale Woodall
Southeastern Env. Products, Inc.
601-421-4258

Curtis Service, Inc.
45180 US Hwy 231
Oneonta, AL 35121
curtis_service@hotmail.com
curtisserviceinc@gmail.com

Estimate

Date 12/21/2020
Estimate # 610b

Name / Address
Sphere 3 Engineering, Inc.
3433 Sierra Drive
Hoover, AL 35216
Attn: Greg Hogeland
greg@sphere3.com

Description	Total
Job: Supermart #195 Oxford, Al	
Description: 1- Install 500' of 2" schedule PVC pipe and 320' 1.5" and 1" schedule 40 PVC pipe. 2- Extend 20' of 4" schedule 40 PVC pipe . 3- Approx. 125' of ditch capped with concrete. 4- Open 320 square feet of pavement and cap with concrete. 5- Set 5x 24" well vaults and 6x 8" well covers. 6- 85' chainlink fence perimeter with privacy slats, barbed wire, and a 8' gate. 7- Construct 1x 6-leg manifold and 2x 5-leg manifold per drawings with schedule 80 PVC pipe. 8- Funish all underground pipe. Sphere 3 to furnish manifold materials & well vaults/covers. 9- Ditches will be poured back 6" with rebar and dowels. 10- Provide crane to receive and place equipment by others.	
Fence	3,500.00
Concrete	4,000.00
Materials	3,500.00
Machinery	4,400.00
Crane	2,500.00
Labor	9,500.00

Any unforeseen objects, etc will be an extra charge of cost plus.

Total $27,400.00

Curtis Service, Inc.
curtis_service@hotmail.com
2052128868
(205)625-3600

DELTA DIRECTIONAL®

Sphere 3 Engineering, INC.

Project Name: Oxford, AL Texaco

Proposal Number: B-11769-202208

Submittal Date: 12/24/2020

9027 Eastside Dr.
Newton, MS 39345
www.deltadirectional.com

DELTA DIRECTIONAL

9027 Eastside Dr. Ext
Newton, MS 39345
601.683.0879
www.deltadirectional.com

24 December 2020
Greg Hoagland
Sphere 3 Engineering, INC.
greg@sphere3.com

RE: Oxford AL Texaco

Greg Hoagland:

We appreciate the opportunity to bid the above referenced project for Sphere 3 Engineering, INC. Our proposal is as follows.

1. Delta Directional, LLC ("Subcontractor") will mobilize and demobilize equipment, and labor to and from the construction site.
2. Sphere 3 Engineering, INC ("Contractor") will provide all access to drill and pipe sites, locate and mark all foreign lines and utilities not located by 811 One-call.
3. Contractor will provide all necessary permits both local and federal.
4. Contractor will provide a proposed drill line with a complete line of sight from entry to exit or a surveyed line provided by owner.
5. Contractor will provide adequate room for Rig location and is responsible for all pipe side activities.
6. Contractor is responsible for all excavation needed as directed by Subcontractor.
7. Subcontractor will dispose of drilling fluids in Contractor provided container on site.
8. Subcontractor will provide material for HDD SOW.
9. If requested in writing in advance of production, Subcontractor will provide a Bore Log within 10 days of the completed project.
10.

SCOPE	PIPE (S) & SIZE	APPROXIMATE LENGTH	PRICE	Total
Directionally Drill, and Place Pipe	1", 1.5", 2", 4" HDPE	550ft Minimum	$72.70/ drilled foot	$40,709.96
Motor Formation Adder	NA	Per Foot	$100/ drilled foot once utilized through end of bore	
Mobilization			$1,400.00	$1,400.00
Total				$42,109.96

11. Should Motor Formation be utilized, the adder will be charged from start of motor formation through end of bore.
12. Should Subcontractor encounter any adverse conditions not previously reported by Contractor,

subcontractor will be entitled to an adjustment in price and schedule.

13. Subcontractor shall not be responsible for contaminates found in the drill slurry that is not a byproduct or otherwise caused by Subcontractor.
14. All inadvertent returns not accessible by rubber tired equipment will be removed on a Time and Material Basis.
15. Subcontractor plans to work five (5) days per week, and twelve (12) hours per day with a right to a Twenty-four (24) hour day under abnormal conditions or job completion schedule.
16. Subcontractor's price is based on availability.
17. All invoices are due net thirty (30) days.
18. Subcontractor is excused from performance and shall not be considered to be in default with respect to any obligation hereunder, if and to the extent that it's failure of, or delay in, performance is due to a Force Majeure.
19. In the event of an inconsistency or conflict between this proposal and any other terms entered into by the parties concerning the work, this proposal shall control.
20. Notwithstanding anything herein to the contrary, neither party shall be entitled to any indirect, incidental, consequential, punitive, or exemplary damages arising out of or related to this proposal or the work, including lost profits or lost opportunity.
21. Each of the persons executing this proposal represents and warrants that he or she has full right and authority to execute this instrument on behalf of the respective parties, and to bind such party to fulfillment of all of the provisions hereof.

Delta Directional, LLC. is pleased to submit this proposal for your kind consideration.

Sincerely,

_____

Matthew Billings
Division Manager
Delta Directional Drilling, LLC.

AGREED AS TO FORM AND SUBSTANCE:

Company:_____

By: _____

Print:_____

Title: _____

Tortorice Electrical Service Inc.

1500 2ND Ave. North
Bessemer, Alabama 35020
Telephone: (205) 424-2698

9-28-20

Sphere 3 Engineering

Job bid Oxford Al.

Bid to install electrical wiring for new gas system with overhead

Service trailer mounted.

Voltage 120/240 200 amps three phase.

Labor materials and permitting $3850.00

Greg Hoagland, P.E.

From: Wes Kittle <wkittle@bigskyenv.com>
Sent: Thursday, October 8, 2020 10:32
To: Kim Kittle; Greg Hoagland, P.E.
Subject: Re: Supermart #195; UST141001; 2030 US Highway 78 East; Oxford, Alabama 36203

Pricing for 2030 US HWY 78 EAST OXFORD AL is as follows

Delivery: $150 x 2 = $300.00

Swap/pull: $1,200 x 2 = $2,400.00

Disposal rate: $27 per ton x 20 = $540.00 Total = $3,240.00

Price includes liner

Sent from my Verizon, Samsung Galaxy smartphone
Get Outlook for Android

From: Greg Hoagland, P.E. <greg@sphere3.com>
Sent: Wednesday, October 7, 2020 6:05:07 PM
To: Kim Kittle <Kkittle@bigskyenv.com>; Wes Kittle <wkittle@bigskyenv.com>
Subject: Supermart #195; UST141001; 2030 US Highway 78 East; Oxford, Alabama 36203

Hi Kim/Wes:

Need to get a quote for the following services at the subject facility:

- Deliver a 20 yard roll off box, with liner
- Pick up, transport, and dispose of waste materials (asphalt, concrete fragments, and petroleum hydrocarbon impacted soils) at your facility in Adamsville. We will obtain the ADEM waste disposal approval letter. We anticipate generating an estimated 10 tons of waste materials.

Any questions, let me know.

Thank you very much.

Greg Hoagland, P.E.
SPHERE 3 ENGINEERING, INC
3433 Sierra Drive
Hoover, Alabama 35216
Phone: (205) 403-3317
Facsimile: (205) 403-3318
Mobile: (205) 288-4896
Email: greg@sphere3.com

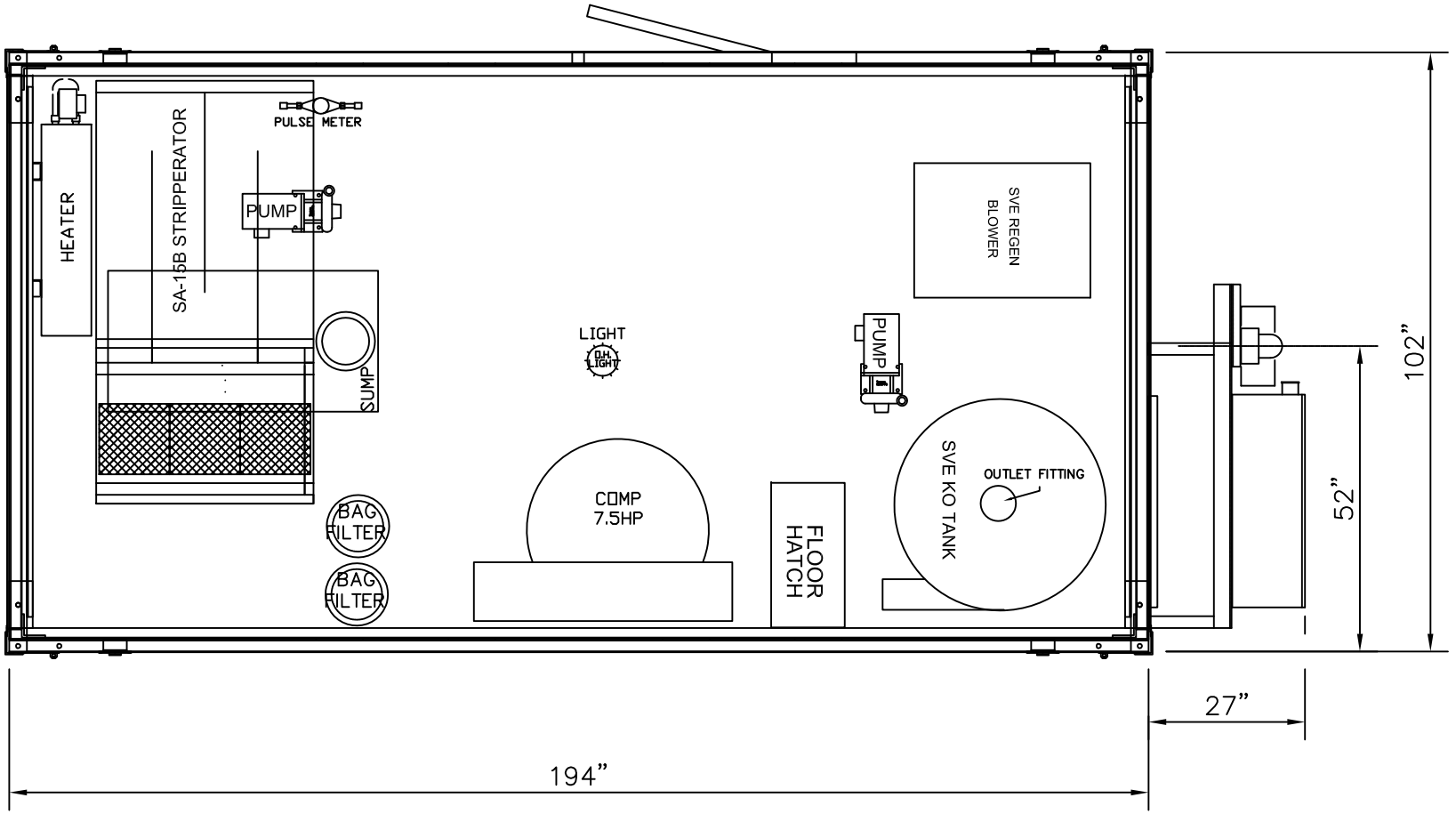
SPHERE 3
ENGINEERING, INC

GW PUMP AIRLINE MANIFOLD BY OTHERS
GW PUMP RETURN DISCHARGE MANIFOLD BY OTHERS
SVE INLET MANIFOLD BY OTHERS

AWS-3 DRUM

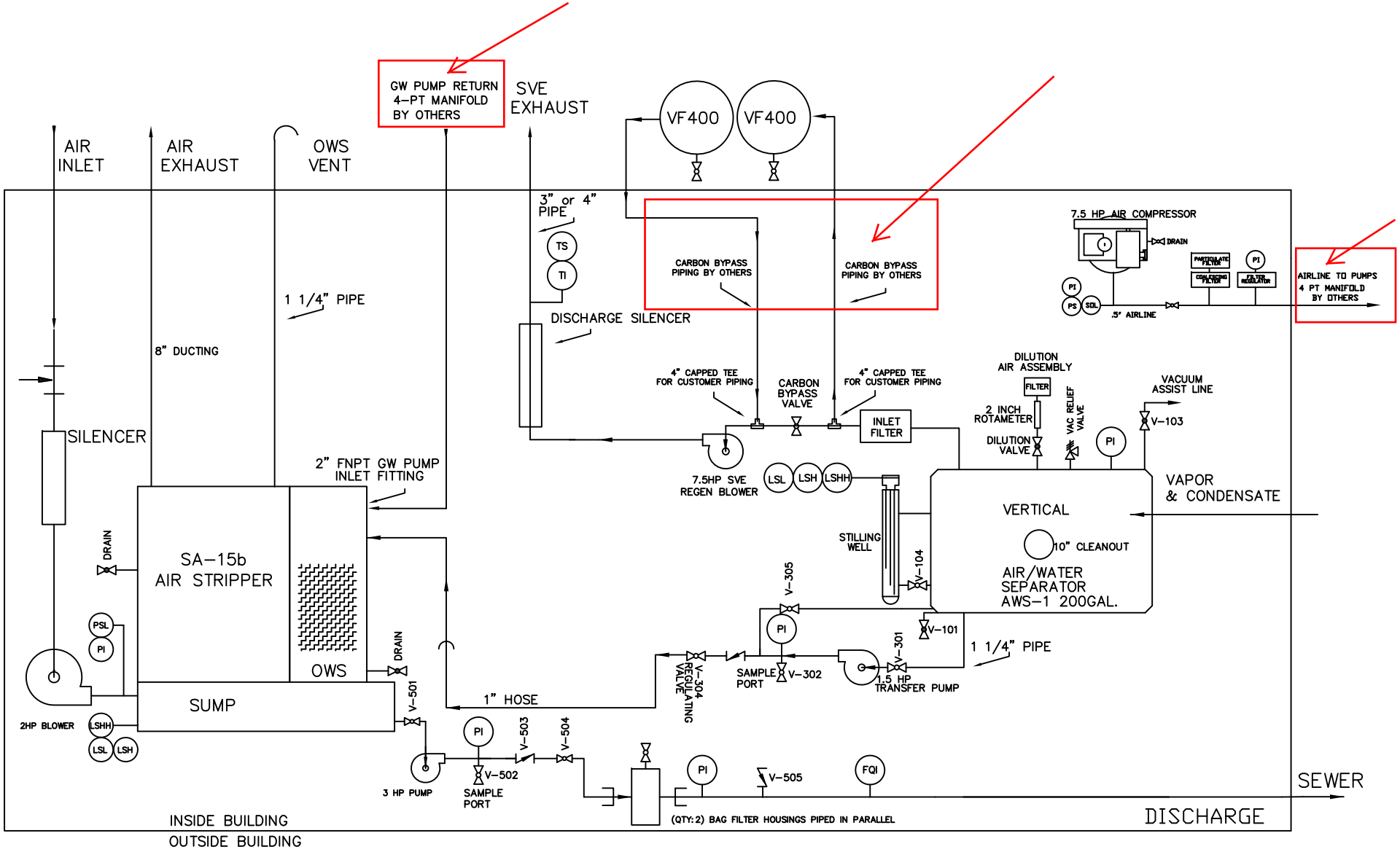
VAPOR GAC DRUM

VAPOR GAC DRUM



DRAFT LAYOUT DRAWING - SUBJECT TO CHANGE

MK ENVIRONMENTAL INC.	DATE:	DRAWN BY:	JOB NUMBER	DRAWING NUMBER
	8-13-20	JAG	220052	SPHERE 3 SUPERMART #195



DRAFT P&ID DRAWING - SUBJECT TO CHANGE

V	VACUUM	I	INDICATOR
P	PRESSURE	FQI	FLOW QTY IND. (TOTALIZER)
S	SWITCH	FRI	FLOW RATE INDICATOR
L	LIQUID LEVEL OR LOW T	T	TEMPERATURE

MK ENVIRONMENTAL INC.

DATE:	DRAWN BY:	JOB NUMBER	DRAWING NUMBER
8-13-20	JAG	220052	SPHERE 3 SUPERMART #195

Product Specifications

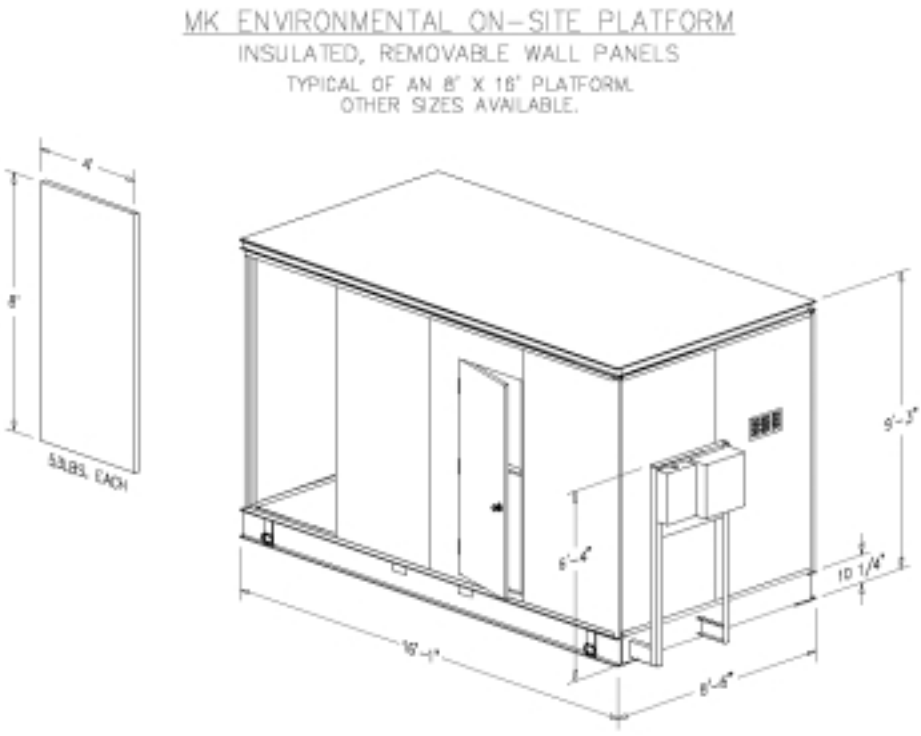
MK Environmental Inc.
7150 South Madison Street
Willowbrook, IL 60527
630-920-1104 Phone
630-920-8013 Fax

ON SITE PLATFORM

SYSTEM DESCRIPTION

The On-Site Platform integrates all the remedial technologies necessary to provide a total site-specific clean-up solution in one complete package. The platform saves time, space and money. All the room needed for maintenance, without taking up a lot of room

- All equipment fully piped, wired and factory tested
- Factory built equipment enclosure
- Structural Steel construction with aluminum exterior for low maintenance
- Removable sliding wall panels fully insulated and faced inside and out with aluminum sheeting
- All panels removable for full accessibility and maintenance to all equipment within
- MK Environmental manufactures all process components
- Dimensions: 8, 12, 16, 20, 24 or 28’ long x 8.5’ wide x 9.5’ high
- Can be trailer mounted
- Easily transportable to second site
- All piping enters building through a floor hatch for weather protection and security
- All panels fully lockable
- NEMA 4 Control panel is standard with Blank Front Cover
- Both Fork pockets and crane lifting rings included as standard
- Multitude of Colors to match station canopies
- Over 100 different equipment combinations available



Standard Specifications

- 10” structural steel I beam base, 4” steel corner posts, 2” steel roof frame
- 100 MPH rated construction. PE stamped design. 150 MPH available
- Roof constructed of a single sheet of aluminum for watertight construction
- Roof and walls are insulated with minimum 1.5” urethane insulation (R10)
- Removable 4’x 8’ sliding aluminum wall panels (53 lbs/ea) for ease of maintenance
- Class 1, Division 2, Group D XP electrical interior
- ¾” plywood flooring with I beams on 12” centers
- Man door and 100 watt interior explosion-proof light fixture is standard
- White interior and exterior
- Single source for equipment, service and support

Optional Building Features:

- Enclosed mobile trailer unit
- XP heater with thermostat
- XP ventilation fan
- Sound Insulation Package for <70 dB operation
- UL listed control panel
- Factory installed Fused Main Disconnect with Meter Base and Weatherhead

MK Environmental Inc.
7150 South Madison Street Willowbrook, IL 60527
630-920-1104 Phone; 630-920-8013 Fax mkenv.com

Samos
SB 0050 – 1400 D/D2

Samos SB 0530 D

Description

Busch Samos SB regenerative blowers are designed for either pressure or vacuum. They are available in single and two stage models so they can operate over a wide range of flow and differential pressure.

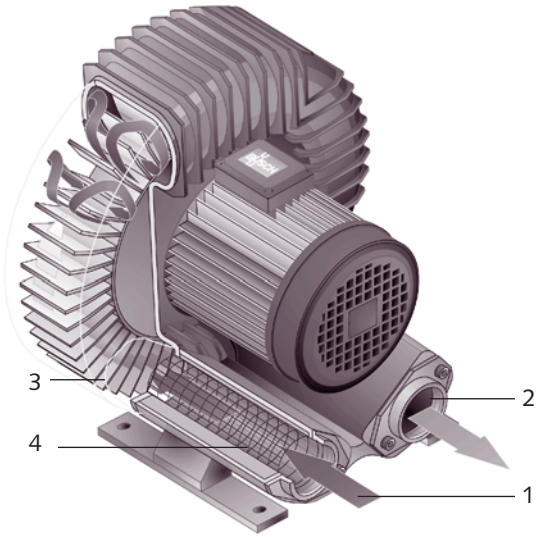
Low Maintenance and Environmentally Friendly

Samos low maintenance features include: rugged construction, sealed-for-life bearings, a fan cooled motor and a non-contacting impeller. They are oil-free, have a low power consumption, and are quiet due to internal silencers. Samos blowers can be installed in either a vertical or horizontal position.

Regenerative Blowers

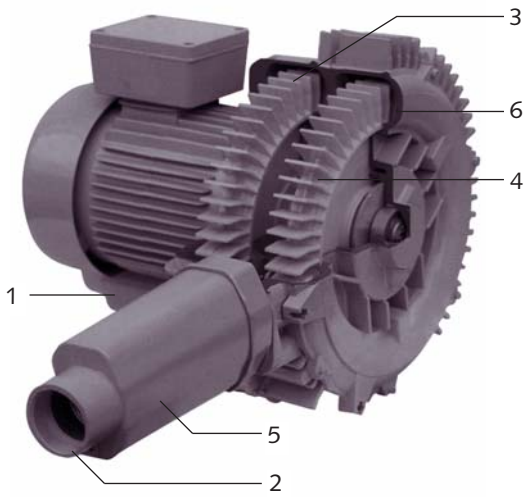
Operating Principle

Single-stage version



1. Gas Inlet
2. Gas outlet
3. Impeller
4. Silencer

Two-stage version



1. Gas inlet
2. Gas outlet
3. Impeller 1st stage
4. Impeller 2nd stage
5. Silencer
6. Side channel

Operating Principle

Gases are drawn in through the blower inlet. As the impeller rotates, it transfers kinetic energy to the gases being pumped. As a result, the gases move forward through a corkscrew shaped path and are compressed, then discharged through the pressure side exhaust silencer. The impeller is mounted directly on the motor shaft.

Applications

Pneumatic conveying

Transport and lifting system

Carton forming and packaging

Vacuum holddown

Materials handling

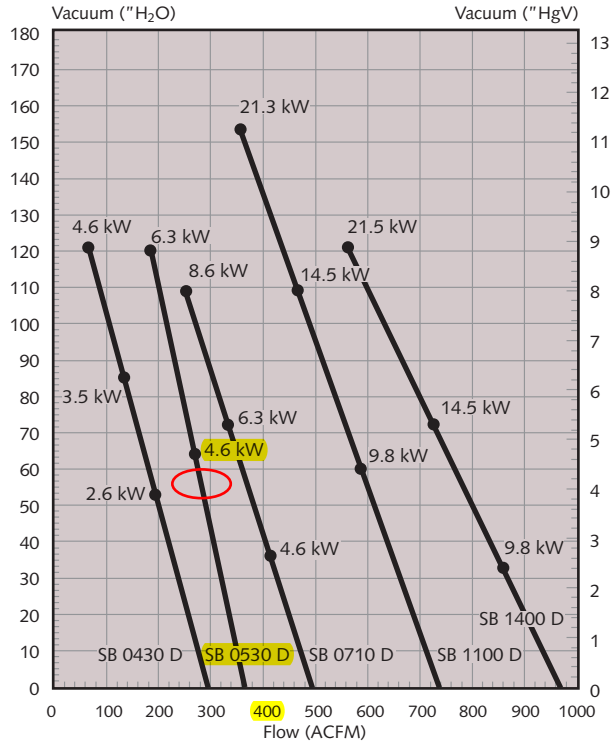
Soil remediation

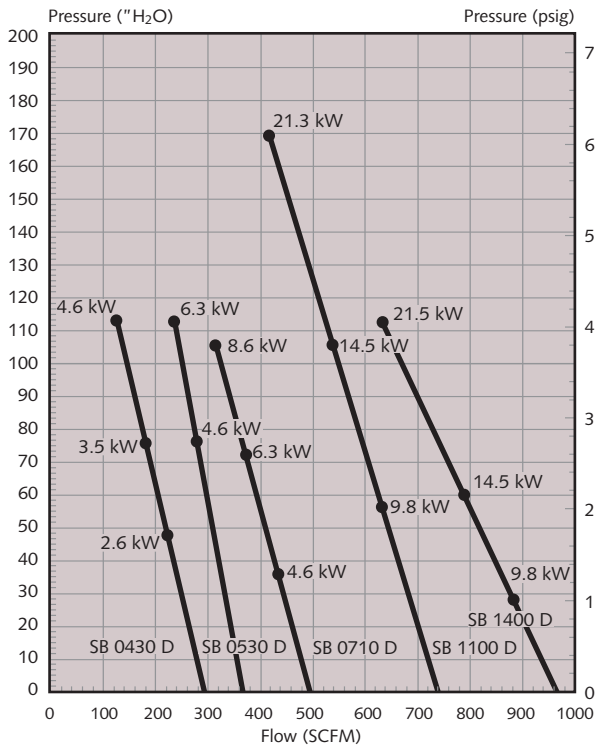
Trim removal

Wood routers

Printing industry applications

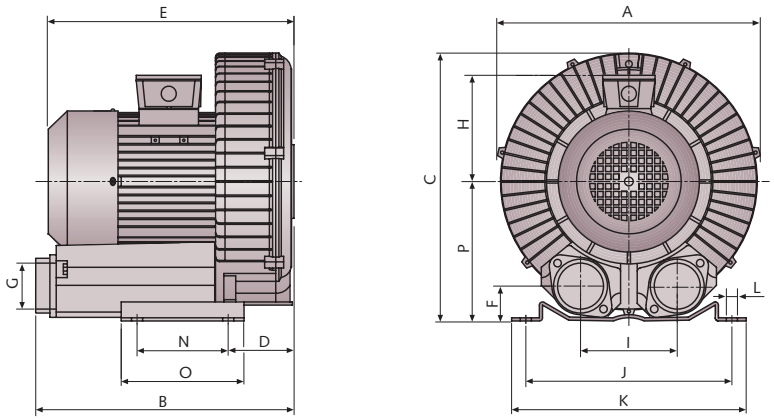
Technical Data Samos SB 0430 - 1400 D (single stage)





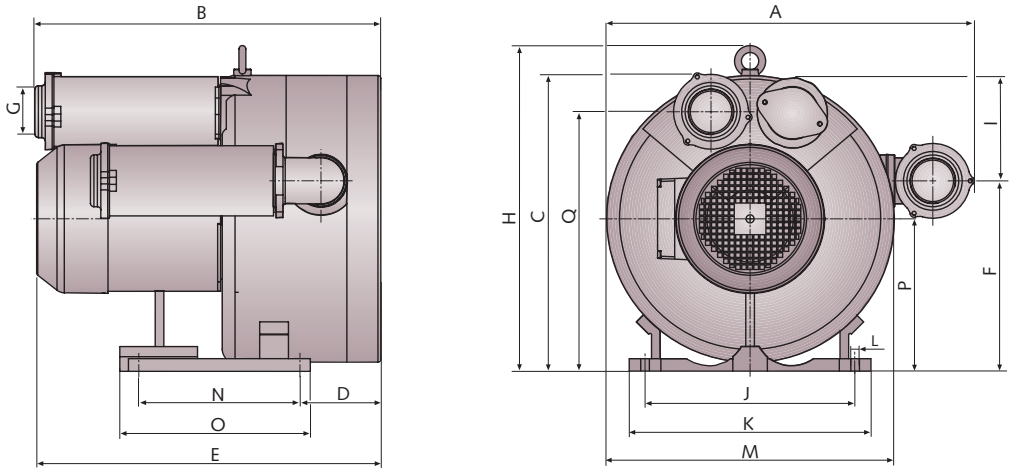
Technical Data Model	Nominal Pumping Speed ACFM	Max. Vacuum "H2O	"Hg	Max Pressure "H2O	psig	Motor (60 Hz) kW	Hp	RPM	Sound dB (A)	Weight lbs
SB 0430 D	294	52	3.8	48	1.7	2.6	3.5	3450	73	64
SB 0430 D	294	85	6.2	76	2.7	3.5	4.7	3450	73	75
SB 0430 D	294	121	8.9	113	4.1	4.6	6.2	3450	73	92
SB 0530 D	365	64	4.7	56	2.0	4.6	6.2	3450	74	246
SB 0530 D	365	121	8.9	113	4.1	6.3	8.4	3450	74	251
SB 0710 D	494	36	2.6	36	1.3	4.6	6.2	3450	74	246
SB 0710 D	494	72	5.3	72	2.6	6.3	8.4	3450	74	277
SB 0710 D	494	109	8.0	105	3.8	8.6	11.5	3450	74	282
SB 1100 D	736	60	4.4	56	2.0	9.8	13.1	3450	79	378
SB 1100 D	736	109	8.0	105	3.8	14.5	19.4	3450	79	420
SB 1100 D	736	153	11.2	169	6.1	21.3	28.6	3450	79	449
SB 1400 D	968	32	2.3	28	1.0	9.8	13.1	3450	80	383
SB 1400 D	968	72	5.3	64	2.3	14.5	19.4	3450	80	425
SB 1400 D	968	121	8.9	113	4.1	21.5	28.8	3450	80	453

Dimensions Samos SB 0050 - 1400 D (single stage)



Model	A	B	C	D	E	F	G (NPT)	H	I	J	K	L	N	O	P
SB 0050 D	9 3/4	9 1/16	9 13/16	2 13/16	10 3/16	1 9/16	1 1/4	4 3/8	3 9/16	8 1/16	9 1/16	3/8	3 1/4	4 1/4	5 1/8
SB 0080 D	9 3/4	9 1/16	9 13/16	2 13/16	10 3/16	1 9/16	1 1/4	4 3/8	3 9/16	8 1/16	9 1/16	3/8	3 1/4	4 1/4	5 1/8
SB 0140 D	11 5/16	9 1/2	12	3	10 11/16	1 13/16	1 1/2	5 3/16	4 1/2	8 7/8	10 1/16	1/2	3 3/4	5 1/8	6 1/8
SB 0200 D	13 1/4	11 3/4	13 3/8	3 7/16	12 1/2	1 7/8	2	6 1/4	4 3/4	10 1/4	11 5/8	9/16	4 1/2	6 1/8	6 15/16
SB 0310 D	15 1/16	13 1/8	15 3/16	4 5/16	14 15/16	2 1/8	2	7 3/16	4 15/16	11 7/16	12 13/16	9/16	5 1/2	7 1/16	7 7/8
SB 0430 D	14 7/8	14 3/16	15 3/16	3 7/8	17 5/16	2 1/8	2	5 13/16	4 15/16	11 7/16	12 13/16	9/16	5 1/2	7 1/16	7 7/8
SB 0530 D	19 11/16	19 1/2	20 5/16	1 3/8	18 5/8	3 3/16	2 1/2	NA	5 11/16	14 3/8	16 9/16	9/16	11	12 7/16	10 1/2
SB 0710 D	19 11/16	19 1/2	20 5/16	11/16	19 7/16	3 3/16	2 1/2	NA	5 11/16	14 3/8	16 9/16	9/16	11	12 7/16	10 1/2
SB 1100 D	21 15/16	28 5/8	24 7/8	4 1/4	24 15/16	3 9/16	4	NA	8 1/8	14 3/16	16 5/16	9/16	23 7/16	NA	11 7/8
SB 1400 D	21	24 13/16	22 3/8	4 1/4	27 11/16	3 9/16	4	7 3/4	8 1/8	14 3/16	16	9/16	23 7/16	NA	11 7/8

Dimensions Samos SB 0530 D2 (two stage)



Model	A	B	C	D	E	F	G (NPT)	H	I	J	K	L	M	N	O	P	Q
SB 0530 D2	25 1/8	23 3/4	20 5/16	5 9/16	23 11/16	13 1/8	2 1/2	22 3/8	7 3/16	14 3/8	16 9/16	9/16	19 11/16	11	12 7/16	10 1/2	17 15/16

All dimensions in inches unless otherwise noted.

MK Environmental Inc.
765 Springer Drive
Lombard, IL. 60148
630-920-1104 Phone

Environmental Inc.

STRIPPERATOR SA15B

The Stripperator SA15B is a complete process treatment unit for hydrocarbon-contaminated water. It integrates both coalescing oil/water separator and the Cascade low profile Air Stripper into one component. The unit will separate free product, coalesce suspended hydrocarbons and settle solids.

- Integrates a coalescing oil/water separator and cascade low profile air stripper and effluent sump into a single component (3 tanks built into1)
- Gravity flow from oil/water separator to the air stripper (NO PUMP REQUIRED)
- Fully gasketed lids with quick release adjustable latches
- Small footprint 37”W X 71”L X 37” H
- 304 Stainless Steel construction
- Fits through a double door – minimal space required
- Easy access to separator and air stripper as well as simple to maintain
- Allows quick inspection and viewing of operation
- 15 GPM capacity

CT Series

High Pressure Centrifugal Pumps
½ - 2½ HP
Heads to 140 Feet
Capacities to 95 GPM

MYERS CT SERIES LINE OF HIGH PRESSURE CENTRIFUGAL PUMPS PROVIDES QUALITY AT A COMPETITIVE PRICE. The complete line of ½ to 2½ HP units provide strong pressures up to 140 feet and flows up to 95 gpm.

The rugged cast iron body construction is available with either a corrosion resistant composite or brass impeller. The brass impeller unit is equipped with a high temperature, viton seal for more demanding applications. The heavy duty motor features a double ball bearing, 50° C ambient, dual voltage design for dependable service. The compact, back pullout design provides easy installation and serviceability.

The quality features of the CT series will provide dependable service for a wide variety of applications.

SPECIFICATIONS

HP	Catalog No. Composite Impeller	Catalog No. Brass Impeller	Pipe Tapping Sizes Suction (NPT)	Pipe Tapping Sizes Discharge (NPT)	Motor Voltage	Phase	Approx. Wt. Lbs.
½	CT05	CT05B	1¼"	1"	115/230	1	30
	CT053	CT05B3	1¼"	1"	208/230/460	3	30
¾	CT07	CT07B	1¼"	1"	115/230	1	32
	CT073	CT07B3	1¼"	1"	208/230/460	3	32
1	CT10	CT10B	1¼"	1"	115/230	1	35
	CT103	CT10B3	1¼"	1"	208/230/460	3	35
1½	CT15	CT15B	1¼"	1"	115/230	1	40
	CT153	CT15B3	1¼"	1"	208/230/460	3	40
2	CT20	CT20B	1½"	1¼"	115/230	1	57
	CT203	CT20B3	1½"	1¼"	208/230/460	3	57
2½	CT25	CT25B	2"	1½"	115/230	1	62
	CT253	CT25B3	2"	1½"	208/230/460	3	62

ADVANTAGES BY DESIGN

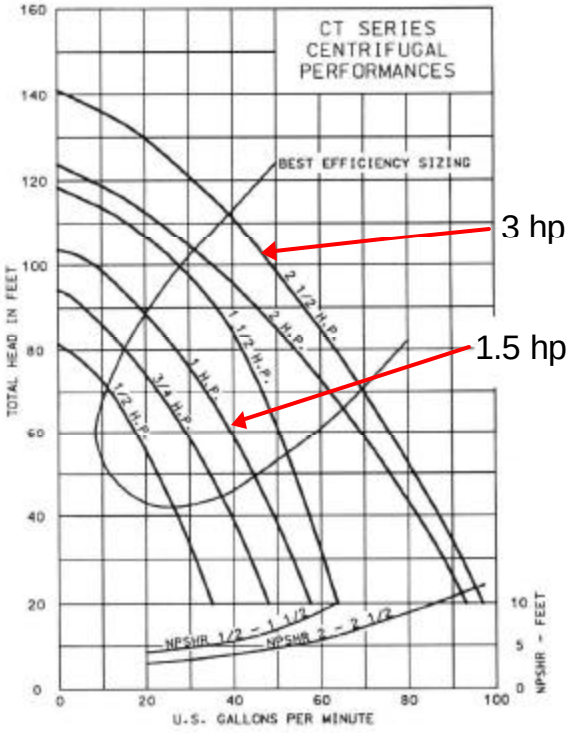
- Heavy duty cast iron construction.
- Back pull-out design.
- Dependable double ball bearing motor
- Continuous duty rating motor.
- Choice of brass or composite impeller.
- Brass impeller pumps rated 212° F.
- Composite impeller pumps rated 140° F.
- Maximum working pressure of 125 psi.
- CSA listed.

Applications

- Booster service
- Irrigation
- Circulating
- Cooling towers
- Air conditioning
- Liquid transfer
- Sprinkling systems
- General industrial service

Note: MK Environmental uses oversized pump motors. See below

PUMP PERFORMANCE



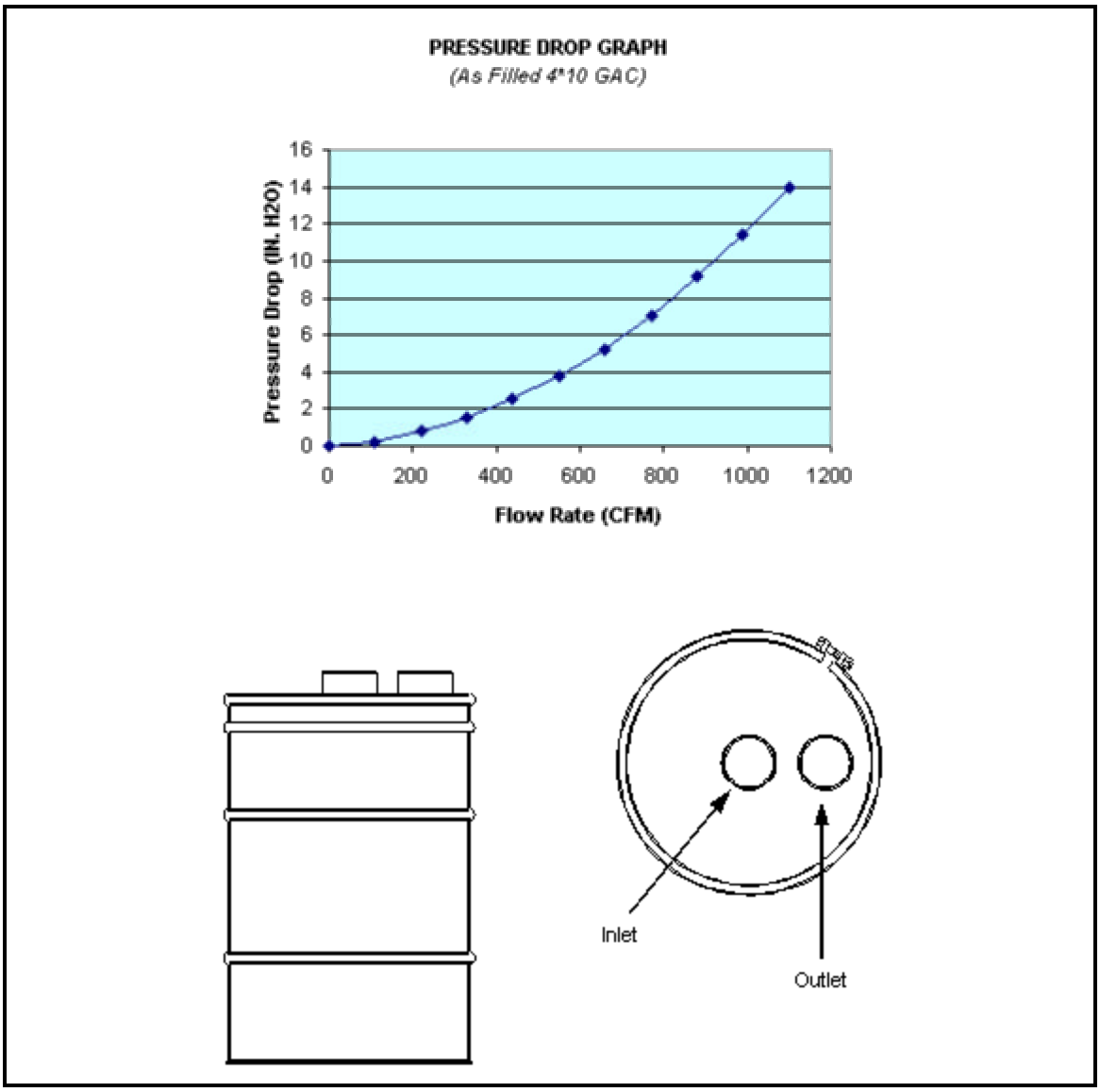
3 hp (MK)

1.5 hp (MK)

WHERE INNOVATION MEETS TRADITION

Myers

ISO 9001 Certified Company



VR-400 SPECIFICATIONS			
Overall Height	3'11"	Vessel/Internal Piping Materials	CS/ SCH 40 PVC
Diameter	30"	Internal Coating	Polyamide Epoxy Resin
Inlet / Outlet (FNPT)	6"	External Coating	Urethane Enamel
Drain / Vent (FNPT)	OPT	Maximum Pressure / Temp	2 PSIG / 150º F
GAC Fill (lbs)	400	Cross Sectional Bed Area	8.8 FT^2
Shipping / Operational Weight (lbs)	500/575	Bed Depth/Volume	11.7 IN / 14.25 FT^3

FleetZOOM™

FZ300

Cellular Monitoring System

Overview:

The FZ300 is a compact cellular transceiver for monitoring industrial equipment that sends live data to the monitoring web site, providing real-time status and alarms. It features 14 digital inputs, 4 digital outputs and 2 analog inputs. In addition to alarming on status changes, the system keeps track of on-time and cycles for the digital inputs; useful for monitoring pump, fan, or compressor run times and duty cycles. Analog inputs can alarm on high or low conditions and are useful for monitoring temperatures, pressures, tank levels or flow rates. The unit monitors input power voltage and provides an optional battery backup which enables the system to alarm on main power voltage level or failure and continue operating without main power.

The easy to use web site updates continuously, displaying location and operating status for all of your monitored equipment. Alarms are immediately displayed on the web site and trigger messages sent to interested personnel in your organization via SMS text messages and emails. Every event is permanently logged in the web site allowing powerful historical analysis using the built in reporting features to give equipment owners detailed insight into the operation and readiness of their equipment fleets.

Proactive service reminders are automatically generated and sent as equipment reaches service intervals based on run-time. Service logs and manuals available over the secure web site reduce paperwork and automate record keeping while providing up to the minute service records for all of your monitored equipment.

Features:

Easy to install cellular monitoring system. A variety of optional enclosures and mounting options provide for a clean and professional installation. Unit includes a quad magnet bracket for quick mounting and templates for mounting with included standoffs.

Advanced power management employing low power idle modes enable the unit to operate in solar powered applications with minimal power draw.

No software to buy, install or maintain; all mapping and data features are accessible over the secure web site from any computer with Internet access.

Technical Specifications:

Size	4.0” x 4.3” x 2.3” in.	**Power**	9 - 32 Volts DC
Radio	Quad Band GPRS GSM	**Battery Backup**	Internal
Transmit Power		**Current Consumption**	
850 / 900 MHz	Class 4, 2 Watts	Idle	65 mA
1800 / 1900 MHz	Class 2, 1 Watt	Transmit, Average	250 mA
Digital Inputs	14	Peak	2.1 A
Digital Outputs	4	**Temperature**	
Analog Inputs	2, 0-5 Volt or 0 to 20 mA	Operating	-30°C to +70°C
Connectors	5mm Terminal Blocks	Storage	-40°C to +85°C
GSM Connector	SMA	**Max. Humidity**	95% Non-Condensing

Radio Agency Approvals:

FCC	Part 15
	Part 22
	Part 24
GCF	Version 3.21.1
PTCRB	Version 3.7.1
Industry Canada	Yes
CE Mark	Yes
RoHS Compliant	Yes
Emark	Yes

Each Complete Monitoring System Includes:

Digital Cellular Monitoring Unit:
- 14 Digital Inputs
- 4 Digital Outputs
- 2 Analog Inputs
- Connected 24x7x365

Low Profile or High Gain Cellular Antenna:
- 4” (Low Profile)
- 12.4” (High Gain)
- 12’ Cable Length
- Magnet Mount

Mapping & Reporting:
- Web Accessible
- Graphical Map Overview
- Simple User Interface
- Run Service Reports
- Monitor Equipment Use

Alarming & Notifications:
- Equipment Status Change
- Equipment Service Needed
- SMS Text Message
- BlackBerry, PDA Message
- Email

AP3T

Top Inlet, Short

Max. Flow	**4.8 gpm (18.1 lpm)**
O.D.	**3.4 in (8.64 cm)**
Length	**47 in. (119 cm)**

Description

The AP3T Top Inlet Short AutoPump is designed for moderate-duty remediation pumping applications with well casings 3" (7.62 cm) diameter and larger using available 2.63 inch (6.68 cm) inlet. It is designed for applications requiring an elevated inlet, such as pumping total fluids from wells contaminated with LNAPLs. Call QED for prompt, no-obligation assistance on your pumping project needs.

The AutoPump Heritage

The AP3T Top Inlet Short AutoPump is part of the famous AutoPump family of original automatic air-powered pumps, developed in the mid 1980s specifically to handle unique pumping needs at remediation and landfill sites. Over the years they've proven their durability at thousands of sites worldwide. AutoPumps are designed to handle difficult pumping challenges that other pumps can't, such as solvents, suspended solids, corrosives, temperature extremes, viscous fluids and frequent start/stop cycles. Beyond just the pump, AutoPump systems offer the most complete range of tubing, hose, connectors, caps and accessories to help your installation go smoothly. This superior pumping heritage, application experience and support back up every AutoPump you put to work on your project.

Advantages

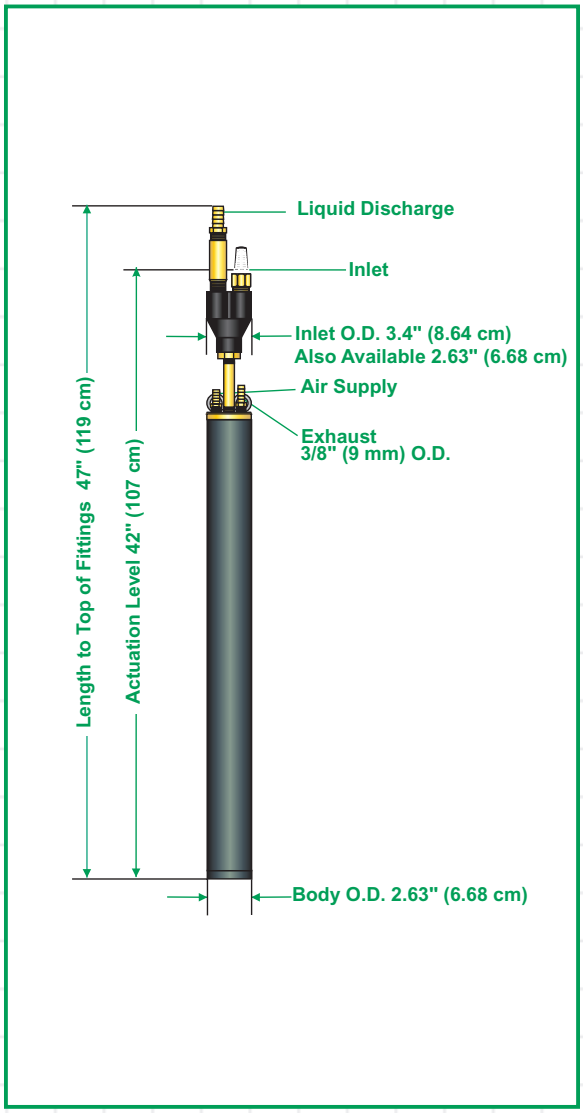
1. **Based on the original automatic air-powered well pump, proven worldwide over 18 years**
2. **Competitive flow rates and pumping capabilities**
3. **Patented, proven design for superior reliability and durability**
4. **Handles solids, some solvents, hydrocarbons and corrosive conditions beyond the limits of electric pumps**
5. **Two-year warranty**

AutoPump®

Top Inlet, Short

AP3T

Pump Dimensions



Specifications & Operating Requirements

Model	**3" - Short AP3 Top Inlet**
Liquid Inlet Location	Top
OD	3.4 in. (8.64 cm) (2.63 in. Available)
Length Overall (pump & fittings)	47 in. (119 cm)
Weight	10 lbs. (4.5 kg)
Max. Flow Rate	4.8 gpm (18.1 lpm) - See Flow Rate Chart
Pump Volume / Cycle	0.08 - 0.15 gal (.30 - 0.57L)
Max. Depth	175 ft. (53.3 m)
Air Pressure Range	5 -80 psi (0.4 - 5.6 kg/cm2)
Min. Actuation Level	42 in. (107 cm)
Air Usage	0.43 -1.6 scf / gal.(3.2 - 12.0 liter of air / fluid liter) - See Air Usage Chart
Min. Liquid Density	0.7 SpG (0.7 g/cm3)
Standard Construction Materials	
Pump Body	Fiberglass or Stainless Steel
Pump Ends	Stainless Steel, Acetal, HDPE, Brass
Internal Components	Stainless Steel, Viton, Acetal, Nylon
Tube & Hose Fittings	Brass or Stainless Steel
Fitting Type	Barbs or Quick Connects
Tube Options	
Tubing Material	Nylon
Sizes[1] - Liquid Discharge	3/4 in. (19 mm) or 1 in. (25 mm) OD
Pump Air Supply	1/2 in. (13 mm) OD
Air Exhaust	5/8 in. (16 mm) OD

[1] Applies to QED supplied tubing; other tubing sources may not conform to QED fittings.

Application Limits

AP3 AutoPumps are designed to handle the application ranges described below. For applications outside this range, consider the AP4, AP2, and HammerHead Pro models.

Maximum Temperature: 120°F (49°C)
pH Range: 4-9
Solvents and Fuels: gasoline, diesel fuel, BTEX, MTBE

AP-3 AutoPumps are warranted for two (2) years: 100% materials and workmanship.

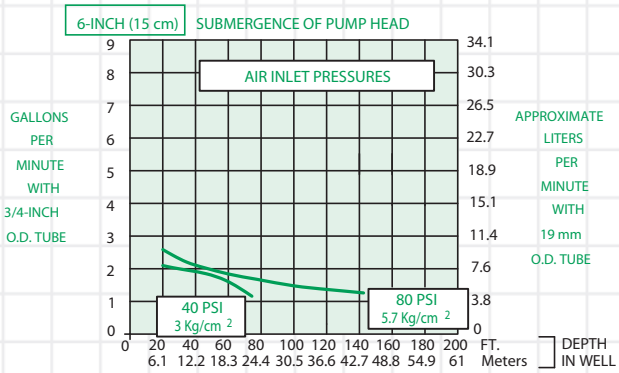
AP3T

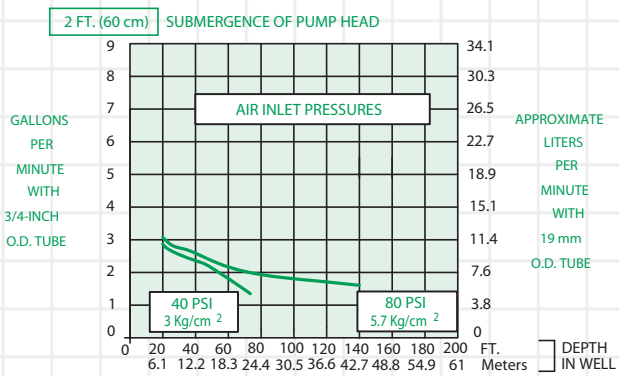
AutoPump®

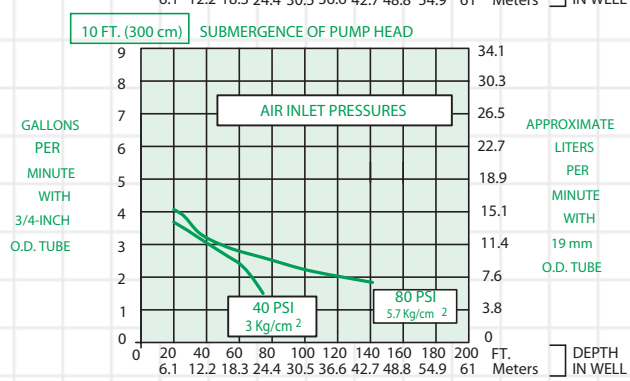
Top Inlet, Short

Flow Rates[1]

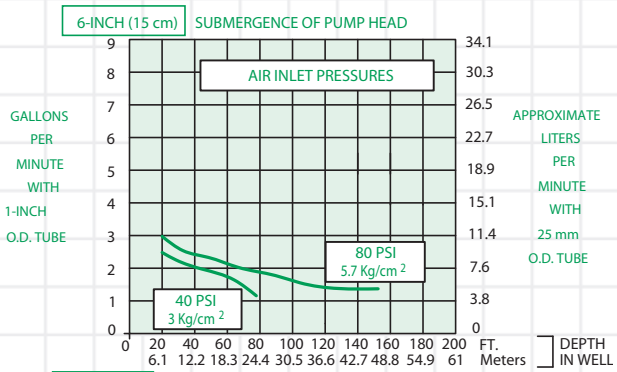
.75 inch (19 mm) O.D. Fluid Discharge Tubing

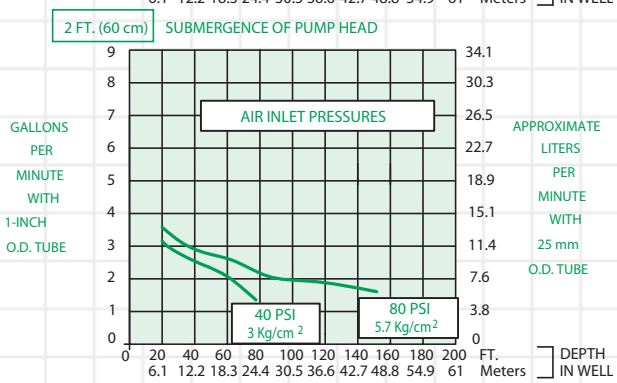


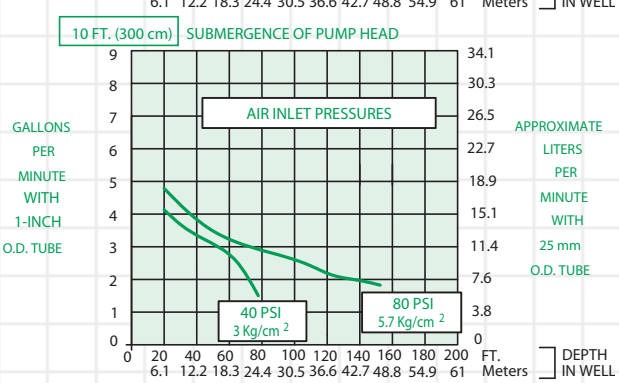




1.00 inch (25 mm) O.D. Fluid Discharge Tubing







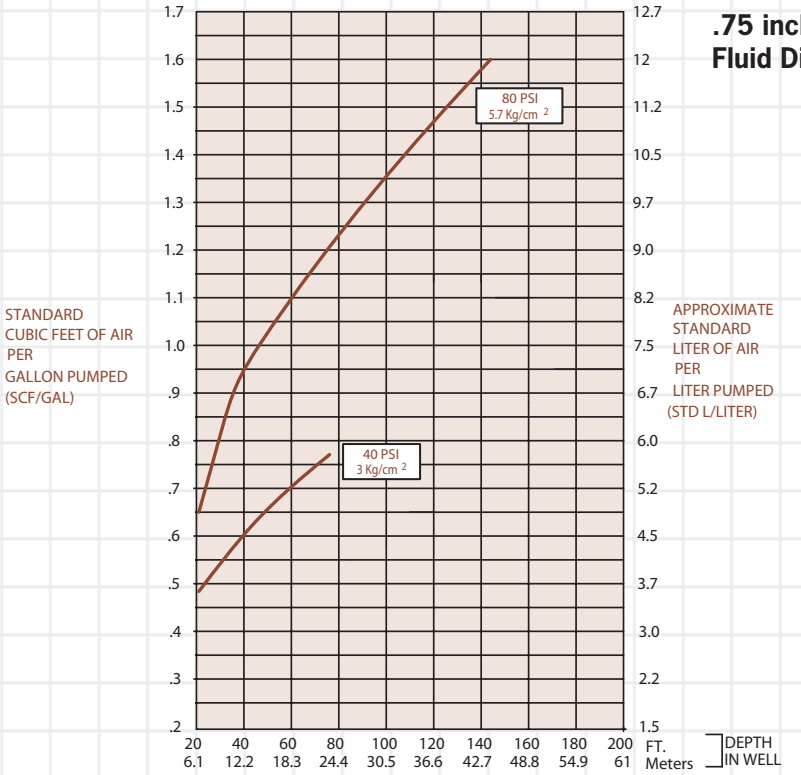
[1] FLOW RATES MAY VARY WITH SITE CONDITIONS. CALL QED FOR TECHNICAL ASSISTANCE.

AutoPump®

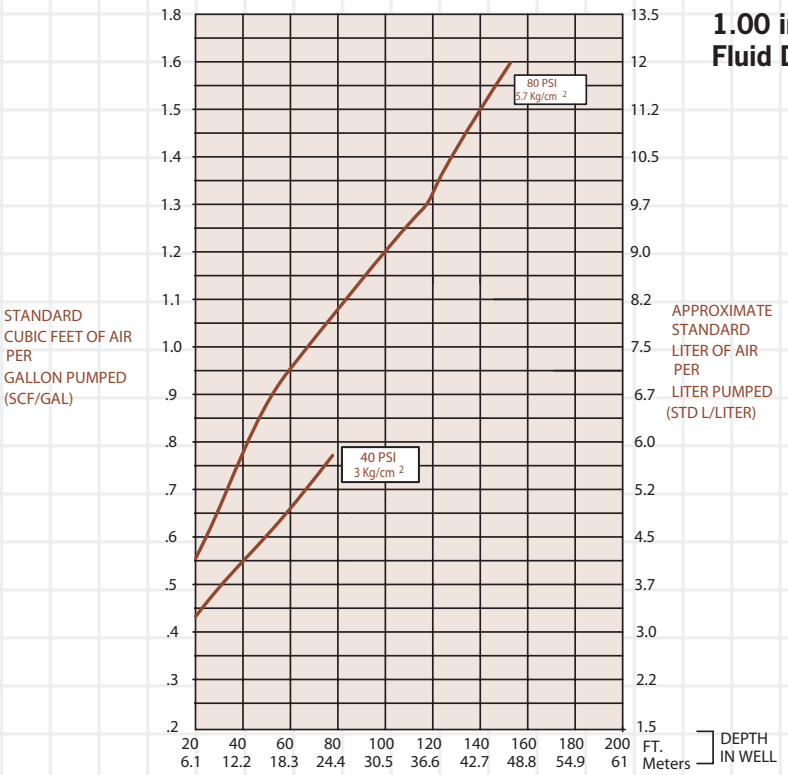
Top Inlet, Short

AP3T

Air Consumption



.75 inch (19 mm) O.D. Fluid Discharge Tubing



1.00 inch (25 mm) O.D. Fluid Discharge Tubing