

CLEAN SITES



Environmental Services, Inc.

May 24, 2007



SDMS DocID 2079890

Mr. David Turner
Remedial Project Manager
U.S. Environmental Protection Agency
Region III
1650 Arch Street (3HS22)
Philadelphia, PA 19103-2029

Subject: **Final Response Action Plan**
UGI Columbia Gas Plant Superfund Site
Columbia, Pennsylvania

Dear Mr. Turner:

Pursuant to the Administrative Settlement and Order on Consent, please find enclosed four copies of the Final Response Action Plan for the UGI Columbia Gas Plant Superfund Site in Columbia, Pennsylvania. This plan was prepared by Advanced GeoServices Corp. and is submitted on behalf of PPL Electric Utilities Corporation and UGI Utilities, Inc.

Should you have any questions regarding this plan, please call me at (703) 519-2142.

Very truly yours,

Scott R. Miller, P.E.
Project Manager

Enclosures

cc: Alan Houck, LCCD
Elise Juers, PADEP
Chris Reitman, Advanced GeoServices Corp.
J Rondeau, UGI Utilities, Inc.
Craig Shamory, PPL Services Corp.





**RESPONSE ACTION PLAN
UGI COLUMBIA GAS PLANT SUPERFUND SITE
COLUMBIA, LANCASTER COUNTY, PENNSYLVANIA**



**RESPONSE ACTION PLAN
UGI COLUMBIA GAS PLANT SUPERFUND SITE
COLUMBIA, LANCASTER COUNTY, PENNSYLVANIA**

**Prepared For:
PPL Electric Utilities Corp.
Allentown, Pennsylvania
and
UGI Utilities, Inc.
Reading, Pennsylvania**

**Prepared By:
ADVANCED GEOSERVICES CORP.
West Chester, Pennsylvania**

**2006-1800-07
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1.0 INTRODUCTION

This Response Action Plan (RAP) was prepared by Advanced GeoServices on behalf of PPL Electric Utilities Corporation (PPL) and UGI Utilities Inc. (UGI), the Respondents to the Administrative Order on Consent (AOC) Docket No. CERC-03-2007-0006DC, dated November 30, 2006 for addressing the soil risks at the UGI Columbia Gas Plant Superfund Site (Site) located in Columbia, Lancaster County, Pennsylvania (See Figure 1 and 2). A copy of the AOC is provided as Appendix A. This RAP was prepared consistent with the requirements of the AOC and addresses mobilization; Site preparation; asbestos removal; demolition; excavation/fill placement; grading; stormwater pipe installation; building foundation/floor slab construction; concrete and asphalt capping activities; and, monitoring well installation, development, and sampling.

The remainder of this RAP is organized as follows:

- Section 2.0 - Site Background
- Section 3.0 - Planned Activities
- Section 4.0 - Project Organization
- Section 5.0 - Reporting
- Section 6.0 - Project Schedule
- Section 7.0 - Health and Safety



2.0 SITE BACKGROUND

The Columbia Gas Company began production of gas at the Site in 1851. Sanborn Fire Insurance maps (1886-1904) depict two gas holders, an oil tank, and a gas works building at the Site. Operations at the Site ceased in the 1950s and the Site was decommissioned sometime thereafter. Most of the Site structures were demolished and removed, and the holders were backfilled. In 1979, a portion of the property was sold to a local resident who began operation of a boatyard.

Several removal activities have been conducted at the Site to address conditions resulting from the former gas plant activities. Materials within the holders were found to contain residual wastes from gas manufacturing operations which were considered the principal threat materials at the Site. From July 1996 through March 1998, these holder materials were satisfactorily remediated as part of the interim remedial activities conducted at the Site. The holder remedial activities included steam and hot water injection/extraction followed by stabilization. Concrete caps were also placed over the existing holders. Other remedial activities including dredging of impacted sediments in the Susquehanna River and stabilization of the river bank near the Site, were conducted between December 1997 and February 1999.

PPL has repurchased the entire Site and is planning on paving the Site in accordance with the remedy and transferring ownership to the Borough of Columbia (Borough). The Respondents understand the Site will be used by the Borough for equipment and material storage. The Borough also desires to construct a maintenance building at the Site. The removal action will include the installation of foundations and a concrete floor slab for a future pre-fabricated steel structure which may be constructed by the Borough. Construction of the building foundations and concrete slab will minimize the need for Site grading associated with development of the Site in the future.

While the removal action's primary purpose is to abate the potential threat posed by contaminated subsurface soils, the remedy has been designed to enable Site reuse. The removal action is a component of the phased clean-up approach at the Site. Following the completion of the removal action, the USEPA will issue a Record of Decision (ROD) for the Site.



Contaminants in the on-site surface and subsurface soils include volatile organic compounds, semi-volatile organic compounds, and inorganic compounds. In addition, physical gas plant related impacts such as tar, odor, and sheen have been observed in the on-site soils and bedrock. Current risks from the potential exposure to these soils were determined to be in a marginally acceptable range in the baseline human health risk assessment studies conducted at the Site. Site risks will be further mitigated by the planned remedial activities described in this RAP.



3.0 PLANNED ACTIVITIES

This section describes the activities to be implemented during the remedial activities at the Site. These activities include the following:

- Mobilization;
- Site security and safety;
- Survey control;
- Photodocumentation;
- Permit Equivalency;
- Traffic control;
- Air monitoring and dust suppression;
- Protection of existing property;
- Asbestos removal;
- Demolition;
- Placement of new concrete caps over the existing holder pads;
- Site preparation;
- Grading activities;
- Installation of stormwater management facilities;
- Placement of new building foundations/floor slab;
- Placement of a Site fence and bollards;
- Placement of an asphalt cap;
- Providing submittals;
- Monitoring Well Installation and Sampling; and
- Demobilization.

Details associated with these activities are provided below. Each of these activities will be completed by the Contractor in accordance with details provided in this RAP and the accompanying plans.



3.1 MOBILIZATION

The Contractor shall provide all labor, equipment, materials, supplies, support zone facilities, and disposal as needed to conduct the remedial activities at the Site. Space for a mobile office trailer will be made available to the Contractor on the Borough property located across South Front Street from the Site. The Borough will also allow for a temporary electrical hook-up from their maintenance facility to the mobile trailer. Coordination of the trailer location and electrical services will be made by the Contractor through Mr. Ron Miller (Public Services Manger, 717-684-2654 ext. 29, ronlmiller@comcast.net).

Sanitary facilities, telephone, and water services will not be available from the Borough property or at the Site. The Contactor will provide a source of potable water and portable sanitary facilities at the Site and on the Borough Property.

The Contractor will establish decontamination facilities and/or stations for personnel and equipment sufficient to support Site activities. Decontamination of personnel, equipment, and materials will be performed in accordance with applicable USEPA and Occupational Safety and Health Administration (OSHA) regulations. Additional details for decontamination facilities and procedures are provided in the Site Safety and Health Plan provided as Appendix B.

3.2 SITE SECURITY AND SAFETY

The Contractor will conduct all Site activities in a safe manner in accordance with the Site Safety and Health Plan provided as Appendix B to this RAP. The Contractor will secure and control Site safety and the active work areas at all times and the Site will be secured at the conclusion of each day. Contamination Reduction Zones (CRZs) and exclusion zones within the Site will be identified and demarcated by the Contractor using fencing or high-visibility tape, as appropriate.



The development/reuse of the Site will require the Contractor to remove and replace about 600 linear feet of the existing fence located parallel to South Front Street. A fence will also be constructed to limit access to the proposed stormwater management basin. The specific sequencing of the fence removal and replacement will be determined by the Contractor. Upon removal of the existing fence, the Contractor will provide a temporary 8-foot high fence with a gate along South Front Street to maintain Site security. This temporary fence will be maintained by the Contractor at all times until the permanent fence shown on the project plans is constructed.

3.3 SURVEY CONTROL

Survey control required to support the removal action activities at the Site will be provided by the Contractor. A topographical and boundary survey of the Site was performed in October 2006 by Weber Surveyors, Inc. of Lancaster, Pennsylvania. The Respondents will coordinate identification of benchmark and survey control information for the Site required by the Contractor. The Contractor will provide all surveying required to complete activities shown on these plans and to show planned grades have been achieved. Within fifteen days following completion of the on-site remedial action activities, an as-built survey will be provided by the Contractor.

3.4 PHOTODOCUMENTATION

Prior to the start of work, the Contractor will photodocument the condition of the Site and all areas to be disturbed by the remedial action activities. All photodocumentation will be available to the Respondent's representatives for review and copying at anytime.



3.5 PERMIT EQUIVALENCY

We understand that the Site removal action activities will require the following information to be submitted:

- A letter of adequacy from the Lancaster County Conservation District is provided as Appendix C.
- The approval of the RAP from the Pennsylvania Department of Environmental Protection (PADEP) is provided as Appendix D.
- A Highway Occupancy Permit from the Pennsylvania Department of Transportation for the construction of the acceleration/deceleration lanes along South Front Street has also been submitted under separate cover. The PennDOT approval letter will be provided following approval.

The Lancaster County Conservation District has clarified that no stream discharge permit (GP-4) is required at the Site.

The USEPA Action Memorandum dated November 2, 2006 sets forth the ARARs associated with the exigencies of the situation of this time critical removal action and serves as the decision document for the removal action. A copy of this Action Memorandum is included as Appendix E.

DEP has noted that because this work is being conducted under a time-critical removal action pursuant to Section 104 of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), state and local permits are not required, and permit equivalency procedures are not to impact the progress or cost of Superfund site remediations. However, the action and standard requirements of the permit must be met. This eliminates delays due to permit application and



approval timeframes, yet makes sure that the requirements are met and all activities conducted on Sites are protective of human health and the environment.

3.6 TRAFFIC CONTROL

The construction of the acceleration/deceleration lanes along South Front Street will require traffic control. The Contractor will provide traffic control as required by PennDOT during all phases of the construction associated with the acceleration/deceleration lanes. In addition, the Contractor will provide flagman for truck traffic leaving the Site.

3.7 AIR MONITORING AND DUST SUPPRESSION

The Contractor will keep dust to a minimum during Site activities by using hoses, sprinklers, and water trucks as necessary. Air monitoring will be conducted by the Contractor in accordance with the Site Safety and Health Plan included as Appendix B.

3.8 PROTECTION OF EXISTING PROPERTY

Throughout the removal action activities, the Contractor will implement procedures to protect existing property features from damage. Procedures will include safe working distances, warning tape, and temporary fencing and barriers. Any damage to public or private properties will be addressed by the Contractor at no expense to the property owner or any other party.

3.9 DEMOLITION

3.9.1 Pre-Demolition Activities

Prior to the start of the removal action activities at the Site, the Contractor will coordinate the removal/replacement of the underground utilities to Existing Buildings 1 and 2 (gas, water, and sanitary sewer) and stub them as directed by the respective utility company.



The Contractor will also remove and relocate the existing fire hydrant along South Front Street, prior to work in this area. A summary of contacts made by Advanced GeoServices regarding these issues are provided within Appendix F.

3.9.2 Contractor Demolition Activities

3.9.2.1 Building Demolition

The Contractor will demolish/remove the superstructures of Existing Buildings 1 and 2. The foundations and floor slabs of Existing Building 1 will also be demolished/removed. The foundations and floor slabs of Existing Building 2 will be prepared as described in Section 3.11.3.

Prior to demolishing Existing Buildings 1 and 2, the Contractor will perform an Engineering Safety Analysis (29CFR1926.850) and conduct an asbestos survey of the existing structures. Following the completion of these activities, the Contractor will submit a PADEP/USEPA Asbestos Abatement and Demolition/Renovation Notification Form.

All demolition materials will be disposed off-site in accordance with all prevailing environmental regulations, and all local, state and federal regulations. The Contractor is responsible for any testing required for off-site disposal. All off-site disposal locations shall be identified by the Contractor in a submittal to the owner at least two weeks prior to scheduling of the disposal activities.

3.9.2.2 Asbestos Removal

Asbestos Containing Materials have been identified in Existing Buildings 1 and 2. The results of the analysis of bulk samples of these materials are included as Appendix G.



The Contractor will remove all Asbestos Containing Materials within Existing Buildings 1 and 2 in accordance with the Asbestos NESHAP (40 CFR 61 Subpart M) and the U.S. Department of Labor Standard (29CFR1926.1101).

This Asbestos Containing Material will be disposed of off-site by the Contractor in accordance with all prevailing environmental regulations, and all local, state and federal regulations. The Contractor shall do any required testing necessary for off-site disposal of these materials. The final disposal location shall be identified to the owner at least two weeks prior to off-site disposal activities.

3.9.2.3 Other Demolition Activities

The Contractor will disconnect and remove all overhead utilities at the Site. Excluding, Concrete Holder Pad 1, Concrete Holder Pad 2, the foundations of the Concrete Structure, Concrete Pad 2, and the Concrete Lagoon, the Contractor will demolish/remove the existing Site structures (including foundations) and dispose of the debris off-site in accordance with all prevailing environmental regulations, and all local, state and federal regulations. The Contractor is responsible for any testing required for off-site disposal. All off-site disposal locations shall be identified by the Contractor in a submittal to the owner at least two weeks prior to scheduling of the disposal activities. The existing Site structures to be removed are identified on the project drawings and are as follows:

- Concrete Structure (above ground portion only);
- Raised Concrete Pad;
- PP&L Pole # 35021 and associated guy wire;
- Utility pole adjacent to Existing Building 1;
- Concrete Pad 1;
- Concrete & Macadam Pad; and,
- Foundations and floor slab of Existing Building 1.



The Borough intends to use the Concrete Lagoon for a future salt storage area. The Contractor will remove the existing wooden ramp and concrete ramp/front wall of this structure and repair the southern edge as shown on the project drawings.

3.10 EXISTING CONCRETE HOLDER PADS

The Contractor will construct an 8-inch thick concrete pad over the footprints of the existing Concrete Holder Pad 1 and Concrete Holder Pad 2. Specific details regarding the concrete pads are shown on the Site Details Plans. (Sheet 4, Section 6.0) The concrete shall be pneumatically placed shotcrete and shall be installed by a specialty contractor experienced with similar applications.

Prior to the start of work, all cracks in the existing concrete will be sprayed with "Round-Up" or comparable commercial environmentally acceptable sterilants in accordance with the manufacturers instructions to kill all vegetation within the cracks.

3.11 SITE PREPARATION

3.11.1 Fence

The Contractor will remove the existing fence along South Front Street and adjacent to Existing Building 2 as necessary to complete the required activities. The sequencing of fence removal shall be integrated into the Contractor's sequencing plan for Site activities. Upon removal of this fence, the Contractor will provide a temporary 8-foot high fence with a gate along South Front Street to maintain Site security. The Contractor will maintain the temporary fence until the permanent fence shown on the Site Removal Action/Reuse Plan is installed. In addition, the Contractor will replace the damage fence identified on the Site Removal Action/Reuse Plan with a new fence.



3.11.2 Existing Vegetated Areas

The Contractor will strip the Site within the footprint of the proposed pavement (shown on the Site Removal Action/Reuse Plan) of all trees, vegetation, roots, and rootmat. This vegetative material will be stockpiled and disposed of off-site by the Contractor in accordance with all prevailing environmental regulations, and all local, state and federal regulations. The Contractor shall do any required testing necessary for off-site disposal of these materials. The final disposal location shall be identified to the owner at least two weeks prior to off-site disposal activities.

Following the removal (stripping) operations, the Contractor will proof-roll the subgrade of all areas to receive fill with a minimum 10-ton smooth-drum vibratory roller under the observation of the Engineer to compact the surficial soils and to delineate any soft/unstable areas. Soft/unstable areas observed by the Engineer during the proof-rolling that cannot be easily compacted will be undercut to stable material and the undercut area backfilled in accordance with the recommendations of the Engineer. The unsuitable material will be placed in the area designated for unsuitable material as shown on the Site Preparation/Demolition Plan.

If the volume of unsuitable material exceeds the capacity of the unsuitable material placement area, the excess material will be disposed of off-site by the Contractor in accordance with all prevailing environmental regulations, and all local, state and federal regulations. The Contractor shall do any required testing necessary for off-site disposal of these materials. The final disposal location shall be identified to the owner at least two weeks prior to off-site disposal activities.

3.11.3 Existing Building 2 and Concrete Pad 2

The building slab of Existing Building 2 as well as Concrete Pad 2 will be broken in place by the Contractor to prepare the area for the materials to be placed and compacted above the slab/pad elevation. The slab/pad will be broken into pieces with a maximum dimension of 3 feet in any direction.



3.12 GRADING ACTIVITIES

The construction of an asphalt cap will require Site grading activities including the following components:

- Installation and maintenance of erosion and sediment controls;
- Utility location identification and verification;
- Installation of stormwater facilities and the concrete curb; and,
- Excavation and fill placement to achieve design grades.

3.12.1 Erosion, Sedimentation, and Stormwater Controls

The installation and maintenance of erosion, sedimentation, and stormwater controls at the Site will be performed by the Contractor in accordance with the Erosion and Sedimentation Control Plan provided in Appendix C and the Erosion and Sedimentation Control Details.

Under the USEPA chosen remedy, the entire Site will be paved and there will be essentially no infiltration. In accordance with discussions with the Lancaster County Conservation District, it was decided that the proposed stormwater management basin would function to detain the increased runoff (compared to the existing condition) during a two year rain event. The approval of the remedy approach by PADEP is provided in Appendix D.

3.12.2 Utility Verification

Prior to performing grading activities, and installing the stormwater facilities and concrete curb, the Contractor will contact the Pennsylvania One-Call agency to locate the public underground utilities at the Site (as required by law) and coordinate with local utilities and a private utility locator service (as necessary) to identify and mark all utilities (underground, surface and above-ground) at the Site.



All utilities will be marked and preserved throughout the activities at the Site. Any damaged utilities will be repaired by the Contractor at the Contractor's expense.

3.12.3 Stormwater Management Facilities, Site Utilities, and Concrete Curb

The construction of an asphalt-lined stormwater management basin and the installation of stormwater pipes/inlets, sanitary sewer/gas/water lines, and concrete curb will be performed by the Contractor as shown on the Grading and Utility Plan and the Site Details. The Contractor shall note that the placement of asphalt in steeply sloping areas may require specialized equipment.

The excavations for the stormwater pipes/inlets and sanitary sewer/gas/water lines will extend a minimum of 18 inches beyond all edges of the pipe/inlet to create a "clean fill" utility corridor around the utility element. A geotextile fabric will be placed within the trench prior to installation of the pipe/inlet to demarcate the utility corridor.

To address NPDES Phase II BMP requirements, water quality filters will be placed at each inlet.

3.12.4 Excavation and Fill Placement

Excavation (cuts) and fill placement will be performed by the Contractor to achieve design grades. One test boring was performed within the footprint of the proposed stormwater management basin. The log of the test boring and a sketch plan showing the location of this test boring as well as the other test borings for the planned building are provided in Appendix H.

Suitable on-site materials removed from cut areas and stormwater facilities/curb excavations will be used for on-site fill areas. On-site materials used as fill will be free of organics, degradable inclusions, excess moisture, frozen materials, and particles larger than 9 inches. On-site materials considered unsuitable for Site fills will be placed in the area designated for unsuitable material shown on the Site Preparation/Demolition Plan.



Imported borrow material will be used to backfill stormwater trenches (pipes and inlets) and to complete Site fills if there is insufficient volume of on-site material. The imported borrow material will be free of organics, degradable inclusions, excess moisture, and frozen materials and:

- Meet PADEP Clean Fill requirements; and,
- Consist of one of the following inorganic USCS soil types: GP, GW, SW, SP, or SM and meet the following gradation requirements.

<u>Sieve Size</u>	<u>Percent Passing</u>
2 inch	75-100
3/4 inch	75-100
No. 4	20-100
No. 40	0-60
No. 200	0-35

Maximum particle size of 2 inches

Fine fraction having a Plastic Index (PI) < 7 and Liquid Limit (LL) < 40

All fills placed to meet grades will be placed in horizontal lifts with a maximum loose thickness of 8 inches. Fill placed over large areas will be compacted by repeated passes of a minimum 10-ton, smooth-drum vibratory roller. Backfill placed in confined areas (trenches, etc.) will be compacted by repeated passes of hand-manipulated compaction equipment (i.e., walk-behind rollers, jumping jack-type tampers, etc.).

Site fills and trench backfill will be placed and completed to at least 94 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D 1557). The Contractor will be responsible for providing a modified proctor test and a grain size distribution curve for each type of material used on Site.



Depending upon the variability of the on-site material, the determination of a representative compaction standard via modified proctor testing may not be possible. If this is the case, the adequacy of compaction will be judged by the Engineer based on the performance (i.e., no movement) of the compacted material beneath the traffic of the construction/compaction equipment. If proctor testing is representative, three tests will be taken by the Contractor from each lift placed within areas expected to have high vehicular load. The Contractor will be responsible for any moisture adjustment necessary to allow the materials to be compacted in a suitable manner. This may include scarifying or adding water, as necessary, based on the starting moisture content of the soil.

3.13 NEW BUILDING FOUNDATIONS AND FLOOR SLAB

The Contractor will install the foundations and concrete floor slab for the future pre-fabricated steel structure to be constructed by the Borough. A passive gas vent pipe system will be installed beneath the slab. Details for this system are shown on Drawing C901. Potable water, gas, and sanitary sewer lines will also be installed to the building and stubbed through the concrete floor slab. The building foundation and floor slab details will be provided under separate cover.

During installation of the building foundations, the bearing surfaces will be evaluated by the Engineer to assure that the bearing conditions are consistent with those assumed for the design of the proposed building. If unsuitable or less competent materials are encountered at the design bearing level, they should be corrected as directed by the Engineer. The Contractor shall not place any floor or foundation concrete until it has been observed and approved by the Engineer. Five test borings were performed within the footprint of the proposed building. The logs of the test borings and a sketch plan showing the location of the test borings are provided in Appendix H.



Prior to slab construction, the subgrade will be proof-rolled with a large (minimum 10-ton), smooth-drum vibratory roller to compact the surface soils and to delineate any materials disturbed by adverse weather conditions or previous construction activities. Any unstable areas observed will be corrected as directed by the Engineer. Concrete testing requirements are provided on the Site plans.

3.14 SITE FENCE AND BOLLARDS

Following installation of the proposed pavement base course material, the Contractor shall install the permanent fence along South Front Street and the proposed stormwater management basin area, and the bollards around the Concrete Holder Pads. The location of the fence and bollards is shown on the Site Removal Action/Reuse Plan. Details of the fence and bollards are on the Site Plans.

3.15 ASPHALT CAP

The Contractor shall install the pavement sections delineated on the project drawings. A description of these pavement sections is provided on the Site Details Plans. The Contractor will also place 1.5 inches of PennDOT ID-2 Wearing Course on the surface of the Concrete Lagoon.

Prior to placement of the pavement base course, the soil subgrade will be proof-rolled by the Contractor with a minimum 10-ton smooth-drum vibratory roller and a loaded triaxle dump truck under the observations of the Engineer to compact the surface soils and to delineate any materials disturbed by adverse weather conditions or previous construction activities. Any unstable areas observed will be corrected as directed by the Engineer.

3.16 SUBMITTALS

The Contractor will provide the submittals identified below to the Project Coordinator and Engineer. The Contractor shall plan for a two week review of each submittal. The Contractor will not begin work before approval of required submittals.



- **Engineering Safety Analysis:** The Contractor will submit an Engineering Safety Analysis required by 29CFR1926.850, performed by a Competent Person, for the demolition of the existing structures.
- **PADEP Notification Form (2700-FM-AQ0021):** The Contractor will submit a copy of the PADEP Asbestos Abatement and Demolition/Renovation Notification Form for the asbestos abatement and demolition activities at the Site.
- **Geotechnical Laboratory Testing:** The Contractor will submit the results of geotechnical laboratory testing [Atterberg limits (ASTM D 4318), particle size distribution (ASTM D 422), and Modified proctor (ASTM D 1557)] for each imported borrow material proposed for use at the Site;
- **PADEP Clean Fill Certification/Testing:** The Contractor will submit certifications or the results of testing for Clean Fill for each imported borrow material proposed for use at the Site documenting that each borrow material meets the PADEP Clean Fill requirements. The Contractor shall also submit a notarized statement that all fill placed meets the project criteria identified above and that the Contractor has completed all necessary testing to confirm the accuracy of this statement.
- **Manhole Structures -** Shop drawings or catalog cut sheets for precast manhole structures shall be provided.
- **Metal Castings -** Shop drawings or catalog cut sheets for the metal casting cut sheets to be used shall be provided.
- **Fence Materials -** Line posts and gate catalog cut sheets shall be provided.



- **Concrete** - The name of the proposed concrete plant and specific mixes to be utilized shall be provided. Batch slips showing the mix delivered to the Site shall also be provided. Appropriate testing requirements for the maintenance building floor slab and foundation are provided on the Site plans.
- **Bituminous Pavement** - The name of the proposed bituminous pavement batch plant shall be identified. The planned bituminous mix shall also be provided. Batch slips from each truck shall also be provided.
- **Off-site Disposal** - The final location of all materials being sent off-site shall be identified by the Contractor. The Contractor shall also submit the methods and types of testing required by the disposal facilities for each material to be disposed.
- **Shotcrete** - For construction of the proposed Concrete Cap, the Contractor shall specialize in the field of Shotcrete and shall have a minimum of 5 years experience in its application. The Shotcrete Contractor shall also have experience similar to the application of Shotcrete as required for this project. The Shotcrete Contractor shall submit qualifications, project experience, references, and the methods proposed for the construction of the proposed Concrete Cap (including mix design).
- **Subcontractors** - All subcontractors proposed for use on the Site shall be identified.

The Contractor shall assume approval of each submittal will take two weeks.



3.17 MONITORING WELL ABANDONMENT, INSTALLATION, DEVELOPMENT AND SAMPLING

Two on-site monitoring wells (MW-3S and MW-3D) will be abandoned prior to capping the Site. In addition, four new bedrock monitoring wells and one replacement well (MW-07D) will be installed, developed, and sampled as required by the AOC. GEI Consultants, Inc. (GEI), the former Remedial Investigation Consultant, has been selected by the Respondents to perform this portion of the work. They have prepared a work plan and health and safety plan for completing these activities which were submitted under separate cover.



4.0 PROJECT ORGANIZATION

Several organizations, companies and individuals will be involved in the successful performance of the work at the Site. These parties are summarized below and are shown on the organizational chart on Figure 3. A list of contact information is provided as Table 1.

4.1 USEPA AND PADEP

The USEPA has designated Mr. Dave Turner as their Project Coordinator. Mr. Turner will be responsible for overseeing the Respondent's implementation of the work specified in this RAP and has the authority to halt, conduct, or direct any work that is not being performed consistent with this RAP. The USEPA will also be supported by a representative from the US Army Corps of Engineers.

USEPA's On-Scene Coordinator will be Eugene Dennis.

The PADEP Officer for the project will be Ms. Elise Juers. Mr. Juers will represent PADEP's interest in the on-going project activities.

4.2 PROJECT COORDINATOR

The Project Coordinator, on behalf of the Respondents, will be Mr. Scott Miller, P.E. of Clean Sites Environmental Services, Inc. (Clean Sites).

4.3 RESPONDENTS

The representatives from the Respondents are Mr. Craig Shamory of PPL Electric Utilities Corp., and Mr. J Rondeau of UGI Utilities, Inc., of Reading, Pennsylvania.



4.4 ENGINEER

The Engineer for the project is Advanced GeoServices. Advanced GeoServices' personnel will oversee the remedial activities on behalf of the Respondent and will also serve as the Respondent's on-site representative. Advanced GeoServices' Project Director will be Mr. Christopher Reitman, P.E. Mr. Todd Trotman P.E. will assist Mr. Reitman with oversight of field activities. An Advanced GeoServices technician will also be on-site during completion of significant activities at the Site.

4.5 REMOVAL CONTRACTOR

The Respondents have retained Penn E & R to conduct the removal action activities. Penn E & R will be responsible for completing the response action work described in this RAP and on project plans and providing on-site Health and Safety and Quality Control services. Penn E & R is experienced in similar excavation, utility, concrete, and pavement work. Penn E & R's qualifications have been submitted to the USEPA under separate cover as required by the AOC. Mr. Jim Vagra is Penn E & R's Project Manager.

The Contractor overseeing installation of the monitoring wells will be GEI Consultants, Inc. the former remedial investigation consultant.



5.0 REPORTING

5.1 PROGRESS REPORTS

Clean Sites, on behalf of the Respondents, will submit progress reports to USEPA. The first progress report will be submitted within seven business days of the RAP being approved by USEPA. The reports will be submitted every seven business days thereafter, or such longer interval as determined by the USEPA Project Coordinator, and until the response action is complete.

The reports shall include, at a minimum: 1) a description of the response action completed and the actions that have been taken toward achieving compliance with this settlement agreement; 2) a description of all data anticipated and activities scheduled for the next seven business days, or, if applicable, the period specified in writing by the USEPA Project Coordinator; 3) a description of any problems encountered or anticipated; 4) any actions taken to prevent or mitigate such problems; 5) a schedule for completion of such actions; 6) copies of all analytical data received during the reporting period; and 7) all modifications to the response action, RAP and scheduled reporting period.

5.2 FINAL REPORT

Advanced GeoServices, on behalf of the Respondents, will prepare a Final Report detailing the work undertaken to implement the RAP. The report will also include an as-built plan of the Site. This report will be submitted for USEPA review within 30 business days of completing the RAP activities.

Within 15 business days of receipt of notification by USEPA, or as otherwise specified by USEPA in its discretion, the report will be amended as appropriate, certified, and submitted final to USEPA.



6.0 PROJECT SCHEDULE

Project activities will be completed in accordance with the AOC which requires the following timeframes for completion of project activities:

- The Respondents shall submit a draft RAP by December 15, 2006.
- USEPA will review the RAP and notify the Respondents of USEPA's approval or disapproval of the RAP. In the event of disapproval, USEPA will specify the deficiencies in writing. The Respondents shall respond to and correct the deficiencies identified by USEPA and resubmit the RAP to USEPA within fifteen (15) business days of receipt of USEPA disapproval or such longer time as may be specified by USEPA in its discretion.
- Within ten business days of receipt from USEPA of written approval to proceed with implementation of the USEPA-approved RAP ("written approval to proceed"), the Respondents shall commence implementation of such RAP and complete it in accordance with the RAP. In the event USEPA determines that any portion of the response action performed is deficient, and USEPA requires Respondents to correct or re-perform such portion of the response action pursuant to this Settlement Agreement, the Respondents shall correct or re-perform such response action or portion of the response action accordance with a schedule provided by USEPA.

The RAP activities will be completed in an expeditious fashion consistent with the AOC. The Contractor will prepare a more detailed project schedule to be submitted for USEPA approval. This more detailed schedule will also comply with the requirements set forth in the AOC.



7.0 HEALTH AND SAFETY

A draft Site Safety and Health Plan has been developed as part of this RAP (Appendix B). The purpose of the submission of this draft is to accelerate the approval of the Site Safety and Health Plan for the Contractor selected at the Site. The Contractor shall review and may opt to modify this Site Safety and Health Plan for planned Site activities. Modifications shall be submitted to the Project Coordinator and USEPA. Any modifications to the plan shall meet all the requirements of the current Site Safety and Health Plan as well as all requirements in the AOC.



TABLE



**TABLE 1
CONTACT LIST**

Company & Address	Contact Name	Phone/Fax/Email
Advanced GeoServices Corp 1055 Andrew Drive Suite A West Chester, PA 19380	Christopher T. Reitman	Tel: (610) 840-9123 Fax: (610) 840-9199 Cell: (610) 389-2469 Home: (610) 701-0670 Email: creitman@advancedgeoservices.com
	Todd Trotman	Tel: (610) 840-9144 Fax: (610) 840-9199 Email: ttrotman@advancedgeoservices.com
	Ross Ulmer	Tel: (610) 610-840-9193 Fax: (610) 840-9199 Email: rulmer@advancedgeoservices.com
Clean Sites Environmental Services, Inc. 46161 Westlake Drive Suite 230 B Potomac Falls, VA 20165	Scott Miller	Tel: (703)-579-2142 Fax: (703)-519-2141 Cell: (703) 868-0710 Email: scottmiller@cleansites.com
PPL Environmental Management 2 North Ninth St. (GENTW17) Allentown, PA 18101	Michael J. Hasel	Tel: (610) 774-4637 Fax: (610) 774-5900 Cell: (610) 737-1630 Email: mjhasel@pplweb.com
PPL Environmental Management 2 North Ninth St. (GENTW17) Allentown, PA 18101	Craig S. Shamory	Tel: (610) 774-5653 Fax: (610) 774-5900 Cell: (610) 393-8176 Email: csshamory@pplweb.com
UGI Utilities Inc. 100 Kachel Boulevard Suite 400 Reading, PA 19607	J C. Rondeau	Tel: (610)-796-3532 Cell: (484) 332-1491 Email: jrondeau@ugi.com
U.S. EPA-3HS22 Region III 1650 Arch Street Philadelphia, PA 19103-2029	Dave Turner	Tel: (215) 814-3216 Fax: (215)-814-3002 Email: turner.david@epamail.epa.gov
PADEP Southcentral Region 909 Elmerton Avenue Harrisburg, PA 17110-8200	Elise Juers	Tel: (717)-705-4852 Fax: (717)-705-4830 Email: Juers.Elise@al.dep.state.pa.us
Borough Hall Public Services Manager 308 Locust Street Columbia, PA 17512	Ron Miller	Tel: (717) 684-2654 Ext: 29 Fax: (717) 684-6819 Email: ronlmiller@comcast.com

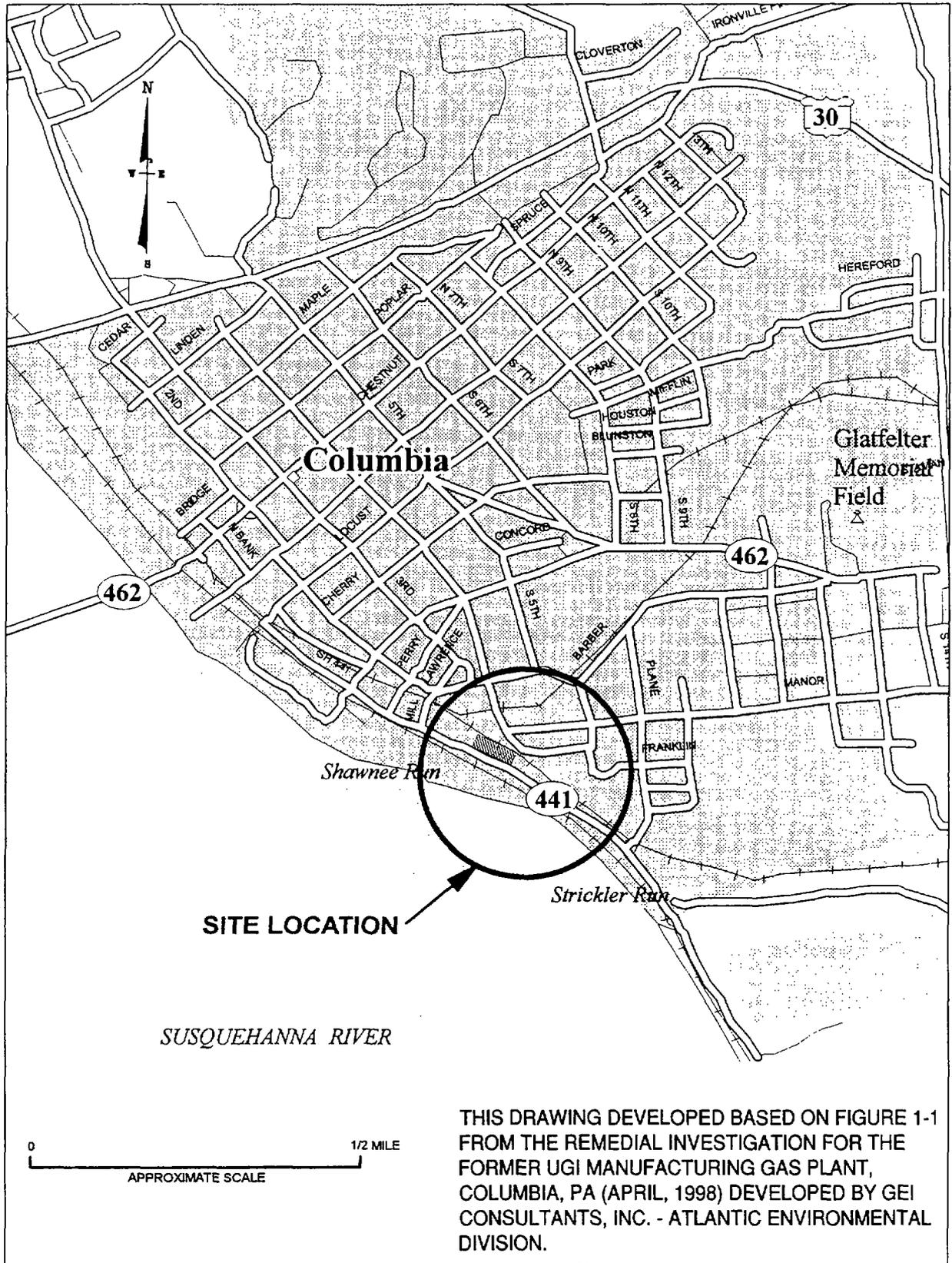


**TABLE 1
CONTACT LIST
(Continued)**

Borough Hall Zoning/Planning/Codes 308 Locust Street Columbia, PA 17512	Jeffrey Helm	Tel: (717) 684-2467 Ext: 215 Fax: (717) 684-7764 Email: colacodes@comcast.com
Lancaster County Conservation District E&S Technician 1383 Arcadia Road Room 200 Lancaster, PA 17601	Alan Houck	Tel: (717) 299-5361 Ext: 5 Email: alan.houck@pa.nacdnet.net
Pennsylvania Department of Transportation Permit Manager District 8-0 2140 Herr Street Harrisburg, PA 17103-1699	Mike Dzurko	Tel: (717)-787-8789 Fax: (717) 705-3652
Penn E & R 2755 Bergey Road Hatfield, PA 19440	Jim Vagra	Tel: (215) 997-9000 Fax: (215) 822-8575 Cell: (267) 246-8535 Email: jvagra@penn-er.com
U.S. Army Corps of Engineers (USACE) U.S. EPA-3HS21 Region III 1650 Arch Street Philadelphia, PA 19103-2029	Tim Gallagher	Tel: (717) 756-3024 Email: Tim.Gallagher@nab02.usace.army.mil
U.S. EPA-3HS32 Region III 1650 Arch Street Philadelphia, PA 19103-2029	Eugene Dennis, OSC	Tel: (215)-814-3202 Email: dennis.eugene@epa.gov



FIGURES



THIS DRAWING DEVELOPED BASED ON FIGURE 1-1 FROM THE REMEDIAL INVESTIGATION FOR THE FORMER UGI MANUFACTURING GAS PLANT, COLUMBIA, PA (APRIL, 1998) DEVELOPED BY GEI CONSULTANTS, INC. - ATLANTIC ENVIRONMENTAL DIVISION.



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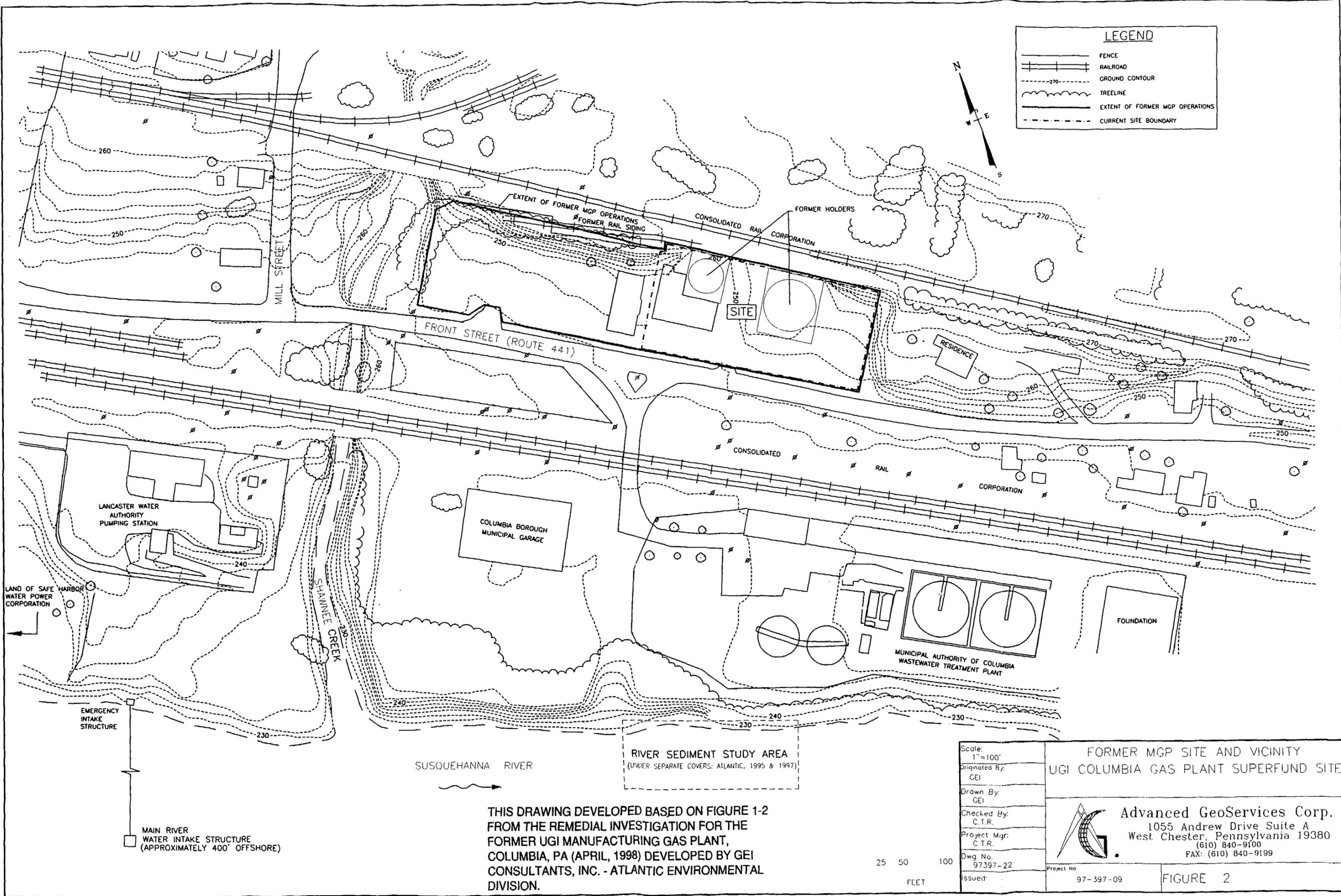
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
 tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

J:\COLUMBIA\DRAWINGS\2006-1800-07\2006-1800-07-01.dwg, Model

SITE LOCATION MAP

UGI COLUMBIA GAS PLANT SUPERFUND SITE

PROJECT ENGINEER: C.T.R.	SCALE:	AS SHOWN
CHECKED BY: C.T.R.	PROJECT NUMBER: 2006-1800-07	
DRAWN BY: D.E.C.	DATE: 11/20/06	FIGURE 12 1



LAND OF SAFE HARBOR
WATER POWER CORPORATION

LANCASTER WATER
AUTHORITY
PUMPING STATION

SHAWNEE CREEK

FRONT STREET (ROUTE 441)

COLUMBIA BOROUGH
MUNICIPAL GARAGE

MUNICIPAL AUTHORITY OF COLUMBIA
WASTEWATER TREATMENT PLANT

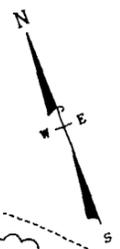
SUSQUEHANNA RIVER

RIVER SEDIMENT STUDY AREA
(UNDER SEPARATE COVERS: ATLANTIC, 1995 & 1997)

THIS DRAWING DEVELOPED BASED ON FIGURE 1-2
FROM THE REMEDIAL INVESTIGATION FOR THE
FORMER UGI MANUFACTURING GAS PLANT,
COLUMBIA, PA (APRIL, 1998) DEVELOPED BY GEI
CONSULTANTS, INC. - ATLANTIC ENVIRONMENTAL
DIVISION.

LEGEND

- FENCE
- RAILROAD
- - - GROUND CONTOUR
- ~ TREELINE
- EXTENT OF FORMER MGP OPERATIONS
- - - CURRENT SITE BOUNDARY



25 50 100
FEET

Scale:
1"=100'
Originated By:
GEI
Drawn By:
GEI
Checked By:
C.T.R.
Project Mgr:
C.T.R.
Dwg No.
97397-22
Issued:

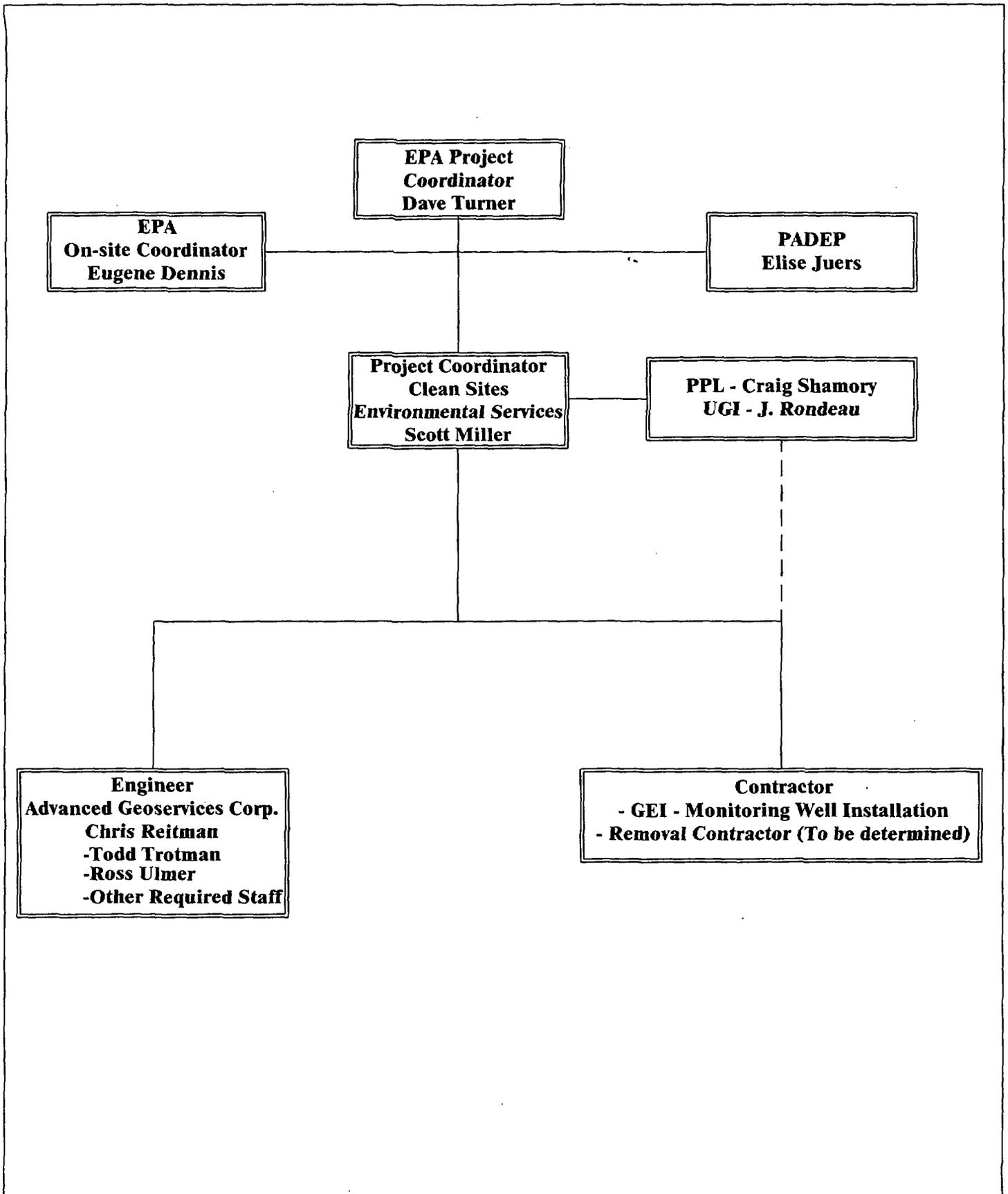
FORMER MGP SITE AND VICINITY
UGI COLUMBIA GAS PLANT SUPERFUND SITE



Advanced GeoServices Corp.
1055 Andrew Drive Suite A
West Chester, Pennsylvania 19380
(610) 840-9100
FAX: (610) 840-9199

Project No
97-397-09

FIGURE 2



Engineering for the Environment. Planning for People.™

1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
Tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

PROJECT ORGANIZATION

UGI COLUMBIA GAS PLANT SUPERFUND SITE

PROJECT ENGINEER: C.T.R.	SCALE:	NO SCALE
CHECKED BY: C.T.R.	PROJECT NUMBER: 2006-1800-07	
DRAWN BY: D.E.C.	DATE: 11/20/06	FIGURE: 3

AR304074



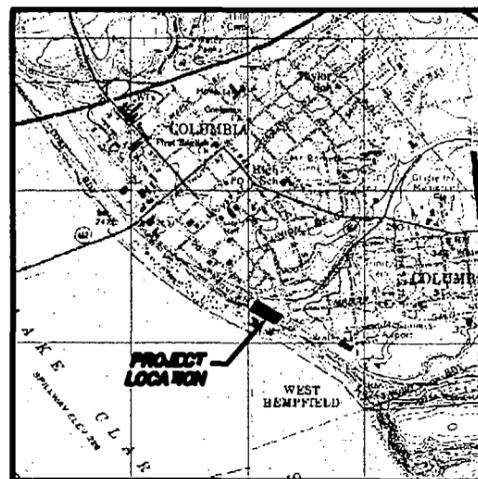
DRAWINGS

UGI COLUMBIA GAS PLANT SUPERFUND SITE

BOROUGH OF COLUMBIA
LANCASTER COUNTY, PENNSYLVANIA

REMOVAL ACTION AND SITE REUSE PLAN

PREPARED FOR
PPL ELECTRIC UTILITIES CORP.
ALLENTOWN, PENNSYLVANIA
AND
UGI UTILITIES, INC.
READING, PENNSYLVANIA

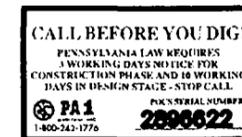


LOCATION MAP
SCALE: 1" = 2000'



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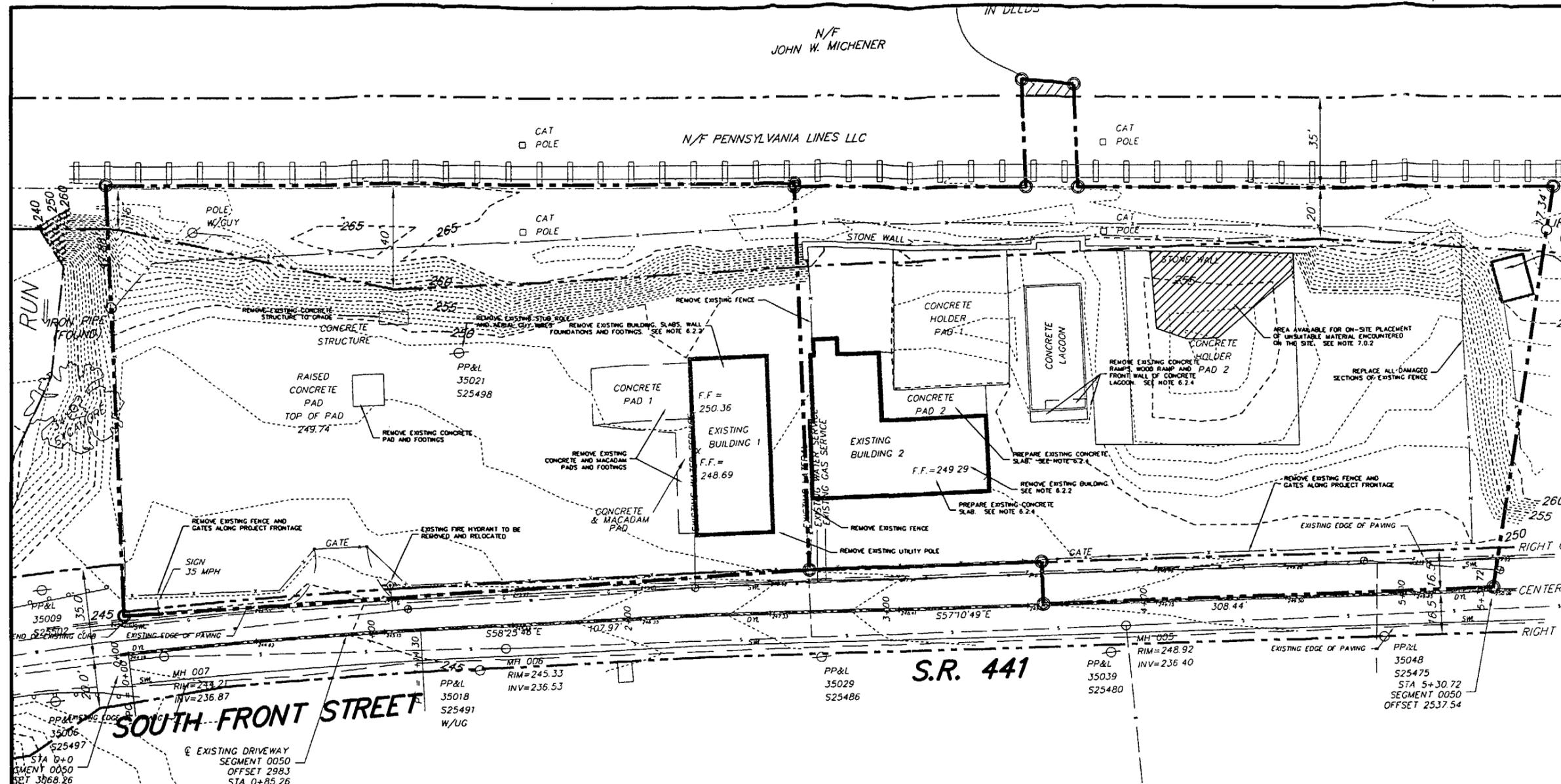
1055 ANDREW DRIVE, SUITE A
WEST CHESTER, PA 19380
tel 610.840.9100
fax 610.840.9199
www.advancedgeoservices.com



DRAWING LIST

DRAWING NUMBER	SHEET NUMBER	DRAWING TITLE	DATE
C001	1 OF 17	COVER SHEET	05/03/2007
C010	2 OF 17	EXISTING CONDITIONS PLAN	05/03/2007
C050	3 OF 17	SITE PREPARATION/DEMOLITION PLAN	05/03/2007
C100	4 OF 17	SITE REMOVAL ACTION/REUSE PLAN	05/03/2007
C200	5 OF 17	GRADING PLAN	05/03/2007
C210	6 OF 17	UTILITY PLAN	05/03/2007
C300	7 OF 17	MAINTENANCE AND PROTECTION OF TRAFFIC	05/03/2007
C301	8 OF 17	PAVEMENT MARKING AND SIGNAGE	05/03/2007
C501	9 OF 17	UTILITY PROFILES	05/03/2007
C502	10 OF 17	UTILITY PROFILES	05/03/2007
C511	11 OF 17	FRONT STREET (SR 0441) SECTIONS	05/03/2007
C512	12 OF 17	FRONT STREET (SR 0441) SECTIONS	05/03/2007
C700	13 OF 17	EROSION AND SEDIMENTATION CONTROL PLAN	05/03/2007
C751	14 OF 17	EROSION AND SEDIMENTATION CONTROL DETAILS AND NARRATIVE	05/03/2007
C752	15 OF 17	EROSION AND SEDIMENTATION CONTROL DETAILS AND NARRATIVE	05/03/2007
C900	16 OF 17	SITE DETAILS	05/03/2007
C901	17 OF 17	SITE DETAILS	05/03/2007

PROJECT NO.: 20061800
DRAWING NO.: C001
SHEET NO.: 1 OF 17
DATE: 12/15/2006
LAST REVISED: 05/03/2007

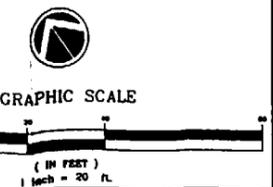


DATE	REVISION
01/17/07	PER LCD AND PENNDOT COMMENTS
01/18/07	PER US AOC COMMENTS
02/15/07	PER LCD COMMENTS
04/17/07	PER PENNDOT COMMENTS (3/12/07)
05/03/07	PER PENNDOT COMMENTS (5/3/07)

- 1.0 MOBILIZATION**
- THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, MATERIALS, SUPPLIES, SUPPORT ZONE FACILITIES, AND DISPOSAL COSTS AS NEEDED TO CONDUCT THE REMOVAL ACTIVITIES AT THE SITE.
 - SPACE FOR A MOBILE OFFICE TRAILER WILL BE MADE AVAILABLE TO THE CONTRACTOR ON THE BOROUGH OF COLUMBIA (BOROUGH) PROPERTY LOCATED ACROSS SOUTH FRONT STREET FROM THE SITE. THE BOROUGH WILL ALSO ALLOW FOR A TEMPORARY ELECTRICAL HOOKUP FROM THEIR MAINTENANCE FACILITY TO THE MOBILE TRAILER. COORDINATION OF THE TRAILER LOCATION AND ELECTRICAL SERVICES WILL BE MADE BY THE CONTRACTOR THROUGH MR. RON MILLER (PUBLIC SERVICES MANAGER, 717-684-2854 EXT. 29, BOROHPUBSERV@COLUMBIA.PA.GOV).
 - SANITARY FACILITIES, TELEPHONE, AND WATER SERVICES WILL NOT BE AVAILABLE FROM THE BOROUGH PROPERTY OR AT THE SITE. THE CONTRACTOR SHALL PROVIDE A SOURCE OF POTABLE WATER AND PORTABLE SANITARY FACILITIES AT THE SITE AND ON THE BOROUGH PROPERTY. THE CONTRACTOR SHALL ALSO PROVIDE FOR TELEPHONE SERVICE, AS NEEDED.
 - THE CONTRACTOR SHALL ESTABLISH DECONTAMINATION FACILITIES AND/OR STATIONS FOR PERSONNEL AND EQUIPMENT SUFFICIENT TO SUPPORT SITE ACTIVITIES. DECONTAMINATION OF PERSONNEL, EQUIPMENT, AND MATERIALS SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE USEPA AND OSHA REGULATIONS. ADDITIONAL DETAILS FOR DECONTAMINATION FACILITIES AND PROCEDURES ARE PROVIDED IN THE HEALTH AND SAFETY PLAN INCLUDED IN THE REMOVAL ACTION/REUSE PLAN.
 - THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL EROSION, SEDIMENTATION, AND STORMWATER CONTROLS AT THE SITE IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN AND EROSION AND SEDIMENTATION CONTROL DETAILS.
- 2.0 SITE SECURITY AND SAFETY**
- THE CONTRACTOR SHALL CONDUCT SITE SAFETY IN ACCORDANCE WITH THE HEALTH AND SAFETY PLAN INCLUDED IN THE RAP. THE CONTRACTOR SHALL SECURE THE ACTIVE WORK AREAS, CONTAMINATION REDUCTION ZONES (CRZ), AND EXCLUSION ZONES SHALL BE IDENTIFIED AND DEMARCATED BY THE CONTRACTOR USING FENCING OR HIGH-VISIBILITY TAPE, AS APPROPRIATE.
 - THE CONTRACTOR SHALL REMOVE THE EXISTING FENCE ALONG SOUTH FRONT STREET AND ADJACENT TO EXISTING BUILDING 2 (FRONT AND BACK OF BUILDING). IN ANY AREA WHERE EXISTING FENCE IS REMOVED, THE CONTRACTOR SHALL PROVIDE A TEMPORARY 8-FOOT HIGH FENCE WITH A GATE ALONG SOUTH FRONT STREET TO MAINTAIN SITE SECURITY. THE CONTRACTOR SHALL MAINTAIN THE TEMPORARY FENCE UNTIL THE PERMANENT FENCE SHOWN ON THE SITE REMOVAL ACTION/REUSE PLAN IS INSTALLED.
 - THE CONTRACTOR SHALL REPLACE THE DAMAGED FENCE AS SHOWN.
- 3.0 PHOTO DOCUMENTATION**
- PRIOR TO THE START OF WORK, THE CONTRACTOR SHALL PHOTO DOCUMENT THE CONDITION OF THE SITE AND ALL AREAS TO BE REPRESENTED BY THE REMOVAL ACTION ACTIVITIES. ALL PHOTO DOCUMENTATION SHALL BE AVAILABLE TO THE RESPONDENT'S REPRESENTATIVES FOR REVIEW AND COMMENT AT ANYTIME.
- 4.0 AIR MONITORING AND DUST SUPPRESSION**
- THE CONTRACTOR SHALL KEEP DUST TO A MINIMUM DURING SITE ACTIVITIES BY USING HOSES, SPRINGOLERS, AND WATER TRUCKS AS NECESSARY. AIR MONITORING SHALL BE CONDUCTED BY THE CONTRACTOR IN ACCORDANCE WITH THE HEALTH AND SAFETY PLAN INCLUDED IN THE RAP.
- 5.0 PROTECTION OF EXISTING PROPERTY**
- THROUGHOUT THE REMOVAL ACTION ACTIVITIES, THE CONTRACTOR SHALL IMPLEMENT PROCEDURES TO PROTECT EXISTING PROPERTY FEATURES FROM DAMAGE. PROCEDURES SHALL INCLUDE SAFE WORKING DISTANCES, WARNING TAPE, AND TEMPORARY FENCING AND BARRIERS. ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTIES SHALL BE ADDRESSED BY THE CONTRACTOR AT NO EXPENSE TO THE PROPERTY OWNER OR ANY OTHER PARTY.

- 6.0 DEMOLITION**
- 6.1 UTILITY COORDINATION ACTIVITIES**
- PRIOR TO THE START OF THE REMOVAL ACTION ACTIVITIES AT THE SITE, WE ANTICIPATE THAT THE CONTRACTOR WILL COORDINATE THE FOLLOWING ACTIVITIES:
- DISCONNECT THE UNDERGROUND UTILITIES TO EXISTING BUILDINGS 1 AND 2 (GAS, WATER, AND SANITARY SEWER) AND STUB THEM AS DIRECTED BY THE RESPECTIVE UTILITY COMPANY.
 - REMOVE AND RELOCATE THE EXISTING FIRE HYDRANT ALONG SOUTH FRONT STREET.
- 6.2 CONTRACTOR DEMOLITION ACTIVITIES**
- 6.2.1 GENERAL**
- ALL DEMOLITION MATERIALS SHALL BE DISPOSED OFF-SITE IN ACCORDANCE WITH ALL PREVAILING ENVIRONMENTAL REGULATIONS, AND ALL LOCAL, STATE AND FEDERAL REGULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR ANY TESTING REQUIRED FOR OFF-SITE DISPOSAL. ALL OFF-SITE DISPOSAL LOCATIONS SHALL BE IDENTIFIED BY THE CONTRACTOR IN A SUBMITTAL TO THE OWNER AT LEAST TWO WEEKS PRIOR TO SCHEDULING OF THE DISPOSAL ACTIVITIES.
 - PRIOR TO THE DEMOLITION ACTIVITIES, THE CONTRACTOR SHALL CONTACT THE PENNSYLVANIA ONE-CALL AGENCY TO LOCATE THE PUBLIC UNDERGROUND UTILITIES AT THE SITE (AS REQUIRED BY LAW).
 - THE CONTRACTOR SHALL VERIFY THAT ALL UNDERGROUND UTILITIES HAVE BEEN DISCONNECTED/SHUTOFF AND STUBBED PRIOR TO INITIATION OF THE DEMOLITION ACTIVITIES. IF THIS ACTIVITY WAS NOT COORDINATED BY THE BOROUGH, THE CONTRACTOR SHALL ARRANGE FOR THE SHUTOFF OF EACH UNDERGROUND UTILITY. THE UNDERGROUND UTILITIES SHALL BE DISCONNECTED AND STUBBED/CAPPED AS DIRECTED BY THE RESPECTIVE UTILITY COMPANY.
 - ALL OVERHEAD UTILITIES TO THE EXISTING STRUCTURES SHALL BE DISCONNECTED FROM SERVICE AND REMOVED BY THE CONTRACTOR PRIOR TO THE START OF THE DEMOLITION VIA METHODS APPROVED BY THE UTILITY COMPANIES.
 - THE CONTRACTOR SHALL COMPLY WITH LOCAL DEMOLITION CODES AND THE U.S. EPA/PADEP/ESHAP PERMIT (2005 REVISION).
 - ALL DEMOLITION PRACTICES SHALL BE PERFORMED IN COMPLIANCE WITH 29CFR:1926 SUBPART I.
 - MANUAL, ORDINARY DEMOLITION OF THE STRUCTURES IS REQUIRED (I.E., SAWING, ABRADING, CUTTING (SUCH AS WITH A POWER SAW), AND CRUSHING IS PROHIBITED).
 - THE USE OF EXPLOSIVES OR BURSTING IS NOT PERMITTED AT THE SITE.
 - THE CONTRACTOR SHALL PROVIDE AND MAINTAIN INTERIOR AND EXTERIOR SHORING, BRACING, OR STRUCTURAL SUPPORT AS REQUIRED TO PREVENT STABILITY AND PREVENT UNEXPECTED MOVEMENT OR COLLAPSE OF THE STRUCTURE BEING DEMOLISHED. THE CONTRACTOR SHALL STRENGTHEN OR ADD NEW SUPPORTS WHEN REQUIRED.
 - THE CONTRACTOR SHALL REMOVE STRUCTURAL FRAMING MEMBERS, ETC. AND LOWER TO THE GROUND BY METHODS SUITABLE TO MINIMIZE GROUND IMPACT OR DUST GENERATION.
 - THE CONTRACTOR SHALL NOT WET OR MIST DURING ALL DEMOLITION/REMOVAL ACTIVITIES.
 - THE CONTRACTOR SHALL PROTECT THE PUBLIC AND ALL ADJACENT BUILDINGS, STRUCTURES, ROADS, SIDEWALKS, CURBS, AND UTILITIES DURING THE DEMOLITION/REMOVAL ACTIVITIES.
- 6.2.2 BUILDING DEMOLITION**
- THE CONTRACTOR SHALL DEMOLISH/REMOVE THE SUPERSTRUCTURES OF EXISTING BUILDINGS 1 AND 2. THE FOUNDATIONS AND FLOOR SLABS OF EXISTING BUILDING 1 SHALL ALSO BE DEMOLISHED/REMOVED. THE FOUNDATIONS AND FLOOR SLABS OF EXISTING BUILDING 2 SHALL BE PREPARED AS DESCRIBED IN SECTION 7.0.
 - PRIOR TO DEMOLISHING EXISTING BUILDINGS 1 AND 2, THE CONTRACTOR SHALL PERFORM AN ENGINEERING SAFETY ANALYSIS (29CFR:1926.850) AND CONDUCT AN ASBESTOS SURVEY OF THE EXISTING STRUCTURES. FOLLOWING THE COMPLETION OF THESE ACTIVITIES, THE CONTRACTOR SHALL SUBMIT A PADEP/US EPA ASBESTOS ABATEMENT AND DEMOLITION/RENOVATION NOTIFICATION FORM FOR THE DEMOLITION ACTIVITIES.

- 6.2.3 ASBESTOS REMOVAL**
- ASBESTOS CONTAINING MATERIALS HAVE BEEN IDENTIFIED IN EXISTING BUILDINGS 1 AND 2. THE RESULTS OF THE ANALYSIS OF BULK SAMPLES OF THESE MATERIALS ARE INCLUDED AS AN APPENDIX C OF THE RAP.
 - THE CONTRACTOR SHALL REMOVE ALL ASBESTOS CONTAINING MATERIALS WITHIN EXISTING BUILDINGS 1 AND 2 IN ACCORDANCE WITH THE ASBESTOS/ESHAP (40 CFR 61 SUBPART M), THE U.S. DEPARTMENT OF LABOR STANDARD (29CFR:1926.1101), AND THE ASBESTOS/ESHAP REGULATED ASBESTOS CONTAINING MATERIALS GUIDANCE PROVIDED BY THE USEPA.
- 6.2.4 OTHER DEMOLITION ACTIVITIES**
- EXCLUDING CONCRETE HOLDER PAD 1, CONCRETE HOLDER PAD 2, THE FOUNDATIONS OF THE CONCRETE STRUCTURE, CONCRETE PAD 2, AND THE CONCRETE LAGOON, THE CONTRACTOR SHALL DEMOLISH/REMOVE THE EXISTING SITE STRUCTURES (INCLUDING FOUNDATIONS) AND DISPOSE OF THE DEBRIS OFF-SITE IN ACCORDANCE WITH ALL PREVAILING ENVIRONMENTAL REGULATIONS, AND ALL LOCAL, STATE AND FEDERAL REGULATIONS.
 - THE EXISTING SITE STRUCTURES TO BE REMOVED ARE IDENTIFIED ON THIS DRAWING AND ARE AS FOLLOWS:
 - CONCRETE STRUCTURE (ABOVE GROUND PORTION ONLY).
 - RAISED CONCRETE PAD.
 - PP&L POLE #35021 AND ASSOCIATED GUY WIRE.
 - UTILITY POLE ADJACENT TO EXISTING BUILDING 1.
 - CONCRETE PAD 1.
 - CONCRETE & MACADAM PAD.
 - BUILDING 1 FOUNDATION AND CONCRETE SLAB.
 - THE BOROUGH INTENDS TO USE THE CONCRETE LAGOON FOR A FUTURE SALT STORAGE AREA. THE CONTRACTOR SHALL REMOVE THE EXISTING WOODEN RAMP AND CONCRETE RAMP/FRONT WALL OF THIS STRUCTURE. THE CONTRACTOR SHALL REMOVE THE FRONT WALL FLUSH WITH THE CONCRETE FLOOR ELEVATION AND WITHIN FOUR (4) INCHES OF THE INTERIOR FACES OF THE SIDE WALLS. THE CONTRACTOR SHALL FORM AND CAST A MINIMUM THREE (3) INCH THICK CONCRETE COVER ON THE EXPOSED AGGREGATE AND REINFORCEMENT. THE CONTRACTOR SHALL PROVIDE REINFORCEMENT STUBS OR INSERT DOWELS TO ANCHOR THE CONCRETE ONTO THE EXPOSED WALL FACE AND USE HIGH-STRENGTH EPOXY CONCRETE TO PROVIDE BONDING TO EXISTING FACE.
- 7.0 SITE PREPARATION**
- THE CONTRACTOR SHALL STRIP THE SITE AREA AND PORTIONS OF THE SOUTH FRONT STREET RIGHT-OF-WAY WITHIN THE FOOTPRINT OF THE PROPOSED PAVEMENT (SHOWN ON THE SITE DEVELOPMENT/REUSE PLAN) OF ALL TREES, VEGETATION, ROOTS, AND ROOT MAT UNDER THE OBSERVATION OF THE ENGINEER. THIS VEGETATIVE MATERIAL SHALL BE DISPOSED OFFSITE BY THE CONTRACTOR IN ACCORDANCE WITH ALL PREVAILING ENVIRONMENTAL REGULATIONS, AND ALL LOCAL, STATE AND FEDERAL REGULATIONS.
 - FOLLOWING THE REMOVAL (STRIPPING) OPERATIONS, THE CONTRACTOR SHALL PROOF-ROLL THE SUBGRADE OF ALL AREAS TO BE RECONSTRUCTED WITH A MINIMUM 10-TON SMOOTH-DRUM VIBRATORY ROLLER UNDER THE OBSERVATION OF A GEOTECHNICAL ENGINEER/TECHNICIAN TO COMPACT THE SURFICIAL SOILS AND TO DELINEATE ANY SOFT/UNSTABLE AREAS. SOFT/UNSTABLE AREAS OBSERVED BY THE GEOTECHNICAL ENGINEER/TECHNICIAN DURING THE PROOF-ROLLING THAT CANNOT BE COMPACTED SHALL BE UNDERCUT TO STABLE MATERIAL, AND THE UNDERCUT AREA BACKFILLED IN ACCORDANCE WITH PROJECT SPECIFICATIONS. THE UNSUITABLE MATERIAL SHALL BE PLACED IN THE AREA DESIGNATED FOR UNSUITABLE MATERIAL, AS SHOWN.
 - THE BUILDING SLAB OF EXISTING BUILDING 2 AS WELL AS CONCRETE PAD 2 SHALL BE BROKEN IN PLACE BY THE CONTRACTOR TO PREPARE THE AREA FOR THE MATERIALS TO BE PLACED AND COMPACTED ABOVE THE SLAB/PAD ELEVATION. THE SLAB/PAD SHALL BE BROKEN INTO PIECES WITH A MAXIMUM DIMENSION OF 3 FEET IN ANY DIRECTION.



SIGNATURE _____ DATE _____

REVIEW ENGINEER: _____

PROJECT ENGINEER: _____

PROJECT MANAGER: _____

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UGI COLUMBIA GAS PLANT SUPERFUND SITE
SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA

SITE PREPARATION/DEMOLITION
PLAN

C050

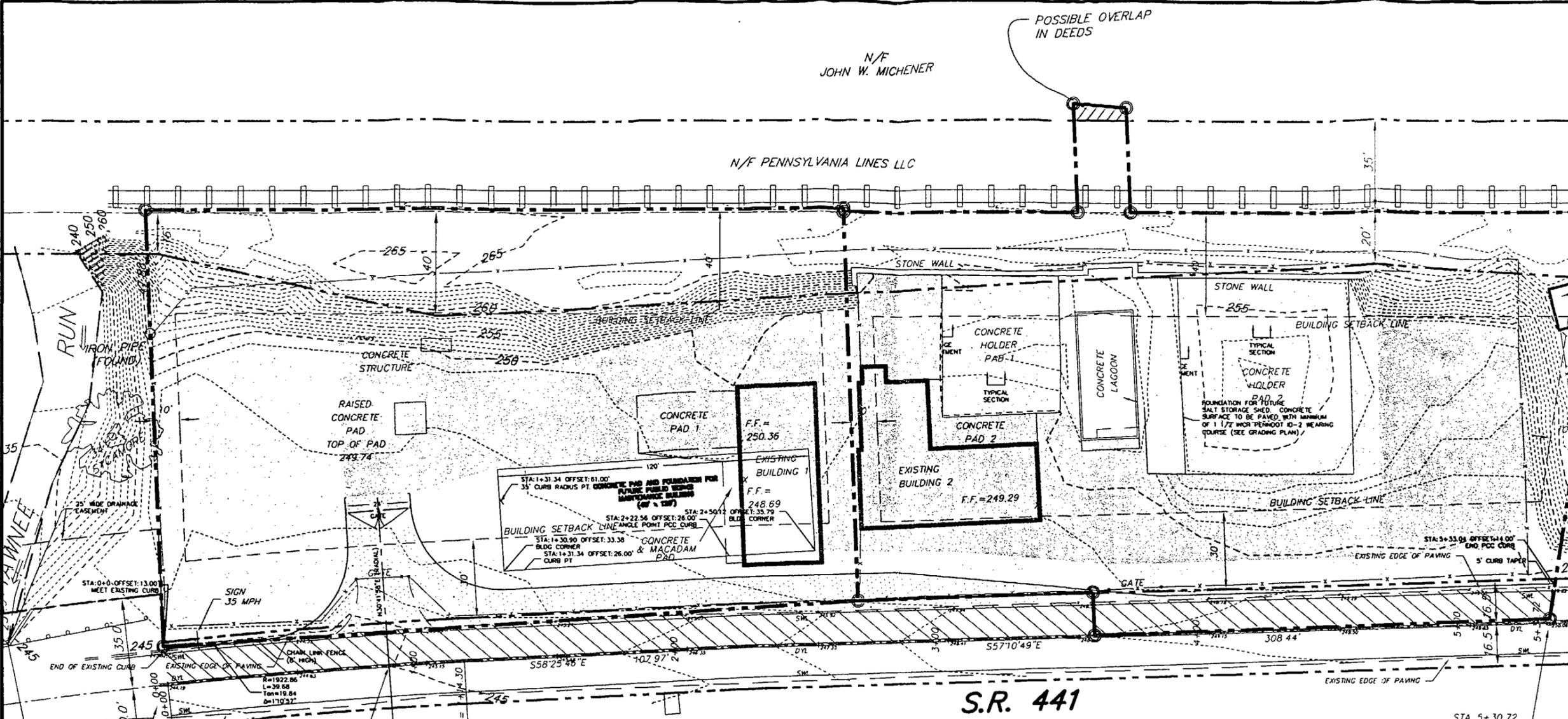
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 Project No.: CTR
 Project No.: 20061800
 Sheet No.: 3 OF 17
 Date: 12/15/2006

DATE	REVISION
01/17/07	PER LCDD AND PENNDOT COMMENTS
01/18/07	PER US ACCE COMMENTS
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N/F
JOHN W. MICHENER

POSSIBLE OVERLAP
IN DEEDS

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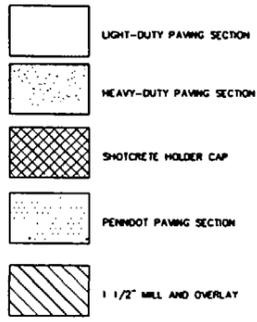


S.R. 441

SOUTH FRONT STREET

EXISTING DRIVEWAY
SEGMENT 0050
OFFSET 298.3
STA 0+85.26

STA 5+30.72
SEGMENT 0050
OFFSET 2537.54



NOTE:
EXISTING GRADING ARE SHOWN. SEE GRADING PLAN FOR PROPOSED FINISHED GRADES.

- 1.0 SUBGRADE PREPARATION**
- PRIOR TO PLACEMENT OF THE AGGREGATE BASE COURSE (2A MODIFIED COARSE AGGREGATE), THE CONTRACTOR SHALL PROOF-ROLL THE SOIL SUBGRADE WITH A MINIMUM 10-TON SMOOTH-DRUM VIBRATORY ROLLER AND A LOADED TRIPLE DUMP TRUCK UNDER THE OBSERVATIONS OF THE GEOTECHNICAL ENGINEER/TECHNICIAN TO DENSIFY THE SURFACE SOILS AND TO DELINEATE ANY MATERIALS DISTURBED BY ADVERSE WEATHER CONDITIONS OR PREVIOUS CONSTRUCTION ACTIVITIES.
 - ANY UNSTABLE AREAS OBSERVED DURING THE PROOF-ROLLING SHALL BE CORRECTED AS DIRECTED BY THE GEOTECHNICAL ENGINEER/TECHNICIAN.
- 2.0 NEW BUILDING FOUNDATIONS AND FLOOR SLAB**
- THE CONTRACTOR SHALL INSTALL THE FOUNDATIONS AND CONCRETE FLOOR SLAB FOR THE FUTURE PRE-FABRICATED STEEL STRUCTURE TO BE CONSTRUCTED BY THE BOROUGH.
 - POTABLE WATER, GAS, AND SANITARY SEWER LINES SHALL BE INSTALLED TO THE BUILDING AND STUBBED THROUGH THE CONCRETE FLOOR SLAB AS SHOWN ON THE UTILITY PLAN. THE LOCATIONS OF THE STUBS SHALL BE DETERMINED IN THE FIELD.
 - DURING INSTALLATION OF THE BUILDING FOUNDATIONS, THE BEARING SURFACES SHALL BE EVALUATED BY A GEOTECHNICAL ENGINEER/TECHNICIAN TO ASSURE THAT THE BEARING CONDITIONS ARE CONSISTENT WITH THOSE ASSUMED FOR THE DESIGN OF THE BUILDING. IF UNSUITABLE OR LESS COMPETENT MATERIALS ARE ENCOUNTERED AT THE DESIGN BEARING LEVEL, THEY SHALL BE CORRECTED BY THE CONTRACTOR AS DIRECTED BY THE GEOTECHNICAL ENGINEER/TECHNICIAN.
 - PRIOR TO SLAB CONSTRUCTION, THE CONTRACTOR SHALL PROOF-ROLL THE FLOOR SLAB SUBGRADE WITH A LARGE (MINIMUM 10-TON) SMOOTH-DRUM VIBRATORY ROLLER TO DENSIFY THE SURFACE SOILS AND TO DELINEATE ANY MATERIALS DISTURBED BY ADVERSE WEATHER CONDITIONS OR PREVIOUS CONSTRUCTION ACTIVITIES. ANY UNSTABLE AREAS OBSERVED SHALL BE CORRECTED BY THE CONTRACTOR AS DIRECTED BY THE GEOTECHNICAL ENGINEER/TECHNICIAN.
- 3.0 AGGREGATE BASE COURSE**
- THE CONTRACTOR SHALL PLACE THE AGGREGATE BASE COURSE FOR THE PENNDOT, LIGHT- AND HEAVY-DUTY PAVING SECTIONS IN ONE LIFT AT THE THICKNESSES SPECIFIED ON THE SITE DETAILS PLANS.
 - THE BASE COURSE SHALL BE COMPACTED BY A MINIMUM OF FOUR (4) PASSES WITH A MINIMUM 10-TON SMOOTH-DRUM VIBRATORY ROLLER.
- 4.0 SITE FINISH AND BOLLARDS**
- FOLLOWING INSTALLATION OF THE AGGREGATE BASE COURSE, THE CONTRACTOR SHALL INSTALL THE PERMANENT FENCE ALONG SOUTH FRONT STREET AND THE BOLLARDS AROUND THE CONCRETE TANK PADS AS SHOWN ON THIS PLAN AND THE SITE DETAILS PLANS.

- 5.0 ASPHALT PAVEMENT**
- ALL PAVEMENT MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTION 402, SECTION 402, SECTION 402, SECTION 421, SECTION 400, AND SECTION 401 OF PENNDOT PUBLICATION 408/2000 (OR LATEST VERSION).
 - THE CONTRACTOR SHALL INSTALL THE PENNDOT, LIGHT- AND HEAVY-DUTY ASPHALT PAVEMENT SECTIONS AS DELINEATED ON THIS PLAN AND AS SHOWN ON THE SITE DETAILS PLANS.
 - THE CONTRACTOR SHALL PLACE A MINIMUM OF 1.5 INCHES OF PENNDOT ID-2 WEARING COURSE ON THE SURFACE OF THE CONCRETE LAGOON GRADED AS SHOWN ON THIS PLAN. THE CONCRETE SHALL BE MILLED TO ROUGHEN (1/4 INCHES OF MILLING) THE EXISTING SURFACE TO ASSURE ADEQUATE BOND WITH THE NEW ASPHALT. LEVELING COURSE MATERIAL (PENNDOT ID-2 WEARING COURSE) SHALL BE PLACED WHERE IT IS NECESSARY TO BUILD UP THE GRADE OF THE CONCRETE SURFACE IN ORDER TO ACHIEVE POSITIVE DRAINAGE AND TO MEET THE GRADES SHOWN ON THE PLANS. THE LEVELING COURSE MATERIAL SHALL BE PLACED SUCH THAT THE MAXIMUM THICKNESS AFTER COMPACTION IS 1.5 INCHES. MULTIPLE APPLICATIONS OF LEVELING COURSE MATERIAL SHALL BE PLACED AS REQUIRED TO ACHIEVE REQUIRED GRADES AND POSITIVE DRAINAGE.
 - THE NORTHBOUND LANE OF SOUTH FRONT STREET AS SHOWN ON THIS PLAN SHEET SHALL BE MILLED 1.5 INCHES. THE MILLING SHALL BE PERFORMED WITH THE SUITABLE EQUIPMENT AND IN A MANNER TO PREVENT DAMAGE TO THE EXISTING BITUMINOUS PAVEMENT. SPOOLS PRODUCED FROM THE MILLING SHALL BE DISPOSED OFFSITE IN ACCORDANCE WITH ALL PREVAILING LOCAL, STATE AND FEDERAL REGULATIONS.
 - THE CONTRACTOR SHALL PROVIDE A PRIME COAT BETWEEN THE AGGREGATE BASE COURSE AND THE ASPHALT BINDER COURSE AND A TACK COAT BETWEEN THE CONCRETE SURFACE/ASPHALT BINDER COURSE AND THE ASPHALT WEARING COURSE.
 - THE CONTRACTOR SHALL MOP AND SEAL ALL ASPHALT JOINTS AT CONCRETE CURB/WALLS/BOLLARDS/WALKWAYS/BOXES/CASTINGS WITH EMULSIFIED ASPHALT.
- 6.0 CONCRETE CAP OVER EXISTING CONCRETE HOLDER PADS 1 AND 2**
- 6.1 GENERAL NOTES**
- THE SHOTCRETE CONTRACTOR SHALL MEET THE QUALIFICATIONS AND SUBMITTAL REQUIREMENTS AS DESCRIBED IN THE RESPONSE ACTION PLAN.
 - THE SUBGRADE OF THE CONCRETE CAP IS ASSUMED TO BEAR ON SOIL CAPABLE OF SAFELY SUPPORTING 300 PSF.
 - THE SUBGRADE OF THE CONCRETE CAP SHALL BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE PLACING ANY CONCRETE.
 - THE CONCRETE CAP SHALL BE A MINIMUM OF 8 INCHES THICK AND REINFORCED AS SHOWN ON SITE DETAILS SHEET.
 - THE TURN DOWN SLAB EDGE SHALL BE SET A MINIMUM EIGHTEEN INCHES BELOW THE EXTERIOR FINISH GRADE.
 - THE SURFACE OF THE SHOTCRETE SHALL BE BRUSH FINISHED.
 - ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AD BUILDING CODE (AD 318), THE AD DETAILING MANUAL (AD 315), AND THE SHOTCRETE REQUIREMENTS OF AD 300R-90.
 - ALL REINFORCING STEEL SHALL BE MANUFACTURED FROM HIGH STRENGTH BULLET STEEL CONFORMING TO ASTM DESIGNATION A615 GRADE 60.
 - ALL REINFORCEMENT BARS SHALL BE LAPPED A MINIMUM 48 BAR DIAMETERS.
 - CONCRETE CAP SHALL CONTAIN CONTROL OR CONSTRUCTION JOINTS AT A MAXIMUM SPACING OF 20 FEET ON CENTER IN EACH DIRECTION. ASPECT RATIO OF PANELS SHALL NOT EXCEED 1-1/2 TO 1.
 - ALL CONSTRUCTION JOINTS SHALL BE KEY JOINTED WITH REINFORCEMENT.
 - ALL CONTROL JOINTS SHALL BE CUT WITHIN 8 HOURS OF PLACING THE CONCRETE AND SHALL BE 1-1/2 INCHES THICK.

- 6.2 SHOTCRETE**
- THE CONCRETE FOR THE PROPOSED CONCRETE CAP SHALL BE PNEUMATICALLY PLACED SHOTCRETE MEETING THE FOLLOWING REQUIREMENTS:
 - HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
 - HAVE A DRY UNIT WEIGHT OF 145 POUNDS PER CUBIC FOOT.
 - HAVE A MINIMUM OF 520 LBS OF ASTM A250 TYPE I CEMENT PER CUBIC YARD.
 - CONTAIN COARSE AND FINE AGGREGATES THAT COMPLY WITH AOS08R-90.
 - THE MIX DESIGN SHALL BE APPROVED BY THE ENGINEER PRIOR TO PLACEMENT.
 - THE SHOTCRETE SHALL BE APPLIED BY WET MIX PROCESS.
 - THE SLUMP (AT POINT OF SHOTCRETE PLACEMENT) SHALL BE 3-INCH MINIMUM AND 3-INCH MAXIMUM.
 - THE SHOTCRETE SHALL HAVE 6 PERCENT AIR ENTRAINMENT (IN PLACE).
- 6.3 CONCRETE TESTING/INSPECTION**
- 7.0 SCOPE**
- THE CONTRACTOR IS RESPONSIBLE TO PERFORM THE FOLLOWING ACTIVITIES FOR ALL CONCRETE PLACED AT THE SITE:
 - TESTING AS PER SECTION 7.2
 - SUPPLY MOLDS FOR CONCRETE CYLINDERS
 - MOLD CYLINDERS PROPERLY
 - ARRANGE FOR THE PICK-UP AND TRANSPORT CYLINDERS TO LABORATORY FOR COMPRESSIVE STRENGTH TESTING
 - COMPRESSIVE STRENGTH TESTING
 - INSPECTION OF ALL REINFORCING STEEL AND CONCRETE PLACEMENT
- 7.2 GUIDELINES**
- ALL TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, AC-C172 AND AC-317 FOR CONFORMANCE WITH THE PROJECT REQUIREMENTS.
 - ON EACH DAY OF CONCRETE OPERATIONS, MINIMUM SAMPLING AND TESTING SHALL BE PERFORMED IN ACCORDANCE WITH THE FOLLOWING SCHEDULE:
 - SIX CYLINDERS SHALL BE MADE AND TESTED FOR FIRST 50 CU. YARDS OF CONCRETE AND SIX ADDITIONAL CYLINDERS FOR EACH ADDITIONAL 50 CU. YARDS OR FRACTION THEREOF. PROVIDE A MINIMUM OF ONE SET OF CYLINDERS FOR EACH DAY'S POUR.
 - TWO CYLINDERS TO BE TESTED AT 7 DAYS AFTER POUR. THREE CYLINDERS TO BE TESTED AT 28 DAYS AFTER POUR. ONE CYLINDER TO BE KEPT FOR RECORD PURPOSES.
 - CYLINDERS SHALL BE STANDARD 6" DIAMETER X 12" HEIGHT.
 - 48-ENTRAINMENT TESTS ARE TO BE MADE AT THE PLACE OF DEPOSIT FOR EACH DAY'S POUR AND BE PERFORMED WHEN CYLINDERS ARE MADE. THE TESTS SHALL CONFORM TO ASTM C260-73 AND ASTM METHOD C233-73.
 - CONCRETE TEMPERATURE SHALL BE PERFORMED HOURLY WHEN AIR TEMPERATURE IS 40 DEGREES F. AND BELOW, AND WHEN 80 DEGREES F. AND ABOVE; AND EACH TIME A SET OF COMPRESSIVE TEST SPECIMENS (CYLINDERS) IS MADE.
 - SLUMP TESTS SHALL BE MADE AT THE PLACE OF DEPOSIT AND IN ACCORDANCE WITH ASTM C143-71. TESTS SHALL BE MADE WHEN CYLINDERS ARE MADE.

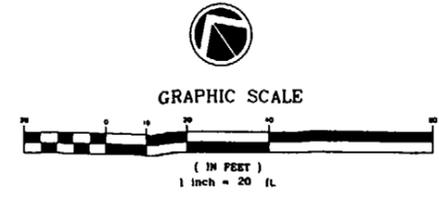
- 8.0 TRAFFIC CONTROL**
- THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AS REQUIRED BY PENNDOT DURING ALL PHASES OF THE CONSTRUCTION ASSOCIATED WITH THE ACCELERATION/DECELERATION LANES ALONG SOUTH FRONT STREET.

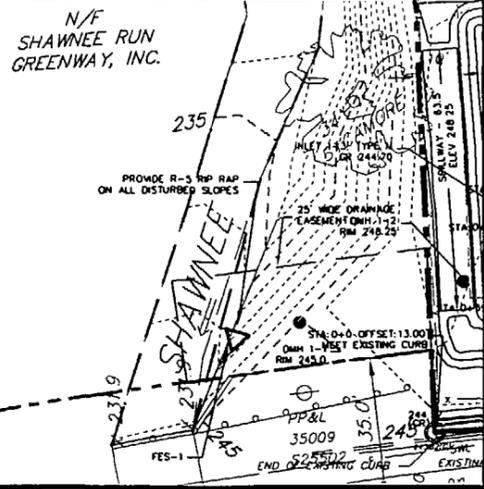
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SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA
SITE DEVELOPMENT/REUSE
PLAN

C100





1.0 SURVEY CONTROL
 1. SURVEY CONTROL REQUIRED TO SUPPORT THE REMOVAL ACTION ACTIVITIES AT THE SITE SHALL BE PROVIDED BY THE CONTRACTOR. A TOPOGRAPHICAL AND BOUNDARY SURVEY OF THE SITE WAS PERFORMED IN OCTOBER 2006 BY WEBER SURVEYORS, INC. OF LANCASTER, PENNSYLVANIA. THE RESPONDENTS SHALL COORDINATE IDENTIFICATION OF BENCHMARK AND SURVEY CONTROL INFORMATION FOR THE SITE REQUIRED BY THE CONTRACTOR.

2.0 UTILITY VERIFICATION
 1. PRIOR TO PERFORMING THE GRADING ACTIVITIES AND INSTALLING THE STORMWATER MANAGEMENT FACILITIES AND CONCRETE CURB, THE CONTRACTOR SHALL CONTACT THE PENNSYLVANIA ONE-CALL AGENCY TO LOCATE THE PUBLIC UNDERGROUND UTILITIES AT THE SITE (AS REQUIRED BY LAW). THE CONTRACTOR SHALL ALSO COORDINATE WITH LOCAL UTILITIES AND A PRIVATE UTILITY LOCATOR SERVICES (AS NECESSARY) TO IDENTIFY AND MARK ALL UTILITIES (UNDERGROUND, SURFACE AND ABOVE-GROUND) AT THE SITE.
 2. ALL UTILITIES SHALL BE MARKED AND PRESERVED THROUGHOUT THE ACTIVITIES AT THE SITE. ANY DAMAGED UTILITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.

3.0 TRAFFIC CONTROL
 1. THE CONTRACTOR SHALL PROVIDE TRAFFIC CONTROL AS REQUIRED BY PENNDOT DURING ALL PHASES OF THE CONSTRUCTION ASSOCIATED WITH THE ACCELERATION/DECELERATION LANES ALONG SOUTH FRONT STREET.

4.0 EROSION, SEDIMENTATION AND STORMWATER CONTROLS
 1. THE CONTRACTOR SHALL INSTALL AND MAINTAIN ALL EROSION, SEDIMENTATION, AND STORMWATER CONTROLS AT THE SITE IN ACCORDANCE WITH THE EROSION AND SEDIMENTATION CONTROL PLAN AND EROSION AND SEDIMENTATION CONTROL DETAILS.
 2. THE INSTALLATION OF STORMWATER PIPES AND INLETS SHALL BE PERFORMED BY THE CONTRACTOR AS SHOWN ON THIS PLAN.

5.0 UTILITY EXCAVATIONS
 1. THE EXCAVATIONS FOR THE STORMWATER PIPES, INLETS, AND SANITARY SEWER, WATER, AND GAS LINES SHALL EXTEND A MINIMUM OF 18 INCHES BEYOND ALL EDGES OF THE PIPE/INLET TO CREATE A "CLEAN FILL" UTILITY CORRIDOR AROUND THE STORMWATER ELEMENT. A GEOTEXTILE FABRIC (PENNDOT CLASS 4 NONWOVEN SEPARATION FABRIC) SHALL BE PLACED WITHIN THE TRENCH PRIOR TO INSTALLATION OF THE PIPE/INLET TO DEMARCATATE THE UTILITY CORRIDOR.

6.0 EXCAVATION AND FILL PLACEMENT
 1. THE CONTRACTOR SHALL PERFORM THE EXCAVATIONS (CUTS) AND FILL PLACEMENT REQUIRED TO ACHIEVE THE GRADES SHOWN ON THIS PLAN.
 2. SUITABLE ON-SITE MATERIALS REMOVED FROM CUT AREAS AND STORMWATER FACILITIES/UTILITY/CURB EXCAVATIONS SHALL BE USED FOR ON-SITE FILL AREAS. ON-SITE MATERIALS USED AS FILL SHALL BE FREE OF ORGANICS, DEGRADABLE INCLUSIONS, EXCESS MOISTURE, FROZEN MATERIALS, AND PARTICLES LARGER THAN 9 INCHES.
 3. ON-SITE MATERIALS CONSIDERED UNSUITABLE FOR SITE FILLS SHALL BE PLACED IN THE AREA DESIGNATED FOR UNSUITABLE MATERIAL AS SHOWN ON THIS PLAN.
 4. IMPORTED BORROW MATERIAL SHALL BE USED TO BACKFILL STORMWATER FACILITIES/UTILITY TRENCHES (PIPES AND INLETS) AND TO COMPLETE SITE FILLS IF THERE IS INSUFFICIENT VOLUME OF ON-SITE MATERIAL. THE IMPORTED BORROW MATERIAL SHALL BE FREE OF ORGANICS, DEGRADABLE INCLUSIONS, EXCESS MOISTURE, FROZEN MATERIALS, AND:
 - MEET PENNSYLVANIA DEPARTMENT OF ENVIRONMENTAL PROTECTION (PADEP) CLEAN FILL REQUIREMENTS; AND
 - MEET THE REQUIREMENTS OF THE UTILITY COMPANY AND CONSIST OF ONE OF THE FOLLOWING INORGANIC USCS SOIL TYPES: GP, GM, SW, SP, OR SM AND MEET THE FOLLOWING GRADATION REQUIREMENTS:

SIEM SIZE	PERCENT PASSING
2 INCH	75-100
3/4 INCH	75-100
NO. 4	20-100
NO. 40	0-60
NO. 200	0-35

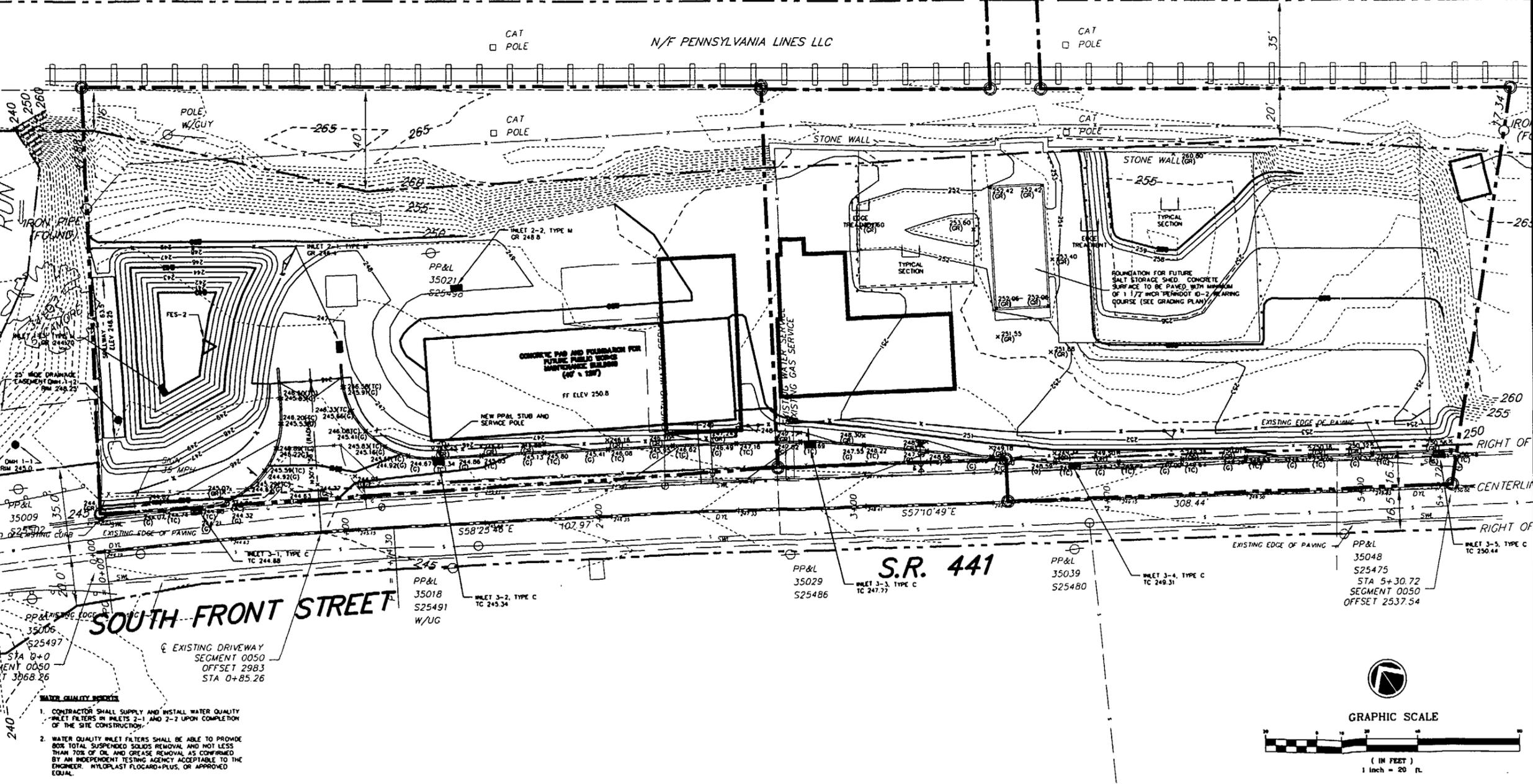
MAXIMUM PARTICLE SIZE OF 2 INCHES
 FINE FRACTION HAVING A PLASTIC INDEX (PI) < 7 AND LIQUID LIMIT (LL) < 40

5. ALL FILLS SHALL BE PLACED IN HORIZONTAL LIFTS WITH A MAXIMUM LIFT THICKNESS OF 8 INCHES.
 6. FILL PLACED OVER LARGE AREAS SHALL BE COMPACTED BY REPEATED PASSES OF A MINIMUM 10-TON, SMOOTH-DRUM VIBRATORY ROLLER.
 7. BACKFILL PLACED IN CONFINED AREAS (TRENCHES, ETC.) SHALL BE COMPACTED BY REPEATED PASSES OF HAND-MANIPULATED COMPACTION EQUIPMENT (I.E., WALK-BEHIND ROLLERS, JUMPING JACK-TYPE TAMPERS, ETC.)
 8. ALL SITE FILLS AND TRENCH BACKFILL SHALL BE PLACED TO AT LEAST 94 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM D 1557). DEPENDING UPON THE VARIABILITY OF THE ON-SITE MATERIAL, THE DETERMINATION OF A REPRESENTATIVE COMPACTION STANDARD VIA PROCTOR TESTING MAY NOT BE POSSIBLE. IN THIS CASE, THE ADEQUACY OF COMPACTION SHALL BE JUDGED BY THE GEOTECHNICAL ENGINEER/TECHNICIAN BASED ON THE PERFORMANCE (I.E., NO MOVEMENT) OF THE COMPACTED MATERIAL BENEATH THE TRAFFIC OF THE CONSTRUCTION/COMPACTION EQUIPMENT.

DATE	REVISION
01/17/07	PER LCD AND PENNDOT COMMENTS
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02/15/07	PER LCD COMMENTS
04/17/07	PER PENNDOT COMMENTS (3/12/07)
05/03/07	PER PENNDOT COMMENTS (5/3/07)

N/F JOHN W. MICHENER

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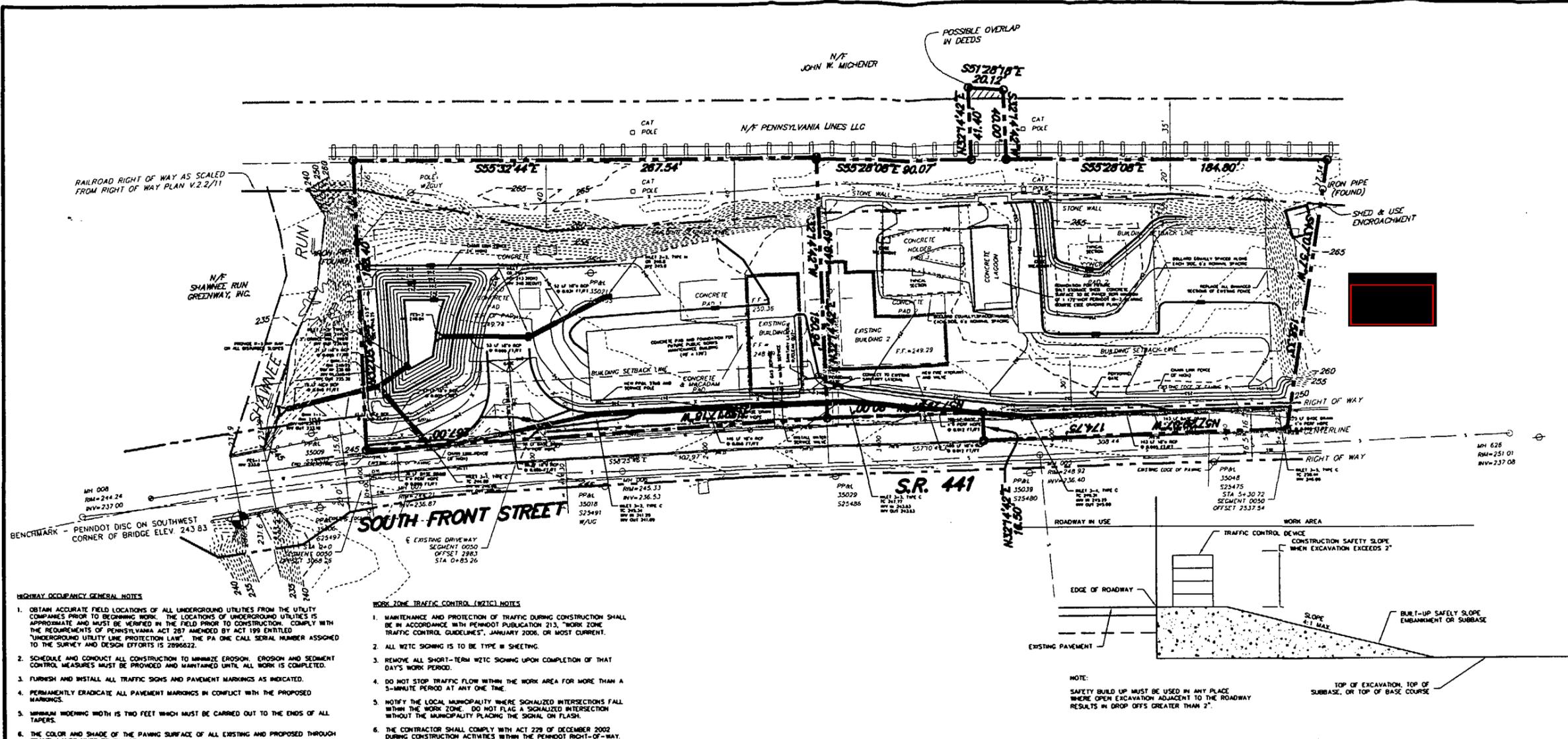
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 SOUTH FRONT STREET
 COLUMBIA, PENNSYLVANIA

GRADING PLAN

C200

Scale:	1" = 20'
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Drawn By:	RPU
Checked By:	CTR
Project No.:	20061800
Sheet No.:	5 OF 17
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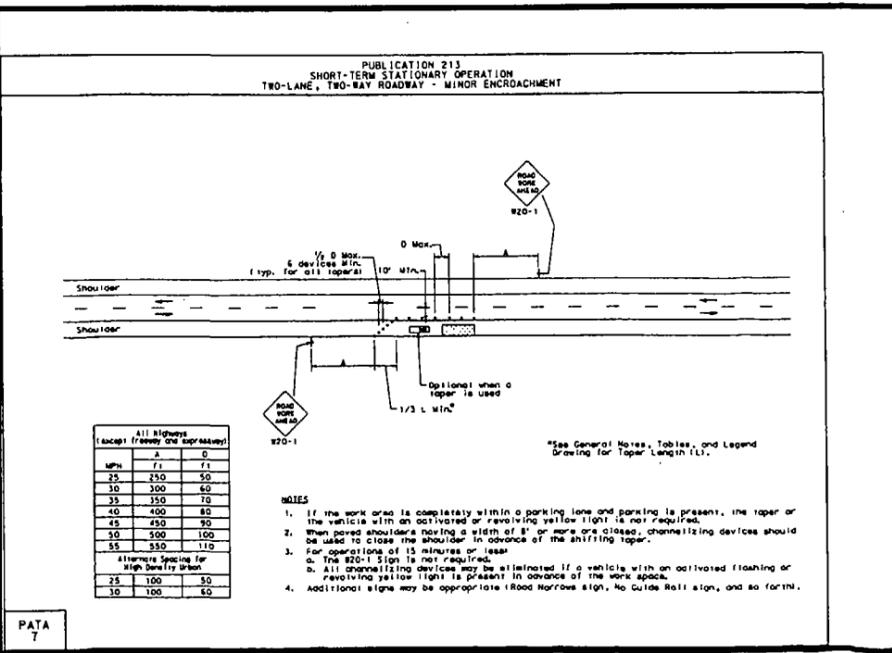
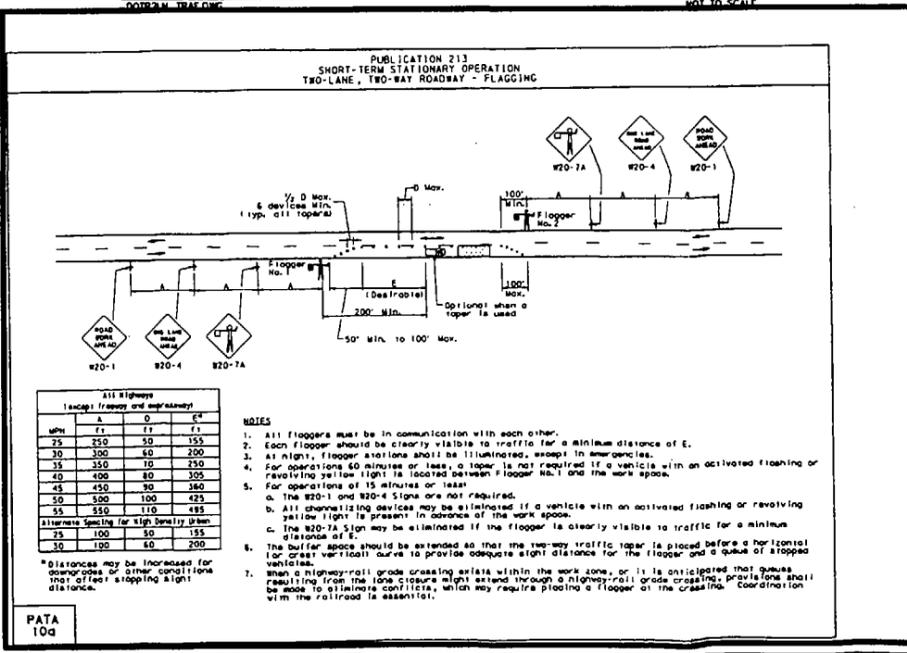
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- HIGHWAY OCCUPANCY GENERAL NOTES**
- OBTAIN ACCURATE FIELD LOCATIONS OF ALL UNDERGROUND UTILITIES FROM THE UTILITY COMPANIES PRIOR TO BEGINNING WORK. THE LOCATIONS OF UNDERGROUND UTILITIES IS APPROXIMATE AND MUST BE VERIFIED IN THE FIELD PRIOR TO CONSTRUCTION. COMPLY WITH THE REQUIREMENTS OF PENNSYLVANIA ACT 287, AMENDED BY ACT 199 ENTITLED "UNDERGROUND UTILITY LINE PROTECTION LAW", THE PA ONE CALL SERIAL NUMBER ASSIGNED TO THE SURVEY AND DESIGN EFFORTS IS 2896622.
 - SCHEDULE AND CONDUCT ALL CONSTRUCTION TO MINIMIZE EROSION. EROSION AND SEDIMENT CONTROL MEASURES MUST BE PROVIDED AND MAINTAINED UNTIL ALL WORK IS COMPLETED.
 - FURNISH AND INSTALL ALL TRAFFIC SIGNS AND PAVEMENT MARKINGS AS INDICATED.
 - PERMANENTLY ERADICATE ALL PAVEMENT MARKINGS IN CONFLICT WITH THE PROPOSED MARKINGS.
 - MINIMUM WORKING WIDTH IS TWO FEET WHICH MUST BE CARRIED OUT TO THE ENDS OF ALL TAPERS.
 - THE COLOR AND SHADE OF THE PAVING SURFACE OF ALL EXISTING AND PROPOSED THROUGH TRAVEL LANES MUST BE SIMILAR.
 - ALL CONCRETE WITHIN RIGHT-OF-WAY MUST DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 3,500 PSI AFTER 28 DAYS, UNLESS NOTED OTHERWISE.
 - CONSTRUCT PROJECT IN ACCORDANCE WITH PENNDOT SPECIFICATIONS, PUBLICATION 408/2000.
 - ALL WORK PERFORMED WITHIN THE STATE LEGAL RIGHT-OF-WAY MUST BE IN ACCORDANCE WITH PENNDOT PUBLICATION 72M, STANDARD FOR ROADWAY CONSTRUCTION, RC-1M TO 100M, APRIL 2004 EDITION AS AMENDED TO DATE.
 - MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION MUST BE IN ACCORDANCE WITH THE DETAILS SHOWN ON THESE DRAWINGS AND PENNDOT PUBLICATION 213 (1-08), WORK ZONE TRAFFIC CONTROL GUIDELINES.
 - THE PROPOSED PAVEMENT SECTION MUST BE AS INDICATED ON THE PLANS, OR MATCH THE EXISTING AS FOUND IN THE FIELD, WHICHEVER IS GREATER.
 - NO UNSATURATED MATERIAL IS TO BE USED IN ANY PORTION OF THE ROADWAY CONSTRUCTION. REMOVE ANY SUBGRADE THAT CANNOT BE PROPERLY COMPACTED AND THAT IS UNSATURATED MATERIAL. UNDERCUTTING AND/OR SUBGRADE STABILIZATION MAY BE REQUIRED AS IDENTIFIED BY THE ENGINEER.
 - SAW LINES LOCATIONS MAY BE ADJUSTED IN THE FIELD AS DEEMED NECESSARY BY A PENNDOT REPRESENTATIVE.
 - POSTED SPEED LIMIT WITHIN THE BOROUGH OF COLUMBIA IS 35 MPH.
 - ALL SIGHT DISTANCE OBSTRUCTIONS (INCLUDING BUT NOT LIMITED TO EMBANKMENTS AND VEGETATION) SHALL BE REMOVED BY THE PERMITTEE TO PROVIDE A MINIMUM OF 249 FEET OF CONTINUOUS SIGHT DISTANCE TO THE LEFT AND TO THE RIGHT FOR SR 0441 FOR A DRIVER ENTERING THE PROPOSED DRIVEWAY ONTO THE STATE HIGHWAY. THE DRIVER MUST BE CONSIDERED TO BE POSITIONED 15 FEET FROM THE NEAR EDGE OF THE CLOSEST HIGHWAY THROUGH TRAVEL LAND AT ANY EYE HEIGHT OF THREE FEET SIX INCHES (3'-6") ABOVE THE PAVEMENT SURFACE. THE POINT SIGHTED BY THE EXISTING DRIVER SHALL BE THREE FEET SIX INCHES (3'-6") ABOVE THE PAVEMENT SURFACE LOCATED IN THE APPROACHING TRAFFIC. THIS SIGHT DISTANCE SHALL BE MAINTAINED BY THE PERMITTEE.
 - EXISTING SIGHT DISTANCES ARE 400 FEET IN EACH DIRECTION.

- WORK ZONE TRAFFIC CONTROL (WZTC) NOTES**
- MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH PENNDOT PUBLICATION 213, "WORK ZONE TRAFFIC CONTROL GUIDELINES", JANUARY 2006, OR MOST CURRENT.
 - ALL WZTC SIGNING IS TO BE TYPE III SHEETING.
 - REMOVE ALL SHORT-TERM WZTC SIGNING UPON COMPLETION OF THAT DAY'S WORK PERIOD.
 - DO NOT STOP TRAFFIC FLOW WITHIN THE WORK AREA FOR MORE THAN A 5-MINUTE PERIOD AT ANY ONE TIME.
 - NOTIFY THE LOCAL MUNICIPALITY WHERE SIGNALIZED INTERSECTIONS FALL WITHIN THE WORK ZONE. DO NOT FLAG A SIGNALIZED INTERSECTION WITHOUT THE MUNICIPALITY PLACING THE SIGNAL ON FLASH.
 - THE CONTRACTOR SHALL COMPLY WITH ACT 279 OF DECEMBER 2002 DURING CONSTRUCTION ACTIVITIES WITHIN THE PENNDOT RIGHT-OF-WAY.

DROPOFF TREATMENT FOR MAINTAINING TWO LANES OF TRAFFIC



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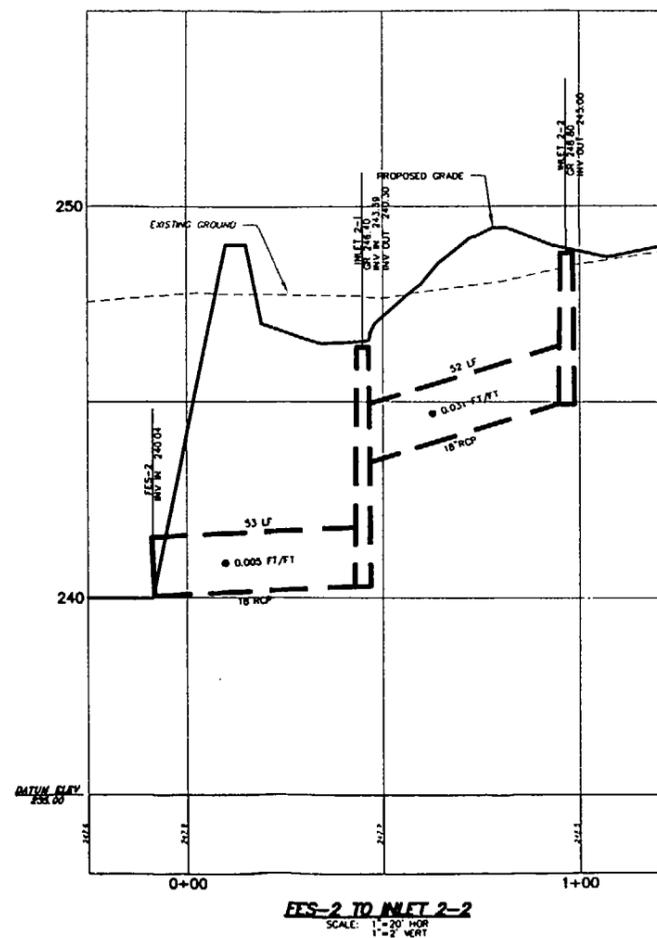
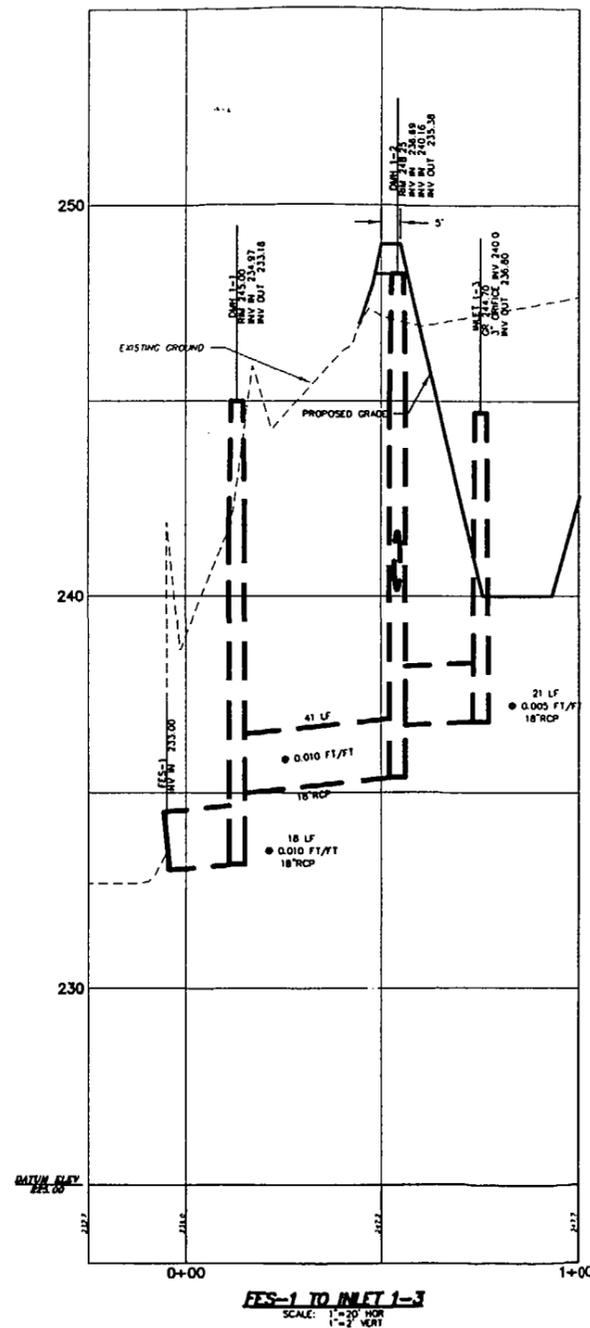
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MAINTENANCE AND PROTECTION OF TRAFFIC

C300

Scale: 1" = 30'
 Drawn By: CTR
 Check By: RPU
 Project No.: CTR
 Project No.: 20061800
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DATE:	REVISION:
01/17/07	PER LCDD AND PENNDOT COMMENTS
01/18/07	PER US ACOE COMMENTS
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05/03/07	PER PENNDOT COMMENTS (5/3/07)



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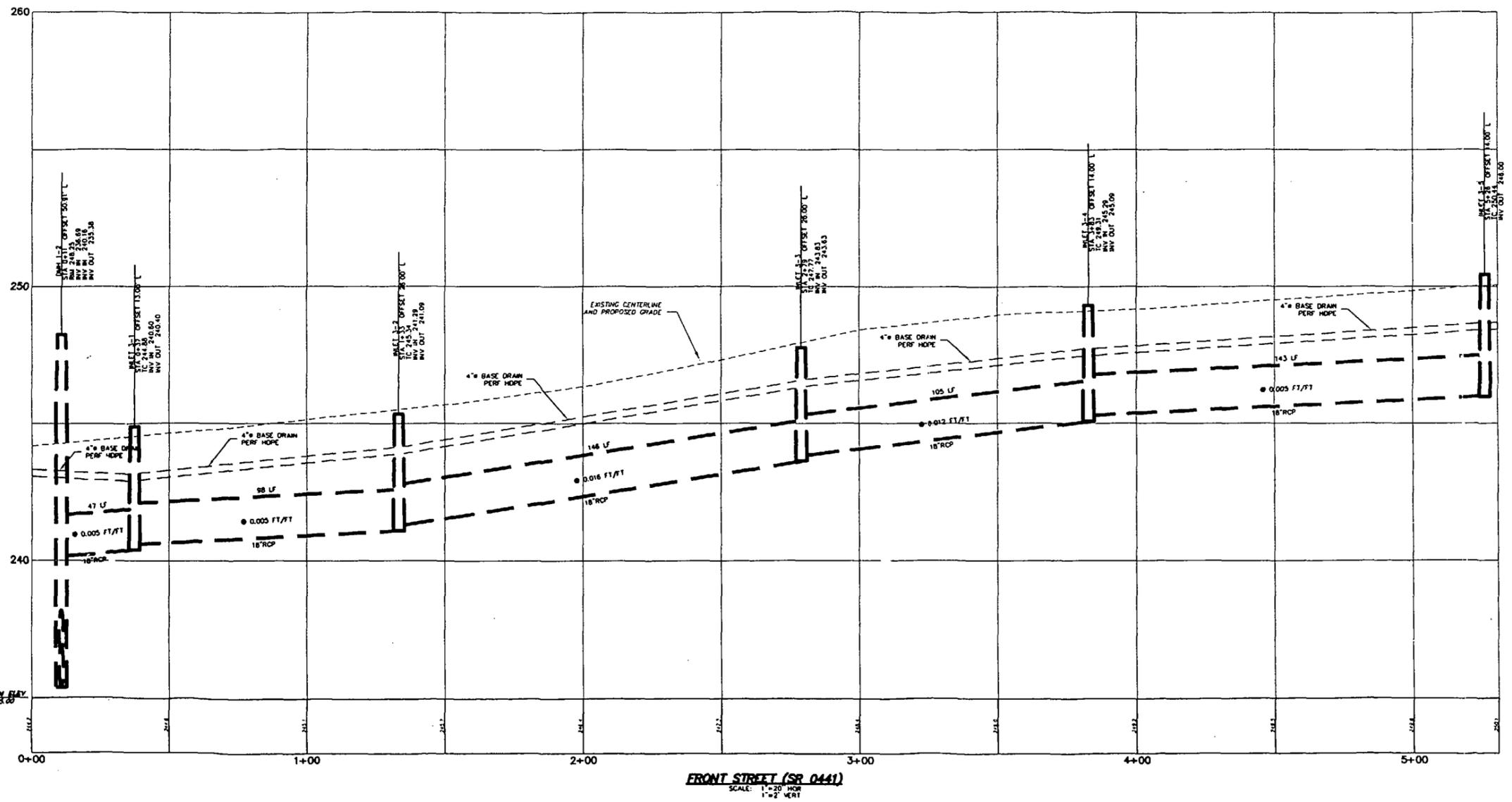
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UTILITY
PROFILES

C501

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Designed By	CTR
Drawn By	RPU
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Project No.	CTR
Project No.	20061800
Sheet No.	9 OF 17
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DATE	REVISION
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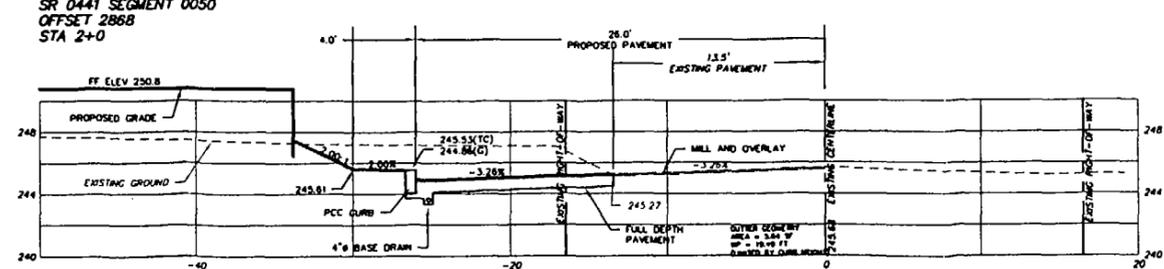
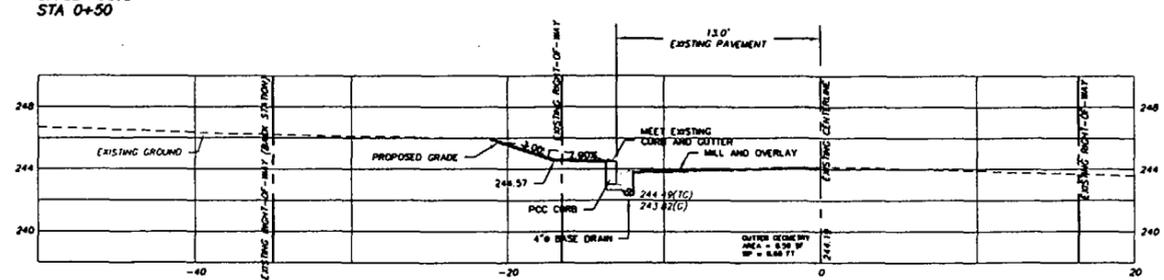
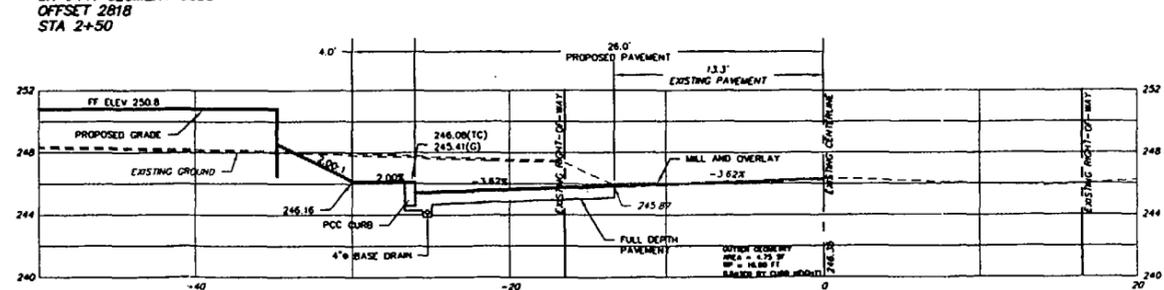
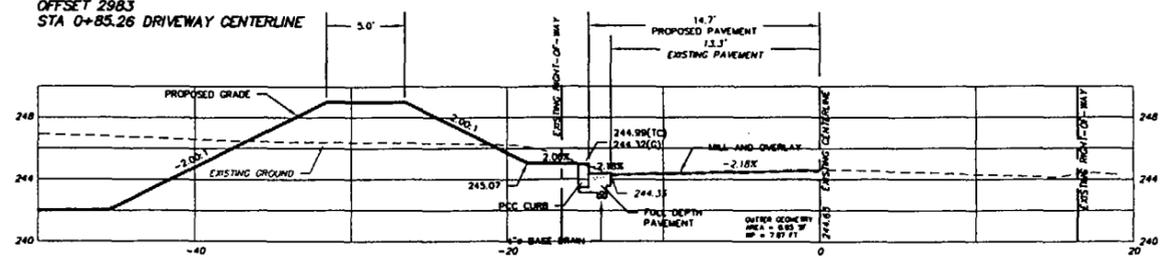
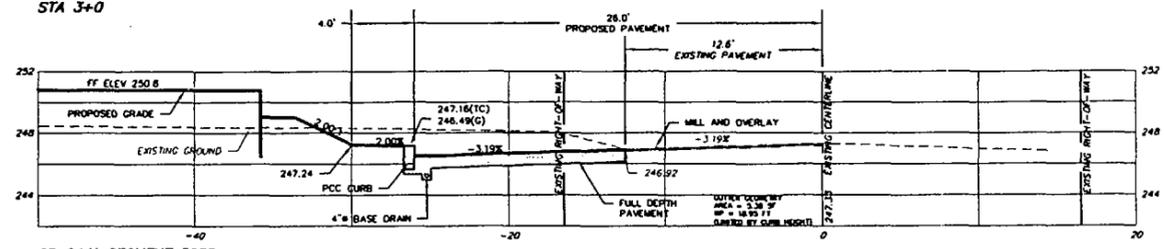
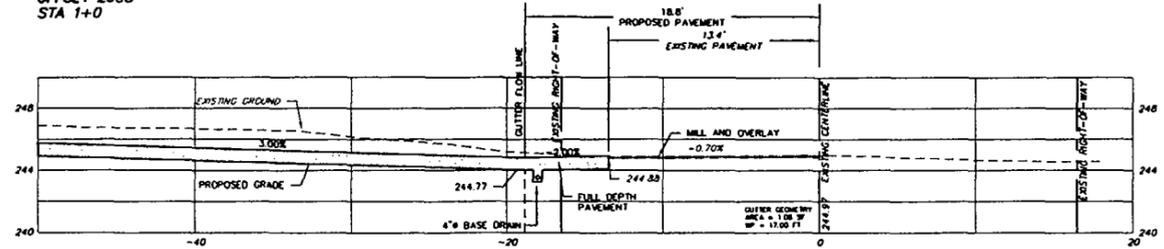
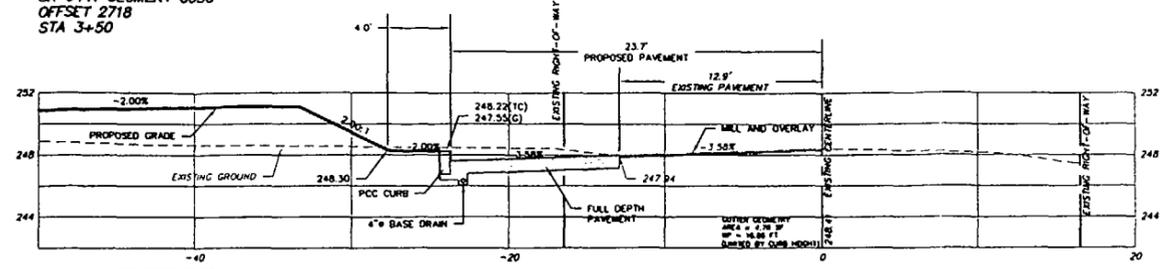
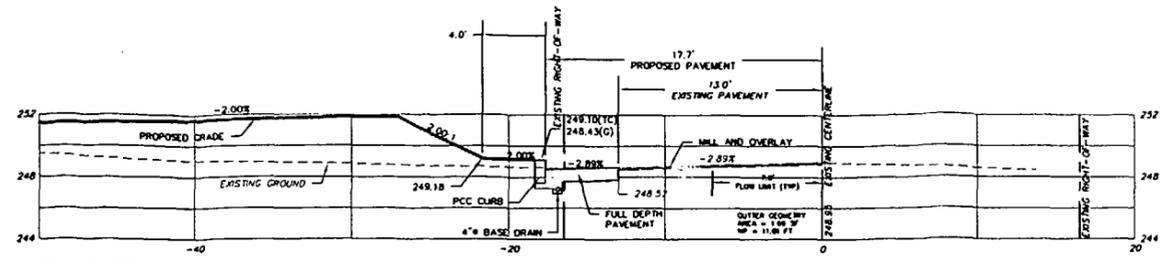
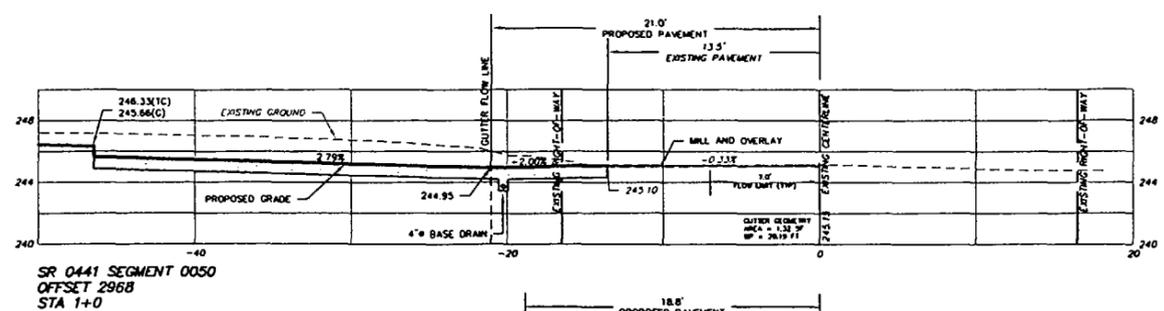
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UTILITY PROFILES

C502

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04/17/07	PER PENNDOT COMMENTS (3/12/07)
05/03/07	PER PENNDOT COMMENTS (5/3/07)



NOTE
1. GUTTER GEOMETRY DETERMINED GRAPHICALLY AT EACH CROSS SECTION BASED UPON EITHER THE 7-FOOT LIMIT OR ONE INCH FROM TOP OF CURB LIMITATION. AREA AND WETTED PERIMETER WERE USED TO DETERMINE GUTTER FLOW CAPACITY.

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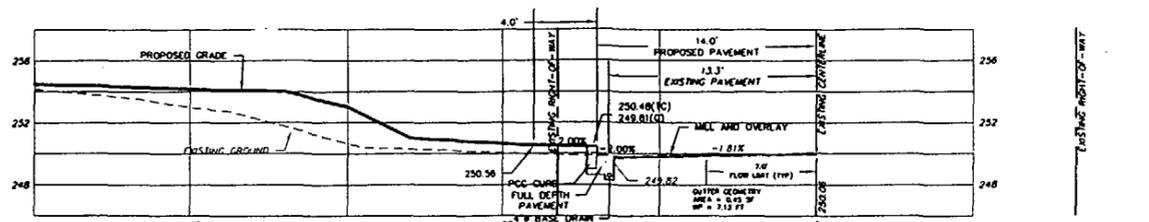
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UGI COLUMBIA GAS PLANT SUPERFUND SITE
SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA
FRONT STREET (SR 0441)
SECTIONS

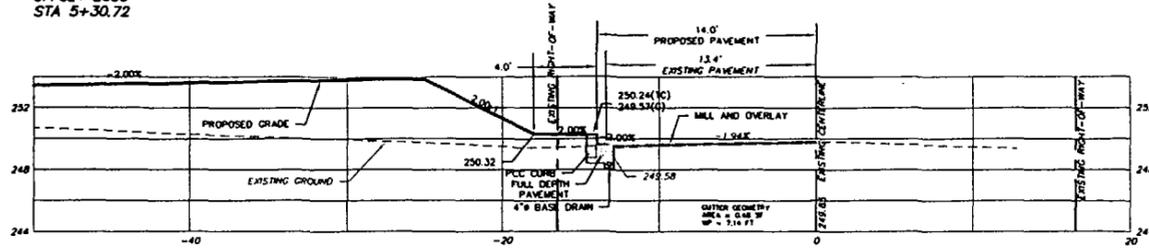
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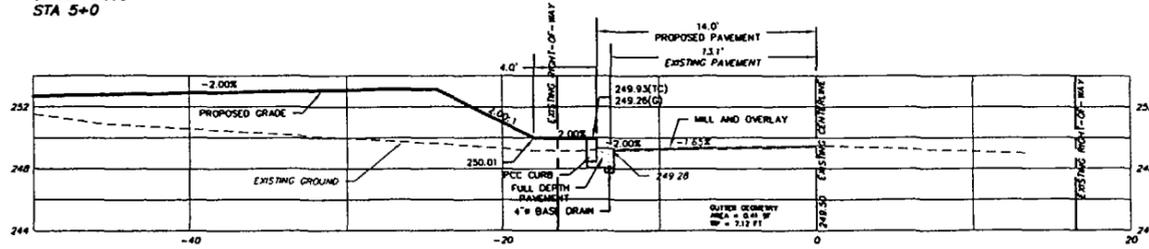
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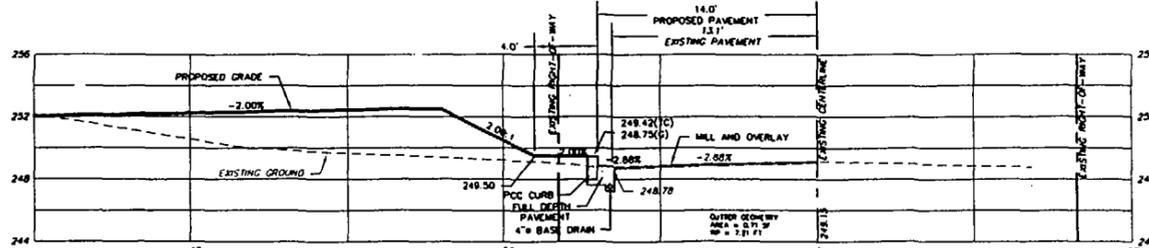
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OFFSET 2538
STA 5+30.72



SR 0441 SEGMENT 0050
OFFSET 2568
STA 5+0



SR 0441 SEGMENT 0050
OFFSET 2618
STA 4+50



SR 0441 SEGMENT 0050
OFFSET 2668
STA 4+0

NOTE
1. OUTER GEOMETRY DETERMINED GRAPHICALLY AT EACH CROSS SECTION BASED UPON EITHER THE 7-FOOT LIMIT OR ONE INCH FROM TOP OF CURB LIMITATION. AREA AND WETTED PERIMETER WERE USED TO DETERMINE GUTTER FLOW CAPACITY.

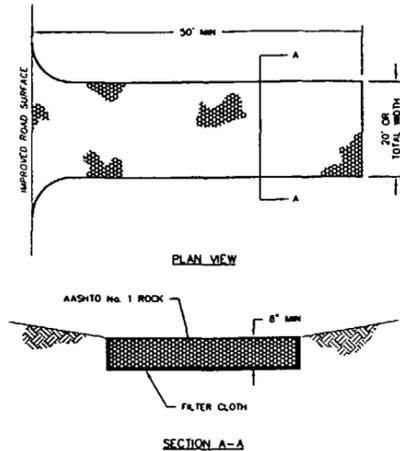
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SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA
FRONT STREET (SR 0441)
SECTIONS

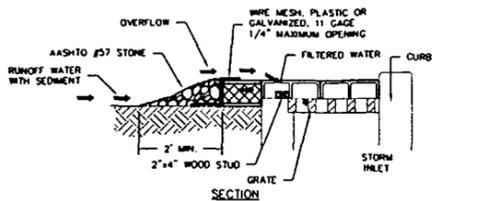
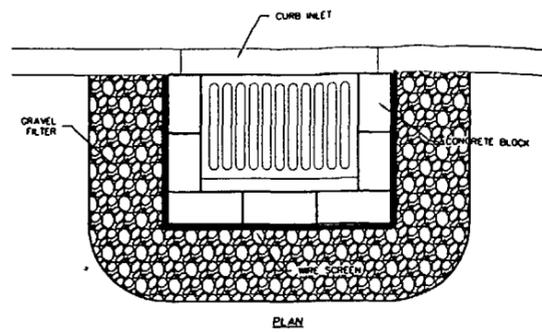
C512

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Project No.:	CTR
Project No.:	20061800
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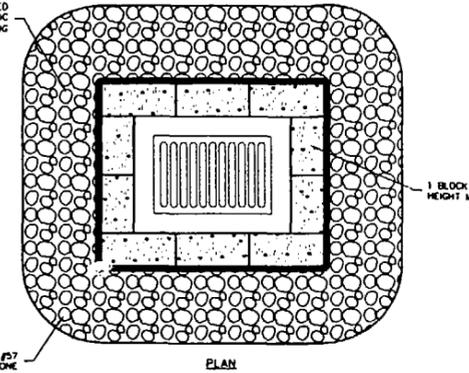


ROCK CONSTRUCTION ENTRANCE THICKNESS WILL BE CONSTANTLY MAINTAINED TO THE SPECIFIED DIMENSIONS BY ADDING ROCK. A STOCKPILE OF MATERIAL WILL BE MAINTAINED ON THE SITE FOR THIS PURPOSE. AT THE END OF EACH CONSTRUCTION DAY, ALL SEDIMENT DEPOSITED ON PUBLIC ROADWAYS WILL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.

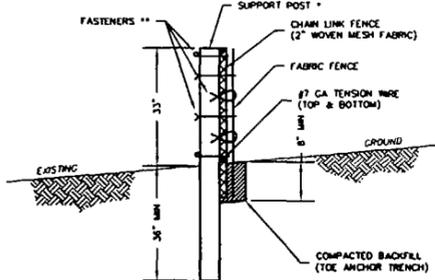
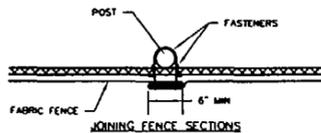
ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE



BLOCK/GRAVEL INLET PROTECTION (CURB INLET)
NOT TO SCALE



BLOCK/GRAVEL INLET PROTECTION (CHANNEL INLET)
NOT TO SCALE



POSTS SPACED @ 10' MAX. USE 2 1/2\"/>

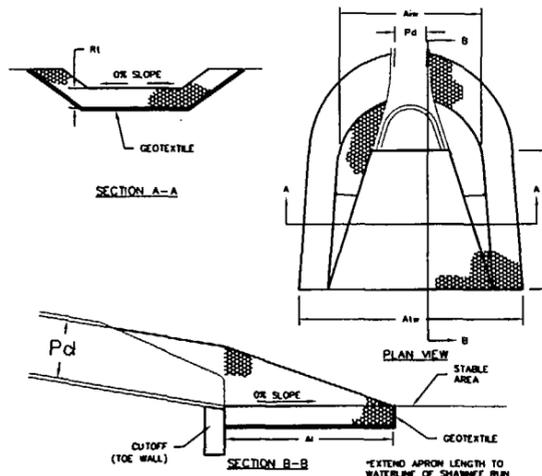
CHAIN LINK TO POST FASTENERS @ 14\"/>

NO. 7 GA TENSION WIRE INSTALLED HORIZONTALLY AT TOP AND BOTTOM OF CHAIN LINK FENCE.

FILTER FABRIC FENCE MUST BE PLACED AT LEVEL GRADE. BOTH ENDS OF THE BARRIER MUST BE EXTENDED AT LEAST 6 FEET UP SLOPE AT 45 DEGREES TO THE MAIN BARRIER ALIGNMENT.

SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.

SUPER SILT FENCE
NOT TO SCALE



ITEM	QTY	UNIT	PRICE	TOTAL
OUTLET	18	(L)		
FES-1	27	(L)		
R-3	8.0'	(L)		
4.5		(F)		
12.5		(F)		

RIP RAP APRON AT FLARED END SECTION
NOT TO SCALE

CONTRACTOR'S MAINTENANCE PROGRAM MINIMUM REQUIREMENTS

1. STORE SURPLUS AGGREGATE AND OTHER STABILIZATION MATERIALS ON-SITE IN ORDER TO HAVE ACCESS TO MATERIALS REQUIRED FOR REPAIR AND MAINTENANCE.
2. INSPECT ROCK CONSTRUCTION ENTRANCES ON A DAILY BASIS. REPLENISH STONE AS NECESSARY TO MAINTAIN REQUIRED THICKNESS. REMOVE ACCUMULATED SEDIMENT AS CLEANING EFFECTIVENESS DETERIORATES AND REPLACE WITH CLEAN STONE.
3. INSPECT FILTER FABRIC FENCE AND ROCK FILTERS, IF INSTALLED, AFTER EVERY RUNOFF PRODUCING RAINFALL. RESTORE FALLEN FENCES TO UP-RIGHT AND EFFECTIVE POSITION. REPLACE OVERTOPPED AREAS OF THE FENCE WITH A ROCK FILTER.
4. REMOVE ACCUMULATED SEDIMENT FROM FENCES AND ROCK FILTERS AS REQUIRED AND AS SHOWN ON THE DETAILS.
5. INSPECT INLET PROTECTION DEVICES ON A DAILY BASIS AND AFTER EACH RUNOFF PRODUCING RAINFALL. MAINTAIN OVERFLOW BERRIS AS REQUIRED, AND REMOVE ACCUMULATED SEDIMENT AND REPLENISH GRAVEL FILTERING MATERIAL.

THE MAINTENANCE PROGRAM WILL BE IMPLEMENTED UPON INSTALLATION OF TEMPORARY EROSION CONTROL MEASURES AND WILL CONTINUE UNTIL THE CONTRIBUTING DRAINAGE AREAS TO THOSE MEASURES ARE PERMANENTLY STABILIZED.

THE CONTRACTOR WILL BE RESPONSIBLE FOR PERFORMING ALL MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES UNTIL SUCH TIME AS THE PROJECT AREA IS PERMANENTLY STABILIZED.

RECYCLING AND DISPOSAL METHODS

- THE SELECTED CONTRACTOR WILL BE RESPONSIBLE FOR PROPER RECYCLING AND/OR DISPOSAL OF MATERIALS GENERATED BY THE SITE CONSTRUCTION ACTIVITIES AND EXCESS OR SCRAP MATERIALS USED DURING THE DEVELOPMENT OF THE PROJECT. THE FOLLOWING ACTIVITIES ARE RECOMMENDED:
1. WOODY MATERIAL TO BE SHREDDED FOR USE AS MULCH FOR TEMPORARY AND PERMANENT EROSION CONTROL.
 2. TOPSOIL CONTAINING SIGNIFICANT ORGANICS SHALL BE REMOVED FROM THE SITE AND PROPERLY DISPOSED.
 3. CEMENT CONCRETE AND BITUMINOUS CONCRETE MATERIALS THAT ARE GENERATED DURING SITE PREPARATION ACTIVITIES SHALL BE PROCESSED AND REUSED AS FILL MATERIALS ON-SITE.
 4. CONSTRUCTION MATERIALS AND TRASH AND/OR RUBBISH GENERATED DURING CONSTRUCTION ACTIVITIES TO BE PROPERLY SEGREGATED AND RECYCLED TO THE EXTENT PRACTICAL.
 5. ALL SOILS THAT ARE EXCAVATED BUT ARE NOT SUITABLE FOR REUSE AND/OR RECYCLING ARE TO BE PLACED ON-SITE AS INDICATED ON THE PLANS.
 6. NO BURNING WILL BE PERMITTED ON THE SITE.
 7. NO BURYING OF TRASH OR RUBBISH WILL BE PERMITTED ON THE SITE.

SCHEDULE OF EARTHMOVING ACTIVITIES AND INSTALLATION OF CONTROL MEASURES AND CONTROL FACILITIES

AT LEAST 7 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, THE OPERATOR SHALL NOTIFY ALL PARTIES INVOLVED IN THOSE ACTIVITIES, THE LANDOWNER, ALL APPROPRIATE MUNICIPAL OFFICIALS, THE EROSION AND SEDIMENT CONTROL PLAN PREPARER, AND THE LANCASTER COUNTY CONSERVATION DISTRICT. ALSO, AT LEAST 3 DAYS BEFORE STARTING ANY EARTH DISTURBANCE ACTIVITIES, ALL CONTRACTORS INVOLVED IN THOSE ACTIVITIES SHALL NOTIFY THE PENNSYLVANIA ONE CALL SYSTEM INCORPORATED AT 1-800-242-1776 FOR BURIED UTILITIES LOCATIONS.

1. INSTALL ROCK CONSTRUCTION ENTRANCE AT THE EXISTING GATED ENTRANCE ON THE WESTERLY PARCEL KNOWN AS 431 SOUTH FRONT STREET AS SHOWN ON THE PLANS.
2. INSTALL SUPER FILTER FABRIC FENCE ALONG THE NORTHWESTERLY AND SOUTHWESTERLY FENCE LINES AS SHOWN ON THE PLANS. INCORPORATE THE EXISTING CHAIN LINK FENCE AS SUPPORT FOR THE SUPER FILTER FABRIC FENCE AND AS SITE SECURITY.
3. STRIP EXISTING VEGETATION IN THE AREA OF THE PROPOSED BASIN; EXCAVATE AND GRADE PROPOSED BASIN.
4. CONSTRUCT BASIN OUTFALL SYSTEM INCLUDING FES-1 THROUGH INLET 1-3. INSTALL CONDUIT OUTLET PROTECTION ON FES-1.
5. INSTALL TEMPORARY RISER ON INLET 1-3. MAKE JOINT WATERPROOF AND PROVIDE AASHTO #57 GRAVEL FILTER AS SHOWN ON THE DETAIL.
6. CONSTRUCT STORMWATER COLLECTION SYSTEM TO INCLUDE FES-2 THROUGH INLET 2-2. INSTALL GRAVEL INLET PROTECTION ON INLETS 2-1 AND 2-2.
7. INSTALL AGGREGATE BASE, BITUMINOUS BINDER COURSE AND BITUMINOUS WEARING COURSE ON THE FULL WIDTH OF THE BASIN BERM AND ON THE INTERIOR SLOPES OF THE BASIN.
8. DEMOLISH AND REMOVE CONCRETE PAD 1 AND SLAB AND FOUNDATIONS OF BUILDING 1. DEMOLISH RAMPS AND FRUIT WALL OF CONCRETE LAGOON AS SPECIFIED.
9. BREAK-UP CONCRETE PAD 2 AND SLAB OF BUILDING 2. MATERIAL TO REMAIN IN PLACE.
10. STRIP EXISTING VEGETATION FROM THE BALANCE OF THE PROJECT SITE TO BE REGRADED. VEGETATION SHALL BE REMOVED FROM THE SITE AND LEGALLY DISPOSED.
11. ROUGH GRADE THE SITE TO APPROPRIATE SUBGRADE ELEVATION FOR THE IDENTIFIED PAVEMENT SECTIONS. COMPACT AS REQUIRED.
12. CONSTRUCT STORMWATER COLLECTION SYSTEM AND ROADWAY BASE DRAINS TO INCLUDE INLETS 3-1 THROUGH 3-5. CONSTRUCT CONCRETE CURB AND INSTALL GRAVEL INLET PROTECTION ON INLETS 3-1 THROUGH 3-5. ADJUST PERMEABLE SILT FENCE WHERE CURB CROSSES FENCE LINE.
13. CONSTRUCT PROPOSED BUILDING FOOTINGS AND FOUNDATIONS INCLUDING PASSIVE UNDER-SLAB VENTING SYSTEM. INSTALL ALL PROPOSED UTILITY SERVICE CONNECTIONS AND CONSTRUCT BUILDING SLAB.
14. REMOVE PERIMETER FILTER FABRIC FENCE AND PLACE AND COMPACT AGGREGATE BASE COURSE AT THE SPECIFIED THICKNESSES FOR THE IDENTIFIED PAVEMENT SECTIONS AND ON CONCRETE TANK PADS 1 AND 2. ADJUST INLET PROTECTION DEVICES AS NECESSARY.
15. SET STEEL REINFORCEMENT AND CONSTRUCT CONCRETE CAPS ON BOTH CONCRETE TANK PADS 1 AND 2.
16. REMOVE ROCK CONSTRUCTION ENTRANCE, GRADE AND PLACE AND COMPACT AGGREGATE BASE COURSE.
17. INSTALL BITUMINOUS BASE COURSE AND BINDER COURSES OF PAVEMENT TO THE IDENTIFIED PAVEMENT SECTIONS.
18. AUGER AND INSTALL STEEL BOLLARDS AND FENCE POSTS.
19. INSTALL BITUMINOUS WEARING COURSE ON ALL AREAS IDENTIFIED TO BE PAVED.
20. INSTALL CHAIN LINK FENCE AND GATES. PAINT BOLLARDS AND CLEAN SITE.
21. REMOVE TEMPORARY RISER FROM INLET 1-2 AND INSTALL LOW LEVEL ORNICE PLATE AND TRASH RACK. REMOVE ALL GRAVEL FILTER AND ACCUMULATED SILT AND DEPOSITS.
22. INSTALL WATER QUALITY INLET FILTERS AS SPECIFIED ON DRAWING C200.

EROSION AND SEDIMENTATION CONTROL NOTES

1. ONLY LIMITED DISTURBANCE WILL BE PERMITTED TO PROVIDE ACCESS TO SEDIMENT BASINS, SEDIMENT TRAPS, DIVERSION TERRACES, INTERCEPTOR CHANNELS, AND/OR CHANNELS OF CONVEYANCE FOR GRADING AND ACCURRING BORROW TO CONSTRUCT THOSE CONTROLS.
2. EROSION AND SEDIMENTATION CONTROLS MUST BE CONSTRUCTED, STABILIZED, AND FUNCTIONAL BEFORE SITE DISTURBANCE WITHIN THE TRIBUTARY AREAS OF THOSE CONTROLS.
3. AFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENTATION CONTROLS MUST BE REMOVED. AREAS DISTURBED DURING REMOVAL OF THE CONTROLS MUST BE STABILIZED IMMEDIATELY.
4. VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY TO NOR EXIT DIRECTLY FROM THE PROJECT SITE EXCEPT AT STABILIZED ROCK CONSTRUCTION ENTRANCES AS SHOWN ON THE PLANS.
5. SEDIMENT BASINS AND OTHER TEMPORARY STRUCTURAL DEVICES MUST BE PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES.
6. SEDIMENT MUST BE REMOVED FROM TRAPS WHEN SEDIMENT HAS ACCUMULATED TO THE CLEANOUT ELEVATION.
7. FILTER FABRIC FENCE MUST BE INSTALLED AT LEVEL GRADE. BOTH ENDS OF EACH FENCE SECTION MUST EXTEND AT LEAST 10 FEET UP SLOPE AT 45 DEGREES TO THE MAIN FENCE ALIGNMENT.
8. SEDIMENT MUST BE REMOVED WHEN ACCUMULATIONS REACH 1/2 THE ABOVE GROUND HEIGHT OF THE FENCE.
9. ANY FENCE SECTION WHICH HAS BEEN UNDERMINED OR TOPPED MUST BE IMMEDIATELY REPLACED WITH A ROCK FILTER OUTLET APPROVED BY THE ENGINEER.
10. STRAW BALE BARRIERS SHOULD NOT BE USED FOR MORE THAN 3 MONTHS.
11. STORMWATER INLETS WHICH DO NOT DISCHARGE TO SEDIMENT TRAPS OR BASINS MUST BE PROTECTED UNTIL THE TRIBUTARY AREAS ARE STABILIZED.
12. SEDIMENT MUST BE REMOVED FROM INLET PROTECTION AFTER EACH SIGNIFICANT STORM EVENT.
13. STOCKPILE HEIGHTS MUST NOT EXCEED 35 FEET. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER. POTENTIALLY CONTAMINATED MATERIALS MUST BE COVERED AT THE END OF EVERY DAY.
14. ANY DISTURBED AREA ON WHICH ACTIVITY HAS CEASED AND WHICH WILL REMAIN EXPOSED FOR MORE THAN 20 DAYS MUST BE STABILIZED IMMEDIATELY. DURING NON-CURBING PERIODS, MULCH MUST BE APPLIED AT THE RECOMMENDED RATES. DISTURBED AREAS WHICH ARE NOT AT FINISHED GRADE AND WHICH WILL BE REDISTURBED WITHIN 1 YEAR MAY BE STABILIZED IN ACCORDANCE WITH TEMPORARY SEEDING SPECIFICATIONS. DISTURBED AREAS WHICH ARE EITHER AT FINISHED GRADE OR WILL NOT BE REDISTURBED WITHIN 1 YEAR MUST BE STABILIZED IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS.
15. DIVERSION, CHANNELS, SEDIMENTATION BASINS, SEDIMENT TRAPS, AND STOCKPILES MUST BE STABILIZED IMMEDIATELY.
16. HAY OR STRAW MULCH MUST BE APPLIED AT RATES OF AT LEAST 3.0 TONS PER ACRE TO ANY DISTURBED AREAS THAT ARE NOT PAVED.
17. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENTATION CONTROLS MUST BE MAINTAINED PROPERLY. MAINTENANCE MUST INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENTATION CONTROLS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADE, RESEEDING, REINFORCING, AND RESETTING MUST BE PERFORMED IMMEDIATELY.
18. AT STREAM CROSSINGS, 50 FOOT STREAM BANK BUFFER AREAS SHOULD BE MAINTAINED. ON BUFFERS, CLEARING, SOOT DISTURBANCES, EXCAVATION, AND EQUIPMENT TRAFFIC SHOULD BE MINIMIZED. ACTIVITIES SUCH AS STACKING CUT LOGS, BURNING CLEARED BRUSH, DISCHARGING RAINWATER FROM TRENCHES, WELDING PIPE SECTIONS, REPELING, AND MAINTAINING EQUIPMENT SHOULD BE ACCOMPISHED OUTSIDE OF BUFFERS.

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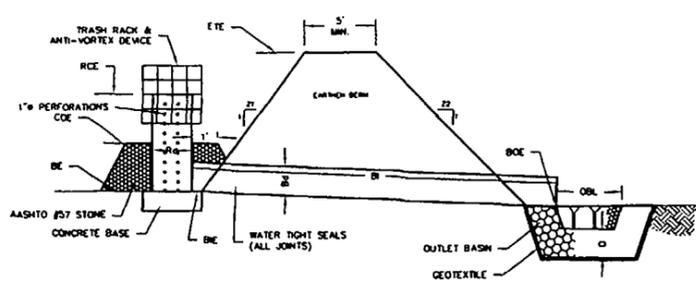
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UGI UTILITIES, INC.

UGI COLUMBIA GAS PLANT SUPERFUND SITE
SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA
EROSION AND SEDIMENTATION
CONTROL DETAILS

C751

Drawn By:	AS SHOWN
Checked By:	CTR
Designed By:	RPU
Project No.:	CTR
Project No.:	20061800
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01/18/07	PER US ACOE COMMENTS
02/15/07	PER LCDD COMMENTS
04/17/07	PER PENNDOT COMMENTS (3/12/07)
05/03/07	PER PENNDOT COMMENTS (5/3/07)



ITEM	RISER		BARREL		OUTLET BASIN		CONCRETE BASE	
	QTY	UNIT	QTY	UNIT	QTY	UNIT	QTY	UNIT
1	1	EA	1	EA	1	EA	1	EA
2	2	EA	2	EA	2	EA	2	EA
3	2	EA	2	EA	2	EA	2	EA
4	2	EA	2	EA	2	EA	2	EA
5	2	EA	2	EA	2	EA	2	EA
6	2	EA	2	EA	2	EA	2	EA
7	2	EA	2	EA	2	EA	2	EA
8	2	EA	2	EA	2	EA	2	EA
9	2	EA	2	EA	2	EA	2	EA
10	2	EA	2	EA	2	EA	2	EA
11	2	EA	2	EA	2	EA	2	EA
12	2	EA	2	EA	2	EA	2	EA
13	2	EA	2	EA	2	EA	2	EA
14	2	EA	2	EA	2	EA	2	EA
15	2	EA	2	EA	2	EA	2	EA
16	2	EA	2	EA	2	EA	2	EA
17	2	EA	2	EA	2	EA	2	EA
18	2	EA	2	EA	2	EA	2	EA

CLEAN OUT STAKES MUST BE PLACED AT HALF DISTANCES FROM POINTS OF CONCENTRATED INFLOWS TO SEDIMENT TRAP OUTLETS. WHEN SEDIMENT HAS ACCUMULATED TO THE CLEAN OUT ELEVATION ON ANY STAKE, THE SEDIMENT MUST BE REMOVED TO RESTORE TRAP CAPACITY.

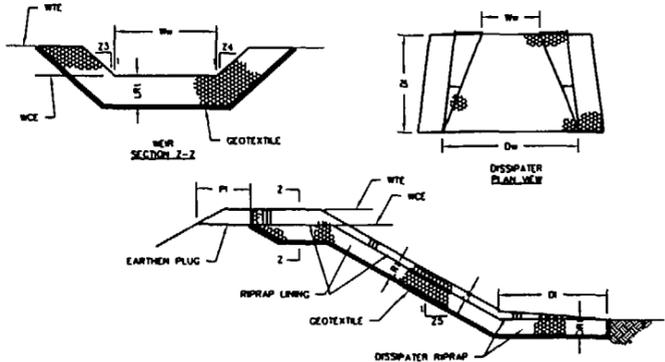
SEDIMENT TRAPS MUST BE PROTECTED FROM UNAUTHORIZED ACTS OF THIRD PARTIES.

FOR BARREL PIPES HAVING SMOOTH EXTERIOR SURFACES, ANTI-SEEP COLLAR(S) AND SELECT EMBANKMENT FILL ARE REQUIRED.

DRY BARREL/RISER SEDIMENT TRAP

NOT TO SCALE

THIS DETAIL WAS DEVELOPED FROM DETAIL #13 ON PAGE 60 OF THE PADEP EROSION AND SEDIMENT POLLUTION CONTROL MANUAL. DIMENSIONS ARE PROVIDED ONLY FOR PLANNED SITE FEATURES.



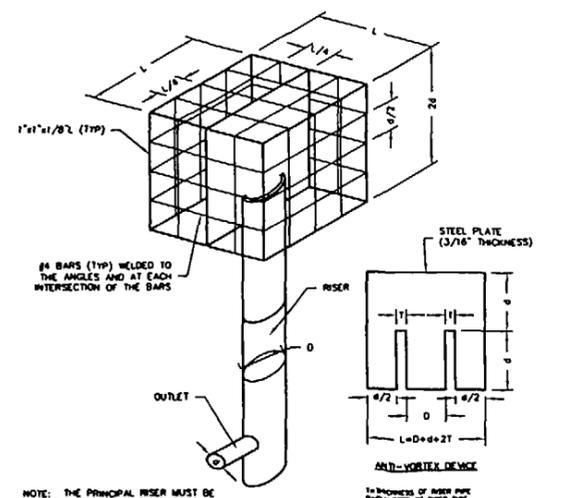
ITEM	WEIR		DISSIPATER RIPRAP		DISSIPATER RIPRAP	
	QTY	UNIT	QTY	UNIT	QTY	UNIT
1	1	EA	1	EA	1	EA
2	2	EA	2	EA	2	EA
3	2	EA	2	EA	2	EA
4	2	EA	2	EA	2	EA
5	2	EA	2	EA	2	EA
6	2	EA	2	EA	2	EA
7	2	EA	2	EA	2	EA
8	2	EA	2	EA	2	EA
9	2	EA	2	EA	2	EA
10	2	EA	2	EA	2	EA
11	2	EA	2	EA	2	EA
12	2	EA	2	EA	2	EA
13	2	EA	2	EA	2	EA
14	2	EA	2	EA	2	EA
15	2	EA	2	EA	2	EA
16	2	EA	2	EA	2	EA
17	2	EA	2	EA	2	EA
18	2	EA	2	EA	2	EA

NOTE: SPILLWAY IS STABILIZED WITH BITUMINOUS PAVING AND UNDISTURBED GROUND. NO GEOTEXTILE IS REQUIRED.

SEDIMENT BASIN EMERGENCY SPILLWAY

NOT TO SCALE

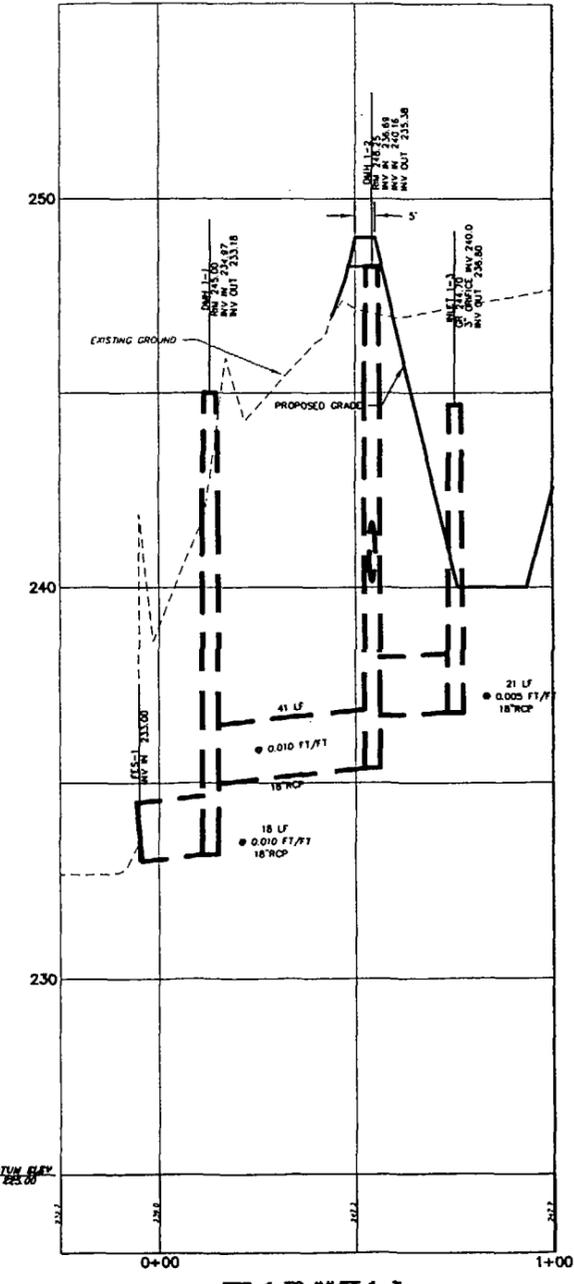
THIS DETAIL WAS DEVELOPED FROM DETAIL #8 ON PAGE 55 OF THE PADEP EROSION AND SEDIMENT POLLUTION CONTROL MANUAL. DIMENSIONS ARE PROVIDED ONLY FOR PLANNED SITE FEATURES.



TRASH RACK AND ANTI-VORTEX DEVICE

NOT TO SCALE

THIS DETAIL WAS DEVELOPED FROM FIGURE #9 ON PAGE 48 OF THE PADEP EROSION AND SEDIMENT POLLUTION CONTROL MANUAL.



FES-1 TO INLET 1-3

SCALE: 1\"/>

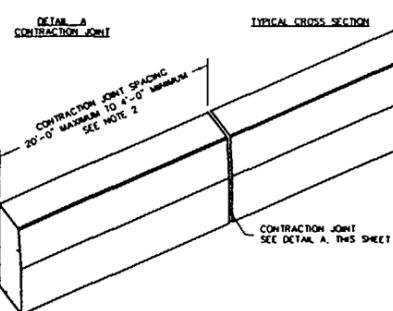
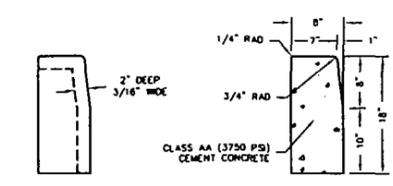
SIGNATURE	DATE
REVIEW ENGINEER:	
PROJECT ENGINEER:	
PROJECT MANAGER:	
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 UGI UTILITIES, INC.

UGI COLUMBIA GAS PLANT SUPERFUND SITE
 SOUTH FRONT STREET
 COLUMBIA, PENNSYLVANIA
 EROSION AND SEDIMENTATION
 CONTROL NARRATIVE

C752

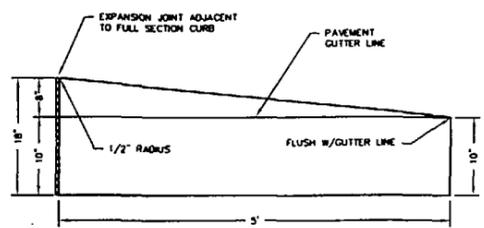
DATE	AS SHOWN
DESIGNED BY	CTR
CHECKED BY	RPU
DRAWN BY	CTR
PROJECT NO.	20061800
SHEET NO.	15 OF 17
DATE	12/15/2006



- NOTES:**
- MATERIALS AND CONSTRUCTION SHALL MEET THE REQUIREMENTS OF PUBLICATION 408, SECTION 630 FOR PLAIN CEMENT CONCRETE CURB.
 - SPACE CONTRACTION JOINTS IN UNIFORM LENGTHS OR SECTIONS.
 - PLACE 3/4 INCH PREMOULDED EXPANSION JOINT FILLER MATERIAL AT STRUCTURES AND AT THE END OF THE WORK DAY. CUT MATERIAL TO CONFORM TO AREA ADJACENT TO CURB OR TO CONFORM TO CROSS SECTIONAL AREA OF CURB.

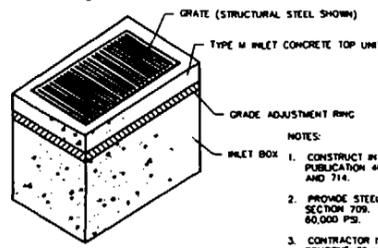
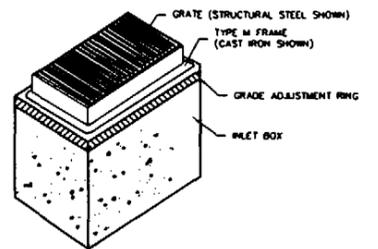
PLAIN CEMENT CONCRETE CURB
NOT TO SCALE

PCCURB.DWG



- GENERAL NOTES:**
- PROVIDE TAPERED END WHERE NEW CURB DOES NOT TERMINATE BY MEETING EXISTING CURB.
 - CONCRETE TO BE PENNDOT CLASS AA (3750 PSI) WITH 6% AIR ENTRAINMENT.

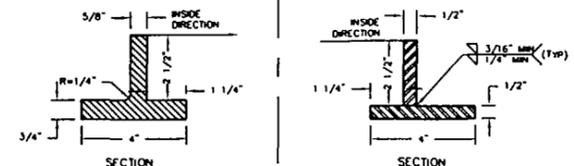
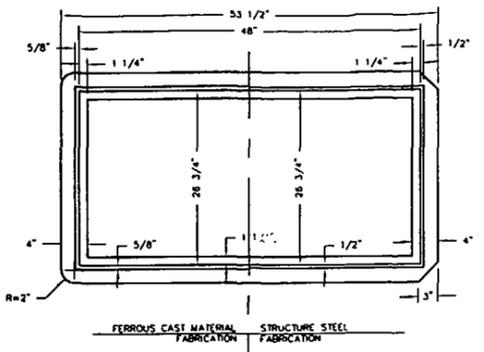
CONCRETE CURB END TAPER
NOT TO SCALE



- NOTES:**
- CONSTRUCT IN ACCORDANCE WITH PENNDOT PUBLICATION 408 SPECIFICATIONS, SECTIONS 605, 606, AND 714.
 - PROVIDE STEEL REINFORCEMENT IN ACCORDANCE WITH SECTION 709. PROVIDE MINIMUM YIELD STRENGTH OF 60,000 PSI.
 - CONTRACTOR IS RESPONSIBLE FOR SELECTION OF COMPONENTS NECESSARY TO ACHIEVE THE ASSEMBLY.
 - USE PRECAST CONCRETE OR STEEL GRADE ADJUSTMENT RINGS WHEN REQUIRED.

TYPE M INLET ASSEMBLY
NOT TO SCALE

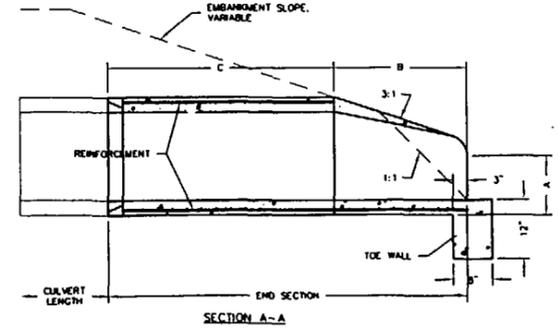
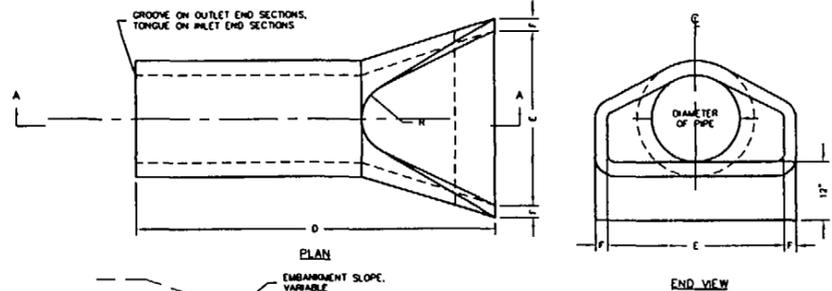
M_ASSAY.DWG



- NOTES:**
- THIS STANDARD DEPICTS THE DIMENSIONS REQUIRED FOR UNIFORMITY AND INTERCHANGEABILITY. IT DOES NOT INCLUDE DETAILS REQUIRED FOR FABRICATION OR MANUFACTURING. ONLY ITEMS SUPPLIED BY A MANUFACTURER LISTED IN BULLETIN 15 WILL BE PERMITTED.
 - WELD STRUCTURAL STEEL GRATES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 1105.03(R). WELDING SHOPS ARE NOT REQUIRED TO BE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) CERTIFIED.
 - PROVIDE EITHER GRAY, MALLEABLE OR DUCTILE IRON CASTINGS OR STRUCTURAL STEEL FRAMES.

INLET FRAME - TYPE M
NOT TO SCALE

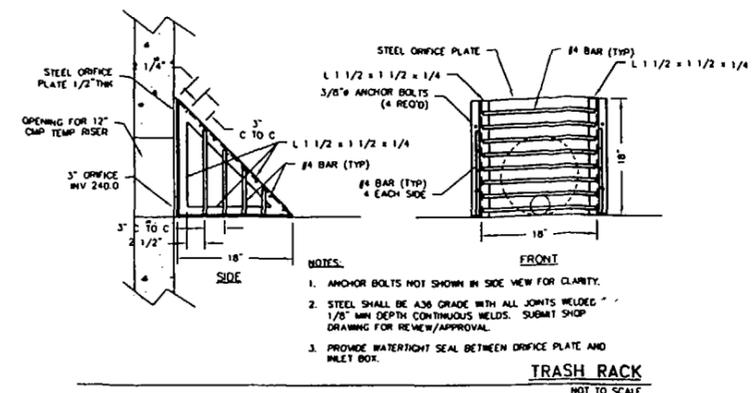
M_FRAME.DWG



DIAM	A	B	C	D	E	F	G	H
18"	0"	2'-3"	3'-10"	6'-1"	3'-0"	2'-8"	7'-8"	
21"	0"	3'-0"	3'-11"	6'-1"	3'-6"	2'-3/4"	8"	
24"	0"	3'-7"	4'-8"	6'-11"	4'-0"	3"	8"	
27"	10"	4'-0"	5'-11"	6'-11"	4'-6"	3 3/4"	9"	
30"	12"	4'-6"	6'-7 3/4"	7'-4 1/4"	5'-0"	3 3/4"	9"	
33"	13"	4'-10"	7'-11"	8'-0"	5'-6"	3 3/4"	9"	
36"	15"	5'-3"	8'-8"	8'-0"	6'-0"	4"	10"	
42"	21"	5'-3"	9'-8"	8'-0"	6'-6"	4 1/2"	11"	
48"	24"	6'-0"	10'-0"	8'-0"	7'-0"	5"	12"	

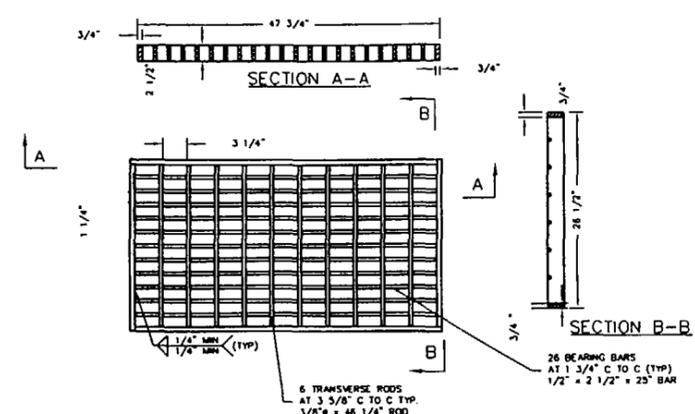
- NOTES:**
- PROVIDE END SECTIONS MEETING THE REQUIREMENTS OF PUBLICATION 408/2000, SECTION 616.

CONCRETE END SECTIONS
NOT TO SCALE

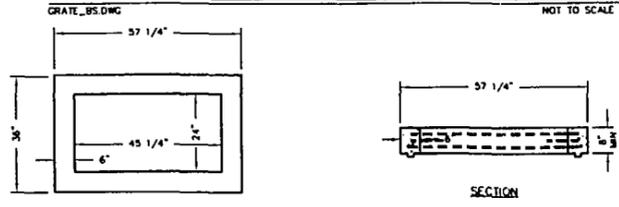


- NOTES:**
- ANCHOR BOLTS NOT SHOWN IN SIDE VIEW FOR CLARITY.
 - STEEL SHALL BE A36 GRADE WITH ALL JOINTS WELDED. 1/8" MIN DEPTH CONTINUOUS WELDS. SUBMIT SHOP DRAWING FOR REVIEW/APPROVAL.
 - PROVIDE WATER-TIGHT SEAL BETWEEN DRIFTE PLATE AND INLET BOX.

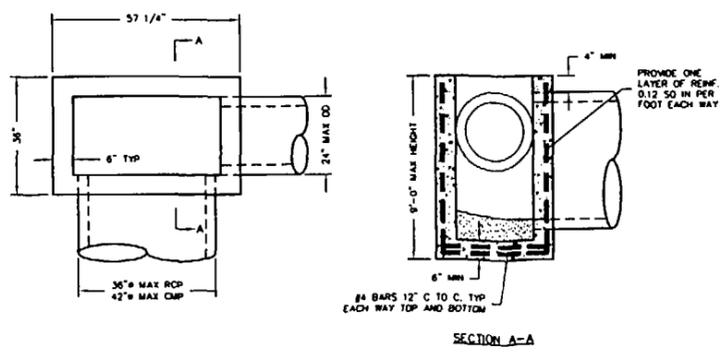
TRASH RACK
NOT TO SCALE



STRUCTURAL STEEL GRATE - BICYCLE SAFE
NOT TO SCALE



COVER ADJUSTMENT SLAB



- NOTES:**
- CONSTRUCT INLET BOXES IN ACCORDANCE WITH THE REQUIREMENTS OF PUBLICATION 408, SECTION 605.
 - PROVIDE INLET BOXES WITH 24"x45 1/4" STANDARD OPENING TO ACCOMMODATE THE STANDARD TOP COMPONENTS.
 - CONSTRUCT INLETS THAT EXCEED FIVE (5) FEET IN HEIGHT WITH STEPS (SEE STEP DETAIL).

STANDARD PRECAST INLET BOX
NOT TO SCALE

DATE:	REVISION:
01/17/07	PER LCDD AND PENNDOT COMMENTS
01/18/07	PER US ACDE COMMENTS
02/15/07	PER LCDD COMMENTS
04/17/07	PER PENNDOT COMMENTS (3/12/07)
05/03/07	PER PENNDOT COMMENTS (5/3/07)

PENNDOT DETAIL LISTING
TD-8000 (AUG. 30, 2004)

DOTTED EXTENSION LINE - CONVENTIONAL
SOLID LINE LINE - CONVENTIONAL
TWO-WAY BARRIER LINE - CONVENTIONAL
STOP LINE - CONVENTIONAL
MARKING ARROW (A) RIGHT - LEGENDS AND SYMBOLS

ROADWAY CONSTRUCTION (INCL)

RC-30M	PLACEMENT AT CURB SECTION	(MAR. 30, 2006)
RC-33M	CONCRETE END SECTIONS	(MAR. 30, 2006)
RC-34M	TYPE M INLET	(MAR. 30, 2006)
RC-34M	STRUCTURAL STEEL GRATE (BICYCLE SAFE)	(MAR. 30, 2006)
RC-39M	STANDARD MANHOLE, PRECAST	(APR. 15, 2004)
RC-64M	PLAIN CEMENT CONCRETE CURB	(APR. 15, 2004)

SIGNAGE

R1-1	STOP SIGN	30"x30"
R3-8A(R)	LANE USE CONTROL	30"x30"

SIGNATURE	DATE
REVIEW ENGINEER:	
PROJECT ENGINEER:	
PROJECT MANAGER:	
CLIENT:	

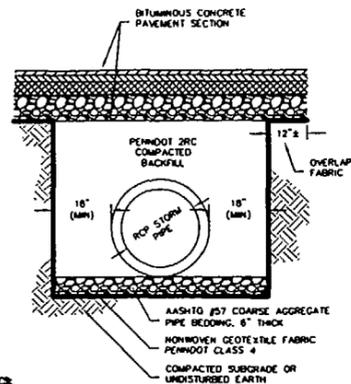
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UGI UTILITIES, INC.

UGI COLUMBIA GAS PLANT SUPERFUND SITE
SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA

SITE DETAILS

C900

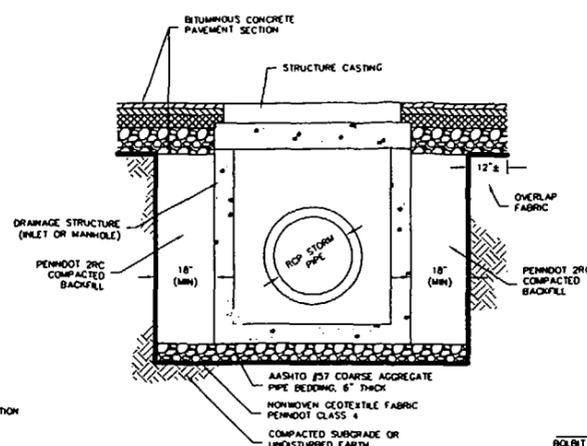
Scale:	AS SHOWN
Designed By:	CTR
Drawn By:	RPU
Checked By:	CTR
Project No.:	CTR
Project No.:	20061800
Sheet No.:	16 OF 17
Issue:	12/15/2006



- NOTES:**
1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, PUBLICATION 408 AS AMENDED TO DATE.
 2. HEAVY DUTY PAVEMENT SECTION IS ILLUSTRATED. PIPE TRENCHING ALSO OCCURS IN LIGHT-DUTY PAVEMENT AREAS. PIPE COVER IS VARIABLE DEPTH IN ACCORDANCE WITH THE UTILITY PLAN.
 3. COMPACT BACKFILL MATERIAL TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS DETERMINED BY THE MOONED PROCTOR SERIES.
 4. ALL REINFORCED CONCRETE PIPE SHALL BE CLASS III, WALL 8 WITH GASKETTED JOINTS.

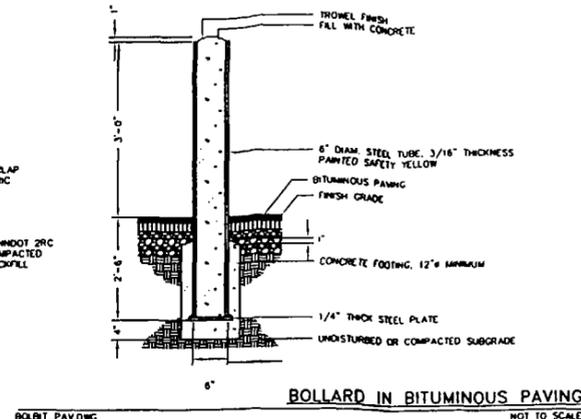
PIPE TRENCH BACKFILL
NOT TO SCALE

ALL BUILDING UTILITY SERVICES (WATER, SEWER, GAS, ELECTRIC AND TELEPHONE, OR OTHERS) SHALL BE INSTALLED IN ACCORDANCE WITH THE PIPE TRENCH BACKFILL DETAIL.

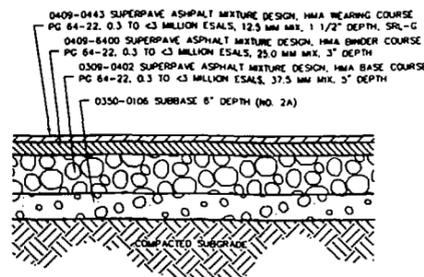


- NOTES:**
1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, PUBLICATION 408 AS AMENDED TO DATE.
 2. HEAVY DUTY PAVEMENT SECTION IS ILLUSTRATED. STRUCTURE BACKFILLING ALSO OCCURS IN LIGHT-DUTY PAVEMENT AREAS. STRUCTURE DEPTH IS VARIABLE DEPTH IN ACCORDANCE WITH THE UTILITY PLAN.
 3. COMPACT BACKFILL MATERIAL TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY AS DETERMINED BY THE MOONED PROCTOR SERIES.

INLET/MANHOLE BACKFILL
NOT TO SCALE



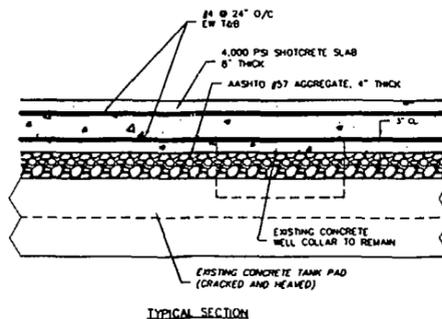
BOLLARD IN BITUMINOUS PAVING
NOT TO SCALE



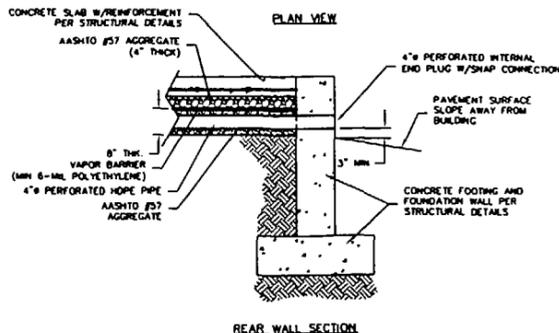
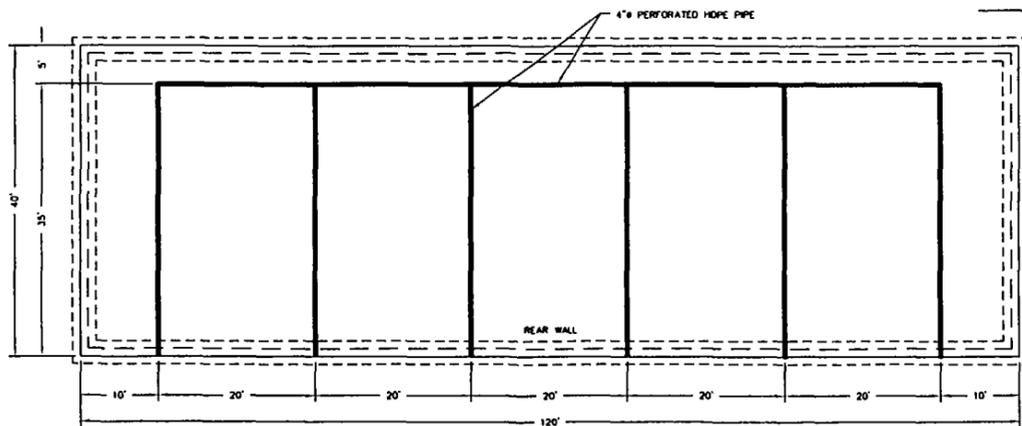
PENNDOT PAVEMENT SECTION

- GENERAL NOTES:**
1. PROVIDE PRIME COAT BETWEEN AGGREGATE COURSE AND BITUMINOUS COURSE.
 2. PROVIDE TACK COAT BETWEEN BITUMINOUS COURSES.

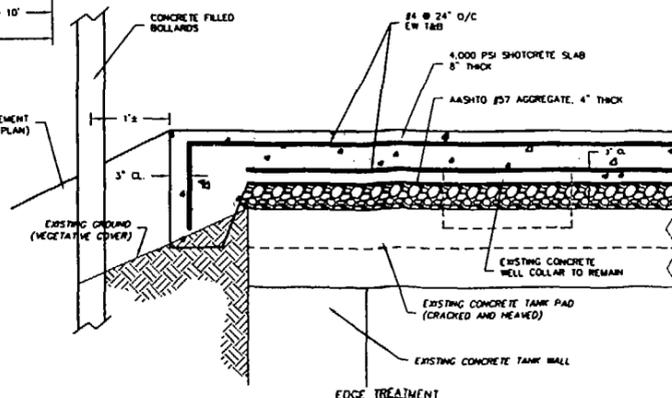
BITUMINOUS CONCRETE PAVING SECTION
NOT TO SCALE



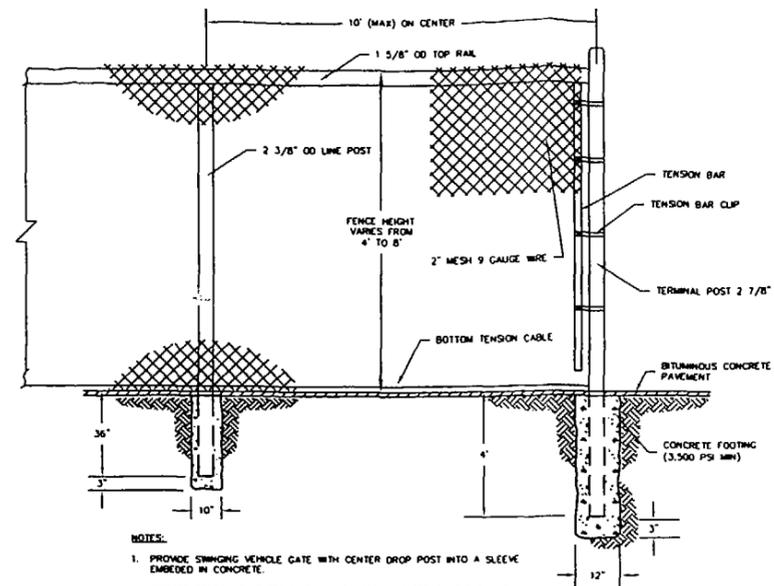
TYPICAL SECTION



BEAR WALL SECTION
UNDERSLAB PASSIVE VENTING SYSTEM
NOT TO SCALE

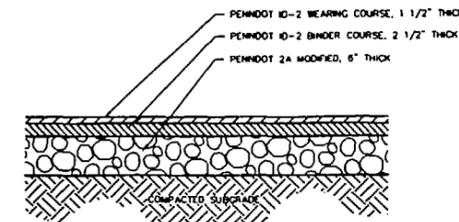


SHOTCRETE CAP FOR CONCRETE HOLDERS
NOT TO SCALE



- NOTES:**
1. PROVIDE SWINGING VEHICLE GATE WITH CENTER DROP POST INTO A SLEEVE EMBEDDED IN CONCRETE.
 2. PROVIDE PERSONNEL GATE(S) AT LOCATION(S) INDICATED ON THE PLANS.
 3. ALL GATES SHALL BE PROVIDED WITH LATCHED AND LOCKS.

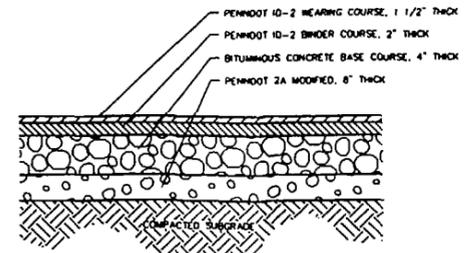
CHAIN LINK FENCE
NOT TO SCALE



LIGHT-DUTY PAVEMENT SECTION

- GENERAL NOTES:**
1. PROVIDE PRIME COAT BETWEEN AGGREGATE COURSE AND BITUMINOUS COURSE.
 2. PROVIDE TACK COAT BETWEEN BITUMINOUS COURSES.
 3. HAND TAMPING MAY BE REQUIRED TO MEET GRADES IN SPECIFIC SITE AREAS INCLUDING THE SEDIMENT BASIN, SLOPED AREAS AND ADJACENT TO FRONT STREET (SR 0441).
 4. ALL PROPOSED SITE PAVING WILL MATCH EXISTING PAVING ALONG FRONT STREET (SR 0441).

BITUMINOUS CONCRETE PAVING SECTION
NOT TO SCALE



HEAVY-DUTY PAVEMENT SECTION

- GENERAL NOTES:**
1. PROVIDE PRIME COAT BETWEEN AGGREGATE COURSE AND BITUMINOUS COURSE.
 2. PROVIDE TACK COAT BETWEEN BITUMINOUS COURSES.

BITUMINOUS CONCRETE PAVING SECTION
NOT TO SCALE

DATE:	REVISION:
01/17/07	PER LCD AND PENNDOT COMMENTS
01/18/07	PER US ACOE COMMENTS
02/15/07	PER LCD COMMENTS
04/17/07	PER PENNDOT COMMENTS (3/12/07)
05/03/07	PER PENNDOT COMMENTS (5/3/07)

SIGNATURE	DATE
REVIEW ENGINEER:	
PROJECT ENGINEER:	
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UGI UTILITIES, INC.

UGI COLUMBIA GAS PLANT SUPERFUND SITE
SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA

SITE DETAILS

C901

Scale:	AS SHOWN
Drawn By:	CTR
Check By:	RPU
Reviewed By:	CTR
Project No.:	CTR
Project No.:	20061800
Sheet No.:	17 OF 17
Issue:	12/15/2006

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WILMINGTON, DE 19801
302-282-9600 • FAX 302-452-4931
ONE PROJECT NO. 216 011



**UGI COLUMBIA GAS PLANT
SUPERFUND SITE**
SOUTH FRONT STREET
COLUMBIA, PENNSYLVANIA

JOB NO. 216 011
CHECKED PJP
DRAWN BAP
DATE 12/18/06
REVISED
FOUNDATION ELEV.
CHANGES 04/11/07

FOUNDATION
PLAN

S-1

GENERAL NOTES

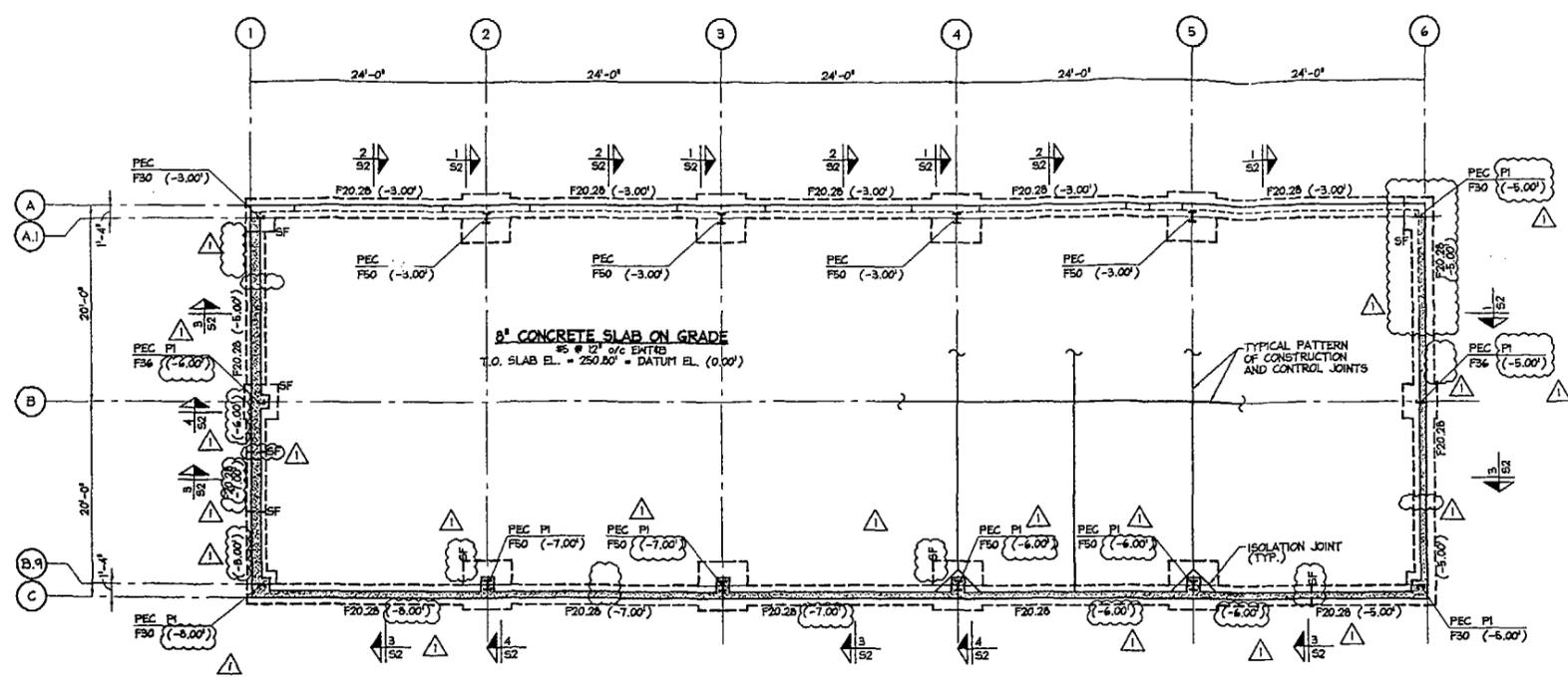
FOUNDATIONS

1. BOTTOM OF FOOTINGS IS ASSUMED TO BEAR ON SOIL CAPABLE OF SAFELY SUPPORTING 600 PSF.
2. BOTTOM OF ALL FOOTINGS MUST BE INSPECTED AND APPROVED BY THE ENGINEER BEFORE PLACING ANY CONCRETE.
3. BOTTOM OF ALL EXTERIOR FOOTINGS SHALL BE MINIMUM THREE FEET BELOW EXTERIOR FINISH GRADE.
4. RETAINING WALLS SHALL HAVE CONTROL JOINTS AT 30 FEET MAXIMUM ON CENTERS UNLESS NOTED OTHERWISE. WALLS WITH INTEGRAL COLUMN PIERS OR PILASTERS SHALL HAVE A FORMED CONTROL JOINT ON ONE SIDE OF EACH PIER ON THE EXPOSED FACE OF THE WALL. JOINTS SHALL BE FILLED WITH SILICONE CAULK.

CONCRETE

1. ALL CONCRETE SHALL BE READY-MIX. HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI AT 28 DAYS. HAVE A MINIMUM OF 500 LBS. OF CEMENT PER CUBIC YARD. SLUMP (AT POINT OF CONCRETE PLACEMENT) SHALL BE 3 INCH MINIMUM AND 6 INCH MAXIMUM. CONCRETE EXPOSED TO WEATHER SHALL HAVE 4 PERCENT AIR ENTRAINMENT. SUBMIT MIX DESIGNS FOR REVIEW.
2. ALL CONCRETE WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE ACI BUILDING CODE (ACI 318), THE ACI DETAILING MANUAL (ACI 315), AND THE SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301).
3. ALL REINFORCING STEEL SHALL BE MANUFACTURED FROM HIGH STRENGTH BILLET STEEL CONFORMING TO ASTM DESIGNATION A615 GRADE 60. WAF SHALL COMPLY WITH ASTM A185.
4. LAP ALL BARS MINIMUM 48 DIAMETERS. LAP ALL WAF A MINIMUM OF 6 INCHES.

NOTE:
THE FOUNDATION PLAN (S-1) SHOWN WAS DEVELOPED FOR THE COSTAL STEEL BUILDING PROJECT NUMBER W060107A BASED ON THE DRAWING DATED 12-11-06. ANY CHANGES TO THE THE PLANNED BUILDING SUPERSTRUCTURE SHALL BE REVIEWED AND APPROVED BY ADVANCED GEOSERVICES CORP. PRIOR TO FABRICATION AND CONSTRUCTION.



FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

- NOTES:
1. TOP OF SLAB EL. = 250.00' = DATUM EL. (0.00').
 2. SEE PLAN FOR BOTTOM OF FOOTING ELEVATION BELOW DATUM ELEVATION.
 3. TOP OF PIER EL. = (-0.00') BELOW DATUM UNLESS NOTED OTHERWISE THUS [...].
 4. COORDINATE ALL UNDER SLAB PIPING WITH PROJECT DRAWINGS.
 5. COORDINATE ALL DIMENSIONS WITH COSTAL STEEL BUILDING DRAWINGS PRIOR TO BUILDING LAYOUT.
 6. 'PEC' INDICATES PRE-ENGINEERED COLUMN.
 7. 'P' INDICATES CONCRETE PIER. SEE SCHEDULE ON DRAWING S-2 FOR ADDITIONAL INFORMATION.
 8. 'ECS' INDICATES RETAINING WALL. SEE RESPECTIVE SECTION AS CUT ON PLAN.
 9. 'SF' INDICATES STEPPED FOOTING. SEE TYPICAL DETAIL S-2 FOR ADDITIONAL INFORMATION.



APPENDICES



APPENDIX A

AOC

I. JURISDICTION AND GENERAL PROVISIONS

- 1.1 This Settlement Agreement is issued pursuant to the authority vested in the President of the United States by Sections 104, 106(a) and 122(a) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended, 42 U.S.C. §§ 9604, 9606(a) and 9622(a); delegated to the Administrator of EPA by Executive Order No. 12580, 52 Fed. Reg. 2923 (January 29, 1987); and further delegated to the Director of the Hazardous Site Cleanup Division, EPA Region III. This Settlement Agreement pertains to property located in the Borough of Columbia, Lancaster County, Pennsylvania. The property, known as the UGI Columbia Gas Plant Superfund Site will hereinafter be referred to as the "UGI Site" or "the Site," and is further described in paragraph 3.1 below.
- 1.2 All terms and conditions of this Settlement Agreement, including any modifications hereto, are required by this Settlement Agreement. The Respondents agree to undertake all actions required by the terms and conditions of this Settlement Agreement and to comply with all such terms and conditions.
- 1.3 The Work shall be consistent with the National Oil and Hazardous Substances Pollution Contingency Plan, as amended ("NCP"), 40 C.F.R. Part 300; and CERCLA.
- 1.4 The Respondents consent to and will not contest EPA's authority or jurisdiction to issue or to enforce this Settlement Agreement.

II. STATEMENT OF PURPOSE

- 2.1 In entering into this Settlement Agreement, the mutual objectives of EPA and Respondents are to conduct a removal action, as defined in Section 101(23) of CERCLA, 42 U.S.C. § 9601(23), to abate, mitigate and/or eliminate the release or threat of release of hazardous substances at the Site by the installation of a cap, including the demolition of on-Site buildings and the excavation and off-Site disposal of contaminated soils to facilitate the installation of a cap, and the installation of groundwater monitoring wells.

III. FINDINGS OF FACT

- 3.1 The Site includes a former manufactured gas plant (the "MGP Facility") which occupies approximately 1.6 acres and is located approximately four hundred feet northeast of the Susquehanna River. The Site also includes the Borough of Columbia's ("Borough's") municipal garage; the Lancaster Water Authority ("LWA") pumping station; railroad

- tracks owned by Consolidated Rail Corporation ("CONRAIL"); and a pedestrian tunnel which extends underneath the railroad tracks on the northern side of the MGP Facility.
- 3.2 Respondent PPL Electric, a Pennsylvania Corporation, is the current owner of the MGP Facility, and various predecessors in interest, were the owners and/or operators of the MGP Facility at the time that Hazardous Substances were disposed there.
- 3.3 Respondent UGI, as corporate successor to United Gas Improvement Company which merged with Lancaster County Gas Company, owned the MGP Facility at the time that Hazardous Substances were disposed there.
- 3.4 Gas was historically produced at the MGP Facility through a coal gasification process which included reacting steam with hot coal, coke and wood. The gas went from two gas generating sets through a washbox, condenser, washer cooler, and then was stored in a gas holder. From the gas holder, the gas went through a coal tar separator and a purifier and finally to a relief holder for distribution in the City of Columbia.
- 3.5 The primary waste stream generated during the coal gasification process was liquid coal tar. Coal tar is a mixture of organic chemicals comprising volatile organic compounds ("VOCs") including benzene, toluene, and xylene ("BTEX"); semi-volatile organic compounds ("SVOCs") including polycyclic aromatic hydrocarbons ("PAHs"), and inorganics including metals and cyanide.
- 3.6 On or about December 7, 1984, PPL Electric and UGI voluntarily agreed with the Pennsylvania Department of Environmental Resources ("PADER"), which was subsequently renamed the Pennsylvania Department of Environmental Protection ("PADEP"), to perform a Site Investigation to determine the nature and extent of contamination at the Site. Samples collected during the Site Investigation revealed that on-Site soils and groundwater were contaminated with VOCs, PAHs, heavy metals, and cyanide.
- 3.7 Following the completion of the Site Investigation, and at various times over the years thereafter through 1998, PPL Electric and UGI voluntarily undertook several cleanup actions at the Site, including capping of the gas and relief holders, removing approximately 100 cubic yards of tar contaminated material from the pedestrian tunnel, constructing a concrete floor inside the tunnel, removing approximately 3,350 gallons of tar from the gas holders and removing approximately 750 tons of contaminated sediments from the Susquehanna River.
- 3.8 In or around January 1991, EPA conducted an Expanded Site Investigation ("ESI") at the Site. Sampling results from the ESI revealed that MGP-related wastes containing VOCs, PAHs, and cyanide had migrated into groundwater, soil and bedrock.
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- 3.9 EPA proposed the Site for inclusion on the Superfund National Priorities List ("NPL") in June 1993 and added the Site to the NPL in August May 1994.
- 3.10 In or around August 1993, PADER requested the lead for further interim response activities at the Site under the Pennsylvania Hazardous Site Cleanup Act and the Remedial Investigation ("RI") and Feasibility Study ("FS") process. EPA agreed to PADEP's request, but EPA retained its authority to review Site-related activities to ensure compliance with CERCLA and the NCP and to select the final remedy for the Site.
- 3.11 In April 1996, PPL Electric entered into a Consent Order and Agreement ("Consent Order") with PADEP to conduct an RI/FS and a Risk Assessment ("RA") to, among other things, determine the nature and extent of contamination at the Site; characterize the risks to human health and the environment, and evaluate alternatives to clean up the contamination at the Site. For purposes of consistency with the Superfund program, EPA oversaw the work done by PPL Electric under the Consent Order with PADEP.
- 3.12 The PADEP-approved RI identified approximately 15,000 cubic yards of remaining contaminated surface and subsurface soils at the Site. The RI also identified contamination in on-Site groundwater that had migrated from the MGP Facility and was detected in deep groundwater near the Susquehanna River.
- 3.13 In 2002, PADEP approved the FS which proposed options for addressing the remaining contamination at the Site. The FS recommended installing additional groundwater monitoring wells at the Site in order to demonstrate whether natural gradient flushing of Site-related contaminants was occurring.
- 3.14 The manufactured gas plant operations have caused Site soils, groundwater, bedrock, and sediments of the Susquehanna River to become contaminated with hazardous substances including BTEX; PAHs, metals and cyanide. All of these substances are hazardous substances within the meaning of Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14), because they are listed at 40 C.F.R. Section 302.4.
- 3.15 In an Action Memorandum approved on November 2, 2006 by the Director of the Hazardous Site Cleanup Division, EPA determined that a threat to public health, welfare and/or the environment exists due to the actual or threatened release of hazardous substances from the Site.

IV. CONCLUSIONS OF LAW

- 4.1 The UGI Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
- 4.2 Respondents are "persons" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
- 4.3 BTEX, PAHs, arsenic and cyanide are "hazardous substances" within the meaning of Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), because they are listed at 40 C.F.R. § 302.4.
- 4.4 "Hazardous substances," as defined in Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), have been disposed of at the UGI Site and are currently present there.
- 4.5 The presence of hazardous substances at the Site and the past, present, and/or potential migration of hazardous substances from the Site constitutes an actual and/or threatened "release" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).
- 4.6 Respondent PPL Electric is an "owner or operator of a vessel or a facility" within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1) and is a "person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of" within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).
- 4.7 Respondent UGI is a "person who at the time of disposal of any hazardous substance owned or operated any facility at which such hazardous substances were disposed of" within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).
- 4.8 EPA has determined that Respondents are liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

V. DETERMINATIONS

Based on the Findings of Fact and Conclusions of Law set forth above, and upon EPA's review of information for the Administrative Record for the Site, EPA has determined that:

- 5.1 The actual and/or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health or welfare or the environment.

- 5.2 The Work is necessary to protect the public health and welfare and the environment.
- 5.3 Because there is a threat to public health or welfare or the environment, a removal action is appropriate to abate, minimize, stabilize, mitigate or eliminate the release or threat of release of hazardous substances at or from the Site.
- 5.4 The Index to the Administrative Record supporting the issuance of this Settlement Agreement is set forth in Attachment A.

VI. PARTIES BOUND

- 6.1 This Settlement Agreement shall apply to and be binding upon EPA and its agents, and upon Respondents and their agents, successors, and assigns. Neither a change in ownership or corporate or partnership status of Respondents, nor a change in ownership or control of the Site, shall in any way alter Respondents' responsibilities under this Settlement Agreement.
- 6.2 In the event of any change in ownership or control of the Site or of Respondents' corporate status, Respondents shall notify EPA in writing at least thirty (30) calendar days in advance of such change and shall provide a copy of this Settlement Agreement to the transferee in interest of the Site prior to any agreement for transfer.
- 6.3 In the event that either Respondent files for or is placed into bankruptcy, that Respondent shall notify EPA within three (3) days of such event.
- 6.4 Respondents shall provide a copy of this Settlement Agreement to all contractors, subcontractors, supervisory personnel, laboratories and consultants retained by Respondents to conduct any portion of the Work to be performed by Respondents pursuant to this Settlement Agreement. Respondents shall require in any and all contracts related to this Site that the Work that is the subject of such contract be performed within the time and in the manner set forth in this Settlement Agreement.
- 6.5 The undersigned representative of each Respondent certifies that he or she is fully authorized to enter into the terms of this Settlement Agreement and to execute and legally bind such Respondent to this Settlement Agreement.
- 6.6 Respondents are jointly and severally liable for compliance with the provisions of this Settlement Agreement. All references to "Respondents" herein shall mean each and every Respondent, both collectively and individually. The failure by one Respondent to comply with all or any part of this Settlement Agreement shall not in any way excuse or justify noncompliance by the other Respondent. Further, the compliance by one Respondent

with all or part of this Settlement Agreement shall not in any way excuse or justify noncompliance by the other Respondent.

VII. NOTICE TO THE STATE

- 7.1 Notice of issuance of this Settlement Agreement has been given to the Commonwealth of Pennsylvania pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

VIII. RESPONSE ACTION PLAN DEVELOPMENT AND IMPLEMENTATION

- 8.1 Respondents shall commence and complete performance of the following response action within the time periods specified herein.
- 8.2 Within fifteen (15) calendar days of the effective date of this Settlement Agreement, Respondents shall notify EPA in writing of the identity and qualifications of the contractor, subcontractor, supervisory personnel and other persons who will be primarily responsible for developing the Response Action Plan ("RAP") required by this Section. Respondents shall further notify EPA in writing of the identity and qualifications of all contractors, subcontractors, supervisory personnel and other persons selected by Respondents who will conduct all or any portion of the response action no less than five (5) days prior to commencement of the response action to be performed by such persons. Respondents shall ensure that all contractors, subcontractors, supervisory personnel and/or other persons retained to perform the response actions shall meet the applicable Occupational Safety and Health Administration ("OSHA") requirements as defined in 29 C.F.R. § 1910.120. The Respondents' selection of all contractors, subcontractors, supervisory personnel and other persons who will perform the response action; the Respondents' Project Coordinator designated pursuant to Section IX; and any replacements to any such persons are subject to disapproval by EPA at any time. In the event of any such disapproval by EPA, Respondents shall notify EPA within fifteen (15) calendar days of receipt of such EPA disapproval of the Respondents' selection of person(s) who will replace the one(s) disapproved by EPA. If a person's selection for specified work is disapproved by EPA, they shall not perform such specified response action.
- 8.3 Respondents shall accomplish the following items:
- (a) Install at a minimum an eight (8)-inch concrete cap over the area of the former holders as depicted in Figure 5-2 in the FS (See Attachment B for a copy of Figure

- 5-2) sufficient to prevent the migration of contaminants through surface water runoff and infiltration;
- (b) Install a four (4)-inch asphalt and/or concrete cap over areas where MGP-related waste remains in the subsurface as depicted in Figure 5-2 in the FS (See Attachment B for a copy of Figure 5-2) sufficient to prevent the migration of contaminants through surface water runoff and infiltration;
 - (c) Demolish two (2) on-Site buildings to facilitate installation of the caps pursuant to (a) and (b), above;
 - (d) Excavate any soils and MGP-related wastes as necessary to facilitate installation of the caps pursuant to (a) and (b), above;
 - (e) Characterize soils excavated pursuant to (d), above, and dispose off-Site all such soils in accordance with the requirements of this Settlement Agreement including, without limitation, Section 8.12 (pertaining to off-site transfers);
 - (f) Place clean fill on MGP Facility as necessary to facilitate installation of the caps pursuant to (a) and (b), above;
 - (g) Install groundwater monitoring wells in locations accepted by EPA for the purpose of monitoring MGP-related contaminants in the groundwater plume;
 - (h) Conduct sampling and analysis of groundwater from wells installed pursuant to (g), above, for the purpose of monitoring MGP-related contaminants in the groundwater plume;
 - (i) Provide site specific health and safety measures, including preparation and implementation of a Health and Safety Plan ("HASP") for actions to be performed at the Site, to protect the health and safety of workers, other personnel and the public from the hazardous substances and work-related health and safety hazards during performance of the response action specified herein. The HASP shall, as appropriate, provide for proper decontamination of personnel and equipment, monitoring and control of offsite migration of hazardous substances during the performance of activities at the Site and protection of public health from exposure to hazardous substances during the conduct of activities at the Site pursuant to this Settlement Agreement. Health and safety requirements in the HASP shall be at least as stringent as those set forth in Occupational Safety and Health Administration and EPA requirements, including but not limited to, requirements contained in 29 C.F.R. § 1910.120 and/or EPA Standard Operating Safety Guides (July 5, 1988);

- (j) Develop and follow an expeditious schedule for implementation of the RAP.
- 8.4 By December 15, 2006, Respondents shall submit to EPA for approval a RAP detailing the response action to be implemented for the items specified in paragraph 8.3 above. The RAP shall include, among other things, a schedule for expeditious performance of such response actions. To the extent that information concerning the details of a particular item does not yet exist so that it can be described in the RAP, the RAP shall set forth an expeditious schedule and plan for submittal of RAP supplement(s) to EPA for approval, which supplement(s) shall fully detail such items. All references to the review, approval and enforcement of the RAP shall also be applicable to any RAP supplement(s). The RAP shall include, among other things, a schedule for expeditious performance of the response action required by this Settlement Agreement. The RAP shall be consistent with the NCP and shall be subject to approval by EPA according to the provisions of paragraphs 8.5 and 8.9 below.
- 8.5 EPA will review the RAP and notify the Respondents of EPA's approval or disapproval of the RAP. In the event of disapproval, EPA will specify the deficiencies in writing. The Respondents shall respond to and correct the deficiencies identified by EPA and resubmit the RAP to EPA within fifteen (15) business days of receipt of EPA disapproval or such longer time as may be specified by EPA in its discretion. Exercise of EPA's discretion with respect to such period shall not be subject to the dispute resolution procedures set forth in Section XII of this Settlement Agreement. Approval, disapproval and/or modification by EPA of the subsequent RAP submission shall be according to the provisions of Paragraph 8.9 below.
- 8.6 Within ten (10) business days of receipt from EPA of written approval to proceed with implementation of the EPA-approved RAP ("written approval to proceed"), the Respondents shall commence implementation of such RAP and complete it in accordance with the RAP and the schedule therein. In the event EPA determines that any portion of the response action performed is deficient, and EPA requires Respondents to correct or re-perform such portion of the response action pursuant to this Settlement Agreement, Respondents shall correct or re-perform such response action or portion of the response action in accordance with a schedule provided by EPA.
- 8.7 Beginning seven (7) business days subsequent to the date of receipt of EPA approval of the RAP and every seven (7) business days thereafter, or such longer interval as may be determined in writing by the EPA Project Coordinator designated pursuant to Section IX, and until EPA advises Respondents that the response action is complete, the Respondents shall provide EPA with a progress report for each preceding 7-day period or if applicable, the period specified in writing by the EPA Project Coordinator. The progress reports

- shall include, at a minimum: 1) a description of the response action completed and the actions that have been taken toward achieving compliance with this Settlement Agreement; 2) a description of all data anticipated and activities scheduled for the next seven (7) business days or, if applicable, the period specified in writing by the EPA Project Coordinator; 3) a description of any problems encountered or anticipated; 4) any actions taken to prevent or mitigate such problems; 5) a schedule for completion of such actions; 6) copies of all analytical data received during the reporting period; and 7) all modifications to the response action, RAP and schedule made in accordance with Section XIV of this Settlement Agreement during the reporting period.
- 8.8 Documents, including plans, reports, sampling results and other correspondence to be submitted pursuant to this Settlement Agreement, shall be sent by certified or overnight mail or electronically, as agreed to by the EPA Project Coordinator, to the EPA Project Coordinator designated pursuant to Section IX.
- 8.9 All reports, plans, specifications, schedules and attachments required by this Settlement Agreement are subject to EPA approval and shall be deemed incorporated into this Settlement Agreement upon approval by EPA. In the event that EPA approves a portion of the RAP, report or other item required to be submitted under this Settlement Agreement, the approved portion shall be enforceable under this Settlement Agreement. In the event of conflict between this Settlement Agreement and any document attached hereto, incorporated in or enforceable hereunder, the provisions of this Settlement Agreement shall control. In the event that EPA disapproves any required submission, EPA will (1) specify the deficiencies in writing and/or (2) submit its own modifications to Respondents. Respondents shall amend and submit to EPA a revised submission that responds to and corrects the specified deficiencies within fifteen (15) business days of receipt of EPA disapproval or such longer time as may be specified by EPA in its discretion. Exercise of EPA's discretion with respect to such period shall not be subject to the dispute resolution procedures set forth in Section XII of this Settlement Agreement. In the event that EPA submits its own modifications to Respondents, the Respondents are hereby required to incorporate such modifications. Any non-compliance with EPA-approved reports, plans, specifications, schedules, attachments, or submission of deficient revisions following EPA disapproval; or non-compliance with an EPA-required modification shall be considered a failure to comply with a requirement of this Settlement Agreement. Determination(s) of non-compliance will be made by EPA.
- 8.10 In addition to the information and documents otherwise required by this Settlement Agreement, Respondents shall provide to EPA, upon written request, any and all information and documents in their possession, custody or control related to the Site including, but not limited to, Site analytical data (including raw data); Site safety data; Site monitoring data; operational logs; copies of all hazardous waste manifests (including copies of all hazardous waste manifests signed upon receipt of the hazardous wastes by a

licensed treatment, storage or disposal facility); the identity of treatment, storage and/or disposal facilities used; the identity of transporters used; the identity of any contractors, subcontractors and supervisory personnel used; information and documents concerning Respondents' compliance with Quality Assurance and Quality Control requirements of this Settlement Agreement; information and documents relating to Respondents' efforts to secure access; and information and documents relating to any project delays. Nothing herein shall be interpreted as limiting the inspection and information-gathering authority of EPA under Federal law.

- 8.11 Within thirty (30) business days of the date Respondents conclude they have completed implementation of the RAP and the items identified in paragraph 8.3 of this Settlement Agreement, Respondents shall submit a draft Final Report to EPA subject to EPA approval described in Paragraph 8.9 above. The draft Final Report shall detail the work undertaken to implement the RAP and the items identified in paragraph 8.3 of this Settlement Agreement. EPA will review the adequacy of Respondents' implementation of the RAP and accomplishment of the items specified in paragraph 8.3 above. EPA will notify Respondents, in writing, of any discrepancies in the draft Final Report or deficiencies in the execution of the RAP and the items identified in paragraph 8.3 of this Settlement Agreement and the actions required to correct such discrepancies or deficiencies. Within fifteen (15) business days of receipt of notification by EPA, or as otherwise specified by EPA in its discretion, Respondents shall, as directed by EPA, amend the draft Final Report, develop an additional plan or amend the existing RAP to address such discrepancies or deficiencies and shall certify the written Final Report in accordance with the terms of Section XXII of this Settlement Agreement. Any additional plan or amendment to the RAP will be subject to the approval procedures in paragraphs 8.5 and 8.9 above. Respondents shall perform all actions approved by EPA in a manner consistent with the NCP and all applicable Federal laws and regulations as required by the NCP.
- 8.12 Respondents shall not handle or remove any hazardous substances from the Site except in conformance with the terms of this Settlement Agreement and all applicable Federal, State and local laws and regulations, as required by the NCP. Any transfer of hazardous substances, pollutants and contaminants from the Site to an off-site facility required by this Settlement Agreement shall be performed in accordance with Section 121(d)(3) of CERCLA, 42 U.S.C. § 9621(d)(3). In addition, any transfer of hazardous substances, pollutants and contaminants from the Site to an off-site facility for treatment, storage, or disposal required by this Settlement Agreement shall be performed in accordance with 40 C.F.R. § 300.440.
- 8.13 Respondents shall not commence any Work except in conformance with the terms of this Settlement Agreement. Respondents shall not commence implementation of the RAP developed hereunder until receiving written EPA approval to proceed pursuant to

paragraph 8.6. Neither Respondent shall interfere in any way with the performance of Work in accordance with this Settlement Agreement by the other Respondent, nor may either Respondent impede or prevent the other Respondent from reasonable access to any area of the Site to comply with the requirements of this Settlement Agreement.

- 8.14 Respondents shall immediately notify EPA's Project Coordinator and the National Response Center [(800) 424-8802] and any other party as required by law in the event of any action or occurrence during the pendency of this Settlement Agreement which causes or threatens to cause an additional release of hazardous substances, pollutants or contaminants on, at or from the Site, or which may create a danger to public health, welfare or the environment.
- 8.15 In the event that EPA believes that response actions or other activities at the Site by Respondents are causing or may cause a release or potential release of hazardous substances or are a threat to public health or welfare or to the environment, EPA may in its discretion, immediately halt or modify such response actions or other activities to eliminate or mitigate such actual or potential releases or threats.

IX. DESIGNATED PROJECT COORDINATORS

- 9.1 The Project Coordinator for Respondents is:

Mr. Scott R. Miller, P.E.
Project Manager
Clean Sites
46161 Westlake Drive, Suite 230-B
Potomac Falls, VA 20165
(703) 519-2142

Designation of a Project Coordinator shall not relieve Respondents of their obligation to comply with all requirements of this Settlement Agreement. The Respondents' Project Coordinator shall be a technical and/or managerial representative of the Respondents and may be a contractor and/or consultant; provided, however, the Respondents' Project Coordinator shall not be their legal representative in this matter. The Project Coordinator for EPA designated pursuant to this Section and the Project Coordinator for the Respondents shall be responsible for overseeing the Work. To the maximum extent possible, communications between the Respondents and EPA and all documents concerning the activities performed pursuant to the terms and conditions of this Settlement Agreement, including plans, reports, approvals and other correspondence, shall be directed to the Project Coordinators.

9.2 The Project Coordinator for EPA is:

David Turner
Remedial Project Manager
U.S. Environmental Protection Agency
Removal Enforcement Section (3HS22)
1650 Arch Street
Philadelphia, PA 19103
(215) 814-3216

- 9.3 Respondents shall have the right to change their Project Coordinator. Such a change shall be accomplished by notifying the EPA Project Coordinator in writing at least five (5) calendar days prior to the change.
- 9.4 EPA shall have the right to change its Project Coordinator at any time without prior notice to Respondents. EPA's intent is to notify Respondents as soon as practicable following any such change of its Project Coordinator.
- 9.5 The absence of the EPA Project Coordinator from the Site shall not be cause for the stoppage or delay of Work except when such stoppage or delay is specifically required by EPA.
- 9.6 The EPA Project Coordinator shall have the authority to halt or modify Work or other activities performed by Respondents at the Site in order to eliminate a release or threat of release of hazardous substances. Such direction by the EPA Project Coordinator may be given verbally or in writing. If such direction is given verbally, the EPA Project Coordinator will later memorialize such direction in writing.

X. QUALITY ASSURANCE

- 10.1 The Respondents shall use quality assurance, quality control, and chain of custody procedures in accordance with the following documents while conducting all sample collection and analysis activities required by this Settlement Agreement:
- (a) "EPA NEIC Policies and Procedures Manual" (EPA Document 330/9-78-001-R (revised November 1984));
 - (b) "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," (QAMS-005/80 (December 1980)); and
 - (c) "QA/QC Guidance for Removal Activities," (EPA/540/G-90/004 (April 1990)).
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- 10.2 The Respondents shall consult with EPA in planning for, and prior to, all sampling and analysis required by the approved RAP. The Respondents shall use a laboratory(s) which has a documented Quality Assurance Program that complies with EPA guidance document QAMS-005/80.

XI. ACCESS

- 11.1 As of the effective date of this Settlement Agreement, Respondents shall provide to each other, EPA and its employees, agents, consultants, contractors and other authorized and/or designated representatives, for the purposes of conducting and/or overseeing the Work, access to all property owned or controlled by Respondents wherein Work must be undertaken. Such access shall permit EPA and its employees, agents, consultants, contractors and other authorized and designated representatives to conduct all activities described in paragraph 11.3 of this Settlement Agreement.
- 11.2 To the extent that property wherein Work must be undertaken is presently owned or controlled by parties other than either of the Respondents, the Respondents shall use their best efforts to obtain Site access agreements from the present owners. Such access agreements shall be finalized as soon as practicable but no later than within thirty (30) calendar days after receiving EPA's written approval to proceed. Such agreements shall provide reasonable access for Respondents and their employees, agents, consultants, contractors and other authorized and designated representatives to conduct the Work, and for EPA and its designated representatives to conduct the activities outlines in paragraph 11.3 below. In the event that any property owner refuses to provide such access or access agreements are not obtained within the time designated above, whichever occurs sooner, the Respondents shall notify EPA at that time, in writing, of all efforts to obtain access and the circumstances of the failure to obtain such access. EPA may then take steps to provide such access. Respondents shall reimburse the United States for all costs incurred in obtaining access which are not inconsistent with the NCP.
- 11.3 In accordance with law and regulation, as appropriate, EPA and its employees, agents, contractors, consultants and other authorized and designated representatives shall have the authority to enter and freely move about the location where the response actions and/or Work is being performed at all reasonable times for the purposes of, inter alia: inspecting Work, records, operating logs and contracts related to the Site; reviewing the progress of the Respondents in carrying out the terms of this Settlement Agreement; conducting such tests as EPA deems necessary; using a camera, sound recording or other documentary type equipment; and verifying the data submitted to EPA by the Respondents. The Respondents shall permit such persons to inspect and copy all records,

files, photographs, documents and other writings, including all sampling and monitoring data, in any way pertaining to the Site.

- 11.4 Respondents may make a claim of business confidentiality for information submitted pursuant to this Settlement Agreement in the manner described in 40 C.F.R. § 2.203(b). Such an assertion shall be adequately substantiated in accordance with 40 C.F.R. § 2.204(e)(4) at the time the assertion is made. Information subject to a confidentiality claim shall be made available to the public by EPA only in accordance with the procedures set forth in 40 C.F.R. Part 2, Subpart B. If no such claim of business confidentiality accompanies the information when it is submitted or made available to EPA, the submitted information may be made available to the public by EPA without further notice to Respondents.
- 11.5 The Respondents may withhold those records and documents covered by any privilege or protection recognized under federal law and applied by federal courts in actions commenced by the United States. In the event that the Respondents withhold a document as privileged, the Respondents shall provide EPA with the title of the document, the date of the document, the name(s) of the author(s) and addressee(s)/recipient(s), a description of the nature of the document and identification of the privilege asserted at the time such document is required to be provided to EPA.
- 11.6 No claim of confidentiality or privilege shall be made regarding any data required to be submitted pursuant to this Settlement Agreement including, but not limited to, sampling, analytical, monitoring, hydrogeologic, scientific, chemical or engineering data, or documents or information evidencing conditions at or around the Site. Nor shall such claims be made for analytical data; Site safety data; Site monitoring data; operational logs; hazardous waste manifests; identities of treatment, storage and/or disposal facilities used; identities of transporters used; identities of any contractors or subcontractors used in performing work required by this Settlement Agreement.
- 11.7 Notwithstanding any provision of this Settlement Agreement, EPA retains all of its access and information-gathering authorities and rights under CERCLA and any other applicable statute and regulation.

XII. DISPUTE RESOLUTION

- 12.1 Except as provided elsewhere in this Settlement Agreement, if the Respondents object to any EPA notification of deficiency, disapproval or other EPA action taken pursuant to this Settlement Agreement, including actions taken under Paragraph 15.3, below, and billings for oversight costs, the Respondents shall notify EPA in writing of their

- objection(s) within fourteen (14) calendar days of receipt of such notification or action ("notification of objection").
- 12.2 EPA and the Respondents shall have fourteen (14) calendar days from the receipt by EPA of the notification of objection to reach agreement. If agreement cannot be reached on any issue within this fourteen (14) day period, EPA will provide a written statement of its decision to the Respondents. Unless otherwise agreed by EPA, Respondents' obligations under this Settlement Agreement shall not be tolled during dispute resolution under this Section XII.
- 12.3 In order to prevail in any dispute regarding oversight costs, Respondents must demonstrate that the costs have been calculated incorrectly or have been incurred in a manner inconsistent with the NCP.
- 12.4 Following resolution of the dispute, as provided by this Section XII, Respondent shall perform the Work that was the subject of the dispute in accordance with the agreement reached or EPA's decision. To the extent that Respondent does not prevail upon resolution of any dispute involving any contested costs other than oversight costs, Respondent shall submit to EPA, within fourteen (14) calendar days of receipt of such resolution, all such costs determined to be owed to EPA, including any accrued interest, as specified in paragraph 13.1 below. Payment of oversight costs, including interest, following resolution of a dispute shall be governed by Paragraph 21.3 of this Settlement Agreement.
- 12.5 Notwithstanding any other provision of this Settlement Agreement, no action or decision by EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XIII. DELAY IN PERFORMANCE AND STIPULATED PENALTIES

- 13.1 For each day, or portion thereof, that Respondents fail to comply with any requirement of this Settlement Agreement at the time and in the manner set forth herein, the Respondents shall be liable upon demand to EPA for the sums set forth below as stipulated penalties. Checks shall be made payable to the "Hazardous Substance Superfund" and shall be transmitted to the following address, or to such other address(es) as EPA may provide in writing to the Respondent in the future:

U.S. Environmental Protection Agency, Region III
Attention: Superfund Accounting
P.O. Box 360515
Pittsburgh, PA 15251-6515

Payment shall be made by cashiers or certified check within thirty (30) calendar days of receipt of demand. Interest at the rate of the current annualized treasury bill rate shall begin to accrue on the unpaid balance at the end of the thirty (30)-day period in accordance with Section 107(a) of CERCLA, 42 U.S.C. § 9607(a). A copy of the transmittal letter shall be sent simultaneously to the EPA Project Coordinator at the address identified in Section IX of this Settlement Agreement and to: EPA Region III Hearing Clerk (3RC00), 1650 Arch Street, Philadelphia, PA 19103.

- 13.2 Stipulated penalties shall accrue in the amount of \$2000 per calendar day per violation for the first 15 days and \$5000 per calendar day per violation for each day thereafter. Neither the accrual of nor demand for stipulated penalties set forth in this Section shall preclude EPA from pursuing other penalties or sanctions available to EPA for Respondents' failure to comply with the requirements of this Settlement Agreement.

XIV. FORCE MAJEURE AND NOTIFICATION OF DELAY

- 14.1 The Respondents, through their Project Coordinator, shall notify EPA of any delay or anticipated delay in achieving compliance with any requirement of this Settlement Agreement. Such notification shall be made verbally as soon as possible but not later than two (2) calendar days after Respondents or either one of them becomes aware or should have become aware of any such delay or anticipated delay, and in writing no later than seven (7) calendar days after Respondents or either one of them becomes aware, or should have become aware, of such delay or anticipated delay. Such written notification shall be certified by the Project Coordinator in accordance with Section XXII of this Settlement Agreement and shall fully describe the nature of the delay, including how it may affect the Work, RAP and schedule; the actions that will be or have been taken to mitigate, prevent and/or minimize further delay; and the timetable according to which the future actions to mitigate, prevent and/or minimize the delay will be taken. The Respondents shall ensure that their Project Coordinator provides Respondents with immediate notification of any project delays. The Respondents shall adopt all reasonable measures to avoid and minimize such delay.
- 14.2 To the extent Respondents intend to claim that any delay or anticipated delay described by Respondents in accordance with paragraph 14.1 was or will be caused by circumstances beyond each of their control, Respondents shall, within fourteen (14) calendar days after Respondents become aware or should have become aware of such delay or anticipated delay, submit to EPA a "Notice of Force Majeure" in which Respondents fully demonstrate that the delay was caused by circumstances beyond each of their control which could not have been overcome by due diligence, the necessity of the proposed length of the delay, and that the Respondents took all reasonable measures

to avoid and minimize delay. The Respondents shall have the burden of proving these facts to EPA. Any "Notice of Force Majeure" shall be certified by a responsible official of Respondents pursuant to paragraph 22.2 of this Settlement Agreement.

- 14.3 Any such delay that EPA determines (1) has resulted or will result from circumstances beyond the control of the Respondents or either one of them and (2) that cannot be overcome by due diligence on Respondents' part, shall not be deemed to be a violation of Respondents' obligation(s) under this Settlement Agreement, and shall not subject Respondents to stipulated penalties under this Settlement Agreement for that particular delay. In such event, the schedule affected by the delay shall be extended for a period EPA deems necessary to complete the Work on an expedited basis, but no greater than a period equal to the delay directly resulting from such circumstances. Increased costs of performance of the requirements of this Settlement Agreement or changed economic circumstances shall not be considered circumstances beyond the control of Respondents. Delay in one item or component of Work or the RAP does not justify delay in timely achievement of other items or components. Each delay must be separately addressed and substantiated according to the provisions of paragraphs 14.1 and 14.2 above.
- 14.4 Failure of the Respondents to comply with the notice requirements of paragraphs 14.1 and 14.2 above shall constitute a waiver of the Respondents' right to invoke the benefits of this Section with respect to that event.
- 14.5 In the event that EPA and Respondents cannot agree that any delay in compliance with the requirements of this Settlement Agreement has been or will be caused by circumstances beyond the control of the Respondents that cannot be overcome by due diligence, the dispute shall be resolved in accordance with the provisions of Section XII (Dispute Resolution) of this Settlement Agreement.

XV. RESERVATION OF RIGHTS

- 15.1 The covenant not to sue set forth in Section XXVII below does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondents with respect to all other matters, including, but not limited to:
- (a) claims based on a failure by Respondents to meet a requirement of this Settlement Agreement;
 - (b) liability for costs other than oversight costs recoverable under Section XXI of this Settlement Agreement;

- (c) liability for performance of response action other than the Work;
 - (d) criminal liability;
 - (e) liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
 - (f) liability arising from the past, present, or future disposal, release or threat of release of hazardous substances outside of the Site; and
 - (g) liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.
- 15.2 Except as expressly provided in this Settlement Agreement, (1) all parties reserve all rights, claims, interests and defenses they may otherwise have, and (2) nothing herein shall prevent EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement, including the right to seek injunctive relief and/or the imposition of statutory penalties.
- 15.3 As provided by this Settlement Agreement, EPA expressly reserves its right to disapprove of Work performed by Respondents; to halt Work being performed by Respondents if Respondents have not complied with an approved RAP or this Settlement Agreement, or at any time EPA deems necessary to protect public health, welfare or the environment and to perform such Work; to request and require hereunder that Respondents correct and/or re-perform any and all Work disapproved by EPA; and/or to request or require that Respondents perform response actions in addition to those required by this Settlement Agreement. Further, EPA reserves the right to undertake response action at any time EPA deems appropriate. In the event EPA requires Respondents, and Respondents decline, to correct and/or re-perform work that has been disapproved by EPA and/or to perform response actions in addition to those required by this Settlement Agreement, EPA reserves the right to undertake such actions and seek reimbursement of the costs incurred and/or to seek any other appropriate relief. In addition, EPA reserves the right to undertake removal and/or remedial actions at any time that such actions are appropriate under the NCP and to seek reimbursement for any costs incurred and/or take any other action authorized by law.
- 15.4 EPA reserves the right to bring an action against Respondents for recovery of all recoverable costs incurred by the United States related to this Settlement Agreement which are not reimbursed by Respondents, as well as any other costs incurred by the United States in connection with response actions conducted at the Site.

- 15.5 This Settlement Agreement concerns certain response actions (Work described in Section VIII, above) concerning the Site. Such response actions might not fully address all contamination at the Site. Subsequent response actions which may be deemed necessary by EPA are not addressed by this Settlement Agreement. EPA reserves all rights including, without limitation, the right to institute legal action against Respondents and/or any other parties in connection with the performance of any response actions not addressed by this Settlement Agreement.
- 15.6 Nothing in this Settlement Agreement shall limit the authority of the EPA On-Scene Coordinator as outlined in the NCP and CERCLA.

XVI. OTHER CLAIMS

- 16.1 Nothing in this Settlement Agreement shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership or corporation not bound by this Settlement Agreement for any liability it may have relating in any way to the generation, storage, treatment, handling, transportation, release or disposal of any hazardous substances, hazardous wastes, pollutants or contaminants found at, taken to, or taken from the Site.

XVII. OTHER LAWS

- 17.1 All Work shall be undertaken in accordance with the requirements of all applicable and/or relevant and appropriate local, State and Federal laws and regulations, as required by the NCP.

XVIII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

- 18.1 The effective date of this Settlement Agreement shall be the date on which it is signed by EPA.
- 18.2 This Settlement Agreement may be amended by mutual agreement of EPA and the Respondents. Such amendments shall be in writing and shall have as their effective date the date on which such amendments are signed by EPA. Modifications to the EPA-approved RAP and its implementation may be made by mutual agreement of the Project Coordinators. Such modifications shall be memorialized in writing by the Project Coordinators.

- 18.3 Any reports, plans, specifications, schedules, or other submissions required by this Settlement Agreement are, upon approval by EPA, incorporated into this Settlement Agreement. Any non-compliance with such EPA-approved reports, plans, specifications, schedules, or other submissions shall be considered non-compliance with the requirements of this Settlement Agreement and will subject the Respondents to the requirements of Section XIII (Delay in Performance and Stipulated Penalties), above. Determinations of non-compliance will be made by EPA.
- 18.4 No informal advice, guidance, suggestions or comments by EPA regarding reports, plans, specifications, schedules or other submissions by the Respondents or the requirements of this Settlement Agreement will be construed as relieving the Respondents of their obligation to obtain formal approval when required by this Settlement Agreement, and to comply with the requirements of this Settlement Agreement unless formally modified.

XIX. LIABILITY OF THE UNITED STATES GOVERNMENT

- 19.1 Neither the United States Government nor any agency thereof shall be liable for any injuries or damages to persons or property resulting from acts or omissions of Respondents or of their employees, agents, servants, receivers, successors or assigns, or of any persons including, but not limited to, firms, corporations, subsidiaries, contractors or consultants in carrying out the Work, nor shall the United States Government or any agency thereof be held out as a party to any contract entered into by Respondents in carrying out the Work.

XX. INDEMNIFICATION AND HOLD HARMLESS

- 20.1 Respondents agree to indemnify and hold harmless the United States, its agencies, departments, agents, officers, employees and representatives from any and all causes of action caused by any acts or omissions of Respondents or their contractors in carrying out the work required by this Settlement Agreement.

XXI. REIMBURSEMENT OF OVERSIGHT COSTS

- 21.1 EPA shall submit to Respondents periodic and/or a final accounting of oversight costs incurred by the U.S. Government with respect to this Settlement Agreement. Oversight costs shall consist of all costs, including indirect costs, incurred by EPA, its employees, agents, contractors, consultants and other authorized and/or designated representatives in connection with EPA's oversight of the Work.

- 21.2 Respondents shall, within thirty (30) calendar days of receipt of the accounting, remit a check for the amount of those costs made payable to the "Hazardous Substance Superfund." Interest at a rate established pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), shall begin to accrue on the unpaid balance from the day after the expiration of the thirty-day period notwithstanding any dispute or an objection to any portion of the costs. Checks shall specifically reference the Site and shall be transmitted as specified in Section XIII of this Settlement Agreement.
- 21.3 In the event the Respondents dispute, pursuant to Section XII of this Settlement Agreement, payment of any costs identified in the accounting provided pursuant to Paragraph 21.1, the Respondents shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the Commonwealth of Pennsylvania and remit to that escrow account funds equivalent to the amount of the contested costs. The Respondents shall send to the EPA Project Coordinator a copy of the transmittal letter and check paying the uncontested costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, the Respondents shall initiate the Dispute Resolution procedures in Section XII of this Settlement Agreement. If EPA prevails in the dispute, within five (5) business days of the resolution of the dispute, the Respondents shall pay the sums due (with accrued interest) to EPA in the manner described in Section XIII of this Settlement Agreement. If the Respondents prevail concerning any aspect of the contested costs, the Respondents shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to EPA in the manner described in Section XIII of this Settlement Agreement; Respondents shall be disbursed any balance of the escrow account.

XXII. CERTIFICATION OF COMPLIANCE

- 22.1 (a) Unless otherwise required by the terms of this Settlement Agreement, any notice, report, certification, data presentation or other document submitted by Respondents under or pursuant to this Settlement Agreement which discusses, describes, demonstrates or supports any finding or makes any representation concerning Respondents' compliance or non-compliance with any requirement(s) of this Settlement Agreement shall be certified by each Respondent, a responsible official of each Respondent or by the Project Coordinator for the Respondents. The term "responsible official" means: (i) a president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or (ii) the manager of one or more manufacturing, production or

operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding \$25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. The responsible official of a partnership or sole proprietorship means the general partner or the proprietor, respectively.

- (b) The written Final Report required by paragraph 8.11 of this Settlement Agreement, any written notification described in paragraph 12.1 of this Settlement Agreement and any "Notice of Force Majeure" described in paragraph 14.2 of this Settlement Agreement shall be certified by each Respondent or a responsible official of each Respondent.

- 22.2 The certification required by paragraph 22.1 of this Settlement Agreement shall be in the following form:

I certify that the information contained in or accompanying this (specify type of submission) is true, accurate and complete.

I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing violations.

Signature: _____

Name (print): _____

Title: _____

- 22.3 Submission of documents pursuant to this Settlement Agreement which are found by EPA to contain false information shall constitute a failure to comply with this Settlement Agreement and shall subject Respondents to, among other things, stipulated penalties whether or not a responsible official of the Respondents has certified the document.

XXIII. RECORD RETENTION

- 23.1 Until ten (10) years after Respondents' receipt of EPA's notification pursuant to Paragraph 26.1 (Notice of Completion), Respondents shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in their possession or control or which come into their possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until ten (10) years after Respondents' receipt of EPA's notification pursuant to Paragraph 26.1 (Notice of Completion), Respondents shall also instruct their

contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

- 23.2 At the conclusion of this document retention period, Respondents shall notify EPA at least ninety (90) days prior to the destruction of any such records or documents, and, upon request by EPA, Respondents shall deliver any such records or documents to EPA. Respondents may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondents assert such a privilege, Respondents shall provide EPA with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Respondents. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

XXIV. POST REMOVAL SITE CONTROL

- 24.1 Respondents agree to maintain the integrity of the response action pursuant to the arrangement proposed in Paragraph 8.3 (j), and approved by EPA pursuant to Paragraph 8.9, above.

XXV. DEFINITIONS

- 25.1 "Business days" as used in this Settlement Agreement shall mean every day of the week except Saturdays, Sundays and federal holidays.
- 25.2 "Calendar days" as used in this Settlement Agreement shall mean every day of the week, including Saturdays, Sundays and federal holidays.
- 25.3 "Days" as used herein shall mean "calendar days" unless specified otherwise.
- 25.4 "Work" as used herein shall mean all requirements of this Settlement Agreement, including any modifications hereto.
- 25.5 All terms not defined herein shall have the meanings set forth in CERCLA and the NCP.

XXVI. NOTICE OF COMPLETION

- 26.1 When EPA determines, after EPA's review and approval of the written Final Report required pursuant to paragraph 8.11 of this Settlement Agreement, that the response action specified in Section VIII of this Settlement Agreement has been fully performed, and upon receipt of costs and penalties assessed by EPA, with the exception of any continuing obligations required by this Settlement Agreement, including those requirements specified in Sections XV ("Reservation of Rights"), XVI ("Other Claims"), XIX ("Liability of the United States Government"), XX ("Indemnification and Hold Harmless"), and XXIII ("Record Retention") and XXV ("Post Removal Site Control"), EPA will provide a notice of completion to the Respondents.

XXVII. COVENANT NOT TO SUE BY EPA

- 27.1 From the effective date of this Settlement Agreement and for as long as EPA determines that the terms of this Settlement Agreement, including any modifications made hereto, are being fully complied with, and except for any proceeding to enforce its terms or collect any applicable costs or penalties, EPA agrees not to sue or take any administrative action against the Respondents for the Work required by this Settlement Agreement, including for reimbursement of costs incurred in connection with this Settlement Agreement.
- 27.2 Nothing in this Settlement Agreement shall be construed to limit the rights EPA has reserved under Section XV of this Settlement Agreement.
- 27.3 Nothing in this Settlement Agreement shall be construed to grant any rights to persons not a party to this Settlement Agreement. Further, nothing in this Settlement Agreement precludes the United States or the Respondents from asserting any claims, causes of action, or demands against any person not parties to this Settlement Agreement for indemnification, contribution, or cost recovery. Nothing herein diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2)(3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that provide contribution protection to such persons.

XXVIII. COVENANT NOT TO SUE BY RESPONDENTS

- 28.1 Respondents covenant not to sue and agree not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, oversight costs paid under this Settlement Agreement, or this Settlement Agreement including, but not limited to:

- a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;
- b. any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Pennsylvania Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or
- c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the Site.

Except as provided in Paragraph 28.3 (Waiver of Claims), these covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 15.1.b., c., e., f., and g., but only to the extent that Respondents' claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

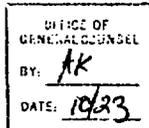
- 28.2 Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).
- 28.3 Respondents agree not to assert any claims and to waive all claims or causes of action that it may have for all matters relating to the Site, including for contribution, against any person where the person's liability to Respondents with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if
 - (a) the materials contributed by such person to the Site containing hazardous substances did not exceed the greater of i) 0.002% of the total volume of waste at the Site, or ii) 110 gallons of liquid materials or 200 pounds of solid materials.
 - (b) This waiver shall not apply to any claim or cause of action against any person meeting the above criteria if EPA has determined that the materials contributed to the Site by such person contributed or could contribute significantly to the costs of response at the Site. This waiver also shall not apply with respect to any defense, claim, or cause of action that Respondent may have against any person if such person asserts a claim or cause of action relating to the Site against Respondent.

XXIX. CONTRIBUTION

- 29.1 The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. §§ 9613(f)(2), and that the Respondents are entitled, as of the effective date of this Settlement Agreement, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Settlement Agreement. The "matters addressed" in this Settlement Agreement is the Work and payment of costs under Section XXI of this Settlement Agreement.
- 29.2 The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which the Respondents have, as of the effective date of this Settlement Agreement, resolved their respective liability to the United States for the Work and payment of costs under Section XXI of this Settlement Agreement.
- 29.3 Nothing in this Settlement Agreement precludes the United States or Respondents from asserting any claims, causes of action, or demands for indemnification, contribution, or cost recovery against any persons not parties to this Settlement Agreement. Nothing herein diminishes the right of the United States, pursuant to Sections 113(f)(2) and (3) of CERCLA, 42 U.S.C. § 9613(f)(2) and (3), to pursue any such persons to obtain additional response costs or response action and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2).

**FOR RESPONDENT
PPL ELECTRIC UTILITIES CORPORATION:**

[Signature]



Please Type the Following:

Name: JOHN F. SIPCIS

Title: President-PPL Electric Utilities Corporation

Address: Two North Ninth St. Allentown, PA 18101

**FOR RESPONDENT
UGI UTILITIES, INCORPORATED:**

[Signature]

Please Type the Following:

Name: Peter G. Terranova

Title: Vice President - Operations
UGI Utilities, Inc.

Address: 225 Morgantown Road
Reading, PA 19612

FOR EPA:

JAMES J. BURKE
Director, Hazardous Site Cleanup Division
U.S. Environmental Protection Agency, Region III

11/29/06
Date

UGI COLUMBIA GAS PLANT
REMOVAL ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

I. FACTUAL INFORMATION/DATA

1. Report: Non-Sampling Site Reconnaissance Summary Report, UGI (PP&L) Columbia Gas Plant Site, prepared by NUS Corp., 11/3/88. P.
2. Report: Site Inspection of UGI (PP&L) Columbia Gas Plant Site, 7/17/89. P.
3. Report: Work Plan of UGI (PP&L) Gas Plant, prepared by NUS Corp., 6/4/90. P.
4. Report: Expanded Site Inspection of UGI Columbia Gas Plant, prepared by NUS Corp., 10/7/92. P.
3. Letter to Mr. Thomas Voltaggio, U.S. EPA from Mr. Hugh Archer, Pennsylvania Department of Environmental Resources (PADER), re: Comments on the roles of the U.S. EPA, PADER, and Pennsylvania Power & Light Company (PP&L) under proposed NEPA listing. 8/9/93. P.
4. Letter to Mr. Hugh Archer, PADER, from Mr. Thomas Voltaggio, U.S. EPA re: Comments on that further discussion of the lead agency for the Remedial Investigation/Feasibility Study (RI/FS) process would continue after the final listing of the site on the NPL, 4/14/94. P.
5. Letter to Mr. Anthony Martinelli, Pennsylvania Department of Environmental Protection (PADEP), from Mr. Douglas Ammon, Clean Sites Environmental Services, Inc., re: Mobilization notice for relief and gas holder remediation, 7/1/96. P.
6. Report: Remedial Investigation, Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, Volume I - Text, prepared by GEI Consultants, Inc., 4/98. P. An April 8, 1998 cover letter to Mr. Douglas Ammon, Clean Sites Environmental Services, Inc., from Mr. Steven Donohue, U.S. EPA, is attached.

Administrative Record File available //.

7. Report: Remedial Investigation, Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, Volume II - Figures, prepared by GEI Consultants, Inc., 4/98. P.
8. Report: Remedial Investigation, Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, Volume III - Tables, prepared by GEI Consultants, Inc., 4/98. P.
9. Report: Remedial Investigation, Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, Volume IV - Appendices A through E, prepared by GEI Consultants Inc., 4/98. P.
10. Report: Remedial Investigation, Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, Volume V - Appendices F through G, prepared by GEI Consultants, Inc., 4/98. P.
11. Report: Remedial Investigation, Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, Volume VI - Appendices H through O, prepared by GEI Consultants, Inc., 4/98. P.
12. Letter to Mr. Steven Donohue, U.S. EPA, from Mr. Jerry Zak, GEI Consultants, Inc., re: Transmittal of three copies of the Remedial Investigation report, 4/1/98. P.
13. Letter to Mr. Douglas Ammon, Clean Sites Environmental Services, Inc., from Mr. Steven Donohue, U.S. EPA, re: Approval of Final Remedial Investigation report, 4/8/98. P.
14. Letter to Mr. Douglas Ammon, Clean Sites Environmental Services, Inc., from Mr. Steven Donohue, U.S. EPA, re: Approval of the Final Baseline Human Health Risk Assessment report, 6/1/98. P. A May 19, 1998 memorandum to Mr. Steven Donohue, U.S. EPA, from Ms. Lynn Flowers, U.S. EPA, regarding the comments on the Baseline Human Health Risk Assessment, is attached.

15. Report: Contaminant Identification, Delineation, and Impacted Soils Volume Estimation, Former UGI Columbia Gas Plant, Columbia, Pennsylvania, prepared by GEI Consultants, Inc., 6/4/98. P. A June 5, 1998 letter to Mr. Anthony Martinelli, PADEP, from Mr. Scott Miller, Clean Sites Environmental Services, Inc., regarding the transmittal of the above referenced report.
16. Report: A Chemometric Assessment of NAPL Source Contributions to Groundwater Contamination at the Manufactured Gas Plant Site in Columbia, Pennsylvania, prepared by Ms. Susan Powers and Ms. Jan DeWaters, Clarkson University, 9/99.
17. Letter to Mr. David Turner, U.S. EPA, from Ms. Elise Juers, PADEP, re: Comments on the Feasibility Study at the Former UGI Gas Plant in Columbia, Pennsylvania, 12/2/99. P.
18. Report: Feasibility Study for the Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, prepared by Advanced Geoservices Corp., revised 1/01.
19. Letter to Mr. Scott Miller, Clean Sites Environmental Services, Inc., from Mr. Edward Arnold, Borough of Columbia, re: Comments on groundwater restrictions, 3/21/01. P.
20. Report: Technical Impracticability of Groundwater Restoration at the Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, prepared by Advanced Geoservices Corp., 10/03. P. An October 16, 2003 cover letter to Mr. David Turner, U.S. EPA, from Mr. Scott Miller, Clean Sites Environmental Services Inc., is attached.
21. Letter to Ms. Elise Juers, PADEP, from Mr. David Turner, U.S. EPA, re: Comments on the state environmental laws applicable to the Proposed Plan, 1/23/04. P.
22. Letter to Mr. Scott Miller, Clean Sites Environmental Services, Inc., from Mr. David Turner, U.S. EPA, re: Comments on technical impracticability waiver of groundwater restoration, 4/6/04. P.

23. Report: Groundwater Engineering Analysis Report, Former UGI Manufactured Gas Plant, Columbia, Pennsylvania, prepared by Advanced GeoServices Corp., 9/06. P. An October 5, 2006 cover letter to Mr. Scott Miller, Clean Sites Environmental Services Inc., from Mr. David Turner, U.S. EPA, is attached.
24. Response Justification Document, UGI Columbia Gas, Columbia, Lancaster County, (undated). P. The following are attached:
1. a March 15, 1994 concurrence letter;
 2. an undated site sketch;
 3. an undated site location map;
 4. an undated sampling map;
 5. undated sludge samples.

II. ENFORCEMENT DOCUMENTS

1. Consent Order and Agreement, in the Matter of: UGI Columbia Gas Plant Site, 4/4/96. P.
2. Letter to Ms. Arundhati Khanwalkar, P&L, from Mr. Martin Siegel, PADEP, re: Comments on consent order and agreement, 6/20/96. P.
3. Letter to Mr. Robert Chaney, UGI Utilities, Inc., from Ms. Joan Armstrong, U.S. EPA, re: 104(e) request for information, 8/4/04. P.
4. Letter to Ms. Arundhati Khanwalkar, P&L Corporation, from Ms. Joan Armstrong, U.S. EPA, re: 104(e) request for information, 8/11/04. P.
5. Letter to Mr. Harry Sternberg, U.S. EPA, from Mr. John Barney, UGI Utilities, re: Response to 104(e) request for information, 9/8/04. P.

III. OTHER AGENCY DOCUMENTATION

1. Report: Public Health Assessment for the UGI Columbia Gas Plant, Columbia, Lancaster County, Pennsylvania, prepared by Agency for Toxic Substances and Disease Registry (ATSDR), 5/23/95. P. A July 27, 1995 memorandum to Mr. Jack Kelly, U.S. EPA, from Steven Donohue, U.S. EPA, regarding the Health Assessment comments, is attached.

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IV. PUBLIC PARTICIPATION

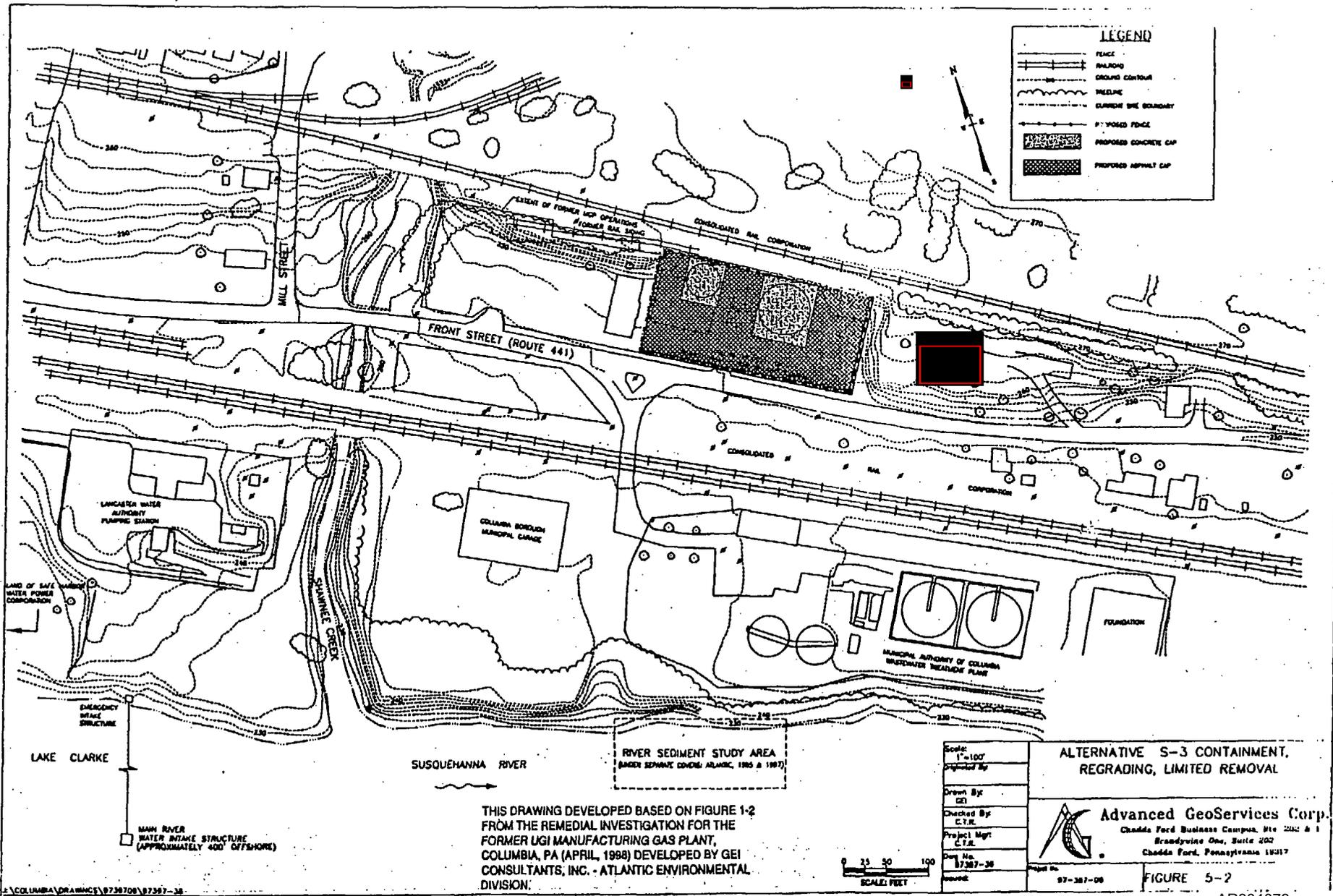
1. Pennsylvania Department of Environmental Resources
Public Notice, UGI Columbia Gas Plant Site, re:
Interim response under the Hazardous Sites Cleanup Act,
2/25/95. P. An undated analysis of alternatives is
attached.

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V. DECISION DOCUMENTS

1. Memorandum to Mr. James Burke, U.S. EPA, from Mr. David Turner, U.S. EPA, re: Approval of a request for removal actions for the UGI Columbia Gas Plant Superfund Site located in Columbia Borough, Lancaster County, Pennsylvania, 11/2/06. P. A November 2, 2006 memorandum to Ms. Susan Bodine, U.S. EPA, from Mr. James Burke, U.S. EPA, regarding the action memorandum - request for removal actions for the UGI Columbia Gas Plant Superfund Site located in Columbia Borough, Lancaster County, Pennsylvania is attached.

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LEGEND

- FENCE
- RAILROAD
- GROUND CONTOUR
- TIE-LINE
- CURRENT SITE BOUNDARY
- PROPOSED FENCE
- PROPOSED CONCRETE CAP
- PROPOSED ASPHALT CAP

THIS DRAWING DEVELOPED BASED ON FIGURE 1-2 FROM THE REMEDIAL INVESTIGATION FOR THE FORMER UGI MANUFACTURING GAS PLANT, COLUMBIA, PA (APRIL, 1988) DEVELOPED BY GEI CONSULTANTS, INC. - ATLANTIC ENVIRONMENTAL DIVISION.

Scale:	1"=100'
Designed By:	
Drawn By:	CE
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Sheet No.:	

ALTERNATIVE S-3 CONTAINMENT, REGRADING, LIMITED REMOVAL

Advanced GeoServices Corp.
 Chadds Ford Business Campus, Rte 202 & 1
 Brandywine One, Suite 202
 Chadds Ford, Pennsylvania 19317

Project No. 87-287-08

FIGURE 5-2

AR304073



APPENDIX B

SITE SAFETY AND HEALTH PLAN



SITE SAFETY AND HEALTH PLAN

**UGI COLUMBIA GAS PLANT SUPERFUND SITE
COLUMBIA, LANCASTER COUNTY, PENNSYLVANIA**

Prepared For:

**PPL Electric Utilities Corp.
Allentown, Pennsylvania
and
UGI Utilities, Inc.
Reading, Pennsylvania**

Prepared By:

**ADVANCED GEOSERVICES CORP.
West Chester, Pennsylvania**

**Project No. 2006-1800
December 15, 2006**



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Appendix

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1.0 PURPOSE

This Site Safety and Health Plan (SSHP) is written to conform to the Occupational Safety and Health Administration (OSHA) Standards and Regulations, Chapter 29 Code of Federal Regulations (CFR) Parts 1910 and 1926. These provide the basis for the safety and health program. Additional specifications contained within this document are provided to conform to the requirements of the United States Environmental Protection Agency (USEPA), National Institute for Occupational Safety and Health (NIOSH), and American Conference of Government Industrial Hygienists (ACGIH). The Contractor completing required activities at the Site may adopt this plan or submit specific modifications to the plan, to allow an expedited review and approval by USEPA.



2.0 GENERAL

This SSHP applies to the remediation activities at the UGI Columbia Gas Plant Superfund Site (referred hereafter as the Site) in Columbia, Pennsylvania as described in Section 3 below and is designed to:

1. Prevent injuries to the Contractor employees or other persons at or visiting the Site.
2. Maintain Site personnel exposures to health hazards well below the occupational limits established by OSHA or the ACGIH.
3. Keep the exposures of area residents to contaminants well below the established site specific action levels.
4. Prevent violations of OSHA, USEPA, Pennsylvania, or other applicable regulations.
5. All Site visitors and contractors/subcontractors who may potentially be exposed to contaminants of concern working at the Site are responsible for compliance with this SSHP and any other requirements set forth by OSHA and other Federal and State regulations. If the Contractor or subcontractors wish to prepare his/her own SSHP, it must meet the minimum requirements set forth in this plan and by OSHA, USEPA, Pennsylvania, or other applicable regulations.

It may be noted that following grading and covering of contaminated materials with gravel or other media to prevent exposure, the Contractor or subcontractors working on the Site (i.e., paving contractor, etc.) will not require the 40 hour training and medical monitoring described in Section 6.0 of this plan, if the potential for exposure to contaminated materials no longer exists.



3.0 SITE DESCRIPTION & CONTAMINATION CHARACTERIZATION

The Site is located on a small parcel of land (approximately 2 acres) in an industrial area of the Borough of Columbia, Lancaster County, Pennsylvania, near the Susquehanna River as shown on Figure 1 and 2.

FORMER GAS PLANT ACTIVITIES

The Columbia Gas Company began production of gas at the Site in 1851. Sanborn Fire Insurance maps dating from 1886 to 1904 depict two gas holders, an oil tank, and a gas works building containing a water gas generator occupying the Site.

In 1949, the Site was sold to the Lancaster County Gas Company, which later merged into UGI. Operations at the Columbia Gas Plant ceased in the 1950s, and the Site was decommissioned sometime thereafter (the actual date is not known). Aboveground structures were demolished and removed, and the holder foundations and tar separator were backfilled.

RECENT SITE ACTIVITIES AND SITE STATUS

Thomas Crouse purchased the former gas plant property in 1976 from UGI Corporation. In October 1979, he sold the eastern part of the property to George Roach who began operation of a boat retail and repair shop. The eastern part of the property purchased by Mr. Roach was the location of the original plant and gas holders. At this time, PPL owns both portions of the original plant property, as shown on Figure 2.



SITE REMEDY

The major components of Site remedy include:

- Restrictions placed on the deed or title to the property that prohibit residential use and restrict excavation in areas of contamination on the Site and in the Site vicinity.
- Removal of equipment and debris from the Site as a result of past Site operations, investigations, and remediation.
- Demolition of existing above-ground Site structures.
- Placement of 8" of cement type concrete over the holder caps.
- Excavation and disposal of contaminated Site soil and placement of clean fill, as necessary, to achieve desired grades and to isolate remaining contamination from surface contact or intrusion.
- Placement of an asphalt cap over areas where contamination will remain.
- Fencing of the Site.

In addition, the foundation and floor slab for a steel frame maintenance building may be placed at the Site. The borough is planning on constructing the building at some point in the future.



CONSTITUENTS OF CONCERN

As a result of industrial activities associated with the manufacture of gas products conducted between 1851 and the 1950s, the Site and portions of surrounding land parcels became impacted with inorganic and organic compounds. The results of the Remedial Investigation (RI) conducted at the Site and Site vicinity found that the surface and subsurface soils contain semi-volatile organic compounds (SVOCs) and relatively low concentrations of volatile organic compounds (VOCs). The SVOCs detected tended to be comprised primarily of the heavier, less soluble species. Materials within two on-Site holder tanks were also found to contain residual wastes from gas manufacturing operations. The RI also indicated the presence of Dense Non-Aqueous Phase Liquid (DNAPL) contained within the fractured bedrock beneath the Site and surrounding land parcels in the Site vicinity.

The Baseline Human Health Risk Assessment (BHHRA) performed for the Site identified the following constituents of concern (COCs) for the on-site remedial activities: Acenaphthylene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(g,h,i)perylene, benzo(a)pyrene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Aluminum, Arsenic, Beryllium, Cadmium, Iron, Lead, Thallium, and Magnesium.

A list of potential COCs at the Site, identified in the BHHRA, along with Occupational Safety and Health (OSHA) Permeable Exposure Limits (PELs) and symptoms/effects of acute exposure are presented in Table 1. Table 2 provides the maximum concentration of the COCs in Site soils. Additional information on the potential COCs is presented in Appendix A.



4.0 HAZARD ANALYSIS

The Site activities will consist of mobilization, decontamination of tools and equipment, excavation of Site soils, fill placement, pavement/concrete construction, site restoration, and demobilization. Based on these activities, Contractor employees and visitors have the potential to be exposed to the following hazards:

- Incidental ingestion of impacted soils,
- Direct contact to impacted soils;
- Inhalation of fugitive dust;
- Heat stress;
- Cold stress;
- Noise;
- Biological hazards;
- Equipment traffic; and,
- Other vehicular traffic.

The Contractor is to review potential hazards during Site activities and where there are changes due to the work, associated controls, and/or equipment used, the analyses are to be modified by the Contractor to represent the actual Site conditions.



5.0 PERSONNEL RESPONSIBLE FOR SAFETY & HEALTH

The Contractor shall designate the following personnel to be responsible for implementing the safety and health program at the Site.

1. Safety and Health Manager (SHM)

Duties of the position are:

- a) To develop, implement, oversee, and enforce the SSHP;
- b) To conduct the initial Site Orientation;
- c) To provide continuing health and safety support, as needed;
- d) To review results of air monitoring and accident reports;
- e) To be present on Site during the first three days of remedial activities;
- f) Be available for emergencies;
 - To provide continued support for upgrading/downgrading of the level of personal protection;
 - To have the authority to stop operations if unacceptable health or safety conditions exist;
- g) To coordinate any modifications to the SSHP with the Site Health and Safety Officer, Contractor Project Manager, Site Respondents and the Owner;
- h) To conduct accident investigations and prepare accident reports;
- i) To sign and date SSHP prior to submittal to USEPA for approval; and
- j) To visit the Site as necessary to audit the effectiveness of SSHP.

2. Contractor Project Manager

Duties of the position are:

- a) To allocate resources to safely perform all operations;



- b) Overall responsibility for work operations; and,
- c) To assist the SHM in the identification of existing and predictable hazards and to take prompt corrective measures to eliminate these hazards.

3. Site Safety and Health Officer (SSHO)

Duties of the position are:

- a) To assist in the implementation and enforcement of the SSHP;
- b) To conduct occupational air monitoring, training, and Site safety inspections and accident investigations;
- c) To remain on Site during all project operations;
- d) To have the authority to stop operations if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions;
- e) To consult with and coordinate any modifications to the SSHP with the Safety and Health Manager, and Contractor Project Manager;
- f) To conduct accident investigations and prepare accident reports, as necessary;
- g) To review results of daily quality control inspections and document safety and health findings into the Daily Inspection Log;
- h) To coordinate and to oversee the implementation of the corrective action;
- i) To provide OSHA required Site Specific Orientation for all employees new to the Site;
- j) To collect and maintain proof of current OSHA training and medical surveillance for all Site work force.
- k) To participate in all management meetings in preparation for new Site activities;
- l) To report on safety/participate in scheduled management regarding progress; and



- m) To prepare for, conduct and/or host and record pertinent daily tool box safety meetings.

4. Contractor Site Superintendent

Duties of the position are:

- a) To coordinate all construction and sub-contractor activities; and,
- b) To assure compliance with SSHP for all construction activities.

The Contractor's Project Manager and Site Superintendent will be directly responsible for enforcing the SSHP for Contractor and Subcontractor personnel and will report directly to the SSHO and SHM regarding any unsafe Site activities as they occur.

All modifications to the SSHP will be approved and signed by the SHM.



6.0 OCCUPATIONAL HEALTH PHYSICIAN & MEDICAL SURVEILLANCE PROGRAM

For personnel who may potentially be exposed to contaminated material, the Contractor will utilize the services of physicians who are board certified in occupational medicine to supervise the medical surveillance program and conduct employee medical examinations.

1. The medical examination will consist of:
 - a) Medical and Occupational History Questionnaire;
 - b) General Physical, including evaluation of all major organ systems;
 - c) Pulmonary Function Examination;
 - d) Electrocardiogram;
 - e) Chest X-Ray (optional);
 - f) Otoscopic Examination;
 - g) Audiometric Examination;
 - h) Visual Acuity Examination;
 - i) Blood Tests, Blood Count, Blood Profile;
 - j) Blood Lead and ZPP; and
 - k) Drug Screen.

2. A baseline examination will be given prior to the employee starting any work activities. A medical examination will be repeated under one or more of the following conditions:
 - a) More than a year has passed since the employee's last examination;
 - b) The employee experiences an acute exposure to a toxic or hazardous material, or an injury.
 - c) The examining physician, the SHM, or SSHO recommends one; or
 - d) At the request of an employee with demonstrated symptoms of an occupational exposure to toxic or hazardous materials.



For personnel who may potentially be exposed to contaminated media, the Contractor will obtain a certification from the occupational physician that the employee is medically fit to wear respiratory protection and has no medical condition that would place him at an increased risk. No employee will be permitted to work in the Exclusion Zone (EZ) until his certificate has been submitted to the SSHO.

All medical records will be kept for at least 30 years and will be made available to the Site Respondents and Owner or regulatory agencies, as required.



7.0 SAFETY TRAINING

The SSHO or designee will provide and require that all personnel who may potentially be exposed to contaminated material at the Site complete training or refresher sessions. Training and refresher sessions will assure that all personnel are capable of and familiar with the use of safety, health, respiratory, and protective equipment and with the safety and security procedures required for this Site. The training session will include the OSHA mandated 40 hour training course for new personnel with potential exposure, as well as refresher courses for those persons who have had this training. Supervisors will have completed an additional 8 hours of supervisor training per 29 CFR 1910.120 (e).

Documentation will be kept on file, which certifies that each employee or subcontractor employee who may potentially be exposed to contaminated material at the Site has satisfied the requirements of the OSHA training regulation 1910.120(e).

There will be at least one person present on Site who will be trained and certified in Standard First Aid and Adult Cardiopulmonary Resuscitation (CPR).

1. The SSHO will provide and conduct a training program on Site for Site personnel prior to commencing work within the EZ. This training program will address as a minimum the following topics:
 - a) Potential hazards;
 - b) Biology, chemistry and physics of hazardous materials;
 - c) Rights and responsibilities of workers under OSHA and Contractor's Hazard Communication Program;
 - d) Standard safety operating procedures;
 - e) Types of monitoring equipment to be used;
 - f) SSHP;



- g) Internal and external communications;
 - h) Medical surveillance program;
 - i) Personal protective clothing and equipment;
 - j) Respiratory equipment including training and qualitative fit testing for full-face piece respirators;
 - k) Air monitoring program;
 - l) Decontamination procedures;
 - m) Evacuation, first aid, and emergency procedures dealing with fire and medical situations;
 - n) Work zones established at the Site;
 - o) Safe work practices associated with employee's work assignment, including dust control measures, hazardous materials recognition, and use of the buddy system;
 - p) Basic operational safety, emphasizing hazards expected on Site;
 - q) Prohibitions inside the EZ and Contamination Reduction Zone (CRZ), including:
 - 1. Glasses and/or facial hair, such as beards or long sideburns, which interfere with respirator fit;
 - 2. Eating, drinking, smoking, and/or chewing in the EZ or CRZ;
 - 3. Wearing of personal articles, (e.g. watches, rings, etc.); and entertainment headsets such as personal CD, tape or radio devices.
 - 4. Working when ill.
2. All personnel assigned to the Site will receive the Site-specific safety and health training. Upon completion of this training, a training acknowledgment log will be completed. The training acknowledgment logs will include provisions for the following information:
- a) Employee or visitor's name.



- a. Verification of topics covered, including:
 - i. Work Rules and Safety Requirements
 - ii. Personal Protection Equipment
 - iii. Potentially Hazardous Chemicals
 - iv. Emergency Equipment and Plan
 - v. Reporting Injuries and Illnesses
 - vi. Emergency Procedures
 - vii. Job Assignment
 - viii. Personal Hygiene
 - ix. Medical Tests
 - x. Materials used
 - xi. Equipment demonstration
 - xii. Hands-on equipment practice for each employee
 - xiii. Prohibitions covered
 - xiv. Buddy-System explanation; and
 - xv. Standard operating procedures.

- c) Date and signature by trainee and trainer.

There may be additional safety training sessions conducted by the SSHO throughout the duration of the project. The purpose of these training sessions is to reinforce the proper procedures, to correct any deficiencies noted in the safety and health program, and to prepare the workers for any change in the safety and health plan due to changes in the operations or unanticipated problems.

All Site personnel will participate in daily safety tailgate meetings that address the health and safety concerns presented by the project's definable features of work. Training attendance and topics will be documented on a daily sign-in log.



3. All first time visitors will be required to undergo an orientation conducted by the SSHO or his designee. The training will consist of:
 - a) Hazards present at the Site;
 - b) Effects of these hazards;
 - c) Progress of work and the relationship of the present work in regard to the type of hazards that may be encountered;
 - d) Emergency signals and procedures;
 - e) Type and limitations of personal protective equipment in use;
 - f) Proper use of protective equipment;
 - g) General safety rules and policies in effect at the Site; and
 - h) Completion of a training acknowledgment log.

If a visitor does not, for any reason, have the required OSHA training and medical examination they will not be permitted in the EZ.



8.0 ACCIDENT PREVENTION PROGRAM

The Contractor is to develop a comprehensive Accident Prevention Program, which follows the requirements, listed in 29 CFR 1910 and 1926. A copy of the Accident Prevention Program is to be appended to this plan. This plan will include the following features:

1. Statement of company policy;
2. Delegation of responsibility;
3. A self-inspection guide;
4. Safety meetings;
5. Outline of topics suitable for safety meetings;
6. Fire prevention program;
7. Posting requirements;
8. Assured equipment grounding conductor program;
9. Policy for violation of safety rules;
10. Accident investigation;
11. General safety rules for employees;
12. Lock out/tag out procedure;
13. Confined space entry;
14. Training requirements; and
15. Safety inspection policy and procedures.

The Contractor's Project Manager is responsible for the administration of the Accident Prevention Program. The SHM is responsible for the implementation and overview of the program while the SSHO will manage the program on a daily basis. The SSHO will determine whether any of the safety rules are being violated, advise the employee(s) on the proper procedure(s), initiate any disciplinary action(s) which may be required, conduct the daily safety inspections, investigate all accidents, and make recommendations that will correct all unsafe conditions.



All subcontractors will also be required to follow the Accident Prevention Program. Subcontractor personnel will be trained in the content and procedures associated with the program. The SSHO will be responsible for determining subcontractor compliance with this program.

There will be daily safety meetings conducted by the SSHO. The topics will be developed in conjunction with the SHM. All on Site personnel will be required to attend the safety meetings. A log will be kept of the attendees and subjects covered.

1. Typical Topics

- a) Safely Operating and working around heavy equipment such as excavators, dozers, and vibratory rollers;
- b) Work Zones and PPE Requirements;
- c) Heat Stress;
- d) Cold Stress;
- e) Personnel/Equipment Decontamination and prevention of cross contamination;
- f) Emergency Response Procedures;
- g) Slips, Trips and Falls;
- h) Safety with Electrical Hazards;

2. Additional Topics

- a) Cutting and Welding: All cutting and welding (“hot work”) operations will require a burning permit signed by the SSHO. The burning permit will require the following information:
 - i) Percent oxygen level;
 - ii) Percent of lower flammable limit;
 - iii) Vapor concentration;



- iv) Availability of fire extinguisher;
- v) Location of nearest combustibles;
- vi) Welding/burning operations in compliance with OSHA regulation 1910.252; and,
- vii) Designated fire watch.

The testing of the atmosphere will be the SSHO or designee's responsibility. At each hot work location an individual will be designated as fire watch. This person's sole responsibility shall be to monitor the hot work and have immediate access to a fire extinguisher located at each hot work Site.

- b) Fire Prevention: Basic fire prevention measures will be followed. Fire extinguishers will be inspected and tagged monthly.
- c) Housekeeping: The Site will be kept in a neat and orderly condition. Non-contaminated refuse will be disposed of on a regular basis. The disposal of contaminated material is discussed in the Personnel and Equipment Decontamination section of this document. Sanitation will be provided in accordance with the personal decontamination procedures outlined in Personal and Equipment Decontamination section of this document.
- d) Heavy Equipment Inspection: All equipment will be inspected by the operator prior to use. Motorized equipment will be checked to see that brake and steering mechanisms are in working order and that all alarm systems and safety guards are operational.
- e) First Aid/CPR Training: There will be one person on Site at all times trained and certified in first aid and CPR. There will also be an industrial first aid kit located in the Site office. All injuries and/or illnesses will be reported to the SSHO and in instances when he is unavailable to one of the Certified First



Aid employees who will then decide on the proper course of treatment i.e., routine first aid or emergency medical treatment. The emergency medical treatment facility and the route to be followed to get there are discussed in Emergency Response and Contingencies section of this document.

- f) Accident Reports: All accidents, occupational illnesses, and exposure events will be reported to the SSHO who will then investigate the accident and make recommendations to prevent its reoccurrence.

- g) Inspections: The SSHO will make safety inspections of the Site. All safety hazards will be immediately corrected.



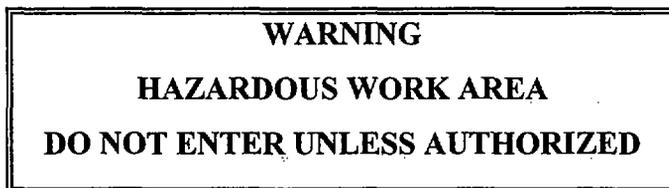
9.0 STANDARD SAFETY OPERATING PROCEDURES

1. The following general safety rules will be in effect for all Site personnel:
 - a) Eating, drinking, smoking, chewing gum or tobacco, applying and wearing make up, and other practices that increase the probability of hand-to-mouth transfer and ingestion of hazardous material is prohibited in any area designated contaminated.
 - b) Hands and face shall be thoroughly washed upon leaving the work area and before eating, drinking, urinating, or other activities.
 - c) Whenever decontamination procedures for protective clothing are in effect, the entire body shall be thoroughly washed as soon as possible after the protective clothing is removed.
 - d) Medicine and alcohol can increase the effects of exposure to toxic chemicals. Therefore:
 1. Personnel using prescription drugs shall inform the doctor who prescribed them of their potential contact with toxic materials.
 2. Personnel who take over-the-counter drugs within a day before work on a Site must inform the SSHO of the warnings listed on the drug's container (the part of the label that says, for example, "Do not take this medication if you are operating a motor vehicle").
 3. Alcoholic beverage intake shall be prohibited during project operations. Personnel under the influence of alcohol or recreational or illegal drugs will not be allowed on Site.



10.0 SITE CONTROL

1. Signage: The SSHO or designee, will provide, install, and maintain signs and other warning devices to inform Site personnel and the public of the hazards present at the Site. The signs will have letters at least 4 inches in height and will state:



In addition, areas of special hazards, such as open excavations, will be posted with a hazard warning banner or sign.

2. Zones: The Contractor will clearly layout and identify all work areas in the field and will limit equipment, operations, and personnel in the area as defined below:
 - a) Exclusion Zone (Hazardous or Contaminated Zone)
 1. This includes all areas, which are found to be impacted with material above the environmental levels.
 2. The EZ will be clearly delineated in the field prior to commencing Site work by orange safety fencing and warning signs spaced around the perimeter of the zone warning of a hazardous work area.
 3. Access from the Support Zone (SZ) into the EZ will be controlled by surrounding the CRZ with stakes, flagging, and warning signs.
 4. Access to the EZ will be restricted to personnel who are wearing the proper PPE, have received the required medical examination, and have undergone the safety and health training required by the SSHP.



Eating, drinking, smoking, or chewing is prohibited in this area.

b) Contamination Reduction Zone

1. This zone will occur at the interface of the EZ and the SZ and will provide for the transfer of construction materials and equipment, the decontamination of transport vehicles handling contaminated soil prior to entering the SZ, the decontamination of personnel and clothing prior to entering the SZ and for the physical segregation of the SZ from the EZ. The SSHO or his designee must certify all materials, equipment, tools, and vehicles removed from the CRZ for uncontrolled release as uncontaminated.
2. Access to the CRZ will be restricted to personnel who are wearing the proper PPE, have undergone the required medical examination, and have participated in the training program outlined in the SSHP. Eating, drinking, smoking, or chewing is prohibited in this area. A Site map of the Project can be found in Figure 1.

c) Support Zone

This area is the remainder of Site and is defined as being an area outside the CRZ and EZ. The SZ will be clearly delineated and procedures will be implemented to prevent active or passive contamination from the work Site. The function of the SZ includes:

1. An entry area for personnel, material, and equipment to the CRZ;
2. An exit area for decontaminated personnel, materials, and equipment from the CRZ; and,
3. A storage area for clean, safety and work equipment.

The SZ will be clearly delineated in the field.



3. Emergency Telephone Numbers: The following emergency telephone numbers will be posted at all on-Site telephones and provided to all Site personnel conducting remediation activities:

EMERGENCY PHONE NUMBERS		
	CONTACT	TELEPHONE NUMBER
1.	Lancaster General	911 or 717-544-3311
2.	Columbia Borough Police Department	911 or 717-684-7735
3.	Columbia Fire Department	911 or 717-684-5100
4.	Columbia Water Company	717-684-2712
5.	<u>Site Respondents</u> : Clean Sites Environmental Services Contact: Scott Miller	703-519-2142
6.	<u>USEPA Project Manager</u> : David Turner	215-814-3216
7.	USEPA Region III	215-814-5000 or 1-800-438-2474
8.	USEPA Spill Control	800-424-8002
9.	PADEP Emergency Response	717-705-4741 or 1-877-333-1904 (after hours)
10.	National Response Center	800-424-8802
11.	Emergency Treatment Facility a. Name: Lancaster General b. Address: 555 North Duke Street Lancaster, PA 17602	717-544-3311
12.	Engineer - Advanced GeoServices Corp. Contact: Christopher T. Reitman	610-840-9123 - Work 610-701-0670 - Home 610-389-2469 - Cell

Directions to the Emergency Treatment Facility (Lancaster General) are provided as Figure 2.



11.0 EMERGENCY EQUIPMENT & FIRST AID REQUIREMENTS

1. The Contractor will provide at a minimum the following emergency and first aid/emergency equipment as required:
 - a) Industrial type first aid kit, which includes a burn kit;
 - b) 3A: 40-B: C (5 LB. Capacity) and 20A: 120-B: C (20 Lb Capacity Wall Mount) type fire extinguishers;
 - c) Portable emergency eye wash units, which provide 15 minutes of fresh water to the eyes;
 - d) Spill kit consisting of shovels, drums, and absorbent material; and,
 - e) Full face piece, negative pressure respirators, disposable outerwear (Tyvek), and necessary PPE for six visitors daily.

One emergency eye wash unit and one 2A: 10B: C fire extinguisher will be placed in each CRZ. First Aid units will be located at a manned location. In isolated work areas they will be located in close proximity to the work. The first aid stations will be suitably marked.

2. Fire extinguishers will also be placed at:
 - a) The Office Trailers; (20 Lb Capacity Wall Mount);
 - b) The Contractor's Construction Equipment Trailer (20 Lb Capacity Wall Mount);
 - c) The Contractor's Flammable materials storage area; (20 Lb Capacity Wall Mount); and in
 - e) All Site vehicles and heavy equipment; 3A: 40-B: C (5 LB. Capacity).



12.0 EMERGENCY RESPONSE & CONTINGENCY PROCEDURES

1. Accidents, Incidents, and Unusual Events: All accidents, incidents, and unusual events will be handled in a manner to minimize health risks to Site workers. In the event that an accident, incident, or other unusual event occurs, the following procedure will be followed:
 - a) First aid or other appropriate initial action will be administered by trained personnel closest to the accident or event. This assistance will not place those rendering assistance in a situation of unacceptable risk;
 - b) All accidents, incidents, and unusual events will be reported to the SSHO. The SSHO is responsible for conducting the emergency response in an efficient, rapid, and safe manner. The SSHO will decide if off-Site assistance and/or medical treatment are required, and arrange for that assistance. In the event that an evacuation must take place an air horn will be sounded. Directions will be given to evacuate the area;
 - c) In the event of a ruptured gas service/main the SSHO will notify the local authorities via the 911 emergency call system, followed by notification of the utility company itself;
 - d) All workers on Site will conduct themselves in a mature, calm manner in the event of an accident or unusual event. All personnel will conduct themselves so as to minimize risks to themselves and to other workers; and
 - e) Immediately following the assessment of the emergency situation, the SSHO or other Site responsible personnel will contact the Site Respondents and Owner.



The types of emergencies that could occur on the project Site include fire, utility line breaks, and medical emergencies. The following is a discussion of the implications of each of these together with the measures that will be taken to prevent the spread of contamination or exposure of individuals to excessive contamination should they occur.

2. Fire/Utility Related Emergencies: Should a fire, potentially hazardous situation, or explosion occur in the EZ the hazard normally associated with such an occurrence is enhanced by the possibility of the release of airborne contamination. This could occur as a result of the air currents generated or as a result of large amounts of water used to suppress the fire. The Site Fire Alarm Plan is as follows:

- a) Outside assistance will be immediately requested, if deemed necessary, by the SSHO.
- b) Personnel not intrinsically involved in on Site emergency response procedures will evacuate to an area upwind of the fire. If the fire can be treated with a fire extinguisher, personnel closest to the fire will obtain a fire extinguisher and attempt to extinguish the fire. This will be attempted only if there is minimal risk to the personnel involved. Contractor personnel must receive training in the use of fire extinguishers, but they do not need to receive fire brigade training as outlined by OSHA.

The following steps are taken in the event of fire to reduce the possibility of the spread of contamination and to assure that individuals are not exposed above acceptable limits:

- a) Any person discovering a fire is to notify 911 first, then notify the SSHO immediately after.



b) Should a fire occur, every effort should be made by On-site personnel, directed by the SSHO, to bring the fire under control, however, in those cases where a fire emergency is beyond the capability of on-site personnel to control, personnel will wait for outside assistance.

3. Medical Emergencies: Medical emergencies can be further complicated by the presence of contaminated material. As a matter of policy, should a medical emergency arise in the EZ, prime attention is given to the medical aspects of the situation even though the use of life saving techniques may result in the spread of contamination.

When the medical situation allows, precautions to prevent the spread of contamination may include:

- a) Removing the injured individual's contaminated clothing and protective equipment within the EZ;
- b) Wrapping the injured individual in sheets to contain contamination;
- c) The use of plastic sheeting to prevent ambulance interiors and hospital facilities from becoming contaminated; and,
- d) The use of protective clothing and contamination control techniques by rescue and medical facility.

Note: Medical actions will always take priority. If contaminated persons are sent to the medical facility, the SSHO or his/her designee shall accompany them.

4. Unusual Objects/Situations/Unidentified Utility Services: Unusual/Unidentified objects such as buried sewer lines, drums, barrels, gas cylinders, gas services, or power lines may be encountered during excavation operations. If such an event occurs, the SSHO will halt operations and decide on the next course of action after



consultation with the Project Manager, Site Respondents and Owner. The SSHO is also responsible for suspending Site operations in the event of inclement weather.

5. Spills: In the event of a spill of affected materials outside the EZ, the area will be isolated from normal traffic by the SSHO using high visibility taping. Depending on the nature of the spilled material and its volume, visual inspection will be used to determine the volume of soil to be removed. If visual inspection is insufficient to determine the affected area, soil samples will be collected around the excavated area to assure that the spill has been adequately contained and affected material removed. Spilled materials and affected superficial soils will be drummed and disposed as appropriate, according to USEPA regulations.

The names and phone numbers of all personnel and agencies that could be involved in emergency response are listed in the Site Control Section 10.0 of this plan. This list will be posted in a conspicuous location at the Site, such as the dashboard of the field vehicle, office, and decontamination trailers. After emergency personnel have been contacted, the SHM will contact the Site Respondents and Owner. The Site SHM prior to the start of field activities will verify the capabilities of the local emergency services and hospitals.

The SSHO will provide a report to the Site Respondents and Owner within 24 hours.

6. Site Evacuation: A Site emergency, such as a ruptured gas utility line, may require the evacuation of personnel from the affected area. If such a situation arises, the SSHO will give the order to evacuate. It is the responsibility of all individuals to evacuate in a calm, orderly fashion. All personnel will be familiar with evacuation procedures and means of exit from their respective work areas. The locations of all evacuation points, including gates, will be thoroughly discussed at the Site-specific health and safety briefing prior to beginning work.



The log of on Site personnel will be used to confirm that all personnel are accounted for. Control of personnel at the designated rendezvous point is the responsibility of SSHO or his/her designee. Re-entrance to the Site will only be decided upon by the SSHO or his/her designee.



13.0 LEVELS OF PROTECTION/PERSONAL PROTECTIVE EQUIPMENT

The Contractor will provide for its personnel and visitors all necessary protective clothing and equipment and maintain it in accordance with the manufacturer's specifications. As applicable, all equipment will be NIOSH approved.

All personnel who are required to wear a respirator will have to pass a fit test given in accordance with OSHA regulations. Fit tests will be given on an annual basis unless a significant loss/gain of body weight or a different model or size respirator is issued. Respirators will not be interchanged between workers without cleaning and sanitizing. Cartridges will be changed prior to the end of service life.

Prescription glasses worn on Site will be safety glasses. Prescription lens inserts will be provided for all employees who wear a full face air purifying or supplied air respirator.

All personnel protective equipment (PPE) worn on Site will be decontaminated or properly disposed of at the end of the workday.

1. The following are the various levels of protection that will be in effect for this project. Optional PPE provided will need to be approved by the SSHO or his/her designee prior to use on Site.

- a) Level D

1. Work Clothing consisting of long sleeve shirts and pants, as dictated by the weather
2. Safety (steel toe/shank) shoes or boots
3. Hard hat
4. Safety glasses with side shields, goggles, or face shield
5. Hearing Protection (for noisy areas)



6. Optional: Nitrile surgical gloves with cotton liners, disposable boot covers

b) Level D Modified

1. Same as for Level D, plus:
2. Disposable, hooded, one-piece, full-body coveralls constructed of polypropylene fabric. Saranex coveralls will be required in areas where there is an increased potential for workers to come in contact with impacted material.
3. Over boots of 60 mil (minimum) rubberized PVC or neoprene. Disposable type over boots allowed for equipment operators.
4. Cotton knit gloves and nitrile gloves

c) Level C

1. Level D modified PPE and:
2. Full-face piece, air-purifying respirator (NIOSH approved) equipped with cartridges approved by NIOSH for particulates and organic vapors.

d) Level B

1. Level D modified PPE and:
2. On demand Self Contained Breathing Apparatuses (SCBA) or Supplied Air Line Respirators with a 5 minute escape bottle

The initial minimum level of protection for Site activity is Level D Modified. The Contractor will conform to the initial levels of protection unless an upgrade or downgrade is warranted by air monitoring data (discussed further in Section 16.0) and an evaluation of work practices/controls.



1. Personal protective equipment upgrades will only occur when the SSHO makes the change based on Site activity, air monitoring of contaminant levels, and work place practices as specified in this plan.

2. The following provisions apply to respiratory protection:
 - a) Employees who are required to wear respirators must pass a pulmonary function test;
 - b) Each time a respirator is donned the employee must perform a positive pressure/negative pressure fit test;
 - c) No facial hair which interferes with a satisfactory fit is permitted. A "two day" growth of beard is considered to interfere with the fit; and,
 - d) Cartridges and filters shall be changed daily or more frequently if breakthrough or increased resistance occurs.



14.0 EQUIPMENT & PERSONNEL DECONTAMINATION

1. Personnel Decontamination: The Contractor will provide:
 - a) Contained storage and disposal for used disposable outerwear;
 - b) Hand/face washing facilities;
 - c) A facility for changing into and out of and storing work clothing separate from street clothing; and,
 - d) A lunch and/or break room.

Personnel decontamination consists of the following steps:

- a) Disposable PPE will be removed and discarded into properly labeled "contaminated material" impermeable receptacles.
 - b) At the end of the work day non-disposable PPE such as respirators will be washed in a low sudsing detergent, rinsed with warm water, and wiped dry with a disposable cloth; Boot wash/brushing station will be supplied if necessary.
 - c) Decontaminated PPE will be stored in a secure area of the SZ; and,
 - d) All personnel will be required to wash their hands and face prior to eating and/or smoking.
2. Equipment decontamination: All equipment will be decontaminated by wash down in the CRZ prior to maintenance work. Maintenance work such as greasing heavy equipment need not require decontamination unless the job requires body contact with soil.

Equipment decontamination will consist of the following steps:

- a) All equipment in the EZ will be assumed to be contaminated and will be surveyed for contamination before it leaves the work zone;



- b) A gross decontamination using water sprays and scraping will be done on heavy equipment prior to it being brought to the decontamination pad;
- c) At the decontamination pad, all visible contamination will be removed with scrub brushes and high-pressure water spray



15.0 EMISSION & DUST CONTROL

The following procedures will be employed to minimize the generation of dust at the Site:

- a) Dusty operations, like excavation of dry soil, will be suspended when wind speed is excessive, as determined by exceeding dust monitoring action levels;
- b) Heavy equipment will be cleaned by wet decontamination in areas designed to collect the run-off. Mud from the equipment will not be allowed to dry on or in the decontamination pad;
- c) Trucks in which contaminated soil/debris are carried will be covered and sealed to control dust releases with a double, positive locking mechanism on the tailgates; and
- d) If the soil is dry, The Contractor will apply water to reduce the creation and dispersion of dust. The Contractor will avoid methods that generate slippery conditions or sticky mud.

The SSHO will confirm that dust suppression practices are effective and being utilized.



16.0 AIR MONITORING

16.1 INTRODUCTION

For Remedial Action field activities, an air monitoring program will be performed for the following reasons:

- To determine the presence of hazardous atmospheres and ensure that workers are wearing appropriate PPE. (PPE requirements are discussed in Section 13.0). As discussed in Section 13.0, workers during the Remedial Action field activities will be wearing Level D PPE at the initiation of work.
- To enable the comparison of the results to established occupational standards, and help determine whether the Site-Specific, real time action level is protective of worker health.
- To document the potential migration of dust and demonstrate whether adequate dust suppression methods are being employed.

This section identifies the procedures, instruments, and analytical methods to be used during the air monitoring program. Table 3 summarizes the air monitoring equipment which may be used on this project and their function.

The SSHO shall be responsible for all aspects of the air monitoring program including sample collection and informing the SHM of results. On-site calibrations of instruments will be performed as necessary and appropriate by the SSHO in accordance with the instructions of the equipment manufacturer.



As discussed in Section 3.0, a list of potential COCs along with Occupational Safety and Health (OSHA) Permissible Exposure Limits (PELs) and symptoms/effects of acute exposure is presented in Table 1. In addition, Table 2 provides the maximum concentration of the COCs in Site soils.

The following sections discuss the air monitoring program to be conducted during designated water line relocation field activities.

16.2 REAL-TIME PARTICULATE MONITORING

16.2.1 Inorganic Compounds

The air monitoring program will consist of real-time particulate air monitoring to evaluate potential airborne inorganic compounds during designated intrusive field activities. Additional air monitoring may be conducted as directed by the SSHO for other Remedial Action activities. The Remedial Action field activities with respect to inorganic compounds include, but are not limited to:

- Site soil Excavation
- Site soil Placement

Periodic, real-time particulate (dust) monitoring will be conducted utilizing an aerosol monitor (AM) which provides a reading of total dust in milligrams per cubic meter (mg/M^3). The SSHO will take periodic readings at the initiation of each designated intrusive task and every hour thereafter, or whenever visible dust is detected during the Remedial Action field activities identified above to document dust emissions. These measurements will dictate whether an upgrade in PPE is required as discussed below.

The allowable dust levels on-site can be estimated for the constituents of concern using the following equation:

$$\text{Total Allowable Particulate (mg / M}^3\text{)} = \frac{\text{particulate concentration action level}}{\text{particulate of concern concentration}}$$



This equation can be solved for the allowable total particulate as described below.

Lead has a TLV of 0.05 milligrams per cubic meter (mg/M³). A safety factor of two provides an action level for lead of 0.025 mg/M³. This is considered the total allowable particulate of concern concentration. The amount of airborne dust (total particulate) required to reach 0.025 mg/M³ of lead is based on the highest soil lead concentration observed at the Site of 730 mg/kg (see Table 2). Based on these calculations, the lead concentration of 730 mg/kg (0.073 percent) was selected to estimate the amount of airborne dust required to reach 0.025 mg/m³ of lead as follows:

$$\text{Total Allowable Particulate} = \frac{0.025 \text{ Mg/M}^3}{0.00073} = 34.2 \text{ mg/M}^3 \text{ total particulate}$$

Similar estimated dust concentrations for other Site inorganic COCs would be protective. The above calculation allows an accurate interpretation of the real time dust monitor data, relative to the constituent concentrations of concern at the Site. A particulate action level of 1.5 mg/M³ will be used for the dust monitor to upgrade from Level D to Level C PPE (see Section 13.0). Table 4 provides air monitoring methods, action levels and protective measures for PPE.

16.2.2 Organic Compounds

Select Remedial Action field activities associated with the project may create conditions, such as the release of organic vapors into the breathing space. The most significant compound found in Tables 1 and 2 that may be associated with the project based on toxicity, reported results, and likelihood of exposure due to the scheduled Remedial Action field activities is Benzene in soils.

The Air Monitoring Program will consist of real-time organic air monitoring during intrusive field activities. The intrusive Remedial Action activities with respect to organic vapors include, but are not limited to:

- Site soil Excavation



- Site soil Placement

The greatest potential of exposure to airborne organic vapors is during Site soil excavation and soil placement. Monitoring of airborne vapors using an organic vapor meter (OVM) with a flame ionization detector (FID) will be performed to evaluate Benzene and other organics during the above intrusive operations. Air monitoring within the breathing zone will be conducted at the initiation of each intrusive operation presented above, then on an as-needed basis for each intrusive Site activity, as determined by the SSHO. If the OVA has sustained reading (greater than 5 minutes) of 1 ppm, a Drager CMS Analyzer with a Benzene chip will be used to determine the benzene level. If Benzene is present at a sustained level above 1 ppm, PPE will be upgrade to Level C.

Explosivity will be monitored during water line relocation field activities and any time organic vapors exceed 250 ppm within the breathing space. Measurements obtained from the OVM and Combustible Gas Indicator/Oxygen meter will be used as criteria for institution of additional precautions, Site evacuation, and PPE selection.

Personal protective levels will be increased in the event organic vapors and/or explosivity are measured above the specified action levels presented in Table 4



17.0 CONSTRUCTION & EXCAVATION

1. The following steps will be taken prior to and during all excavation activities:
 - a) All utility lines that may interfere with the work will be located and disconnected before digging near them. As required by law, the Pennsylvania One-Call System will be called by the Contractor.
 - b) Trenches greater than 5 feet in depth will be shored or sloped in accordance with OSHA regulation 1926.650. A minimum slope ratio of 1.5:1 will be maintained at all times. At this time no trenches deeper than 5 feet are anticipated at the Site.
 - c) Where employees are required to enter into trenches greater than 4 feet in depth suitable means of access and egress such as a ladder, ramp, stairway or other safe means will be provided. Trenches greater than 4 feet in depth will also be considered a confined space, and entry will take place under the procedures outlined in the Confined Space Entry Program.
 - d) The Contractor will implement shoring, sloping, and/or benching methods for excavations over 5 feet in depth or at any location where the structural integrity of the excavation wall is in question.
 - e) A visible barrier or orange safety fence will be erected at the edge of any open excavation.
 - f) Neither heavy equipment nor excavated material will be placed within 2 feet of an open excavation.



- g) A competent person shall inspect all shoring, sloping and/or benching each day before workers enter excavations.
- h) Workers shall be prohibited from standing underneath loads handled by lifting or digging equipment.
- i) On Site personnel will perform rescue activities. In the event that on Site personnel cannot perform rescue an outside team (i.e., fire department, emergency medical services (EMS), etc.) will be called. If an outside team is requested they will be informed of the type of rescue.
- j) Sandbags, silt fence, and polyethylene sheeting will be used to prevent and control water that could enter the excavation.

2. The following general rules will be adhered to during construction activity:

- a) All mobile equipment will be provided with working back-up alarms, brakes, and shut-off switches;
- b) Operators shall not leave their equipment while it is running;
- c) A daily inspection will be made by the SSHO to determine compliance with the SSHP;
- d) Illumination in the working zone will be a minimum of 10-foot candles. Supplementary temporary lighting will be provided, if necessary;
- e) Electrical installations will be in compliance with the National Electric Code and local code requirements;



- f) All electrical equipment will be grounded and further protected by the use of ground fault circuit interrupters;
- g) An adequate number of toilet facilities will be provided. There will be at least one toilet for every twenty employees. With separate facilities for male and female employees;
- h) A source of potable water will be provided;
- i) An on Site wash facility will be provided;
- j) Food will only be consumed in prescribed clean locations;
- k) During on Site maintenance to be performed on equipment capable of storing and releasing energy, the lockout/tagout program will be implemented;
- l) Spills will be promptly cleaned to the bare ground or pavement with dedicated equipment and hand brooms;
- m) Liquids and residues will be removed using explosion proof or air driven pumps.



18.0 HEAT STRESS MONITORING/MANAGEMENT

Heat stress is one of the most common hazards encountered at a Site, and there are a number of factors that have an effect in determining the amount of heat stress experienced by an individual worker. These factors include environmental conditions, type of clothing worn, workload, and individual characteristics.

When individuals are subject to heat stress and are wearing personal protective equipment (PPE) which may restrict heat loss from the body (i.e., Tyvek/respirator) heat stress management/monitoring shall be performed. The SSHO shall assure the following:

- All employees drink plenty of fluids;
- Frequent breaks are scheduled so overheating does not occur; and
- Revise work schedules, when necessary, to take advantage of the cooler parts of the day (i.e., 5:00 a.m. to 1:00 p.m., and 6:00 p.m. to nightfall; and perform heat stress monitoring.

The intent of heat stress monitoring is to maintain a body core temperature below 100.4 degrees F. This is accomplished by measuring temperature with an infrared thermometer and/or measuring pulse rate at the beginning and at the end of each break in work. A target maximum temperature is set at 99.6 degrees; the target pulse rate is 120.

Work/rest regiments shall be adjusted so that the target values are not exceeded when entering a rest period. The rest period should be of sufficient duration to allow elevated measurements to return to below the target values before returning to work. Worker exposure to heat stress will be monitored using a battery operated thermometer which can be inserted into the ear to check the person's core temperature.



19.0 COLD STRESS MONITORING/MANAGEMENT

Body protection shall be provided to all Site personnel that have prolonged exposure to cold air. The right kind of protective clothing shall be provided to Site personnel to prevent cold stress. The following dry clothing shall be provided by the Contractor as deemed necessary by the SSHO:

- Appropriate underclothing (wool or other);
- Outer coats that repel wind and moisture;
- Face, head, and ear coverings;
- Extra pair of socks;
- Insulated safety boots; and
- Glove liners (wool) or wind-and-water-repellant gloves.

The SSHO will use the equivalent chill temperature when determining the combined cooling effect of wind and low temperatures on exposed skin or when determining clothing insulation requirements.

Site personnel working continuously in the cold are required to warm themselves on a regular basis in the on-site hygiene facility. Warm, sweet drinks will also be provided to Site personnel to prevent dehydration. The SSHO shall follow the work practices and recommendations for cold stress threshold limit values as stated by the 1991-1992 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices by the American Conference of Governmental Industrial Hygienists or equivalent cold stress prevention methods.



20.0 HEARING CONSERVATION

When noisy operations make normal conversation difficult, Site personnel shall use personal protection (ear plugs and/or muffs).



21.0 BIOLOGICAL HAZARDS

The procedures presented in this section shall only be administered by persons certified in first aid tactics and trained in the OSHA Bloodborne Pathogens Standard.

POISONOUS SNAKEBITES

Reactions from snakebites are aggravated by acute fear and anxiety. Other factors that affect the severity of local and general reaction from poisonous snakebite include: the amount of venom injected and the speed of absorption of venom into the victim's circulation; the size of the victim; protection from clothing, including shoes and gloves; quick antivenom therapy; and location of the bite.

First Aid Procedure

The objective of first aid is to reduce the circulation of blood through the bite area, to delay absorption of venom, to prevent aggravation of the local wound, and to sustain respiration.

The most important step is to take the snakebite victim to the hospital quickly. Meanwhile, the following first aid steps should be taken:

- Keep the victim from moving around.
- Keep the victim as calm as possible and preferably in a lying position (horizontal).
- Immobilize the bitten extremity and keep it at or below heart level. If the victim can reach a hospital within 4 to 5 hours and if no symptoms develop, no further first aid measures need be applied at the Site.
- If mild-to-moderate symptoms develop, apply a constricting band 2 to 4 inches above



the bite, but not around a joint (the elbow, knee, wrist, or ankle) and not around the head, neck, or trunk. The band should be 3/4 to 1-1/2 inches wide, not thin like a rubber band. Watch out for swelling. Loosen the band if it becomes too tight, but do not remove it. Periodically check the pulse in the extremity beyond the bite to insure that the blood flow has not stopped.

- If severe symptoms develop, make an incision and apply suction immediately. Apply a constricting band, if this has not already been done, and make a cut in the skin through the fang mark(s). Use a sharp, sterilized knife. Cuts should be 1/2 inch long, extending over the suspected venom deposit point. (Because a snake strikes downward, the deposit point is usually lower than the fang mark). Cuts should be made along the long axis of the limb. Do not make cross-cut incisions. Do not make cuts on the head or trunk. Apply suction with a suction cup for 30 minutes. If suction cup is not available, use the mouth. There is a little risk to the rescuer who uses his/hers mouth, but it is recommended that the venom not be swallowed and that the mouth be rinsed out.

If the hospital cannot be reached in 4 or 5 hours, take the following measures:

- Keep trying to obtain professional care, either by transporting the victim to a place where medical care is available or by using an emergency communications system to obtain medical advice.
- If no symptoms develop, keep trying to reach the hospital and give the general first aid described above.
- If any symptoms at all develop, apply a constricting band, make incisions, and apply suction immediately, as described above.

Several other factors must be considered in cases of snakebite:



- Shock - Keep the victim lying down and comfortable, and maintain his or her body temperature.
- Breathing and heartbeat - If breathing stops, give mouth-to-mouth resuscitation. If breathing stops and there is no pulse, perform cardiopulmonary resuscitation (CPR) if you have been trained to do so.
- Identifying the snake - If you can kill the snake without risk or delay, bring it to the hospital for identification.
- Cleaning the bitten area - You may wash the bitten area with soap and water and blot it dry with sterile gauze. You may apply dressings and bandages, but only for a short period of time.
- Medicine to relieve the pain - Do not give the victim alcohol, sedatives, aspirin, or any medicine containing aspirin. Some painkillers, however, may be given as directed by a physician. Consult a doctor or other medical personnel for specific medications that may be used.

SPIDERS BITES

Spiders in the United States are generally harmless, with two notable exceptions: the Black Widow spider (*Latrodectus Mactans*) and the Brown Recluse or violin spider (*Lox Osceles Reclusa*).

The symptoms of such a spider bite are: slight reaction, severe pain produced by nerve toxin, profuse sweating, nausea, painful cramps in abdominal muscles, and difficulty in breathing and speaking. Victims recover in almost all cases, but an occasional death is reported. The bite of a Black Widow spider is the more painful and often the more deadly of the two.



Field personnel should exercise caution when lifting covers off manholes or sumps or rummaging through wood, rock, or brush piles, etc. since both the Black Widow and Brown Recluse spiders are typically found in these areas.

TICKBORNE DISEASES

Lyme Disease

Lyme disease is an illness caused by a bacterium which may be transmitted by the bite of a tick (*Ixodes Dammini*), commonly referred to as the "Deer Tick." The tick is about the size of a sesame seed, as distinguished from the Dog Tick, which is significantly larger. The Deer Tick is principally found along the Atlantic Coast, living in grassy and wooded areas, and feeds on mammals such as mice, shrews, birds, raccoons, possums, deer, and humans. Not all ticks are infected with the bacterium, however. When an infected tick bites, the bacterium is passed into the bloodstream of the host, where it multiplies. The various stages and symptoms of the disease are well recognized and, if detected early, can be treated with antibiotics.

Removal of ticks is best accomplished using small tweezers. Do not squeeze the tick's body. Grasp it where the mouth parts enter the skin and tug gently, but not firmly, until it releases its hold on the skin. Save the tick in a jar with the date, body location of the bite, and the place where it may have been acquired. Wipe the bite thoroughly with an antiseptic and seek medical attention as soon as possible.

The illness typically occurs in the summer and is characterized by a slowly expanding red rash, which develops a few days to a few weeks after the bite of an infected tick. This may be accompanied by flu-like symptoms along with headache, stiff neck, fever, muscle aches, and/or general malaise. At this stage, treatment by a physician is usually effective; but if left alone, these early symptoms may disappear and more serious problems may follow. The most common late symptom of the untreated disease is arthritis. Other problems which may occur include meningitis and neurological and cardiac abnormalities. It is important to note that some people do not get the



characteristic rash but progress directly to the later manifestations. Treatment of later symptoms is more difficult than early symptoms and is not always successful.

When in an area suspected of harboring ticks (grassy, bushy, or woodland area) the following precautions can minimize the chances of being bitten by a tick:

- Wear long pants and long-sleeved shirts that fit tightly at the ankles and wrists.
- Wear light colored clothing so ticks can be easily spotted.
- Wearing tick repellents may be useful.
- Inspect clothing frequently while in tick habitat.
- Inspect your head and body thoroughly when you return from the field.
- Remove any attached ticks by tugging with tweezers where the tick's mouth parts enter the skin. Do not squeeze or crush it.

Rocky Mountain Spotted Fever

In the eastern and southern United States this tickborne disease is transmitted by the infected Dog Tick (*Dermacentor Variabilis*). It is important to note that the Dog Tick is significantly larger than the Deer Tick. Nearly all cases of infection occur in the spring and summer, generally several days after exposure to infected ticks. The onset of illness is abrupt and often accompanied by high fever, headache, chills, and severe weakness. After the fourth day of fever, victims develop a spotted pink rash that usually starts on the hands and feet and gradually extends to most of the body. As with Lyme disease, early detection and treatment significantly reduces the severity of illness. The disease responds to antibiotic therapy with tetracycline or chloramphenicol.



POISONOUS PLANT

The majority of skin reactions following contact with offending plants is allergic in nature and is characterized by general symptoms of headache and fever, itching, redness, and a rash.

Some of the most common and most severe allergic reactions result from contact with plants of the Poison Ivy group including Poison Oak and Poison Sumac. The most distinctive features of Poison Ivy and Poison Oak are their leaves, which are composed of three leaflets each. Both plants also have greenish-white flowers and berries that grow in clusters. Such plants produce a severe rash characterized by redness, blisters, swelling and intense burning and itching. The victim can also develop a high fever and become very ill. Ordinarily, the rash begins within a few hours after exposure, but it may be delayed for 24 to 48 hours.

First Aid Procedure

1. Remove contaminated clothing.
2. Wash all exposed areas thoroughly with soap and water, followed by rubbing alcohol.
3. Apply calamine or other soothing skin lotion if the rash is mild.
4. Seek medical advice if a severe reaction occurs, or if there is a known history of previous sensitivity.



22.0 FALL PROTECTION

During the course of the project workers may be exposed to situations where there is the potential for a fall from greater than 6 feet. The acceptable means of providing access to elevated work are ladders, scaffolding, and mobile manlift baskets. The Contractor will develop a program to prevent injuries due to falls from elevated work surfaces and to comply with OSHA fall protection standards in 29 CFR 1926, Subpart M.

Site supervisors have the responsibility to ensure that fall protection is provided at the Site. The SSSHO is responsible for providing fall protection training for all Site personnel and monitoring compliance with this program.



23.0 CONFINED SPACE ENTRY

A Confined Space Entry Program will be required when employees enter into tanks, sewers, and trenches greater than 4 feet in depth, or any place with limited ventilation which is not designed for human habitation. Prior to entry into a confined space, the SSO or designee will review with the affected personnel all potential hazards, proper work procedures, required safety equipment, and emergency procedures.

As part of the Confined Space Entry Program, the following actions will be completed prior to entry:

1. Pre-planning of all operations with those both directly and indirectly involved, including rescue teams;
2. Notification of the SHM and other proper authorities of the planned entry and actions to be taken;
3. Working out all emergency signals with all involved in the confined space entry;
4. Have a complete list of emergency telephone numbers for police, fire, hospital, and emergency rescue units as well as directions and map of routes to nearest hospital and emergency treatment facility;
5. Having all safety equipment readily available;
6. Having all mechanical equipment thoroughly checked and in proper working order prior to initiating any confined space activities;
7. Checking all retrieval lines and safety harnesses for unusual signs of wear and making sure the SCBA is fully charged, as appropriate;



8. Calibration and rezeroing of portable gas detectors daily or more often, per manufacturer's instructions;
9. Blanking off, bleeding, blocking, securing, and isolating the confined space to a zero-mechanical state;
10. Lockout and tagout all electrical and mechanical equipment including verification that it is properly locked out by attempting to start equipment; and
11. Considering all confined spaces dangerous before entry until proven safe.

All confined spaces will have their atmosphere tested prior to entry. The following air tests will be taken:

- a) Oxygen level;
- b) Presence of organic vapors;
- c) Potentially explosive atmospheres;
- d) Detection of Carbon Monoxide (CO) and Hydrogen Sulfide (H₂S); and
- e) Real time particulates.

If necessary, the Contractor will ventilate the confined space prior to employees entering and during all phases of work. A positive draft will be maintained into the confined space. The SSHO or designee will also continuously monitor the atmosphere of the confined space using portable combustible gas, oxygen deficiency, and toxic gas detectors during all activities, which require employees to enter the confined space.

If any of the following conditions are met, entry into the confined space will be prohibited.



- An oxygen deficient atmosphere has a percent oxygen concentration below 19.5%.
- An oxygen-enriched atmosphere is above 22%.
- Excessive organic vapor concentrations occur when the level is above 100 parts per million (ppm).
- A flammable atmosphere has a reading above 10% of the Lower Explosive Limit (LEL).
- Excessive hydrogen sulfide concentrations occur when the measured level is above 5 ppm.
- Excessive CO concentrations occur when the measured level is above 35 ppm.
- Excessive particulate with particulate concentrations above 100ug/m³.

This testing will occur at all depths (top to bottom) of the confined space.

Finally, the SSHO or designee will verify that the confined space is isolated from all unwanted forms of energy and material. This can be done by verifying that lockout/tagout systems have not been tampered with.

During confined space entry the SSHO or designee will:

1. If necessary, visually inspect ladder rungs for corrosion;
2. Monitor the atmosphere using a combustible gas, oxygen deficiency, and hydrogen sulfide detector when work is being performed;



3. Use a safety harness at all times with a minimum of 2-inch nylon rope retrieval line attached;
4. The trailing end of the retrieval line should be tied to the portable hoist assembly-lifting device or to an anchor point outside the confined space;
5. Equip standby personnel with self-contained breathing apparatus;
6. When using SCBA the buddy system shall be used. Two persons (entrants) wearing SCBA shall be in the confined space;
7. Outside attendant/observer shall keep an accurate count of all entrants and maintain effective and continuous contact with entrants;
8. At least one crew member (attendant) shall keep a constant watch and a continuous hold on the retrieval line of the workers in the confined space, whenever a portable hoist is not being used. The end of the line must be secured to an anchor point outside the entry portal;
9. The attendant shall recognize potential signs of trouble from those within the confined space. The attendant shall have sufficient training to recognize the potential hazardous activities both inside and outside the confined space;
10. Tools shall be lowered by a line and never thrown into the confined space;
11. Use a plastic pail to lower tools within or raise tools from a confined space instead of a metal pail;
12. All Contractor crewmembers shall wear proper work shoes, hard hats, and reflective traffic vests;



13. When the confined space is re-entered, the atmosphere must be retested if testing has stopped;
14. The attendant should not attempt a rescue unless another observer or backup person arrives, and only if trained to affect a rescue and has proper rescue equipment. If not trained, The Contractor will call for professional emergency rescue crews;
15. In the event of a rescue or extrication of a person from the lower level of the confined space, an additional rescue person is needed on the platform level to assist in guiding the injured worker out of the confined space; and
16. Comply with OSHA regulation 1910.146 in regards to permitted and non- permitted confined space entry.



24.0 RECORD KEEPING

1. The SSSHO or designee will maintain all records documenting the implementation of the SSHP. The records will include:
 - a) Training logs;
 - b) Daily logs;
 - c) Weekly reports;
 - d) Real time air monitoring;
 - f) Documentation of safety meetings;
 - h) Decontamination logs;
 - i) Monitoring equipment calibration sheets;
 - j) Permit for open flame or welding;
 - k) Confined space entry permit;
 - l) Accident report;
 - m) Employee/visitor register; and
 - n) Medical certifications.

2. If an accident, an explosion or fire, or a release of toxic materials occurs during the course of the project, the Site Respondents and Owner will be telephoned immediately and receive a written notification within 24 hours. The report shall include the following items:
 - a) Name, organization, and telephone number of the Contractor;
 - b) Name and title of the person(s) reporting;
 - c) Date and time of the accident/incident;
 - d) Location of the accident/incident, i.e., Site location, facility name;
 - e) Brief summary of the accident/incident giving pertinent details including type of operation ongoing at the time of the accident/incident;
 - f) Cause of the accident/incident, if known;



- g) Casualties (fatalities, disabling injuries);
- h) Details of any existing chemical hazard or contamination;
- i) Estimated property damage, if applicable;
- j) Nature of damage, effect on contract schedule;
- k) Action(s) taken by the Contractor to provide for safety and security; and,
- l) Other damage or injuries sustained, public or private.

3. Daily safety inspection logs shall be kept for review and include the following items:

- a) Date;
- b) Areas inspected;
- c) Employees in the particular areas;
- d) Equipment being utilized by the employees named;
- e) Protective clothing and equipment being worn by the employees;
- f) Air monitoring results; and,
- g) Signature of SSHO.

4. Daily Reports will include:

- a) Summary sheet covering the range of work being done;
- b) Any incidents of:
 - 1. Non-use of protective devices in an area where required
 - 2. Non-use of protective clothing
 - 3. Disregard of buddy system
 - 4. Violation of eating, smoking, and chewing in prohibited areas
 - 5. Misuse of any of the above
 - 6. Job related injuries and illness;
- c) SSHO signature and date;



d) Copies of daily logs.

5. Employee's and Visitor's Logs shall include:

- a) Date;
- b) Name;
- c) Address;
- d) Representing Agency or Company;
- e) Time entering Site; and,
- f) Time exiting Site.



25.0 PROJECT SAFETY & HEALTH SUMMARY

1. The Contractor will submit, to the Site Respondents and Owner a Safety Summary Report within thirty days of the project completion. The report shall be signed by the project SHM and will include:
 - a) Summary of all environmental air monitoring accomplished on the project;
 - b) Procedures and techniques used to decontaminate equipment and personnel;
 - c) Results of air sampling;
 - d) Copies of hazardous waste manifest forms indicating proper disposal was accomplished;
 - e) Final physical/medical certifications;
 - f) Daily Safety Inspection Reports;
 - g) Training Logs; and,
 - h) Accident Reports.



26.0 SSHP REVIEW AND APPROVAL

Project Name: _____ Project No.: _____
Company Name: _____
Name of Project: _____
Safety and Health Manager (print): _____
Approval Signature: _____
Project Safety and Health
Manager: _____ Date: _____

TABLES

**TABLE 1
LIST OF POTENTIAL CONSTITUENTS OF CONCERN**



**UGI Columbia Gas Plant Superfund Site
Columbia, PA**

POTENTIAL CONSTITUENTS OF CONCERN	OSHA PEL mg/m ³	SYMPTOMS/ EFFECTS OF ACUTE EXPOSURE
Acenaphthylene	N/A	N/A
Aluminum	15 (total); 5 (resp)	Skin, eye, respiratory irritation
Arsenic	0.01	Ulceration or nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, [potential occupational carcinogen]
Benzo(a)anthracene	N/A	N/A
Benzo(b)fluoranthene	N/A	N/A
Benzo(k)fluoranthene	N/A	N/A
Benzo(g,h,i)perylene	N/A	N/A
Benzo(a)pyrene	N/A	N/A
Beryllium	.005; .025 [30-minute maximum peak]	Berylliosis(chronic exposure):anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irriation eyes; dermatitis; [potential occupational carcinogen]
Cadmium (dust/fume)	0.005	Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, susternal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]
Dibenzo(a,h)anthracene	N/A	N/A
Indeno(1,2,3-cd)pyrene	N/A	N/A
Iron	N/A	N/A
Lead	0.05	Lassitude (weakness, exhaustion); insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension
Magnesium	N/A	N/A
Thalium	0.1 [skin]	Nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs

**TABLE 2
MAXIMUM CONCENTRATIONS OF CONSTITUENTS OF CONCERN IN SOIL**



**UGI Columbia Gas Plant Superfund Site
Columbia, PA**

Potential Constituent of Concern	Maximum Concentration Observed in Site Soils	Sample ID	Pennsylvania Residential Direct Contact Numerical Values	Pennsylvania Non-Residential (0-2') Direct Contact Numerical Values
Acenaphthylene	270	SUB-2	13,000	170,000
Aluminum	21400	PPLCGP-SB05B 34680	190,000	190,000
Arsenic	34.1	PPLCGP-02 04- 21-94	12	53
Benzo(a)anthracene	310	SUB-2	25	110
Benzo(b)fluoranthene	260	SUB-2	25	110
Benzo(k)fluoranthene	320	SUB-2	250	1100
Benzo(g,h,i)perylene	360	SUB-2	13,000	170,000
Benzo(a)pyrene	350	SUB-2	2.5	11
Beryllium	3.9	PPLCGP-SB05B 34680	440	5,600
Cadmium (dust/fume)	5.8	PPLCGP-SS2 28- Nov-94	47	210
Dibenzo(a,h)anthracene	2.5	PPLCGP-SED03 21- Dec-94	2.5	11
Indeno(1,2,3-cd)pyrene	220	SUB-2	25	110
Iron	39700	PPLCGP-SB07B 29- Nov-94	66,000	190,000
Lead	730	PPLCGP-SB2RA 30- Nov-94	500	1000
Magnesium	36300	PPLCGP-SS3 28- Nov-94	-	-
Thalium	3.5	PPLCGP-SB1DRB 07-Dec-94	15	200



**TABLE 3
AIR MONITORING EQUIPMENT**

**UGI Columbia Gas Plant Superfund Site
Columbia, PA**

INSTRUMENT	HAZARD MONITORED	APPLICATION	DETECTION METHOD	GENERAL CARE AND MAINTENANCE	OPERATING DURATION
Dust Monitor (Mini-Ram™)	Dust, aerosols, fumes, mist	Measures total or respirable particulate matter in air	Provides real time measurements of total or respirable particulate in a known volume of air	Recharge or replace battery	Battery life - 12 hrs. per charge
Organic Vapor Meter (OVA)	Organic vapors	Measures organic vapor concentration	Photo Ionization Detector (PID) or Flame Ionization Detector (FID)	Recharge battery Hydrogen gas Calibrate daily	4 to 10 hours
Drager CMS Analyzer	Benzene	Measures Benzene Concentration	Benzene Chip	Calibrate, recharge or replace battery	8 to 10 hours
Explosive Meter	Lower Explosive Limit	Lower Explosive Limit	Provides real time measurements of flammable materials in the surrounding air	Calibrate, recharge or replace battery	8 to 10 hours



TABLE 4
AIR MONITORING METHODS, ACTION LEVELS AND PROTECTIVE MEASURES

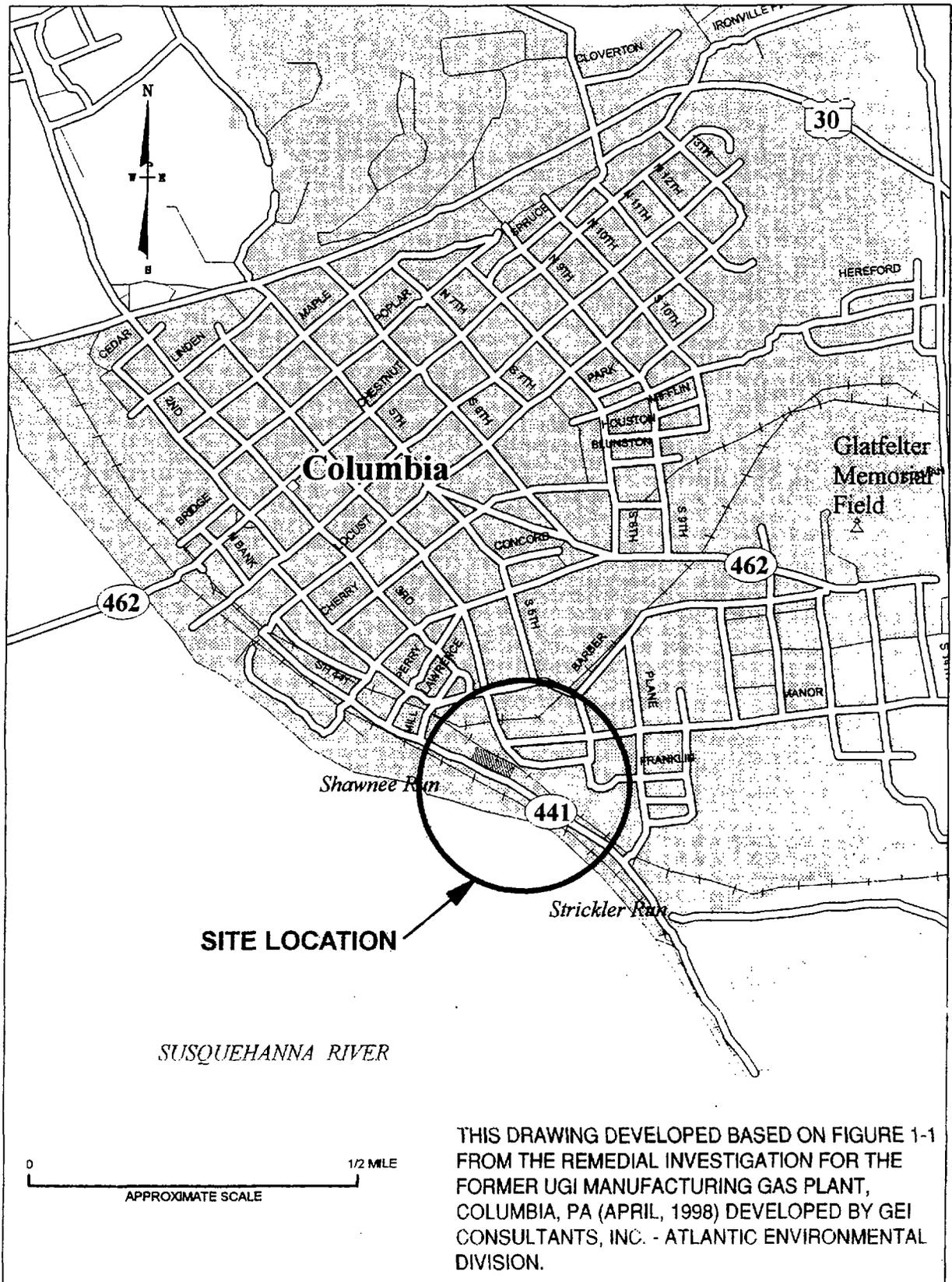
UGI Columbia Gas Plant Superfund Site
Columbia, PA

Hazard	Monitoring Method	Action Level (See Note 1)	Monitoring Schedule (See Note 2)	Protective Measures (See Section 8.0)
Particulate Matter	Particulate monitor	0 - 1.5 mg/M ³	At the initiation of each task/operation and periodically (every 60 minutes) during intrusive field activities and every 60 minutes near the fence line.	Level D
		1.5-5 mg/M ³ (respirable fraction)	Periodically (every 60 minutes) during intrusive field activities and every 60 minutes near the fence line.	Level C
		>5 mg/M ³ (respirable fraction)	Periodically (every 60 minutes) during intrusive field activities and every 60 minutes near the fence line.	Level B
Total Organic Vapor	Organic Vapor Monitor (OVM)	< 5 ppm	At the initiation of each task/operation and periodically (every 60 minutes) during intrusive operations.	Level D
		5 - 250 ppm	Continuously (every 30 minutes) during intrusive operations.	Level C
		> 250 ppm	Continuously (every 30 minutes) during intrusive operations.	Level B
Benzene	Drager CMS Analyzer with a Benzene Chip	>1 ppm	OVM Sustained Reading of 1ppm over 5 minutes and periodically (every 60 minutes).	Level C
		10-25 ppm	Continuously (every 30 minutes) during intrusive operations.	Level B
Combustible Gases	Combustible Gas Meter (% of LEL)	0-10%	At the initiation of each task/operation and periodically (every 60 minutes) during intrusive operations.	Continue Operations
		10-20 %	Continuously (every 30 minutes) during intrusive operations with OVA readings over 250 ppm.	Proceed with caution extrinsically safe equipment and no ignition sources in the work area
		20% and above	Continuously (every 15 minutes) during intrusive operations.	Evacuate area stop operations until <20%

Note 1

1. Action level based on a sustained reading greater than 5 minutes within the breathing zone.
2. Monitoring frequency may be modified (increased/decreased) based on field conditions, SSH observations and professional judgment (i.e., more monitoring on windy days - less monitoring on rainy days). All changes in monitoring frequency must be approved by the Site Safety Manager.

FIGURES



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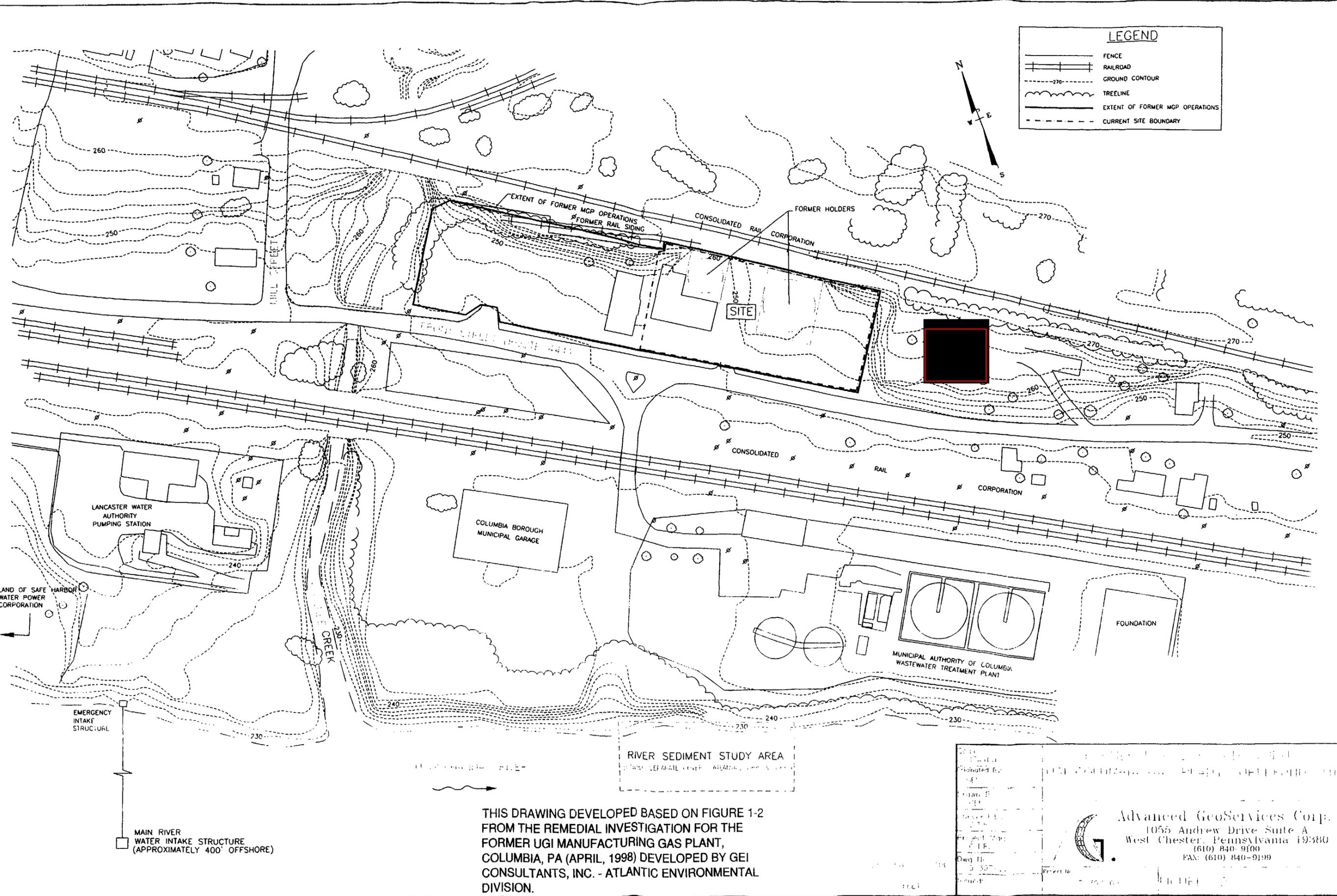
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
tel 610.840.9100 fax 610.840.9199 www.advancedgeoservices.com

J:\COLUMBIA\DRAWINGS\2006-1800-07\2006-1800-07-01.dwg, Model

SITE LOCATION MAP

UGI COLUMBIA GAS PLANT SUPERFUND SITE

PROJECT ENGINEER: C.T.R.	SCALE: AS SHOWN
CHECKED BY: C.T.R.	PROJECT NUMBER: 2006-1800-07
DRAWN BY: D.E.C.	DATE: 11/20/06
	FIGURE: 1 AR304146



LEGEND

	FENCE
	RAILROAD
	GROUND CONTOUR
	TREELINE
	EXTENT OF FORMER MGP OPERATIONS
	CURRENT SITE BOUNDARY

THIS DRAWING DEVELOPED BASED ON FIGURE 1-2 FROM THE REMEDIAL INVESTIGATION FOR THE FORMER UGI MANUFACTURING GAS PLANT, COLUMBIA, PA (APRIL, 1998) DEVELOPED BY GEI CONSULTANTS, INC. - ATLANTIC ENVIRONMENTAL DIVISION.

<p> Advanced GeoServices Corp. 1055 Andrew Drive Suite A West Chester, Pennsylvania 19380 (610) 840-9100 FAX: (610) 840-9199 </p>	<p> Project No.: Date: Scale: Author: Checker: Title: </p>
--	---



FIGURE 3

Directions to Emergency Treatment Facility - Lancaster General Hospital

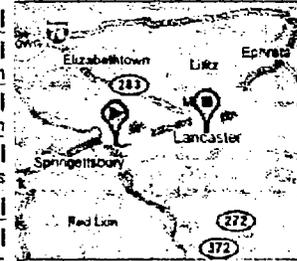


Start **S Front St & Mill St**
 Columbia, PA 17512
 End **555 N Duke St**
 Lancaster, PA 17602
 Travel 11.8 mi (about 20 mins)

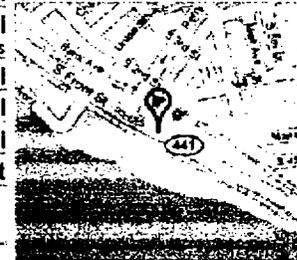
Directions

- | | |
|---|------------------|
| 1. Head west from S Front St | 0.1 mi |
| ➔ 2. Turn right at Union St | 0.6 mi
1 min |
| ➔ 3. Bear right at Lancaster Ave | 0.8 mi
1 min |
| 4. Continue on Columbia Ave | 1.2 mi
2 mins |
| ⬅ 5. Turn left at Prospect Rd | 0.1 mi |
| ➔ 6. Turn right into the US-30 E entry ramp | 6.3 mi
7 mins |
| 7. Take the Harrisburg Pike exit | 0.2 mi |
| ➔ 8. Turn right at Harrisburg Pike | 2.0 mi
3 mins |
| ⬅ 9. Bear left at W James St | 0.1 mi |
| ⬅ 10. Turn left at N Queen St | 0.1 mi |
| ➔ 11. Turn right at E Frederick St | 0.1 mi |
| ➔ 12. Turn right at N Duke St | 327 ft |
| 13. Arrive at 555 N Duke St
Lancaster, PA 17602 | |

Overview



Start



End



These directions are for planning purposes only. You may find that construction projects, traffic, or other events may cause road conditions to differ from the map results.

Map data ©2006 NAVTEQ™

Map data ©2006 NAVTEQ™

APPENDICES

APPENDIX A

NIOSH POCKET GUIDE TO CHEMICAL HAZARDS

NIOSH Pocket Guide to Chemical Hazards

Magnesium oxide fume		CAS 1309-48-4	
MgO		RTECS OM3850000	
Synonyms & Trade Names Magnesia fume		DOT ID & Guide	
Exposure Limits	NIOSH REL: See Appendix D		
	OSHA PEL†: TWA 15 mg/m ³		
IDLH 750 mg/m ³ See: 1309484		Conversion	
Physical Description Finely divided white particulate dispersed in air. [Note: Exposure may occur when magnesium is burned, thermally cut, or welded upon.]			
MW: 40.3	BP: 6512°F	MLT: 5072°F	Sol(86°F): 0.009%
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 3.58
FLP: NA	UEL: NA	LEL: NA	
Noncombustible Solid			
Incompatibilities & Reactivities Chlorine trifluoride, phosphorus pentachloride			
Measurement Methods NIOSH 7300, 7301, 7303; OSHA ID121 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: No recommendation Eyes: No recommendation Wash skin: No recommendation Remove: No recommendation Change: No recommendation		First Aid (See procedures) Breathing: Respiratory support	
<u>Important additional information about respirator selection</u> Respirator Recommendations OSHA Up to 150 mg/m³: (APF = 10) Any dust, mist, and fume respirator/(APF = 10) Any supplied-air respirator Up to 375 mg/m³: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with a dust, mist, and fume filter Up to 750 mg/m³: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter*/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand			

fitting facepiece and a high-efficiency particulate filter/(APF = 50) Any self-contained breathing apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece

Up to 15 mg/m³: (APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000)

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, ingestion, skin and/or eye contact

Symptoms Nausea, diarrhea, abdominal pain, vomiting; ptosis, strabismus; peri neuritis, tremor; retrosternal (occurring behind the sternum) tightness, chest pain, pulmonary edema; convulsions, chorea, psychosis; liver, kidney damage; alopecia; paresthesia legs

Target Organs Eyes, respiratory system, central nervous system, liver, kidneys, gastrointestinal tract, body hair

See also: [INTRODUCTION](#) See [MEDICAL TESTS: 0228](#)

NIOSH Pocket Guide to Chemical Hazards

Thallium (soluble compounds, as Tl)		CAS	
		RTECS	
Synonyms & Trade Names Synonyms vary depending upon the specific soluble thallium compound.		DOT ID & Guide 1707 151 (compounds, n.o.s.)	
Exposure Limits	NIOSH REL: TWA 0.1 mg/m ³ [skin]		
	OSHA PEL: TWA 0.1 mg/m ³ [skin]		
IDLH 15 mg/m ³ (as Tl) See: thallium		Conversion	
Physical Description Appearance and odor vary depending upon the specific soluble thallium compound.			
Properties vary depending upon the specific soluble thallium compound.			
Incompatibilities & Reactivities Varies			
Measurement Methods NIOSH 7300, 7301, 7303, 9102; OSHA ID121 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated Remove: When wet or contaminated Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Water flush promptly Breathing: Respiratory support Swallow: Medical attention immediately	
<u>Important additional information about respirator selection</u> Respirator Recommendations NIOSH/OSHA Up to 0.5 mg/m³: (APF = 5) Any dust and mist respirator^ Up to 1 mg/m³: (APF = 10) Any dust and mist respirator except single-use and quarter-mask respirators^(APF = 10) Any supplied-air respirator Up to 2.5 mg/m³: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with a dust and mist filter^ Up to 5 mg/m³: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode/(APF = 50) Any powered, air-purifying respirator with a tight-			

NIOSH Pocket Guide to Chemical Hazards

Lead		CAS 7439-92-1	
Pb		RTECS OF7525000	
Synonyms & Trade Names Lead metal, Plumbum		DOT ID & Guide	
Exposure Limits	NIOSH REL*: TWA 0.050 mg/m ³ See Appendix C [*Note: The REL also applies to other lead compounds (as Pb) -- see Appendix C.]		
	OSHA PEL*: [1910.1025] TWA 0.050 mg/m ³ See Appendix C [*Note: The PEL also applies to other lead compounds (as Pb) -- see Appendix C.]		
IDLH 100 mg/m ³ (as Pb) See: 7439921		Conversion	
Physical Description A heavy, ductile, soft, gray solid.			
MW: 207.2	BP: 3164°F	MLT: 621°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 11.34
Fl.P: NA	UEL: NA	LEL: NA	
Noncombustible Solid in bulk form.			
Incompatibilities & Reactivities Strong oxidizers, hydrogen peroxide, acids			
Measurement Methods NIOSH 7082, 7105, 7300, 7301, 7303, 7700, 7701, 7702, 9100, 9102, 9105; OSHA ID121, ID125G, ID206 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contaminated Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap flush promptly Breathing: Respiratory support Swallow: Medical attention immediately	
<u>Important additional information about respirator selection</u> Respirator Recommendations NIOSH/OSHA Up to 0.5 mg/m³: (APF = 10) Any air-purifying respirator with a high-efficiency particulate filter/(APF = 10) Any supplied-air respirator Up to 1.25 mg/m³: (APF = 25) Any supplied-air respirator operated in a continuous-flow mode/(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter Up to 2.5 mg/m³: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/(APF = 50) Any supplied-air respirator that has a tight-fitting facepiece and is operated in a continuous-flow mode/(APF = 50) Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter/(APF = 50) Any self-contained breathing			

apparatus with a full facepiece/(APF = 50) Any supplied-air respirator with a full facepiece

Up to 50 mg/m³: (APF = 1000) Any supplied-air respirator operated in a pressure-demand or other positive-pressure mode

Up to 100 mg/m³: (APF = 2000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode

Emergency or planned entry into unknown concentrations or IDLH conditions: (APF = 10,000)

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, ingestion, skin and/or eye contact

Symptoms Lassitude (weakness, exhaustion), insomnia; facial pallor; anorexia, weight loss, malnutrition; constipation, abdominal pain, colic; anemia; gingival lead line; tremor; paralysis wrist, ankles; encephalopathy; kidney disease; irritation eyes; hypotension

Target Organs Eyes, gastrointestinal tract, central nervous system, kidneys, blood, gingival tissue

See also: [INTRODUCTION](#) See ICSC CARD: [0052](#) See MEDICAL TESTS: [0127](#)

Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation

Symptoms Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; emphysema, proteinuria, anosmia (loss of the sense of smell), mild anemia; [potential occupational carcinogen]

Target Organs respiratory system, kidneys, blood

Cancer Site [prostatic & lung cancer]

See also: INTRODUCTION See ICSC CARD: 0117 See MEDICAL TESTS: 0035

NIOSH Pocket Guide to Chemical Hazards

Cadmium fume (as Cd)		CAS 1306-19-0 (CdO)	
CdO/Cd		RTECS EV1930000 (CdO)	
Synonyms & Trade Names CdO: Cadmium monoxide, Cadmium oxide fume Cd: Cadmium		DOT ID & Guide	
Exposure Limits	NIOSH REL*: Ca See Appendix A [*Note: The REL applies to all Cadmium compounds (as Cd).]		
	OSHA PEL*: [1910.1027] TWA 0.005 mg/m ³ [*Note: The PEL applies to all Cadmium compounds (as Cd).]		
IDLH Ca [9 mg/m ³ (as Cd)] See: IDLH INDEX		Conversion	
Physical Description Odorless, yellow-brown, finely divided particulate dispersed in air. [Note: See listing for Cadmium dust for properties of Cd.]			
MW: 128.4	BP: Decomposes	MLT: 2599°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.15 (crystalline form)/6.95 (amorphous form)
FLP: NA	UEL: NA	LEL: NA	
Noncombustible Solid			
Incompatibilities & Reactivities Not applicable			
Measurement Methods NIOSH 7048, 7300, 7301, 7303; OSHA ID121, ID125G, ID189, ID206 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: No recommendation Eyes: No recommendation Wash skin: Daily Remove: No recommendation Change: Daily		First Aid (See procedures) Breathing: Respiratory support	
<u>Important additional information about respirator selection</u> Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus			

Exposure Routes inhalation, ingestion

Symptoms Pulmonary edema, dyspnea (breathing difficulty), cough, chest tightness, substernal (occurring beneath the sternum) pain; headache; chills, muscle aches; nausea, vomiting, diarrhea; anosmia (loss of the sense of smell), emphysema, proteinuria, mild anemia; [potential occupational carcinogen]

Target Organs respiratory system, kidneys, prostate, blood

Cancer Site [prostatic & lung cancer]

See also: [INTRODUCTION](#) See ICSC CARD: [0020](#) See MEDICAL TESTS: [0035](#)

NIOSH Pocket Guide to Chemical Hazards

Cadmium dust (as Cd)		CAS 7440-43-9 (metal)	
Cd (metal)		RTECS EU9800000 (metal)	
Synonyms & Trade Names Cadmium metal: Cadmium Other synonyms vary depending upon the specific cadmium compound.		DOT ID & Guide 2570 154 (compounds)	
Exposure Limits	NIOSH REL*: Ca See Appendix A [*Note: The REL applies to all Cadmium compounds (as Cd).]		
	OSHA PEL*: [1910.1027] TWA 0.005 mg/m ³ [*Note: The PEL applies to all Cadmium compounds (as Cd).]		
IDLH Ca [9 mg/m ³ (as Cd)] See: IDLH INDEX		Conversion	
Physical Description Metal: Silver-white, blue-tinged lustrous, odorless solid.			
MW: 112.4	BP: 1409°F	MLT: 610°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 8.65 (metal)
FLP: NA	UEL: NA	LEL: NA	
Metal: Noncombustible Solid in bulk form, but will burn in powder form.			
Incompatibilities & Reactivities Strong oxidizers; elemental sulfur, selenium & tellurium			
Measurement Methods NIOSH 7048, 7300, 7301, 7303, 9102; OSHA ID121, ID125G, ID189, ID206 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: No recommendation Eyes: No recommendation Wash skin: Daily Remove: No recommendation Change: Daily		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash Breathing: Respiratory support Swallow: Medical attention immediately	
<u>Important additional information about respirator selection</u> Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus			

Exposure Routes inhalation, skin and/or eye contact

Symptoms Berylliosis (chronic exposure): anorexia, weight loss, lassitude (weakness, exhaustion), chest pain, cough, clubbing of fingers, cyanosis, pulmonary insufficiency; irritation eyes; dermatitis; [potential occupational carcinogen]

Target Organs Eyes, skin, respiratory system

Cancer Site [lung cancer]

See also: [INTRODUCTION](#). See ICSC CARD: [0226](#) See MEDICAL TESTS: [0025](#)

NIOSH Pocket Guide to Chemical Hazards

Beryllium & beryllium compounds (as Be)		CAS 7440-41-7 (metal)	
Be (metal)		RTECS <u>DS1750000</u> (metal)	
Synonyms & Trade Names Beryllium metal: Beryllium Other synonyms vary depending upon the specific beryllium compound.		DOT ID & Guide 1566 <u>154</u> (compounds) 1567 <u>134</u> (powder)	
Exposure Limits	NIOSH REL: Ca Not to exceed 0.0005 mg/m ³ <u>See Appendix A</u>		
	OSHA PEL: TWA 0.002 mg/m ³ C 0.005 mg/m ³ 0.025 mg/m ³ [30-minute maximum peak]		
IDLH Ca [4 mg/m ³ (as Be)] See: <u>IDLH INDEX</u>		Conversion	
Physical Description Metal: A hard, brittle, gray-white solid.			
MW: 9.0	BP: 4532°F	MLT: 2349°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 1.85 (metal)
FLP: NA	UEL: NA	LEL: NA	
Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of a powder or dust.			
Incompatibilities & Reactivities Acids, caustics, chlorinated hydrocarbons, oxidizers, molten lithium			
Measurement Methods NIOSH <u>7102, 7300, 7301, 7303, 9102</u> ; OSHA <u>ID125G, ID206</u> See: <u>NMAM</u> or <u>OSHA Methods</u>			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: Daily Remove: When wet or contaminated Change: Daily Provide: Eyewash		First Aid (See procedures) Eye: Irrigate immediately Breathing: Fresh air	
<u>Important additional information about respirator selection</u> Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained positive-pressure breathing apparatus Escape: (APF = 50) Any air-purifying, full-facepiece respirator with a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus			

mode in combination with an auxiliary self-contained positive-pressure breathing apparatus

Escape: (APF = 50) Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted acid gas canister having a high-efficiency particulate filter/Any appropriate escape-type, self-contained breathing apparatus

Exposure Routes inhalation, skin absorption, skin and/or eye contact ingestion

Symptoms Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuropathy, respiratory irritation, hyperpigmentation of skin, [potential occupational carcinogen]

Target Organs Liver, kidneys, skin, lungs, lymphatic system

Cancer Site [lung & lymphatic cancer]

See also: [INTRODUCTION](#) See ICSC CARD: [0013](#) See MEDICAL TESTS: [0017](#)

NIOSH Pocket Guide to Chemical Hazards

Arsenic (inorganic compounds, as As)		CAS 7440-38-2 (metal)	
As (metal)		RTECS CG0525000 (metal)	
Synonyms & Trade Names Arsenic metal: Arsenia Other synonyms vary depending upon the specific As compound. [Note: OSHA considers "Inorganic Arsenic" to mean copper acetoarsenite & all inorganic compounds containing arsenic except ARSINE.]		DOT ID & Guide 1558 152 (metal) 1562 152 (dust)	
Exposure Limits	NIOSH REL: Ca C 0.002 mg/m ³ [15-minute] See Appendix A		
	OSHA PEL: [1910.1018] TWA 0.010 mg/m ³		
IDLH Ca [5 mg/m ³ (as As)] See: 7440382	Conversion		
Physical Description Metal: Silver-gray or tin-white, brittle, odorless solid.			
MW: 74.9	BP: Sublimes	MLT: 1135°F (Sublimes)	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 5.73 (metal)
Fl.P: NA	UEL: NA	LEL: NA	
Metal: Noncombustible Solid in bulk form, but a slight explosion hazard in the form of dust when exposed to flame.			
Incompatibilities & Reactivities Strong oxidizers, bromine azide [Note: Hydrogen gas can react with inorganic arsenic to form the highly toxic gas arsine.]			
Measurement Methods NIOSH 7300, 7301, 7303, 7900, 9102; OSHA ID105 See: NMAM or OSHA Methods			
Personal Protection & Sanitation Skin: Prevent skin contact Eyes: Prevent eye contact Wash skin: When contaminated/Daily Remove: When wet or contaminated Change: Daily Provide: Eyewash, Quick drench		First Aid (See procedures) Eye: Irrigate immediately Skin: Soap wash immediately Breathing: Respiratory support Swallow: Medical attention immediately	
Important additional information about respirator selection Respirator Recommendations NIOSH At concentrations above the NIOSH REL, or where there is no REL, at any detectable concentration: (APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode/(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure			

NIOSH Pocket Guide to Chemical Hazards

Aluminum		CAS 7429-90-5	
Al		RTECS <u>BD0330000</u>	
Synonyms & Trade Names Aluminium, Aluminum metal, Aluminum powder, Elemental aluminum		DOT ID & Guide 1309 <u>170</u> (powder, coated) 1396 <u>138</u> (powder, uncoated) 9260 <u>169</u> (molten)	
Exposure Limits	NIOSH REL: TWA 10 mg/m ³ (total) TWA 5 mg/m ³ (resp)		
	OSHA PEL: TWA 15 mg/m ³ (total) TWA 5 mg/m ³ (resp)		
IDLH N.D. See: <u>IDLH INDEX</u>		Conversion	
Physical Description Silvery-white, malleable, ductile, odorless metal.			
MW: 27.0	BP: 4221°F	MLT: 1220°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 2.70
F.L.P: NA	UEL: NA	LEL: NA	
Combustible Solid, finely divided dust is easily ignited; may cause explosions.			
Incompatibilities & Reactivities Strong oxidizers & acids, halogenated hydrocarbons [Note: Corrodes in contact with acids & other metals. Ignition may occur if powders are mixed with halogens, carbon disulfide, or methyl chloride.]			
Measurement Methods NIOSH <u>7013, 7300, 7301, 7303</u> ; OSHA <u>ID121</u> See: <u>NMAM</u> or <u>OSHA Methods</u>			
Personal Protection & Sanitation Skin: No recommendation Eyes: No recommendation Wash skin: No recommendation Remove: No recommendation Change: No recommendation		First Aid (See procedures) Eye: Irrigate immediately Breathing: Fresh air	
<u>Important additional information about respirator selection</u> Respirator Recommendations To be added later			
Exposure Routes inhalation, skin and/or eye contact			
Symptoms Irritation eyes, skin, respiratory system			
Target Organs Eyes, skin, respiratory system			
See also: <u>INTRODUCTION</u> See ICSC CARD: <u>0988</u> See <u>MEDICAL TESTS: 0011</u>			



APPENDIX C

**LETTER OF ADEQUACY FROM THE LANCASTER COUNTY
CONSERVATION DISTRICT**



C-3
Lancaster County Conservation District

1383 Arcadia Road, Room 6 • Lancaster, Pennsylvania 17601-3149

Telephone (717) 299-5361 Ext. 5 • FAX (717) 299-9459

www.co.lancaster.pa.us/lccd

MAR - 2 2007

2006-1800 - File
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February 28, 2007

Mr. Christopher T. Reitman
Advanced GeoServices
1055 Andrew Dr Ste A
West Chester PA 19380-4293

RE: **UGI Columbia Gas Plant Superfund Site**
LCCD Plan ID: 07-09-001, Borough of Columbia

Dear Mr. Reitman:

I have reviewed the Erosion and Sediment Pollution Control Plan dated December 15, 2006, and last revised February 15, 2007, for the above referenced project. If the Erosion and Sediment Pollution Control Plan is fully implemented as described, it should be adequate to meet the intent of the rules and regulations adopted under the PA Clean Streams Law relating to erosion and sedimentation control.

The Conservation District reviews this plan solely to determine whether it is adequate to satisfy the requirements of 25 PA Code §102.1 et seq., the erosion control regulations of the Department of Environmental Protection. By a determination that the plan is adequate to meet those requirements, neither the Conservation District nor the County assumes any responsibility for the implementation of the plan or the proper construction and operations of the facilities contained in the plan.

A representative of the Lancaster County Conservation District may conduct periodic inspections of the erosion and sedimentation control facilities during the construction of this project. The approved Erosion and Sediment Pollution Control Plan must be available at the site of the earthmoving activity at all times.

Yours for a better environment,

Alan B. Houck
Erosion Control Technician

C: Borough of Columbia

ABH/cah



APPENDIX D
PADEP RAP APPROVAL



Pennsylvania Department of Environmental Protection

909 Elmerton Avenue
Harrisburg, PA 17110-8200

April 5, 2007

Southcentral Regional Office

717-705-4705
FAX - 717-705-4830

Mr. David P. Turner
Superfund Remedial Project Manager
EPA, Region III (3TIS22)
1650 Arch Street
Philadelphia, PA 19103-2029

Re: UGI Columbia Superfund Site
Columbia Borough
Lancaster County

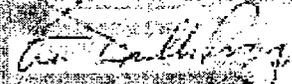
Dear Mr. Turner:

The Southcentral Watershed Management Program has reviewed the UGI Columbia Gas Plant Superfund Site, Post Construction Stormwater Management Plans, submitted by Scott R. Miller, P.E., Clean Sites Environmental Services, Inc. Included in the review were: Letter of February 15, 2007, to Alan B. Houck, Lancaster County Conservation District, from Christopher Reitman, P.E., with Attachment 1 - Sediment Trap Design Information, Attachment 2 - Product Literature for the Water Quality Inlet Filters, Attachment 3 - Post Construction Stormwater Management Plan Narrative, and Revised Plan Set (11 Sheets).

The Department's comments on these plans relating to post construction stormwater management applicable requirements have been addressed. The Lancaster County Conservation District is reviewing the erosion and sedimentation requirements, and their approval of the plans will be required. This review is to address the asphalt lined stormwater basin design for the time critical removal action. Future plans may require additional reviews and approvals for stormwater permitting. This would include any stormwater controls to achieve NPDES industrial stormwater requirements for future site uses.

If you have any questions you may direct them to my attention at the above address, by phone at 717-705-4861, or email at adallapiaz@state.pa.us. The Department appreciates your resolve to address state ARARs during this time critical removal action.

Sincerely,


Arthur L. Dalla Piazza, Chief
Hazardous Sites Cleanup Section
Environmental Cleanup Program

cc: Scott R. Miller, P.E., Clean Sites Environmental Services, Inc.
Ramez Ziadah, P.E., PA Dept. of Environmental Protection
Alan B. Houck, Lancaster County Conservation District

AL:mfnd



APPENDIX E

NOVEMBER 2, 2006 ACTION MEMORANDUM

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Subject: Approval of a Request for Removal Actions for the UGI Columbia Gas Plant Superfund Site located in Columbia Borough, Lancaster County, Pennsylvania

From: David Turner, RPM 
Western PA and MD Remedial Branch (3HS22)

To: James J. Burke, Director
Hazardous Site Cleanup Division (3HS00)

NOV 02 2008

I. Issue

The purpose of this Action Memorandum ("Memorandum") is to document the United States Environmental Protection Agency's approval of the time critical removal action pursuant to Section 104 of the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. Section 9604, in connection with the UGI Columbia Gas Plant Superfund Site (the "Site") located in Lancaster County, Pennsylvania and to seek approval to initiate those response actions.

In April 1996, PPL entered into a Consent Order and Agreement ("Consent Order") with the Pennsylvania Department of Environmental Protection ("PADEP") to conduct a Remedial Investigation ("RI") and Feasibility Study ("FS"). The PADEP-approved RI identified the presence of manufactured gas plant ("MGP")-related hazardous substances, including benzene, toluene, and xylene ("BTEX"); polycyclic aromatic hydrocarbons ("PAHs"); arsenic, and cyanide in groundwater and soils at the Site. In 2002, PADEP approved PPL's FS which proposed several response actions for addressing the remaining contamination at the Site.

The primary objective of the removal action is to implement certain non-complex response actions identified in the FS. The removal action is an appropriate measure by which to abate, mitigate, and/or eliminate the threat of release of BTEX; PAHs; arsenic and cyanide at the Site.

By approval of this Memorandum, EPA Region III has determined that 1) there is a release or threat of release of a hazardous substance, pollutant, or contaminant into the environment; 2) the conditions at the Site may present an imminent and substantial endangerment to public health, or welfare, or the environment, and; 3) conditions at the Site meet the criteria of the National Contingency Plan ("NCP"), 40 C.F.R. Section 300.415 for removal actions. The actions necessary to abate the threats at this Site are anticipated to require less than 12 months for completion. The anticipated response actions have been estimated to have a project cost of \$1.99 million

An Administrative Record has been prepared for this removal action.

II. Background

A. Site Description

1. Physical Location

The Site is located in Columbia Borough, Lancaster County, Pennsylvania, approximately four hundred feet northeast of the Susquehanna River. The Site includes a former MGP facility ("MGP Facility") which occupies approximately 1.6 acres which houses two buildings which are abandoned and in disrepair; the Borough of Columbia's ("Borough's") municipal garage; the Lancaster Water Authority ("LWA") pumping station; railroad tracks owned by Consolidated Rail Corporation ("CONRAIL"); and a pedestrian tunnel which extends underneath the railroad tracks on the northern side of the MGP Facility.

2. Site History

From approximately 1851 to 1949, PPL's predecessors in interest used the MGP Facility to manufacture gas for distribution in the City of Columbia. Gas was historically produced at the MGP Facility through a coal gasification process which included reacting steam with hot coal, coke and wood. The gas went from two gas generating sets through a washbox, condenser, washer cooler, and then was stored in a gas holder. From the gas holder, the gas went through a coal tar separator and a purifier and finally to a relief holder for distribution in the City of Columbia.

From approximately 1949 to 1950, UGI and its predecessors in interest produced a propane/air mixture at the MGP Facility. During its ownership of the MGP Facility, UGI demolished, removed and/or backfilled various MGP-related structures.

The MGP Facility is currently not in use and PPL is the current owner of the MGP Facility.

3. Release or Threatened Release into the Environment of Hazardous Substances or Pollutants or Contaminants

The primary waste stream generated during the coal gasification process was liquid coal tar. Coal tar is a mixture of organic chemicals comprising VOCs including BTEX; SVOCs including PAHs, and inorganics including metals and cyanide (hereinafter collectively referred to as "MGP-related hazardous substances").

The MGP operations have caused Site soils, which are believed to include soils under the two abandoned on-Site buildings, and groundwater to become contaminated

with hazardous substances including BTEX; PAHs; metals, and cyanide. All of these substances are hazardous substances within the meaning of Section 101(14) of CERCLA, 42 U.S.C. Section 9601(14), because they are listed at 40 C.F.R. Section 302.4.

Based on the information described above, EPA has determined that a threat to public health, welfare and/or the environment exists due to the threatened release of hazardous substances from the Site.

4. National Priorities List Status

EPA proposed the Site for inclusion on the Superfund National Priorities List ("NPL") in June 1993 and added the Site to the NPL in May 1994.

B. Actions

1. Previous Actions

In December 1984, PPL and UGI voluntarily agreed with the Pennsylvania Department of Environmental Resources ("PADER"), which was subsequently renamed the Pennsylvania Department of Environmental Protection ("PADEP"), to perform a Site Investigation to determine the nature and extent of contamination at the Site. Samples collected during the Site Investigation revealed that on-Site soils and groundwater were contaminated with VOCs, PAHs, heavy metals, and cyanide.

In January 1991, EPA conducted an Expanded Site Investigation ("ESI") at the Site. Sampling results from the ESI revealed that MGP related wastes containing VOCs, PAHs, and cyanide had migrated into groundwater, soil and bedrock.

In April 1996, PPL entered into a Consent Order and Agreement ("1996 Order") with PADEP to conduct a Remedial Investigation ("RI")/ Feasibility Study ("FS") and a Risk Assessment ("RA") to, among other things, determine the nature and extent of contamination at the Site; characterize the risks to human health and the environment, and evaluate alternatives to clean up the contamination at the Site. For purposes of consistency with the Superfund program, EPA oversaw the work done by PPL under the 1996 Order with PADEP.

The PADEP-approved RI identified approximately 15,000 cubic yards of remaining contaminated surface and subsurface soils at the Site. For surface soils at depths of 6 inches and above, the following contaminants were found at levels above their respective Risk-Based Concentrations ("RBCs"):

SVOCs (PAHs): Benzo(a)anthracene, Benzo(b)fluoranthene,
Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene.

Inorganics: Arsenic.

For subsurface soils at depths of below 6 inches, the following contaminants were found at levels above their RBCs:

SVOCs (PAH)s: Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene.

Inorganics: Arsenic.

The RI also identified contamination in on-Site groundwater that had migrated from the MGP. The following hazardous substances were found in on-Site groundwater above their respective MCLs:

VOCs: Benzene, Ethylbenzene, Tetrachloroethene, Toluene, Trichloroethene, 1,2,4- Trimethylbenzene, and Xylenes (total).

SVOCs (PAHs): Acenaphthene, Acenaphthylene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(a)pyrene, Chrysene, Fluoranthene, 1-Methylnaphthalene, 2-Methylnaphthalene, Naphthalene, Phenanthrene, and Pyrene.

Other SVOCs: Bis(2-ethylhexyl)phthalate, and Dibenzofuran.

Inorganics: Aluminum, Barium, Cyanide, Iron, Lead, and Manganese.

2. Current Actions

Currently there are no response actions being performed at the Site. This Memorandum proposes and selects a removal response action to abate, mitigate and/or eliminate the releases of contaminants from the Site. Please refer to Section V.A., below, for a description of the proposed actions.

C. State and Local Roles

1. State and Local Actions to Date

As discussed in Section II.B., above, PADEP was the lead agency overseeing the RI/FS work being conducted by PPL at the Site under the 1996 Order. EPA retained its authority to review Site-related activities to ensure compliance with CERCLA and the NCP and to select the final remedy for the Site.

2. Potential for Continued State/Local Response

The removal action at the Site will be conducted under CERCLA authority. PADEP will be provided an opportunity to review and provide timely comments on project design documents and work plans. Coordination efforts between EPA, PADEP, and local authorities will continue throughout the project.

III. Threats to Public Health or Welfare or the Environment

The removal action is an appropriate measure by which to abate, mitigate, and/or eliminate the threat of release of BTEX; PAHs; arsenic and cyanide at the Site because the conditions at the Site which may present an imminent and substantial endangerment to public health, or welfare, or the environment will continue if the removal action is not taken; the proposed removal actions are relatively simple measures to address Site-related contamination identified in the RI; and several of the factors listed in Section 300.415(b)(2) of the NCP apply to the Site.

Section 300.415(b)(2) of the NCP lists factors to be considered in determining the appropriateness of a Removal Action. Paragraphs (b)(2),(i)(ii)(iv),(v) and (vii) of Section 300.415 directly apply to conditions at the Site as follows:

- A. 300.415(b)(2)(i) *“Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants”*

Hazardous substances, pollutants, or contaminants are present in the groundwater and surface soils, which are believed to include soils underneath the two buildings, at the Site and potentially present a risk of exposure to human populations.

Groundwater containing MGP-related hazardous substances is currently being used by the Lancaster Water Authority (“LWA”) to supply a portion of the drinking water for Columbia Borough. The LWA treats the groundwater obtained from its wells with activated carbon to make it potable in accordance with PADEP requirements.

Concentrations of MGP-related hazardous substances in soils have been identified as possibly having adverse effects on on-Site workers. There is a potential for soil to pose a moderate cancer risk to construction workers as a result of direct contact with surface and subsurface soils during excavation without personal protective equipment. In addition, because the Site is not presently secure, local residents who come onto the Site could possibly be exposed to MGP-related hazardous substances through dermal contact.

- B. 300.415(b)(2)(ii) *“Actual or potential contamination of drinking water supplies or sensitive ecosystems”*

LWA drinking water supply wells are located approximately 300 feet away from the Site. During the RI, groundwater samples taken from LWA’s wells were found to contain MGP-related hazardous substances.

- C. 300.415(b)(2)(iv) *“High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface that may migrate”*

MGP-related hazardous substances have the potential to migrate from the Site via surface water runoff.

- D. 300.415(b)(2)(v) *“Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released”*

Runoff from rainfall and annual snowfall melt events increase the likelihood that MGP-related hazardous substances will migrate from the Site via surface water runoff and infiltration.

- E. 300.415(b)(2)(vii) *“The availability or other appropriate federal or state response mechanisms to respond to the release”*

PADEP does not possess the resources to undertake a removal action at this time.

IV. Endangerment Determination

Based on information gathered in connection with the Site, actual and threatened release of hazardous substances from this Site, if not addressed by conducting the Removal Action proposed in this Memorandum, may present a potential imminent and substantial endangerment to public health, welfare, or the environment. As such, the proposed response action set forth in this Memorandum should be implemented to abate the threats presented.

V. Proposed Actions and Estimated Costs

A. Proposed Actions

- 2.1 The removal action proposed for the Site is designed to mitigate the threat posed to public health, welfare, and the environment by potential exposure to MGP-related hazardous substances. The removal action will include the following:
- (a) Install at a minimum an eight (8)-inch concrete cap over the area of the former holders as depicted in Figure 5-2 in the FS (See Attachment A for a copy of Figure 5-2) sufficient to prevent the migration of contaminants through surface water runoff and infiltration;
 - (b) Install at a minimum a four (4)-inch asphalt and/or concrete cap over areas where MGP-related waste remains in the subsurface as depicted in Figure 5-2 in the FS (See Attachment A for a copy of Figure 5-2) sufficient to

prevent the migration of contaminants through surface water runoff and infiltration;

- (c) Demolish two (2) on-Site buildings so that the areas where MGP-related waste remains in the subsurface as depicted in Figure 5-2 in the FS (See Attachment A for a copy of Figure 5-2) are completely and uniformly capped pursuant to (a) and (b), above;
- (d) Excavate any soils and MGP-related wastes as necessary to facilitate installation of the caps pursuant to (a) and (b), above;
- (e) Characterize soils excavated pursuant to (d), above, and dispose off-Site all such soils in accordance with Section 121(d)(3) of CERCLA, 42 U.S.C. Section 9621(d)(3), and 40 C.F.R. Section 300.440;
- (f) Place clean fill on MGP Facility as necessary to facilitate installation of the caps pursuant to (a) and (b), above;
- (g) Install groundwater monitoring wells in locations accepted by EPA for the purpose of monitoring MGP-related contaminants in the groundwater plume;
- (h) Conduct sampling and analysis of groundwater from wells installed pursuant to (g), above, for the purpose of monitoring MGP-related contaminants in the groundwater plume and
- (i) Provide site specific health and safety measures, including preparation and implementation of a Health and Safety Plan ("HASP") for actions to be performed at the Site, to protect the health and safety of workers, other personnel and the public from the hazardous substances and work-related health and safety hazards during performance of the response action specified herein. The HASP shall, as appropriate, provide for proper decontamination of personnel and equipment, monitoring and control of offsite migration of hazardous substances during the performance of activities at the Site and protection of public health from exposure to hazardous substances during the conduct of activities at the Site pursuant to this Settlement Agreement. Health and safety requirements in the HASP shall be at least as stringent as those set forth in Occupational Safety and Health Administration and EPA requirements, including but not limited to, requirements contained in 29 C.F.R. § 1910.120 and/or EPA Standard Operating Safety Guides (July 5, 1988).

B. Contribution to Remedial Performance

The Site is listed on the NPL. The proposed actions are expected to abate, mitigate and/or eliminate the threats that meet NCP removal criteria. The actions proposed are consistent with any long term or remedial action that might be necessary at the Site.

C. Compliance with Applicable or Relevant and Appropriate environmental and health requirements (ARARs)

The Applicable or Relevant and Appropriate environmental and health requirements ("ARARs") for this removal action were listed in the PADEP-approved FS for the Site. The proposed removal action set forth in this Memorandum will comply with all ARARs, to the extent practicable, considering the exigencies of the situation.

D. Project Schedule

Upon approval of the proposed removal actions in this Memorandum and issuance of an appropriate Agency implementation document, it is anticipated that PPL and UGI will implement the proposed removal actions in accordance with an expeditious schedule.

E. Estimated Cost

The project ceiling is estimated at \$1,995,149 over a one year period. See the following for estimated cost breakdown:

Extramural Costs:

ERRS:	\$ 1,543,124
START:	\$ 50,000
CLP:	\$ 19,500
USACE:	\$ 50,000

Extramural Subtotal: \$ 1,662,624

Extramural Cost Contingency: \$ 332,525
(20% of Subtotal Extramural)

Total Removal Project Ceiling: \$ 1,995,149

VI. Expected Change in the Situation Should No Action be Taken or Action Delayed

In the event that actions proposed in this Memorandum are not approved or are delayed, the release or potential release of hazardous substances from the Site will continue.

VII. Outstanding Policy Issues

There are no outstanding policy issues pertaining to the Site.

VIII. Enforcement

See Enforcement Addendum in Attachment B.

The total EPA costs for this Removal Action based upon full-cost accounting practices that will be eligible for cost recovery, as modified by certain bankruptcy stipulation, are estimated below as follows¹:

Direct Extramural Costs:	\$ 1,995,149
Direct Intramural Costs:	\$ 75,000
Indirect Costs (55%):	\$ 1,138,581

Estimated EPA Costs for Removal Action: \$ 3,208,730

IX. Recommendation

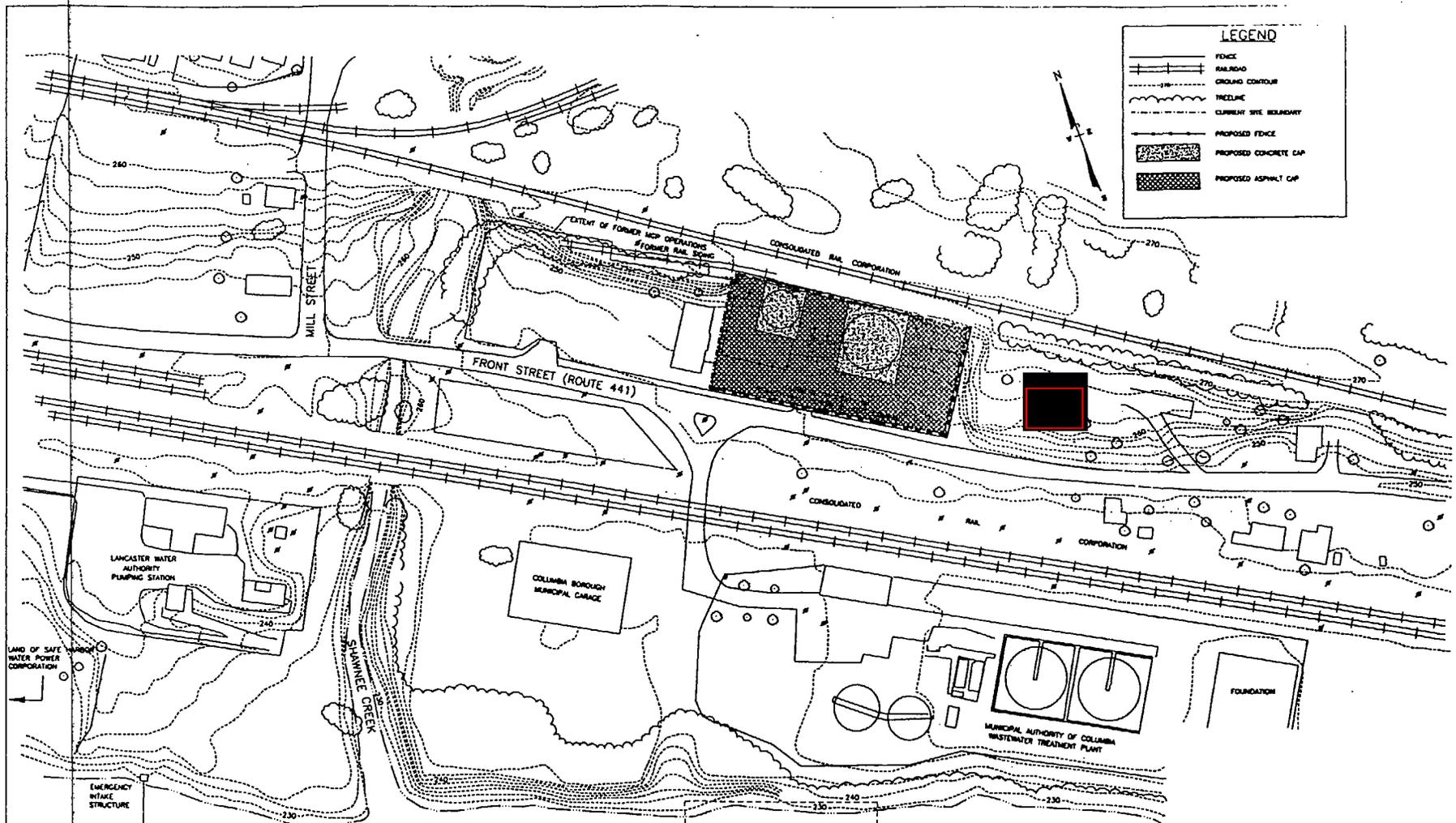
This Action Memorandum represents the selected removal action for UGI Columbia Gas Plant Superfund Site, in Columbia Borough, Lancaster County, Pennsylvania, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. The proposed removal actions implement certain non-complex response actions identified in the RI for the Site. This decision is based on the administrative record for the Site. Additional actions may be appropriate and necessary to abate, mitigate, and/or eliminate the threat of release of BTEX; PAHs; arsenic and cyanide at the Site

¹ As required by OSWER 9360.0-42, this footnote is included herein: Direct Costs include direct extramural costs and direct intramural costs. Indirect Costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of a Removal Action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of a total cost estimate nor deviation of actual total costs from this estimate will affect the United States' right to cost recovery.

Pursuant to section 113 (K) of CERCLA and EPA Delegation No. 14-22, I hereby establish the documents listed in Attachment C, hereto, as the Administrative Record supporting the issuance of this Action Memorandum. Because conditions at the Site meet the criteria in NCP, 40 C.F.R. Section 300.415 criteria for a removal action, I recommend your approval of the proposed removal actions. Please indicate your approval or disapproval by signing below.

APPROVED: James J. Burke DATE: 11/2/06

DISAPPROVED: _____ DATE: _____



LEGEND	
	FENCE
	RAILROAD
	GRADING CONTOUR
	INCLINE
	CURRENT SITE BOUNDARY
	PROPOSED FENCE
	PROPOSED CONCRETE CAP
	PROPOSED ASPHALT CAP



<p>LAND OF SAFE WATER POWER CORPORATION</p> <p>EMERGENCY INTAKE STRUCTURE</p> <p>LAKE CLARKE</p> <p>MAIN RIVER WATER INTAKE STRUCTURE (APPROXIMATELY 400' OFFSHORE)</p>	<p>SUSQUEHANNA RIVER</p> <p>RIVER SEDIMENT STUDY AREA (UNDER SEPARATE COVERS: ATLANTIC, 1985 & 1987)</p> <p>THIS DRAWING DEVELOPED BASED ON FIGURE 1-2 FROM THE REMEDIAL INVESTIGATION FOR THE FORMER UGI MANUFACTURING GAS PLANT, COLUMBIA, PA (APRIL, 1998) DEVELOPED BY GEI CONSULTANTS, INC. - ATLANTIC ENVIRONMENTAL DIVISION.</p> <p>0 25 50 100 SCALE: FEET</p>	<p>Scale: 1"=100'</p> <p>Designed By:</p> <p>Drawn By: GEI</p> <p>Checked By: C.T.R.</p> <p>Project Mgr: C.T.R.</p> <p>Dwg No. 97397-36</p> <p>Issued:</p>	<p>ALTERNATIVE S-3 CONTAINMENT, REGRADING, LIMITED REMOVAL</p> <p> Advanced GeoServices Corp. Chadds Ford Business Campus, Rte. 202 & 1 Brandywine One, Suite 202 Chadds Ford, Pennsylvania 19317</p> <p>Project No. 97-397-09</p> <p>FIGURE 5-2 AR304180</p>
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APPENDIX F

HOP CONTACTS MADE BY ADVANCED GEOSERVICES

FILE COPY



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1055 Andrew Drive, Suite A
West Chester, PA 19380-4293
tel 610.840.9100 fax 610.840.9199
www.advancedgeoservices.com

2006-1800

MEMORANDUM

DATE: April 27, 2007
TO: Scott Miller
FROM: Todd D. Trotman
Christopher T. Reitman
SUBJECT: UGI Columbia Gas Plant Superfund Site
Utility Services
Proposed Building
Additional Information and Clarifications

In our letter to Ron Miller (Columbia Borough Public Services Manager) dated April 16, 2007, Advanced GeoServices requested that the Borough provide a sketch showing where they wanted the following elements located within the proposed building:

- The shutoff valve for the waterline;
- The toilet flange and stub for a future sanitary waste pipe; and,
- The shutoff valve for the gas line.

In their response to our letter, the Borough of Columbia requested that three (3) toilet flanges and two (2) stubs for future sanitary waste pipes be placed within the southwest corner of the proposed building as circled on the attached Foundation Plan. We understand that in the future, the Borough of Columbia intends to construct two bathrooms with 8-inch framing as shown on the attached sketch plan provided by Ron Miller. Based on this sketch, the location of the proposed toilet flanges (3) and stubs for waste pipes (2) in relationship to the proposed outside wall (metal shell) and inside wall (framing to be constructed by the Borough) is as described below. For your reference, Foundation Section 3/S2 from the Foundation Sections Plan (S-2) is also provided.

- **Toilet flange:** 14 inches from inside wall and 22 inches from outside wall.
- **Stubs for waste pipe:** 10 inches from inside wall and 18 inches from outside wall.

The Borough of Columbia also requests that the shutoff valve for the proposed waterline be placed on a riser inside the building and the shutoff valve for the proposed gas line be placed on a riser outside of the building.

cc. Ron Miller
Ross P. Ulmer



Leo S. Lutz, Mayor
Robert L. Buxendore, Jr., Council President

Robert L. Pfannenbcker, Solicitor
Norman B. Mahoney, III, Borough Manager

PUBLIC SERVICES DEPARTMENT FAX

TO: TODD TROTMAN

FROM: RON MILLER

SUBJECT: DESIGN FOR PLUMBING.

TODD, I hope this is OK.

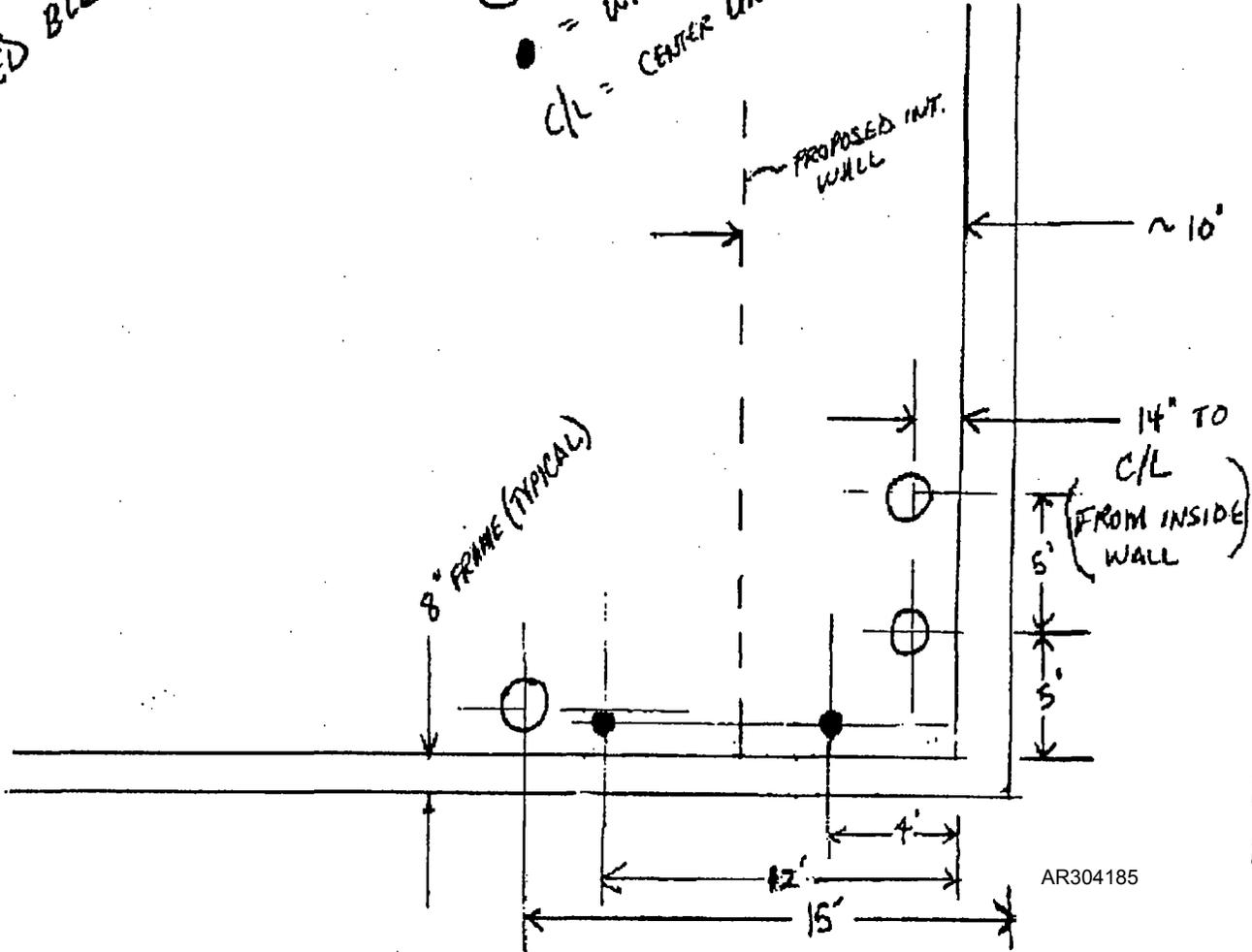
Thanks, Ron.

NUMBER OF PAGES INCLUDING COVER SHEET: 2

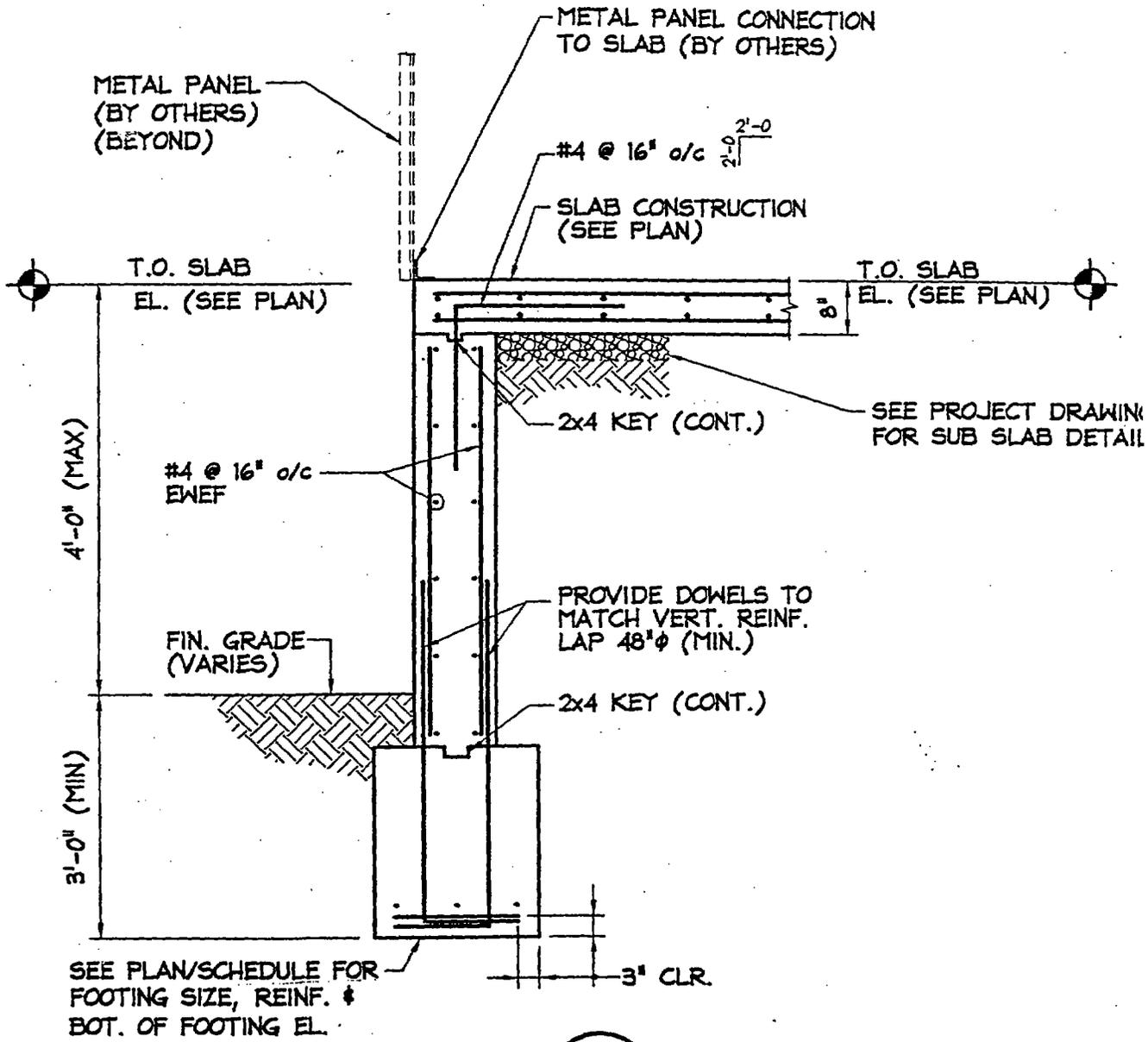
CONTACT/QUESTIONS: 717-684-2654 EXTENSIONS 29&30

S/W CORNER
OF PROPOSED BLDG.

○ = TOILET FLANGE, 14" FROM INSIDE WALL, 22" FROM OUTSIDE WALL
● = WASTE PIPE, 10" FROM INSIDE WALL, 18" FROM OUTSIDE WALL
C/L = CENTER LINE.



AR304185



Section 3
S2

FILE COPY

MEMORANDUM

DATE: March 28, 2007
TO: Scott Miller
FROM: Todd D. Trotman
Christopher T. Reitman *CTR*
SUBJECT: UGI Columbia Gas Plant Superfund Site
Site Utilities
Additional Information and Clarifications

The purpose of this memorandum is to provide additional information and clarifications regarding the installation of new utility services and the removal/relocation of existing utility services at the UGI Columbia Gas Plant Superfund Site (Site). The memorandum has been divided into the following sections:

- Existing utility services
- Installation of new utility services
- Highway Occupancy Permit (HOP)

The locations of the existing and proposed underground and overhead utilities are shown on the attached Figure 1 and are discussed below.

EXISTING UTILITY SERVICES

PP&L Stub Pole

PP&L Stub Pole 35021 S25498 is located within the northern portion of the Site. This stub pole provides lateral support to PP&L pole 35018 S25491 located along South Front Street. The stub pole is located within the future access road, and will have to be removed. Discussions with PP&L Electric indicate that this stub pole can be removed provided that a new pole is placed at an acceptable location on the Site. The new location for the stub pole has been set directly adjacent to the southwestern corner of the proposed building pad. The pole removal/replacement must be performed by PP&L Electric. A request for removal/replacement must be made through PP&L Electric at 1-888-220-9991. The removal/replacement of the pole will cost a few thousand dollars and will be performed within about 6 weeks after the request is made.

Private Utility Pole

A private utility service pole is located at the southeastern corner of Existing Building 1. This pole is located within the footprint of the proposed building and will have to be removed. The utility services (wires) to this pole have been removed. Because this pole is a private service pole, it must be removed by the property owner.



Scott Miller
2006-1800
March 28, 2007
Page 2 of 3

Based on discussion with PP&L Electric, the new stub pole (discussed above) may be used as a service pole for the future building; therefore, the installation of a new private service pole is not required at the Site. When the request is made to PP&L Electric to remove/replace the existing stub pole, they must be informed that this new stub pole will also be used as a service pole.

Gas Service

A gas service presently feeds Existing Building 2. Based on discussions with Rich Stahovich (717-299-7281 ext. 2970), this service will be disconnected at the main within South Front Street by UGI Utilities following the issue of the HOP by PennDOT.

Water Services

A water service presently feeds both Existing Building 1 and Existing Building 2. These services will be removed. In addition, a fire hydrant is located at the Site. This hydrant is located within the future deceleration lane and will be relocated.

Ron Miller has indicated that these existing services will be removed/relocated by Columbia Water Company following issue of the HOP by PennDOT. However, Dave Lewis at the Columbia Water Company office (717-684-2188) has indicated that the water company will not perform this work due to the presence of contaminated material at the Site, and requested that the owner have this work performed. However, the activities associated with the removal of these services will be inspected by Columbia Water Company.

Sanitary Service

A sanitary service is located between Existing Building 1 and Existing Building 2. This service will remain and the sanitary facilities for the proposed building will tie into this pipe. Based on discussions with Columbia Wastewater Department, they indicate that the existing sanitary line is most likely Schedule 35 or Schedule 40 Plastic Pipe. Columbia Wastewater Department has requested that the existing line be inspected via a camera to verify its integrity prior to connecting the new sanitary services to this pipe.

INSTALLATION OF NEW UTILITY SERVICES

The construction of the proposed building pad will include the installation of a new water and gas service as well as connection to the existing sanitary pipe. The installation of these elements is discussed below.

Depending upon the time frame of the property transfer to the Borough of Columbia, initially these new service lines may have to be put under PP&L's ownership.



Scott Miller
2006-1800
March 28, 2007
Page 3 of 3

Gas Service

The installation of the gas service will be performed by UGI Utilities. UGI Utilities (Rich Stahovich: 717-299-7281 (ext. 2970)) and Ron Miller are currently working out the load requirements for the new gas service. Depending upon the load, the cost of the installation may be figured into the usage, or UGI Utilities will charge an up-front fee for the installation.

PennE&R shall excavate the trench for the gas service as well as provide the required screenings for the pipe backfill. The initial 6 inches of screenings shall also be placed by PennE&R prior to pipe installation. Placement of the gas line and the remainder of the required screening material will be performed by UGI Utilities. Backfill placement and pavement restoration shall be performed by PennE&R in accordance with the Response Action Plan (RAP) and HOP.

Water Service

A 2-inch copper water service and new fire hydrant shall be installed by PennE&R in accordance with the Standard Details provided by the Columbia Water Company (attached), the RAP, and the HOP. The curb stop for this service shall be placed within the proposed deceleration lane at 2 feet from the edge of the future pavement.

The installation of this service will be inspected by Columbia Water Company. There is a simple application that needs to be filled out by PennE&R at the time of the work. There is a \$350.00 deposit that is required when the application is prepared. There is no need to prepare the application now; it can be prepared at the Columbia Water Company office (Dave Lewis: 717-684-2188) when the work begins.

Sanitary Service

Connection to the existing sanitary service shall be performed by PennE&R using 4-inch diameter Schedule 35 or Schedule 40 Plastic Pipe. Specifications and details for pipe installation are attached. A permit (fee of \$75) is required by the Columbia Borough Wastewater Department (Ken Berkheimer: 717-684-2070) and they will inspect the installation prior to the placement of backfill.

HIGHWAY OCCUPANCY PERMIT (HOP)

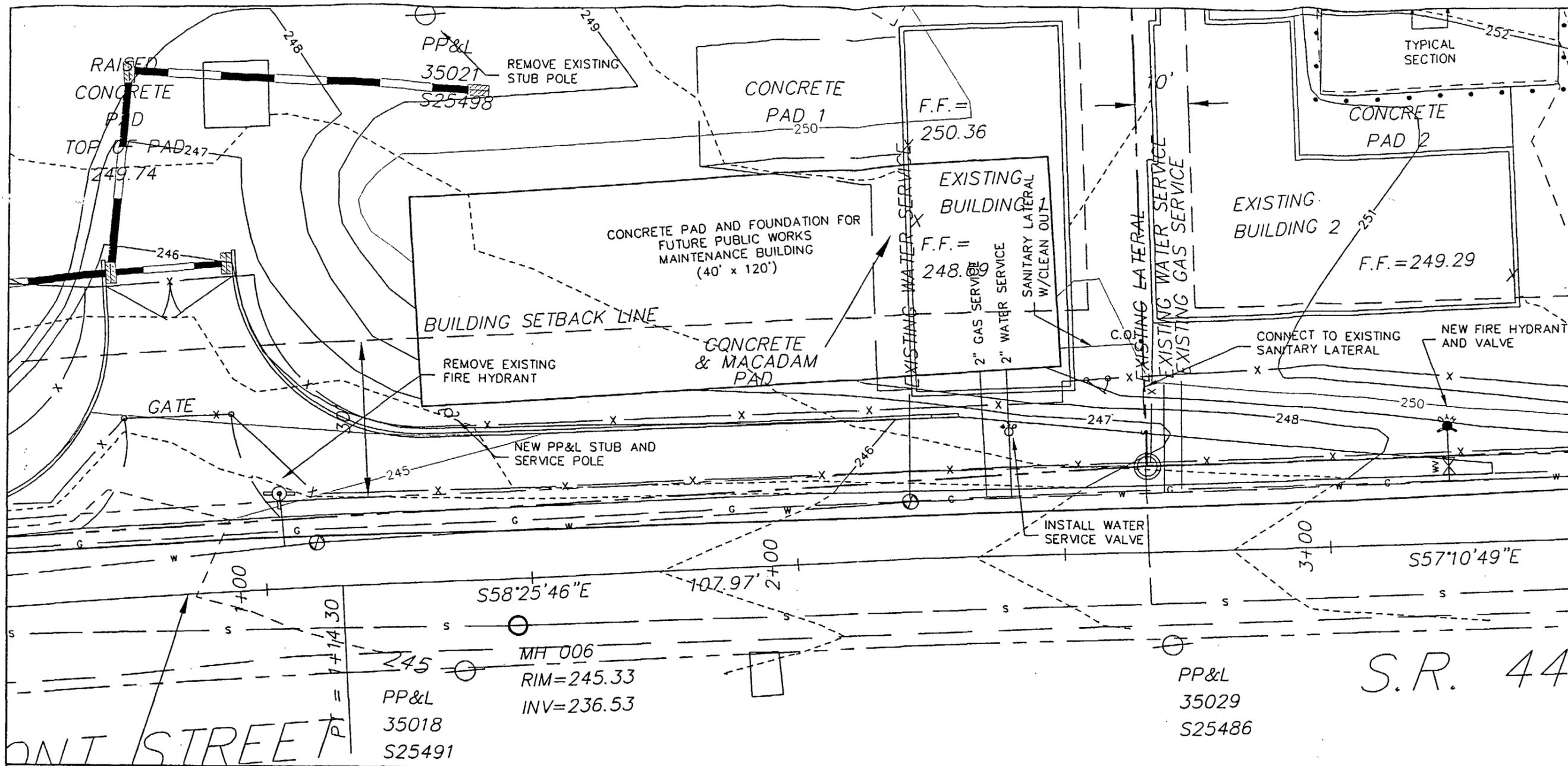
A HOP application was submitted to PennDOT on March 27, 2007 for the installation/removal/relocation activities associated with the water and gas services at the Site. The information included with this submission is attached. Once the HOP has been issued by PennDOT, these activities can be performed.

cc. Ross P. Ulmer

AR304189



BUILDING UTILITY SERVICES LOCATION PLAN



ONT STREET

PT = 1+14.30
 PP&L 35018 S25491
 MH 006
 RIM=245.33
 INV=236.53

PP&L 35029 S25486

S.R. 44

- BUILDING SERVICE LOCATIONS**
 SR 0441 SEGMENT 0050
- OFFSET 2964 - EXISTING FIRE HYDRANT
 - OFFSET 2846 - EXISTING WATER SERVICE
 - OFFSET 2832 - PROPOSED 2" GAS SERVICE
 - OFFSET 2828 - PROPOSED 2" WATER SERVICE
 - OFFSET 2802 - EXISTING SANITARY LATERAL
 - OFFSET 2799 - EXISTING WATER SERVICE
 - OFFSET 2796 - EXISTING GAS SERVICE
 - OFFSET 2746 - PROPOSED FIRE HYDRANT & VALVE

BUILDING UTILITY SERVICES LOCATION PLAN	
PROJECT MANAGER: CSR	SCALE: 1"=20'
CHECKED BY: CSR	PROJECT NUMBER: 20061800
DRAWN BY: RPU	DATE: 03/06/07

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 1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
 tel 610 840 9100 fax 610 840 9199 www.advancedgeoservices.com

UGI COLUMBIA GAS PLANT SUPERFUND SITE
 COLUMBIA, PENNSYLVANIA

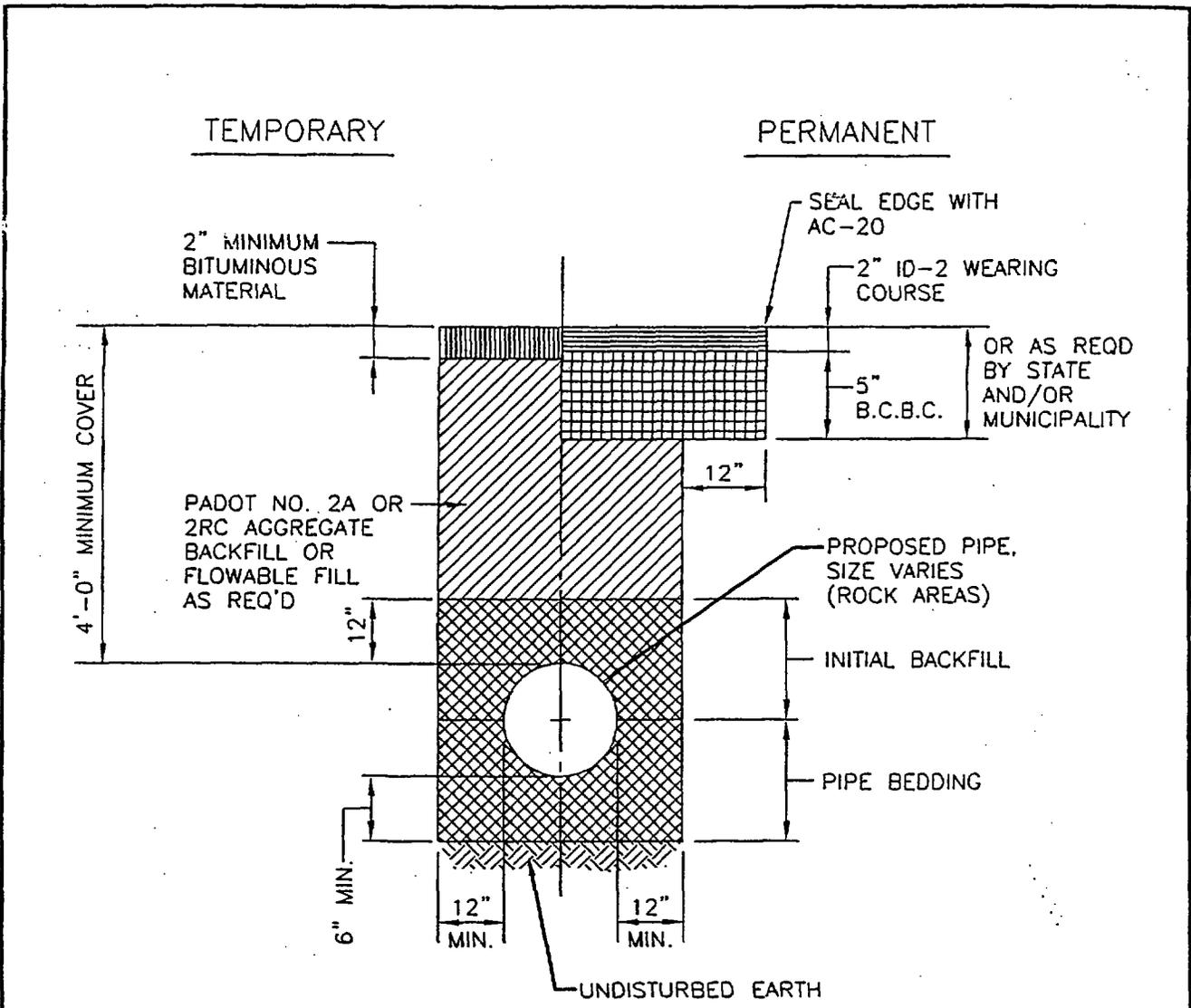
Figure 1



WATER SERVICE DETAILS AND SPECIFICATIONS

- **Standard Detail 1 – Water System**
- **Standard Detail 9 – Water System**

Dwg. Name: 04133289.DWG Last Revised: 10/08/02 15:16



NOTE:

PIPE BEDDING & INITIAL BACKFILL TO BE AASHTO #8.

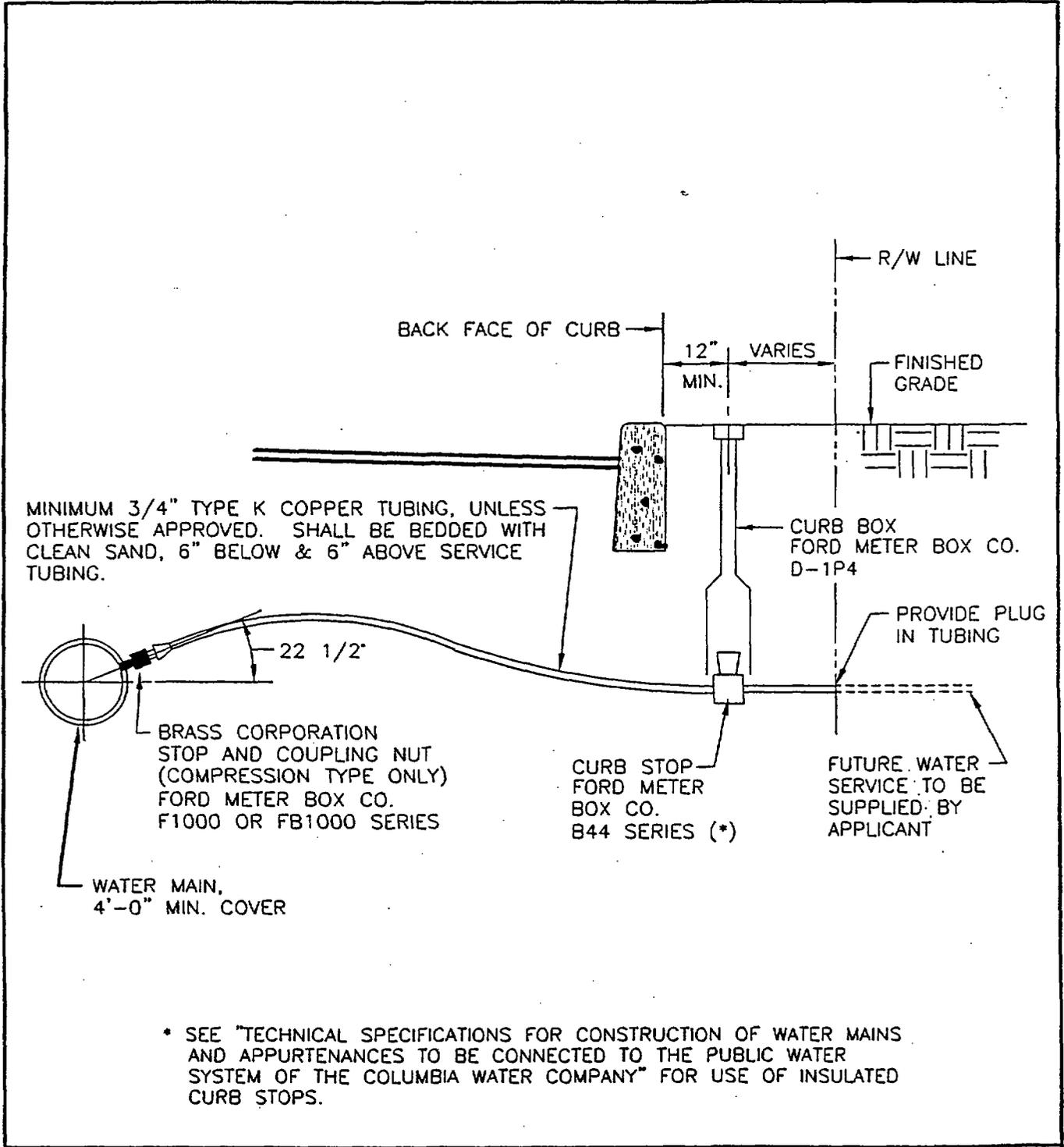
ALL WORK TO BE DONE IN ACCORDANCE WITH PADOT PUBLICATION 408

The Columbia Water Company
 STANDARD DETAIL - WATER SYSTEM



BACKFILL AND PAVEMENT RESTORATION
 FOR STATE/BOROUGH/TOWNSHIP ROADS

DATE: OCTOBER 2002
 DETAIL: AR304193



* SEE "TECHNICAL SPECIFICATIONS FOR CONSTRUCTION OF WATER MAINS AND APPURTENANCES TO BE CONNECTED TO THE PUBLIC WATER SYSTEM OF THE COLUMBIA WATER COMPANY" FOR USE OF INSULATED CURB STOPS.

Dwg. Name: 04133297.DWG Last Revised: 10/08/02 15:26

The Columbia Water Company

STANDARD DETAIL - WATER SYSTEM



STANDARD WATER SERVICE LINE
INSTALLATION (ROADWAY/CURBING)

DATE: OCTOBER 2002

DETAIL: AR306194



SANITARY SEWER DETAILS AND SPECIFICATIONS

- **Sewer Connection Instructions**
- **Pipe Installation & Trench Restoration (SD-09)**

SEWER CONNECTION INSTRUCTIONS FOR THE BOROUGH OF COLUMBIA

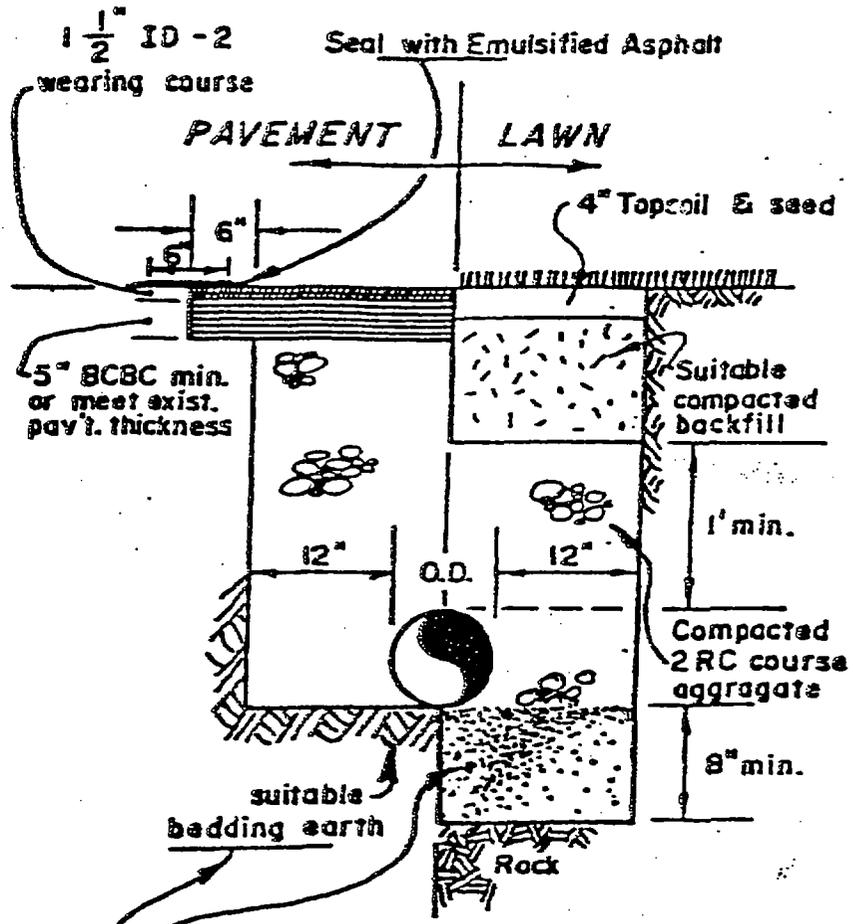
1. ANY FOR HIRE CONTRACTOR MUST PRESENT A CURRENT CERTIFICATE OF INSURANCE BEFORE ANY PERMIT IS ISSUED.

IT MUST MEET THE FOLLOWING REQUIREMENTS:

- A. MUST NAME THE BOROUGH OF COLUMBIA AS AN ADDITIONAL INSURED PARTY UNDER THE POLICY.
 - B. MUST HAVE A MINIMUM OF ONE MILLION DOLLARS OF GENERAL LIABILITY AND AUTOMOTIVE COVERAGE.
2. A CUT SHEET OF THE WORK TO BE PERFORMED MUST BE PRESENTED AND REVIEWED BY THE WASTEWATER MANAGER OR A DESIGNEE OF THE MANAGER BEFORE ANY PERMIT IS ISSUED.
 3. ALL BUILDING SEWER CONNECTIONS SHALL BE NOT LESS THAN (4) FOUR INCHES IN DIAMETER AND SHALL HAVE A UNIFORM FALL OF NOT LESS THAN (1/8) ONE EIGHTH INCH PER FOOT.
 4. PIPE SHALL BE DUCTILE IRON CEMENT LINED WITH NEOPRENE JOINTS OR PLASTIC SCHEDULE 35 OR SCHEDULE 40. ALL PIPE MUST BE INSTALLED IN A STRAIGHT LINE SO AS NOT TO PUT ANY STRESS ON THE PIPE ITSELF. ANY BENDS MUST BE MADE WITH THE PROPER FITTINGS.
 5. NEOPRENE ADAPTERS MAY BE USED WITH STAINLESS STEEL BANS.
 6. A "Y" CLEAN OUT PIPE MUST BE INSTALLED AT THE PROPERTY LINE OR WHERE THE WASTEWATER DEPARTMENT DESIGNATES. ALL PIPE INSTALLED IN THE BOROUGH RIGHT OF WAY (i.e. FROM THE PROPERTY LINE TO THE SEWER MAIN) MUST BE (6) SIX INCHES IN DIAMETER AND SHALL BE DUCTILE IRON CEMENT LINED OR SCHEDULE 35 OR 40, FOR NEW HOOK-UPS. THE (6) SIX INCH CLEAN OUT CAP MUST HAVE A RECESSED LID. ANY (4) FOUR INCH CLEAN OUT CAPS THAT ARE INSTALLED SHALL BE CAST IRON WITH A BRASS LID ATTACHED USING (2) TWO BRASS SCREWS. THE (4) FOUR INCH CLEAN-OUT MAY BE INSTALLED USING A (4) FOUR INCH CAST IRON SOIL PIPE RUBBER OR THE PROPERLY SIZED NEOPRENE ADAPTER. ALL OTHER HOOK-UPS OR REPAIRS WITHIN THE BOROUGH RIGHT OF WAY ARE AT THE WASTEWATER MANAGER'S DISCRETION.
 7. SINGLE OR DOUBLE HUB PLASTIC TRAPS MAY BE USED.
 8. MUST HAVE A PHILADELPHIA STYLE 4" CITY REGULATION VENT BOX SECURED ON TOP OF THE VENT STACK WITH A (4) FOUR INCH CAST IRON SOIL PIPE RUBBER OR THE PROPERLY SIZED NEOPRENE ADAPTER. THE VENTED LID MUST BE INSTALLED WITH A STAINLESS STEEL SCREW.
 9. ALL PIPE SHALL BE BEDDED WITH (4) FOUR INCHES OF (1/4) ONE FORTH INCH STONE BOTH BENEATH AND OVER THE PIPE.
 10. MUST BE INSPECTED BEFORE BEING BACKFILLED BY THE WASTEWATER DEPARTMENT MANAGER OR A BOROUGH EMPLOYEE DESIGNATED BY THE WASTEWATER DEPARTMENT MANAGER.
 11. THE HOURS FOR SEWER INSPECTION SHALL BE 8:00 AM TO 2:30 PM. THE BOROUGH REQUIRES TWO HOURS NOTICE BEFORE MAKING FINAL INSPECTION. NO INSPECTIONS WILL BE PERFORMED ON SATURDAYS, SUNDAYS, OR HOLIDAYS.
 12. BACKFILL SHALL BE BROUGHT UP EVENLY ON BOTH SIDES OF THE PIPE SO THAT IT RETAINS ALIGNMENT. BACKFILLING SHALL BE FREE OF FROZEN DIRT, LARGE ROCKS, BRICKS, AND ANY OTHER UNWANTED DEBRIS/MATERIAL AND WILL BE TAMPED IN (1) ONE FOOT LIFTS. CONTRACTOR MUST ABIDE BY OSHA REGULATIONS ON SHORING TRENCHES.
 13. ANY MAIN LINE BREAKS OR CRACKS MUST BE REPORTED TO THE WASTEWATER TREATMENT PLANT AT 684-2070, IMMEDIATELY. THE BOROUGH WILL THEN MAKE ARRANGEMENTS TO HAVE THE LINE REPAIRED AND INSPECTED AT THE CONTRACTOR'S EXPENSE. A MAIN LINE CAMERA WILL BE USED TO VERIFY THE MAIN LINE WAS FIXED PROPERLY.
 14. EXISTING SEPTIC TANKS SHALL HAVE THE ENTIRE TOP OF THE TANK REMOVED AND BE FILLED WITH STONE TO ITS ENTIRETY.

AR304196

NOTE: ANY CONDITIONS OR ISSUES THAT NEED TO BE RESOLVED WILL BE ADDRESSED USING THE COLUMBIA BOROUGH CODE, CHAPTER 173.



Class A bedding AASHTO No. 8
 course aggregate or course sand,
 gravel and/or crushed stone with
 maximum diameter of $\frac{1}{4}$ "
 subject to the approval of the Engineer

Subject to the approval of the Engineer



HOP APPLICATION

COPY

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West Chester, PA 19380-4293
tel 610.840.9100 fax 610.840.9199
www.advancedgeoservices.com

March 27, 2007

2006-1800-10

Mr. Mike Forester
Pennsylvania Department of Transportation
District 8-0 Lancaster County Permit Office
2105 Lincoln Highway East
Lancaster, PA 17602

Reference: UGI Columbia Gas Plant Superfund Site
Highway Occupancy Permits (SR 0441)
Proposed Utility Installation
Borough of Columbia, Lancaster County, Pennsylvania

Dear Mr. Forester:

On December 15, 2006, Advanced GeoServices Corp. submitted the Removal Action and Site Reuse Plan (Plan) for the UGI Columbia Gas Plant Superfund Site (Site) located at 431/433 South Front Street in Columbia, Pennsylvania. This plan has been approved by the USEPA, PADEP, USACE, and Lancaster County Conservation District. Implementation of this Plan is schedule to begin in early Spring 2007.

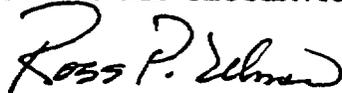
Following implementation of the Plan, ownership of the property will be transferred to the Borough of Columbia (Borough) who intends to use the property for equipment and material storage. The Plan includes the construction of foundations and floor slab for a future pre-fabricated steel building to be installed by the Borough. During construction of the foundations and floor slab, a 2-inch water service and a 2-inch gas service will be installed to the building pad to avoid the need for future disturbance to the property when the steel building is erected. The Plan also includes disconnecting the existing water/gas services and removal/relocation of the existing fire hydrant at the Site.

Please find the enclosed applications (and required application fees) for a Highway Occupancy Permit (HOP) associated with the installation/removal of the water and gas services at the Site. A separate HOP application has been prepared for the water and gas service activities.

If you have any questions concerning this matter, please contact us.

Sincerely,

ADVANCED GEOSERVICES



Ross P. Ulmer, P.E.
Project Consultant

RPU:kk

Enclosures

AR304199

M-945A (4-04)
PENNDOT

APPLICATION FOR HIGHWAY OCCUPANCY PERMIT 205637

INSTRUCTIONS ON REVERSE

ENGINEERING DISTRICT District 8-0

Applicant/Owner <u>Columbia Water Company</u>	
Address <u>220 Locust Street, P.O. Box 350</u>	
Post Office <u>Columbia, Pennsylvania</u>	Zip Code <u>17512</u>
Phone <u>(717) 684-2188</u>	

Application	Inspection	Inspection	Inspection
	1	2	3
441/459 Ref. No.			
Unit Fee			
Number of Units	<u>1</u>		
Item Fee			
Permit Fee \$	_____		
Account No.	_____		
Check or Money Order No.	_____		

County Lancaster County

Township/Boro Columbia Borough

Date work is scheduled to begin April - May 2007

Approximate date when work will be completed April - May 2007

If utility: Opening over 36 ft² along and/or across highway _____ FT. _____ FT. _____ FT.

(IN PAVEMENT)

(IN SHOULDER)

(OUTSIDE SHOULDER)

If utility: Installation Emergency Repair - E.P.C. No. _____ Entry No. _____ Repair Replace Service Connection or Disconnection Removal

If driveway: Anticipated average daily traffic: ADT cars _____ ADT trucks _____ ADT buses _____ TOTAL ADT _____

Is any portion of the property reserved for a person with a disability or a severely disabled veteran? Yes No

STATE ROUTE LOCATION

DESCRIPTION OF PROPOSED WORK

S.R. 0441	Install 2" inch water service from main. Installation includes water valve within pavement.	DEPARTMENT USE ONLY
Segment 0050		
Offset(s) 2828		
S.R. 0441	Remove existing fire hydrant; disconnect at main.	
Segment 0050		
Offset(s) 2964		
S.R. 0441	Install new fire hydrant.	
Segment 0050		
Offset(s) 2746		
S.R. 0441	Disconnect existing water services at main	
Segment 0050		
Offset(s) 2799 & 2846		

PRINT NAME OF APPLICANT'S CONSULTANT(S) Advanced GeoServices PHONE (610) 840-9100

PRINT CONTACT PERSON'S NAME Christopher T. Reitman PHONE: (610) 840-9123

Under and subject to all the conditions, restrictions and regulations prescribed by the Pennsylvania Department of Transportation (see in particular 67 PA Code, Chapters 203/212, 441 and 459) and on the issued Permit, Form M-945P, and attachments thereto. The applicant certifies that this application, information and documentation therein or required by the Department is accurate, pursuant to 18 PA C.S. §4904 relating to false swearing to authorities, and that it has or will have all insurance and other security required by the Department prior to performing any work authorized by the Permit.

The Applicant is (an individual) (a partnership) (a corporation incorporated under the laws of Pennsylvania)

DATE SIGNED: 3/23/07 PRINT APPLICANT'S NAME Columbia Water Company

WITNESS OR ATTEST [Signature] SIGNED BY [Signature]

TITLE OF SIGNATORY _____ TITLE OF SIGNATORY General Manager

Plans are Satisfactory? YES NO (Returned on _____)

Traffic Control Plan consistent with Chapter 203/212 YES NO (Returned on _____)

Driveway Classification(s) _____ MU _____ LV _____ MV _____ HV

M-930 was was not used. AR304200

Limited Access Highway is is not involved.

Continuous Inspection is is not planned

NT USE ONLY

M-945A (4-04)
PENNDOT

APPLICATION FOR HIGHWAY OCCUPANCY PERMIT

16757

INSTRUCTIONS ON REVERSE

ENGINEERING DISTRICT District 8-0

Applicant/Owner UGI Utilities	
Address P.O. Box 4937	
Post Office Lancaster, Pennsylvania	Zip Code 17604
Phone (717) 299-7281 Ext. 2970	

	Inspection 1	Inspection 2	Inspection 3
Application Ref. No.			
Unit Fee			
Number of Units	1		
Item Fee			
Permit Fee \$			
Account No.			
Check or Money Order No.			

County Lancaster County

Township/Boro Columbia Borough

Date work is scheduled to begin April - May 2007

Approximate date when work will be completed April - May 2007

If utility: Opening over 36 ft² along and/or across highway _____ FT. 1 FT. 5 FT.
(IN PAVEMENT) (IN SHOULDER) (OUTSIDE SHOULDER)

If utility: Installation Emergency Repair - E.P.C. No. _____ Entry No. _____ Repair Replace Service Connection or Disconnection Removal

If driveway: Anticipated average daily traffic: ADT cars _____ ADT trucks _____ ADT buses _____ TOTAL ADT _____

Is any portion of the property reserved for a person with a disability or a severely disabled veteran? Yes No

STATE ROUTE LOCATION

DESCRIPTION OF PROPOSED WORK

S.R. 0441	Install 2-inch gas service	DEPARTMENT USE ONLY
Segment 0050		
Offset(s) 2832 2832		
S.R. 0441	Disconnect existing gas service at main	
Segment 0050		
Offset(s) 2796		
S.R.		
Segment		
Offset(s)		
S.R.		
Segment		
Offset(s)		

PRINT NAME OF APPLICANT'S CONSULTANT(S) Advanced GeoServices PHONE (610) 840-9100

PRINT CONTACT PERSON'S NAME Christopher T. Reitman PHONE: (610) 840-9123

Under and subject to all the conditions, restrictions and regulations prescribed by the Pennsylvania Department of Transportation (see particular 67 PA Code, Chapters 203/212, 441 and 459) and on the issued Permit, Form M-945P, and attachments thereto. The applicant certifies that this application, information and documentation therein or required by the Department is accurate, pursuant to 18 PA C.S. §4904 relating to false swearing to authorities, and that it has or will have all insurance and other security required by the Department prior to performing any work authorized by the Permit.

The Applicant is (an individual) (a partnership) (a corporation incorporated under the laws of Pennsylvania)

DATE SIGNED: 3/13/07 PRINT APPLICANT'S NAME UGI Utilities, Inc.

WITNESS OR ATTEST [Signature] SIGNED BY [Signature]

TITLE OF SIGNATORY New Business Rep TITLE OF SIGNATORY Sr. New Business Rep

Plans are Satisfactory? YES NO (Returned on _____)

Traffic Control Plan consistent with Chapter 203/212 YES NO (Returned on _____)

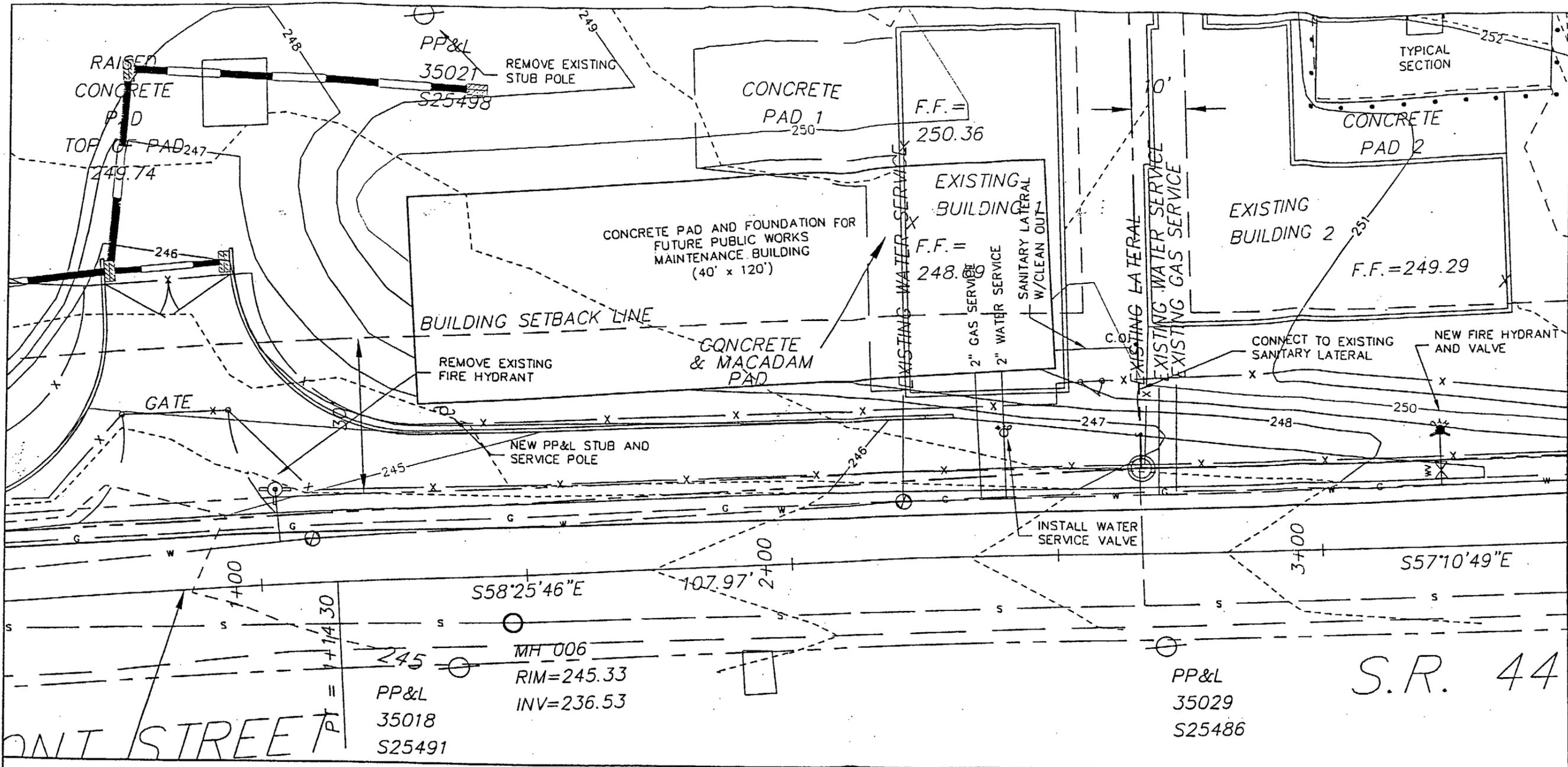
Driveway Classification(s) _____ MU _____ LV _____ MV _____ HV _____

M-930 was was not used. AR304201

Limited Access Highway is is not involved.

Continuous Inspection is is not planned.

NT USE ONLY



BUILDING UTILITY SERVICES
LOCATION PLAN

PROJECT MANAGER: CSR SCALE: 1"=20'
CHECKED BY: CSR PROJECT NUMBER: 20061800
DRAWN BY: RPU DATE: 03/06/07

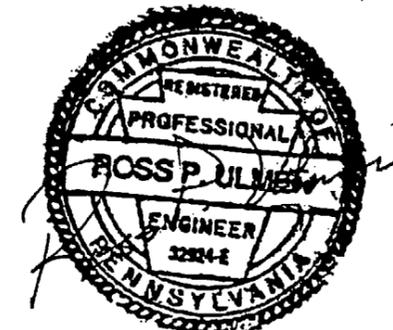
ADVANCED Geoservices
Engineering for the Environment. Planning for People.
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
Tel: 610 840 9100 Fax: 610 840 9199 www.advancedgeoservices.com

UGI COLUMBIA GAS PLANT SUPERFUND SITE
COLUMBIA, PENNSYLVANIA

BUILDING SERVICE LOCATIONS

SR 0441 SEGMENT 0050

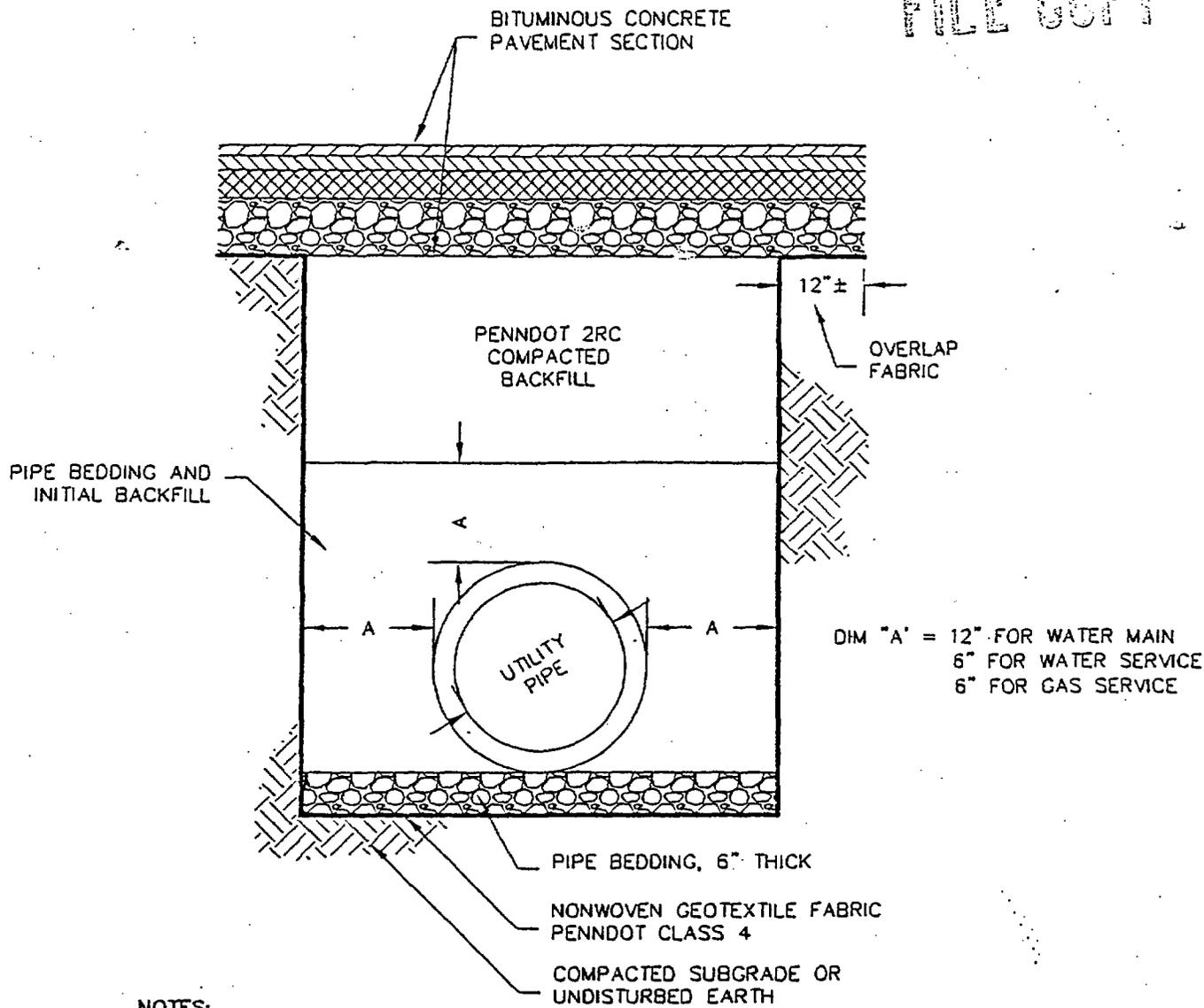
- OFFSET 2964 - EXISTING FIRE HYDRANT
- OFFSET 2846 - EXISTING WATER SERVICE
- OFFSET 2832 - PROPOSED 2" GAS SERVICE
- OFFSET 2828 - PROPOSED 2" WATER SERVICE
- OFFSET 2802 - EXISTING SANITARY LATERAL
- OFFSET 2799 - EXISTING WATER SERVICE
- OFFSET 2796 - EXISTING GAS SERVICE
- OFFSET 2746 - PROPOSED FIRE HYDRANT & VALVE



Figure

1

FILE COPY



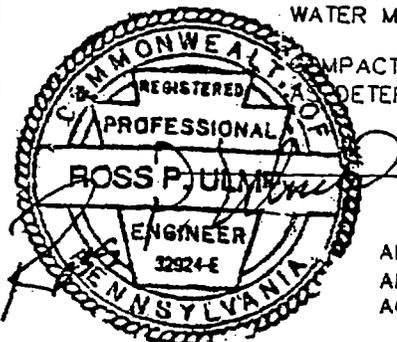
NOTES:

1. ALL MATERIALS SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, PUBLICATION 408 AS AMENDED TO DATE.
2. PIPE BEDDING AND INITIAL BACKFILL SHALL BE AASHTO #8 AGGREGATE FOR WATER MAIN; SAND FOR WATER SERVICE; AND SCREENINGS FOR GAS SERVICE. COMPACT BACKFILL MATERIAL TO A MINIMUM OF 95% OF THE MAXIMUM DENSITY DETERMINED BY THE MODIFIED PROCTOR TEST (ASTM D 1557).

PIPE TRENCH BACKFILL

NOT TO SCALE

ALL BUILDING UTILITY SERVICES (WATER, SEWER, GAS, ELECTRIC AND TELEPHONE, OR OTHERS) SHALL BE INSTALLED IN ACCORDANCE WITH THE PIPE TRENCH BACKFILL DETAIL.



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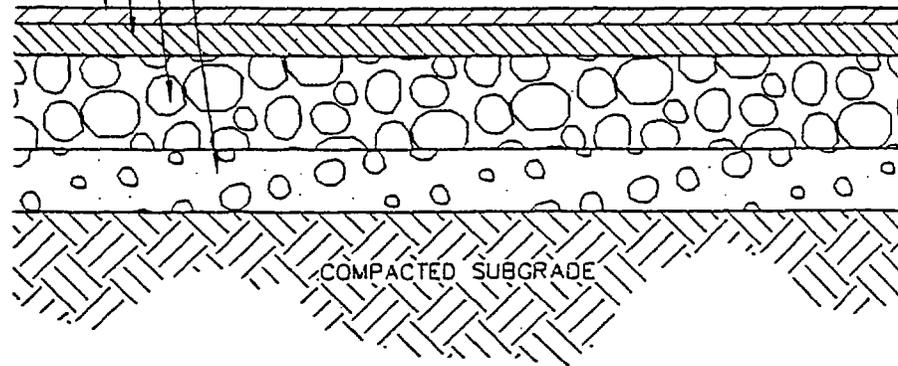
1055 ANDREW DRIVE, SUITE A, WEST CHESTER PA, 19380
Tel 610.340.9100 fax 610.840.9199 www.advancedgeoservices.com

**BUILDING UTILITY SERVICES
RESTORATION DETAILS
UGI COLUMBIA GAS PLANT SUPERFUND SITE
COLUMBIA, PENNSYLVANIA**

PROJECT ENGINEER:	CSR	SCALE:	NONE
CHECKED BY:	CSR	PROJECT NUMBER:	20061800

DRAWN BY

0409-0243 SUPERPAVE ASPHALT MIXTURE DESIGN, HMA WEARING COURSE
 PG 58-28, 3 TO <10 MILLION ESALS, 12.5 MM MIX, 1 1/2" DEPTH, SRL-G
 0409-6200 SUPERPAVE ASPHALT MIXTURE DESIGN, HMA BINDER COURSE
 PG 58-28, 3 TO <10 MILLION ESALS, 25.0 MM MIX, 3" DEPTH
 0309-0202 SUPERPAVE ASPHALT MIXTURE DESIGN, HMA BASE COURSE
 PG 58-28, 3 TO <10 MILLION ESALS, 37.5 MM MIX, 5" DEPTH
 0350-0106 SUBBASE 6" DEPTH (NO. 2A)



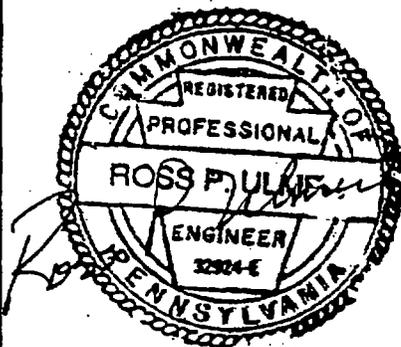
PENNDOT PAVEMENT SECTION

GENERAL NOTES:

1. PROVIDE PRIME COAT BETWEEN AGGREGATE COURSE AND BITUMINOUS COURSE.
2. PROVIDE TACK COAT BETWEEN BITUMINOUS COURSES.

PENNDOT PAVING SECTION

NOT TO SCALE



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BUILDING UTILITY SERVICES
RESTORATION DETAILS
UGI COLUMBIA GAS PLANT SUPERFUND SITE
COLUMBIA, PENNSYLVANIA

PROJECT ENGINEER:	CSR	SCALE:	AR300004
CHECKED BY:	CSR	PROJECT NUMBER:	20061800



APPENDIX G

ASBESTOS ANALYSIS OF BULK MATERIALS

Asbestos • Lead • Environmental • Materials & Indoor Air Analysis

EMSL Analytical, Inc.

<http://www.emsl.com>

1056 Stelton Road
Piscataway, NJ 08854
Phone: (732) 981-0550
Fax: (732) 981-0551



FACSIMILE TRANSMITTAL SHEET

TO: Sue Baer	FROM: EMSL Analytical, Inc.
COMPANY: Analytical Laboratory Services, Inc.	DATE: 11/27/2006
FAX: (717) 944-1430	PAGES INCLUDING COVER: 3
PHONE: (717) 944-5541	

RE: Analysis Results for Order 050604143

The following report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 11/22/2006. The samples are for 9667663.

Notice: If you are not the stated recipient of this fax and have received this in error, please discard immediately and contact EMSL Analytical at the phone number listed above.

If you have any questions, please do not hesitate to contact us at (732) 981-0550.

VISIT OUR WEBSITE AT [HTTP://WWW.EMSL.COM](http://www.emsl.com)
YOU CAN DOWNLOAD AND PRINT
CERTIFICATIONS OF ACCREDITATIONS AND CHAIN OF CUSTODY FORMS



EMSL Analytical, Inc.

1056 Stetson Road, Piscataway, NJ 08854

Phone: (732) 981-0550 Fax: (732) 981-0551 Email: piscatawaylab@emsl.com

Attn: Sue Baer
Analytical Laboratory Services, Inc.
34 Dogwood Lane
Middletown, PA 17057

Fax: (717) 944-1430 Phone: (717) 944-5541
 Project: 8667663

Customer ID: WRIG51
 Customer PO:
 Received: 11/22/06 9:30 AM
 EMSL Order: 050604143
 EMSL Proj:
 Analysis Date: 11/24/2006
 Report Date: 11/27/2006

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
9667663-001A 050604143-0001	Boat House siding	Black/White Fibrous Heterogeneous	15% Cellulose	74% Non-fibrous (other)	11% Chrysotile
9667663-002A 050604143-0002	Boat House Roofing	Black Fibrous Heterogeneous	13% Cellulose	15% Quartz 72% Non-fibrous (other)	None Detected
9667663-003A 050604143-0003	MGP Site Roofing	Black Fibrous Heterogeneous	11% Cellulose	84% Non-fibrous (other)	5% Chrysotile
9667663-003AA 050604143-0004	MGP Site Roofing	Gray Fibrous Heterogeneous	Different Layers of the same shingle	100% Non-fibrous (other)	None Detected
9667663-003AB 050604143-0005	MGP Site Roofing	Green Fibrous Heterogeneous		100% Non-fibrous (other)	None Detected

Analyst(s)

Maurice Carchman (5)

Chaiyut Sae Lao, Laboratory Manager
 or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. Samples reported as <1% or none detected may require additional testing by TEM to confirm asbestos quantities. The above test report relates only to the items tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted.
 Analysis performed by EMSL Piscataway (NY State ELAP #11423, NYLAP #101048-2, Connecticut DCH PH-0286 Approved Env. Lab)



Analytical Laboratory Services, Inc. Environmental • Industrial Hygiene • Field Services

34 Dogwood Lane • Middleburg, PA 17057 • 717.944.5541 • Fax: 717.644.1430

EMSL

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

050604143

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: of ALSI Quote #:

Client Name: ARSE Address: 34 Dogwood Lane Middleburg PA 17057

Contact: Susan Bean Phone: 717 944 5541 x3104

Project Name: Bill To: TAT: [] Normal-Standard TAT is 10-12 business days. [x] Rush-Subject to ALSI approval and surcharges. Date Required: 48 hours Approved By: Email: [x] Y Share analytical lab. info Fax: [] Y No. 717 944 5541

Container Type, Container Size, Preservative: NONE

ANALYSES/METHOD REQUESTED

Table with columns for Sample Description/Location, Sample Date, Military Time, # of Containers, and Matrix. Includes handwritten 'Bulk Asbestos' and 'Sub to EMSL - PISCATAWAY'.

Receipt Information (completed by Receiving Lab) Cooler Temp: Therm. ID: No. of Coolers: Y N Initial. Checklist for seals, labels, containers, volumes, preservation, and tracking.

Table for Chain of Custody with columns: Relinquished By / Company Name, Date, Time, Received By / Company Name, Date, Time. Includes signature 'Kelly Mount'.

Additional checkboxes for Data Deliverables (Standard, CLP-Hite, NI-Reduced, NI-Full), State Samples Collected In (NC, RI, NY, PA), and ALSI Field Services (Pickup, Labor, Composite Sampling, Reeds, Equipment, Other).

*G=Grab; C=Composite **Matrix: A=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater. Container Type: AG=Amber Glass; CG=Clear Glass; PL=Plastic. Container Size: 250ml, 500ml, 1L, 5oz., etc. Preservative: HCl, HNO3, NaOH, etc. Rev 5/06



APPENDIX H
TEST BORING LOGS

LOG OF TEST BORING

TEST BORING B-1

PROJECT: UGI Columbia Gas Plant
BORING LOCATION: See Figure 1
DRILLING METHOD: Hollow Stem Auger
DRILLING COMPANY: Eichelbergers, Inc.
WATER ENCOUNTERED AT: 8.0 Feet
DATE: November 17, 2006

PROJECT NO.: 2006-1800-11
SURFACE ELEVATION: 247.0 Ft.
CHECKED BY: T. Trotman
DRILLER: B. Triable
INSPECTOR: K. O'Rourke

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS BLOWS PER 6 INCHES	Soil Description	SPT (N)	Moisture (%)	Other Tests
0		Root Mat.	247		
		Medium dense, light brown to brown silty fine SAND.	0.2 246.8		
245	3/6 2/6 1/6		3		
		Stiff to very stiff, light brown to dark brown and black clayey SILT with gravel.	3.0 244		
5	6/6 11/6 4/6		15		
		Loose, brown to dark brown clayey silty SAND with gravel.	6.0 241		
240	4/6 2/6 1/6		3		
		Refusal encountered at 10.0 feet. Boring offset and re-drilled.	4		
10	2/6 2/6 2/6		4		
		Very stiff brown to dark brown sandy clayey SILT.	13.5 233.5		
235	13/6 20/6 45/6		65		
			24		
230	14/6 15/6 9/6		24		
20		Completion Depth = 20 feet	20 227		
225		END OF TEST BORING			
25					
220					
30					
215					
35					
210					

LOG OF TEST BORING

TEST BORING B-2

PROJECT: UGI Columbia Gas Plant
BORING LOCATION: See Figure 1
DRILLING METHOD: Hollow Stem Auger
DRILLING COMPANY: Eichelbergers, Inc.
WATER ENCOUNTERED AT: None Encountered
DATE: November 17, 2006

PROJECT NO.: 2006-1800-11
SURFACE ELEVATION: 247.0 Ft.
CHECKED BY: T. Trotman
DRILLER: B. Triable
INSPECTOR: K. O'Rourke

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS BLOWS PER 6 INCHES	Soil Description	SPT (N)	Moisture (%)	Other Tests
0		Root Mat.	247		
			0.2		
245	3/6 2/6 1/6	Medium dense, dark gray to black coarse to fine sandy SILT with gravel.	246.8		
			3		
5	4/6 6/6 3/6				
			9		
240	2/6 7/6 6/6				
			13		
10	14/6 19/6 21/6	Very dense, light gray silty fine SAND.	8.5 238.5		
			40		
235		Very stiff, brown to dark brown sandy clayey SILT with gravel.	11.0 236		
			59		
15	9/6 31/6 28/6				
230					
			18.0		
		Completion Depth = 18 feet	229		
20		AUGER REFUSAL @ 18.0 FEET			
225					
25					
220					
30					
215					
35					
210					

LOG OF TEST BORING

TEST BORING B-3

PROJECT: UGI Columbia Gas Plant
BORING LOCATION: See Figure 1
DRILLING METHOD: Hollow Stem Auger
DRILLING COMPANY: Eichelbergers, Inc.
WATER ENCOUNTERED AT: None Encountered
DATE: November 17, 2006

PROJECT NO.: 2006-1800-11
SURFACE ELEVATION: 248.0 Ft.
CHECKED BY: T. Trotman
DRILLER: B. Triable
INSPECTOR: K. O'Rourke

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS BLOWS PER 6 INCHES	Soil Description	SPT (N)	Moisture (%)	Other Tests
<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <p>0</p> <p>245</p> <p>5</p> <p>240</p> <p>10</p> <p>235</p> <p>15</p> <p>230</p> <p>20</p> <p>225</p> <p>25</p> <p>220</p> <p>30</p> <p>215</p> <p>35</p> </div> <div style="flex: 1; border-left: 1px solid black; border-right: 1px solid black; padding: 0 5px;"> </div> </div>		<p>.....</p> <p><i>Root Mat.</i> 248</p> <p>..... 0.2</p> <p><i>Medium dense to dense, dark brown to black</i> 247.8</p> <p><i>sandy SILT with gravel and brick fragments.</i></p> <p>.....</p> <p><i>Refusal encountered at 2.5', 5.5', 7.5', and 10.0';</i> 4.0</p> <p><i>boring offset each time to re-drill boring.</i> 244</p> <p><i>Soft to firm, light brown sandy clayey SILT.</i></p> <p>..... 6.0</p> <p><i>Medium dense, dark brown silty coarse to fine</i> 242</p> <p><i>SAND and GRAVEL.</i></p> <p>..... 8.5</p> <p><i>Very stiff clayey SILT.</i> 239.5</p> <p>..... 13.0</p> <p>Completion Depth = 13 feet 235</p> <p><i>AUGER REFUSAL @ 13.0 FEET</i></p>			

LOG OF TEST BORING

TEST BORING B-4

PROJECT: UGI Columbia Gas Plant
BORING LOCATION: See Figure 1
DRILLING METHOD: Hollow Stem Auger
DRILLING COMPANY: Eichelbergers, Inc.
WATER ENCOUNTERED AT: 9.0 Feet
DATE: November 17, 2006

PROJECT NO.: 2006-1800-11
SURFACE ELEVATION: 249.0 Ft.
CHECKED BY: T. Trotman
DRILLER: B. Triable
INSPECTOR: K. O'Rourke

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS BLOWS PER 6 INCHES	Soil Description	SPT (N)	Moisture (%)	Other Tests	
0		Root Mat.	249			
			Medium dense, light brown to brown silty fine SAND.	0.2 248.8	7	
245			Medium dense, dark gray to black fine sandy SILT with varying amounts of clay and gravel.	3.0 246	12	
5					11	
240					10	
10						
235						
15						
230						
20			Completion Depth = 19.5 feet	19.5 229.5		
225			SPOON REFUSAL @ 19.5 FEET			
25						
220						
30						
215						
35						

LOG OF TEST BORING

TEST BORING B-5

PROJECT: UGI Columbia Gas Plant
BORING LOCATION: See Figure 1
DRILLING METHOD: Hollow Stem Auger
DRILLING COMPANY: Eichelbergers, Inc.
WATER ENCOUNTERED AT: None Encountered
DATE: November 17, 2006

PROJECT NO.: 2006-1800-11
SURFACE ELEVATION: 248.0 Ft.
CHECKED BY: T. Trotman
DRILLER: B. Triable
INSPECTOR: K. O'Rourke

ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS BLOWS PER 6 INCHES	Soil Description	SPT (N)	Moisture (%)	Other Tests
0		Root Mat.	248		
			0.1		
		Dense, brown to black silty coarse to fine SAND and GRAVEL, trace clay.	247.9		
245	4/6 6/6 8/6		14		
5	4/6 7/6 10/6		17		
240	3/6 5/6 6/6		11		
10	2/6 4/6 8/6	Stiff, dark gray clayey sandy SILT.	12		
235					
15	3/6 7/6 34/6		41		
230					
20		Completion Depth = 19 feet	19.0		
		AUGER REFUSAL @ 19.0 FEET	229		
225					
25					
220					
30					
215					
35					

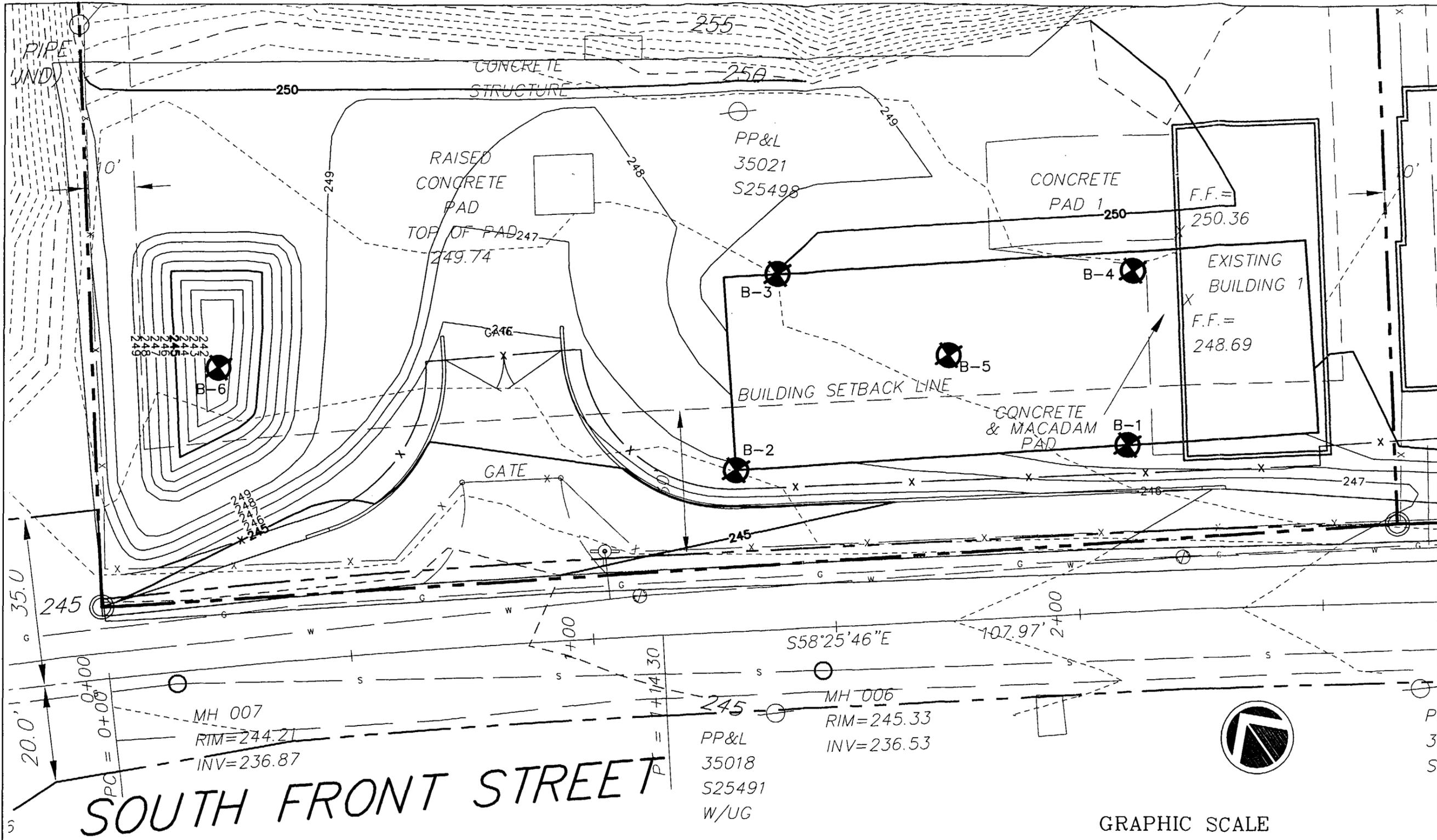
LOG OF TEST BORING

TEST BORING B-6

PROJECT: UGI Columbia Gas Plant
BORING LOCATION: See Figure 1
DRILLING METHOD: Hollow Stem Auger
DRILLING COMPANY: Eichelbergers, Inc.
WATER ENCOUNTERED AT: None Encountered
DATE: November 17, 2006

PROJECT NO.: 2006-1800-11
SURFACE ELEVATION: 247.0 Ft.
CHECKED BY: T. Trotman
DRILLER: B. Triable
INSPECTOR: K. O'Rourke

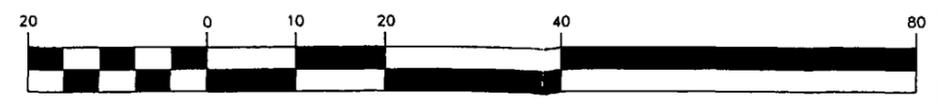
ELEVATION / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS BLOWS PER 6 INCHES	Soil Description	SPT (N)	Moisture (%)	Other Tests
0		Root Mat	247		
		(Topsoil)	1.0		
245	2/6 3/6 3/6	Dense, brown to dark gray to black silty SAND with gravel.	246		
	1/6 6/6 8/6	Medium dense to dense, brown silty coarse to fine SAND, trace gravel.	3.0 244		
5	3/6 8/6 10/6		18		
240	5/6 8/6 6/6		14		
10	10/6 8/6 12/6	Dense, silty SAND and GRAVEL.	9.0 238		
		Completion Depth = 10.5 feet	10.5 236.5		
235		END OF TEST BORING			
15					
230					
20					
225					
25					
220					
30					
215					
35					
210					



SOUTH FRONT STREET

LEGEND

⊗ B-1 BORING LOCATION AND NUMBER



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

BORING LOCATION PLAN

ADVANCED Geoservices
 Engineering for the Environment. Planning for People.
 1055 ANDREW DRIVE, SUITE A, WEST CHESTER, PA, 19380
 Tel: 610.840.9100 Fax: 610.840.9199 www.advancedgeoservices.com

UGI COLUMBIA GAS SUPERFUND SITE
 BOROUGH OF COLUMBIA, LANCASTER CO., PA

PROJECT MANAGER:	TDT SCALE:	1"=20'
CHECKED BY:	CTR PROJECT NUMBER:	20061800
DRAWN BY:	RPU DATE:	11/29/06

Figure
B-1

1055 Andrew Drive, Suite A
West Chester, PA 19380-4293
tel 610.840.9100 fax 610.840.9199
agc@advancedgeoservices.com
www.advancedgeoservices.com

