CUMMINGS RITER CONSULTANTS, INC.

VOLUME I OF III

DATA SUMMARY REPORT
PHASE II INVESTIGATION
WESTINGHOUSE ELECTRIC CORPORATION
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR:
WESTINGHOUSE ELECTRIC CORPORATION
WESTINGHOUSE BUILDING
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1.0 INTRODUCTION

Cummings/Riter Consultants, Inc. (Cummings/Riter) was retained by Westinghouse Electric Corporation (Westinghouse) to perform a Phase II site investigation at the Westinghouse Specialty Metals Plant located in Derry Township, Westmoreland County, Pennsylvania near the community of Blairsville (Figure 1). Specifically, the investigation involved review of published geologic literature, surficial and subsurface soil sampling, abandonment of former groundwater supply wells, monitoring well installation, shallow groundwater pump testing, borehole geophysical logging, a sampling and analysis program for soil and groundwater, and evaluation of the on-site pond levels and site groundwater levels. The scope of work is outlined in the Phase II Field Sampling Plan (FSP) (Cummings/Riter, 1995b).

The Phase II FSP was submitted to the Pennsylvania Department of Environmental Protection (PADEP) on June 26, 1995. Representatives of the PADEP reviewed the Phase II FSP and recommended modifications included in a response letter dated August 2, 1995. The recommended modifications by the PADEP were addressed in an Addendum to the Phase II FSP submitted by Cummings/Riter to the PADEP on August 10, 1995. The Addendum was approved by the PADEP in a letter dated September 7, 1995.

This report documents the field procedures and summarizes the results of the Phase II investigation performed under the PADEP approved Phase II FSP and Addendum. The balance of Section 1.0 provides objectives and the overall approach for the Phase II program, a description of the site setting and a discussion regarding the manufacturing process. Section 2.0 provides a summary of the available site background information.

Section 3.0 presents the Phase II field activity procedures. Sections 4.0 and 5.0 present a discussion of the regional and site-specific geologic and hydrogeologic setting, respectively. The analytical results for soil and groundwater samples collected during Phase II are provided in Section 6.0. The summary of findings are included as Section 7.0.

The investigation and this report represent a cooperative effort by Cummings/Riter and the Energy Systems business unit of Westinghouse (Energy Systems). Energy Systems was responsible for radiological testing and data interpretation. Cummings/Riter had primary responsibility for the other aspects of the Phase II investigation.

1.1 OBJECTIVES AND OVERALL APPROACH

The objective of the Phase II investigation is to further evaluate the nature and extent of compounds of interest (COI) in shallow and deep groundwater, in soils in the northeast fill area, and in four areas identified by Westinghouse during the Phase I assessment where radiologic readings were recorded to exceed background levels. In addition, obtaining additional information regarding the shallow and deep hydrogeologic regime and the surface water/groundwater relationship at the Specialty Metals Plant were also viewed as an important overall objective. The investigative tasks performed or directed by Cummings/Riter to accomplish the aforementioned objectives included the following:

- Surficial and subsurface soil (fill) sampling and analysis,
- Groundwater supply well remediation,
- Unconsolidated deposits/weathered bedrock monitoring well installation,
- Shallow groundwater pumping test,
- Bedrock monitoring well installation,
- Borehole geophysics,
- Evaluation of the on-site pond levels and site groundwater levels,
- Shallow and deep groundwater sampling and analysis, and
- Preparation of this Data Summary Report.

Energy Systems also conducted some parallel investigations that were outside of the scope of the Phase II FSP. These investigations included exploratorion trenching, and those results are discussed in this report as are relevant to the objectives of the Phase II investigation.

1.2 SITE DESCRIPTION

The Westinghouse Specialty Metals Plant is located on approximately 485 acres along Township Road 966, which terminates at the plant. The facility is located south and west of the Conemaugh River, immediately upstream of the confluence between Blacklick Creek and the Conemaugh River, approximately two miles northwest of the town of Blairsville, Pennsylvania (Figure 1). The Westro Building, Zircaloy Building, Main Building Shop, Industrial Waste Treatment Plant, Maintenance Shop and Machine and Die Shop comprise the major buildings at the facility (Figure 2). Additional site features include the sludge drying beds, septic leach beds, sand filters, a 250,000-gallon water tank, an aeration pond, a man-made pond used for plant process water and paved parking/access areas.

1.3 PRODUCTION AT THE SITE

The Specialty Metals Plant was founded in 1955 as a research and development manufacturing facility for Westinghouse. Westinghouse began manufacturing Zircaloy tubing in 1967. The Specialty Metals Plant historically manufactured two lines of nuclear grade tubing, including steam generator tubing and fuel clad tubing. The plant currently manufactures only fuel clad tubing. Manufacture of the tubing includes the use of a variety of lubricants, solvents, acid pickle solutions and alkaline cleaners. Several spent solutions and/or materials used in the plant process are managed as hazardous wastes under the Resource Conservation and Recovery Act (RCRA). These materials are treated and disposed of off site.

During the period from approximately 1955 to 1961, fuel manufacturing operations were conducted at the Specialty Metals Plant using enriched uranium in both metal and oxide forms. This involved both highly enriched uranium for the naval fuel program and low enriched uranium for atomic power plants. Experimental and development work using depleted uranium metal was also performed.

2.0 BACKGROUND

Cummings/Riter conducted a sampling and analysis program of existing surface water, groundwater and National Pollutant Discharge Elimination System (NPDES) outfalls for volatile organic compounds (VOCs) in November 1993 at the Specialty Metals Plant. The findings of the sampling and analysis program were documented in a report dated February 10, 1994. The following areas were identified for further investigation based on discussions with Westinghouse personnel, previous sampling and analysis program results, and the 1981 preliminary RCRA assessment by Acres American, Inc.:

- Former above ground trichloroethene/1,1,1-trichloroethane storage tank area,
- Former "triclene" pit,
- Former underground waste hydrofluoric acid and methylene chloride storage area,
- Former underground polyvinyl chloride (PVC) line to waste acid and solvent storage tanks,
- Existing sludge drying beds,
- Former Zircaloy burn area,
- Monitored waste line to evaporator,
- Fill area northeast of facility,
- Fill area (casting sand) north of visitors parking lot,
- Former underground waste acid tank,
- Former underground waste oil tanks,
- Former underground gasoline storage tanks,
- Storm water discharge (Outfall 002),
- Septic effluent (Outfall 102), and
- Industrial waste water effluent (Outfall 101).

Based upon the preliminary RCRA assessment and discussions with Westinghouse personnel, the primary COI for surface water and groundwater included the following:

- Target Compound List (TCL) VOCs,
- Target Analyte List (TAL) metals,
- Total petroleum hydrocarbons (TPHs),
- Fluoride,
- Nitrate,

- Ammonia,
- Total organic carbon (TOC),
- Gross alpha,
- Gross beta,
- Total uranium,
- Uranium isotopes,
- Total radium, and
- pH.

Cummings/Riter prepared a Phase I FSP in September 1994. The Phase I investigation, conducted by Cummings/Riter in November 1994, focused on site soils in the vicinity of potential source areas identified above and shallow groundwater, surface water and sediment at the Specialty Metals Plant.

The Phase I results are summarized in the Data Summary Report (Cummings/Riter 1995a). The findings are as follows:

- Unconsolidated deposits consisting of fill material, terrace deposits and residual soil are present immediately beneath the Specialty Metals Plant. The unconsolidated deposits range from 5 feet to greater than 27 feet in thickness.

- The uppermost bedrock beneath the Specialty Metals Plant consists of brown to gray, fine-to-medium grained sandstone with gray shale interbeds. This unit corresponds to the Saltsburg Sandstone unit.

- The uppermost groundwater-bearing unit beneath the Specialty Metals Plant was encountered at depths ranging from 7 to 20 feet below ground surface (bgs) and was associated with the unconsolidated deposits and the upper weathered bedrock.

- Groundwater flow within the uppermost groundwater-bearing unit tends to mimic surface topography, with flow from west to east across the site. The average hydraulic gradient on November 10, 1994 was approximately 0.02 foot-per-foot (ft/ft).

- Based on the one-time monitoring event conducted on November 10, 1994, the pond located south of the Specialty Metals Plant (Figure 2) appears to act as a recharge point for the local shallow groundwater unit. In addition, the groundwater levels indicate a potential for

shallow groundwater discharge to surface water drainage features near the sludge drying beds, as evidenced by groundwater levels measured in Well MW-2, and the presence of a spring in this area which was later diverted to the drainage change (GW-1). This relationship may be reversed with surface water drainage into the shallow groundwater unit further east along the drainage course, as evidenced by water levels measured in Well MW-9A (Figure 3).

- Slightly elevated (20 percent above background) field radiological readings were reported in two areas north of the railroad tracks; one in a shallow depression or impoundment, the other along a path leading to a natural gas well location.

- Field radiological readings twice background were detected in a field to the west of the north end of the Westro Building, primarily 150 to 200 feet west of the building.

- Field radiological readings 10 to 15 times background were reported in a mound adjacent to the main guard station, north of the visitors parking lot (Figure 3).

- Soil analytical results for pesticides, herbicides and polychlorinated biphenyls (PCBs) were below method detection limits for all soil samples tested.

- Soil samples exceeded the PADEP interim criteria for two parameters: trichloroethene in one sample adjacent to the former 15,000-gallon above ground trichloroethene/1,1,1-trichloroethane storage tank, and nickel in two samples collected in the fill area identified northeast of the Specialty Metals Plant.

- Soil radiological results indicate areas of the site exceed background and require additional delineation.

- Soil radiochemistry results for the surface and near-surface samples collected in the former Zircaloy burn area (Figure 3) indicate that some soil exceeds the release criteria of 30 picoCuries per gram (pCi/g) for uranium in soil. This area will require additional delineation.

- Soil radiochemistry results for the soil boring samples collected in the fill area northeast of the facility (Figure 3) indicate radiological results that exceed background. This area will require additional delineation.

- VOCs cis-1,2-dichloroethene, trichloroethene, vinyl chloride and methylene chloride were detected in downstream sediment sample locations SD-1, SD-2, and SD-3 (Figure 3).

- Surface water samples SW-1 and SW-2 (Figure 3), collected from the two drainage channels located downstream from the Specialty Metals Plant contained concentrations of trichloroethene [7.5 and 50 micrograms per liter (μg/l), respectively]. These constituents were not present in previously obtained upstream samples. The level of trichloroethene at Location SW-7, located at the confluence with the Conemaugh River, approximately 1,300 feet downstream from Location SW-2 was less than 5 μg/l. The surface water downstream from location SW-1 seeps into the hillside above the Conemaugh River.

- Groundwater sampled from shallow site monitoring wells exceeded the U.S. Environmental Protection Agency (USEPA) maximum contaminant level (MCLs) allowed for drinking water wells for pH, total iron, total manganese and gross alpha for both the upgradient and downgradient monitoring wells, indicating these levels represent background groundwater quality.

- Groundwater sampled from the active groundwater drain near the existing sludge drying beds (GW-1 on Figure 3) contained concentrations of trichloroethene at 150 μg/l. Monitoring Well MW-2, located downgradient of the sludge drying beds (Figure 3), also contained concentrations of fluoride [2.7 milligrams per liter (mg/l)] and trichloroethene (12 μg/l) above the MCLs.

- Groundwater sampled from Well MW-3 (Figure 3), located south of the Westro Building, exceeded MCLs for 1,1-dichloroethene (1500 μg/l) and vinyl chloride (220 μg/l).

- Groundwater sampled from Well MW-9A (Figure 3), located 75 feet southeast (downgradient) of the Industrial Waste Treatment Plant Building, exceeded MCLs for total chromium (0.052 mg/l), total mercury (0.0027 mg/l), 1,1-dichloroethene (20 μg/l), trichloroethene (22,000 μg/l) and vinyl chloride (49 μg/l).

A Data Summary Report documenting the Phase I investigation findings was submitted to the PADEP and the U.S. Nuclear Regulatory Commission (USNRC) on June 12, 1995.

This Phase II investigation was designed to address data gaps identified during Phase I, including an evaluation of the deep groundwater unit at the Specialty Metals Plant.

3.0 FIELD INVESTIGATION

3.1 SURFICIAL SOIL SURVEYS

3.1.1 Soil Sampling and Analysis

Surface soil samples were collected by Cummings/Riter personnel from four areas for radiological testing by Westinghouse. The sample locations were identified in the field based on the results of radiological field screening during Phase I by Westinghouse. The areas included two areas north of the site (Areas 1 and 2), a section of the field west of the Westro Building (Area 3), and an additional section of the former Zircaloy burn area (Area 4). Figure 4 depicts each of these areas. A section of the former Zircaloy burn area was previously sampled during Phase I.

Cummings/Riter established a grid system consisting of eight-meter intervals in each of the four areas. Samples from each location on the grid were obtained from a depth of 0 to 6 inches and 6 to 12 inches. Each sample was uniquely identified, cataloged and submitted to Westinghouse for radioactivity screening and storage. Field screening consisted of real-time monitoring for total organic vapors using the soil headspace technique and radiation screening by a Westinghouse health physics technician. The soil headspace technique involved placing a portion of the soil sample in a container, covering the container with aluminum foil and allowing the sample to remain undisturbed for approximately ten minutes. After approximately ten minutes, the aluminum foil is pierced with a probe of an HNu photoionization detector and results are given in parts per million (ppm). Table 1 summarizes the results of the headspace test and Appendix A includes figures showing locations for the surface soil samples.

A portion of each soil sample was maintained at the site in a locked secure building. Each sample was logged using chain-of custody procedures. Surficial soil samples were collected using the Standard Penetration Test (SPT) which consists of driving a two-inch outside diameter (O.D.) split-spoon sampler 24 inches into the soil by dropping a 140-pound weight through a height of 30 inches.

Soil sampling equipment was cleaned before initial use, between sample locations and at the conclusion of the sampling event by steam cleaning or by the following procedure:

- Alconox detergent wash,
- Distilled water rinse,
- Methanol rinse,
- Distilled water rinse, and
- Air dry.

3.1.2 Gamma Surveys of Surface Areas

Each of the four areas were surveyed with a gamma spectrum unit on an established grid pattern to measure surface radiation levels. The instrument used was a Model GR-256 NaI (sodium iodide) instrument which is capable of gamma spectral measurements. The data were gathered for four gamma energy regions (Regions of Interest or ROI). These data are presented and graphical presentations are provided in Appendix B. Area 4 is further discussed in Section 3.10. Only the data for the total spectrum of gamma energies are included on the figures, as the data for the other three regions of gamma energies were not found to provide any additional information.

3.1.3 Gamma Surveys of Soil Samples

Each of the surficial soil samples collected, as described in Section 3.1.1 was counted in a shielded vault using the Model GR-256 NaI instrument. These data are presented in Appendix B. Certain samples were then selected for further analytical analysis.

3.2 Subsurface Soil (Fill) Sampling and Analysis

3.2.1 Cased Borings in Fill

Five boring locations (B-45 through B-49) were selected in the field within the former disposal area (fill area) located northeast of the Specialty Metals Plant. Figure 4 depicts the boring locations. The objective of the Phase II soil borings was to further evaluate the magnitude and extent of COI within the fill area.

Eichelbergers, Inc. of Mechanicsburg, Pennsylvania was retained by Westinghouse for subsurface soil sampling. The soil borings were advanced using 6¼-inch inside diameter (I.D.) hollow stem augers. Two-foot split-spoon samples were collected on 2½-foot centers using the SPT apparatus. If split-spoon refusal was encountered, the material was augered through and a sample was attempted at the next interval. The borings were

terminated at the base of fill (B-47 through B-49) or upon auger refusal (B-45 and B-46). The total depth of the borings ranged from 10.9 feet (B-46) to 29.5 feet (B-47). Boring logs are included as Appendix C to this report.

Various fill materials were encountered in the soil borings which consisted of silt, sand, concrete, slag, cinders, metal, brick and wood fragments. No significant amounts of moisture or water were encountered in any of the borings. Each soil sample collected was field screened for total volatile organic vapors using the soil headspace technique and radiation screening by a Westinghouse health physics technician. The results for the soil headspace are included in the boring logs (Appendix C).

A portion of each of the sample was placed in an appropriate laboratory supplied container, labeled and placed in a cooler containing ice. In accordance with the PADEP approved Phase II FSP, two soil samples from each boring were selected for laboratory analysis based on field screening results. The soil sample analytical parameters included the following:

- Nickel,
- Gross alpha,
- Gross beta,
- Total uranium,
- Uranium isotopes, and
- Total radium.

Table 2 includes the analytical results for the soil samples collected from Borings B-45 through B-49. The remaining portion of the sample was placed in an appropriate bottle, catalogued and submitted to Westinghouse for radioactive screening and storage.

Each boring was cased upon completion using four-inch I.D., threaded flush joint, Schedule 40 PVC casing. A "shale trap," which consisted of a rubber bell-shaped device with a ten-inch O.D. top and four-inch I.D. base, was installed in each borehole approximately three feet bgs on the outside of the PVC casing. The "shale trap" allowed the top of the PVC casing to be cemented in place while prohibiting cement or other materials from migrating down the borehole, which would interfere with future geophysical testing. A 6 5/8-inch O.D. locking steel protective casing and a concrete pad

were installed over each cased boring for protection from damage and surface water infiltration. Borehole geophysics were performed at each Phase II boring location advanced within the fill area, as discussed in Section 3.2.2.

The drill rig, augers, bits, drill rods, split-spoon samplers, tools and related equipment were steam cleaned at a temporary site decontamination pad upon entering the site, between borings and prior to leaving the site. Decontamination activities were conducted on a plastic-lined pad which was bermed to collect fluids generated during steam cleaning. The fluids were contained on site in a 21,000-gallon tank for disposal by Allegheny Liquid Systems.

Drill cuttings and used personal protective equipment accumulated during the sampling program were contained in 55-gallon, open top, steel drums, labeled and transported to a designated storage area on site for disposal by Westinghouse.

3.2.2 Borehole Spectral Gamma Logging

On August 28, 1995, a borehole geophysical survey was performed by Appalachian Geophysical Surveys of Apollo, Pennsylvania for each boring (B-45 through B-49) advanced within the fill area. The geophysical suite included total gamma and spectral gamma. These geophysical techniques were used to evaluate gamma radiation anomalies within the boreholes (in particular uranium, thorium and radium). The cased boreholes kept the boreholes open and permitted the downhole geophysical testing to be conducted. The use of cement-bentonite grout or bentonite sealing materials behind the casing was prohibited due to the effect of these materials on the total and spectral gamma readings.

The results of the total and spectral gamma geophysical testing and analytical results are discussed in Section 6.0. The geophysical logs are included as Appendix D.

3.3 GROUNDWATER SUPPLY WELL REMEDIATION

During the Phase II investigation, eight of the nine groundwater supply wells located at the Specialty Metals Plant were properly abandoned by Eichelbergers, Inc., including Wells DW-1, DW-2, DW-3, DW-4, DW-5, DW-6, DW-7, and DW-9 (Figure 4). Groundwater supply Well DW-8, reportedly located south of the Main Shop Building near the on-site pond, was unable to be located during field reconnaissance with the aid of

a metal detector and is believed to have been buried during renovations for pond expansion. The information obtained during the Phase II investigation for the nine former groundwater supply wells is summarized in Table 3.

In order to obtain information regarding lithology, groundwater conditions and the integrity of the well casing seal, the following suite of geophysical logs was conducted in the eight groundwater supply wells prior to well abandonment:

- Natural gamma,
- Single-point resistance,
- Spontaneous potential,
- Fluid Conductivity,
- Fluid temperature, and
- Full-wave sonic.

These logs were utilized to correlate stratigraphy and evaluate groundwater production zones within these open bedrock wells and are discussed further in Section 3.6.2. The full-wave sonic log evaluated the presence or absence of cement grout behind the casings. The geophysical logs are included as Appendix D to this report.

An attempt was made to remove any known or visible obstructions in the wells (i.e., pumps and pipes), prior to conducting well abandonment. Wells DW-2, DW-6 and DW-9 contained submersible pumps which were successfully removed. Attempts to remove the pump and piping remaining in DW-5, observed on borehole video logs recorded during the Phase I investigation, were unsuccessful.

The groundwater supply well abandonment procedure consisted of tremie grouting a cement-bentonite mixture into the open borehole until the grout was approximately to the bottom of the well surface casing. The grout mixture consisted of one 94-pound bag of cement per six gallons of potable water per three to five pounds of powdered sodium bentonite. Once the cement-bentonite grout was to the bottom of the well casing, a hydraulic jack unit and hoist were utilized to pull the well casing from the borehole. Following attempts at removing the surface casing, the cement-bentonite grout was tremie pumped to ground surface and the well abandonment completed. When attempting to remove the casing in Wells DW-7 and DW-3, the steel surface casing broke

off approximately five feet (DW-7) and three feet (DW-3) bgs and the remaining casing (23 and 34 feet, respectively) was unretrievable and grouted in place. Table 3 summarizes the groundwater supply well abandonment results.

A well abandonment form obtained from the PADEP Pennsylvania Land Recycling Act 2 (1995) was completed for each abandoned groundwater supply well. The well abandonment forms are included as Appendix E to this report. In addition, a copy of the well abandonment forms, a table summarizing the groundwater supply well abandonments (Table 3) and a site figure (Figure 4) locating the abandoned wells were previously submitted to the PADEP, Bureau of Topography and Geologic Survey.

Water encountered during well abandonment was contained on site in a 21,000-gallon tank for disposal by Allegheny Liquid Systems. The well casings recovered from the former groundwater supply wells were steam cleaned and placed in rolloffs for disposal at a solid waste landfill.

3.4 UNCONSOLIDATED DEPOSITS/WEATHERED BEDROCK INVESTIGATION

Five shallow monitoring wells (MW-11A, MW-12A, MW-13A, MW-16A and MW-17A) were installed by Eichelbergers, Inc. at the Specialty Metals Plant during the Phase II site investigation. Three of the shallow wells (MW-11A, MW-12A and MW-13A) were proposed in the Phase II FSP. Installation of Wells MW-16A and MW-17A was recommended by representatives of the PADEP and approved by Westinghouse representatives.

Figure 4 depicts the monitoring well locations. Additional information regarding the lateral and vertical extent of COI in shallow groundwater identified during the Phase I site investigation was deemed necessary to characterize the hydrogeologic regime and to provide data for possible design of a groundwater remediation system.

3.4.1 Drilling/Soil Sampling Technique

Borings for shallow monitoring well installation were advanced using a combination of 6¼-inch I.D. hollow stem augers in the unconsolidated deposits and six-inch O.D. downhole percussion techniques in the underlying bedrock. Split-barrel (split-spoon) soil samples were collected in the unconsolidated deposits on five-foot centers using the SPT

apparatus. A standard two-inch O.D. split-spoon soil sampler was driven 24 inches into the soil by dropping a 140-pound weight through a height of 30 inches. The number of blows required to drive the sampler through each six-inch increment of soil was recorded, along with a visual classification of the soil sample. The boring logs are included as Appendix C to this report.

The drilling rig, augers, sample rods, split-spoon samplers and equipment were decontaminated by steam cleaning upon arrival at the facility, between drilling locations and prior to leaving the facility.

3.4.2 Shallow Monitoring Well Installation

The five shallow monitoring wells (MW-11A, MW-12A, MW-13A, MW-16A and MW-17A) were designed to monitor the groundwater unit associated with the unconsolidated deposits and the upper weathered bedrock surface. The monitoring wells were screened a few feet into weathered bedrock and range from 21.0 to 25.0 feet in total depths.

Monitoring Wells MW-11A, MW-13A, MW-16A and MW-17A were constructed using threaded, flush joint, two-inch I.D., Schedule 40 PVC screen (0.01-inch slots) and casing. Monitoring Well MW-12A was constructed using threaded, flush joint, four-inch I.D., stainless steel screen (0.01-inch slots) and casing. Based on the results of soil sampling and analysis conducted during the Phase I investigation, Monitoring Well MW-12A was selected as an optimal location for a groundwater pumping test conducted during the Phase II site investigation, as discussed in Section 3.5. The larger diameter provides additional options for pump selection related to constant rate pump testing and possible long-term groundwater recovery.

The annular space was backfilled using an appropriately sized sand adjacent to the screen to a depth approximately two feet above the top of the screen. The shallow monitoring wells were constructed with a ten-foot screen interval except Well MW-16A, which was constructed with a 15-foot screen interval due to the conditions observed during drilling. A minimum three-foot sodium bentonite pellet seal was placed above the sand pack to inhibit vertical migration along the borehole. The remaining annular space was backfilled with cement-bentonite grout using the tremie method. The grout mixture

consisted of one 94-pound bag of Portland Type I cement per six gallons of water and three to five pounds of powdered sodium bentonite. A locking steel protective casing set in a concrete pad, or flush mount cover (MW-12A and MW-16A) and locking pressure cap were installed to protect the wells from damage and surface water infiltration. Monitoring well installation details are included with the appropriate boring log (Appendix C).

Each monitoring well was developed using alternating surge and pump techniques. A minimum of five well casing volumes were removed from each well during development. The Cummings/Riter representative recorded pH, specific conductance and temperature of groundwater recovered to verify adequate well development. Well development equipment was decontaminated by steam cleaning between wells. Development water was contained on site in a 21,000-gallon tank for disposal by Allegheny Liquid Systems. Well development forms are included in the field data information forms as Appendix F to this report.

3.5 SHALLOW GROUNDWATER PUMPING TEST

Between October 10 through 12, 1995, a shallow groundwater pumping test was performed by Cummings/Riter personnel at Monitoring Well MW-12A. The groundwater pumping test consisted of a step-drawdown test and a constant rate test. The objective of the pumping test was to evaluate specific hydraulic characteristics for the shallow groundwater unit (i.e., transmissivity and hydraulic conductivity) in order to evaluate the effectiveness of a groundwater extraction system for shallow groundwater impacted with VOCs. The following subsections outline the pumping test procedures.

3.5.1 Step-Drawdown Test

A step-drawdown test was performed on Monitoring Well MW-12A. The objective of the step-drawdown test was to determine the maximum sustainable yield of the well for use during the constant rate aquifer test. Prior to initiating the step-drawdown test, groundwater levels from Pumping Well MW-12A; Monitoring Wells MW-3, MW-11A, and MW-13A; and the surface water level in the on-site pond were collected at ten-minute intervals using ten pound per square inch (psi) pressure transducers and data loggers manufactured by Insitu®. The pressure transducers were placed in the four wells and at the on-site pond a minimum of 12 hours before testing was performed. The water

level of the pond was monitored at ten-minute intervals continuously throughout testing. The water levels provided background data used to evaluate variations in drawdown trends during the actual pumping test.

During the step-drawdown test, the pumping rate was increased in steps. Based on observations during well development, Well MW-12A was pumped at approximately 1.0 gallons per minute (gpm) for two hours and 1.25 gpm for three and one-half hours. It was apparent that Well MW-12A could not sustain a flow rate of 1.25 gpm for the constant rate test, and the step-drawdown test was terminated.

A Rediflo-2® submersible pump was utilized during both the step-drawdown test and the constant rate pumping test. The flow rates were determined using an in-line Carlon® Model 625-JL, 3/4-inch flow meter. During the step-drawdown tests, the water levels in Wells MW-3, MW-11A, MW-12A, and MW-13A were monitored on a logarithmic time frequency with a maximum time recording interval of ten minutes using 10 psi pressure transducers and data loggers. Upon completion of the step-drawdown test, the groundwater level in the pumping well and observation wells were allowed to recover to hydrostatic conditions prior to initiating the constant rate aquifer test at Well MW-12A.

The water generated during the step-drawdown test was discharged via 5/8-inch diameter "garden hose" into a 21,000-gallon tank located approximately 350 feet north of Well MW-12A.

3.5.2 Constant Rate Aquifer Test

A constant rate aquifer test was performed at Monitoring Well MW-12A. The purpose of the constant rate aquifer test was to obtain data necessary to evaluate the effectiveness of a groundwater extraction system for shallow groundwater impacted with VOCs. The pumping rate for the constant rate aquifer test was determined based on the results of the step-drawdown test.

Upon completion of the step-drawdown test, water levels were permitted to recover to hydrostatic conditions prior to initiating the constant rate test. A round of manual water levels from site wells (MW-2, MW-3, MW-6A, MW-6B, MW-7A, MW-7B, MW-8A, MW-8B, MW-9A, MW-10A, MW-10B, MW-11A, MW-12A, MW-13A, MW-15,

MW-16A and MW-17A) and the on-site pond was obtained prior to the constant rate test. Based on the results of the step-drawdown test, a pumping rate of 1.0 gpm was selected for the constant rate test. Groundwater was pumped at a constant rate of 1.0 gpm for a time period of approximately 28 hours. Near steady-state conditions were achieved at approximately 21 hours into the test.

The groundwater level in Well MW-12A was obtained using an electronic water level meter at 30-second intervals for the initial 15 minutes of the test, one-minute intervals for the next 45 minutes, five-minute intervals for the next 30 minutes and gradually decreased to 15-minute intervals for the remainder of the test. In addition, the groundwater levels in Monitoring Wells MW-3, MW-11A and MW-13A were obtained continuously for a period of one hour with an electronic water level meter.

During the constant rate test, the groundwater levels in Wells MW-3, MW-11A, MW-12A and MW-13A, and the surface water level in the on-site pond were obtained using an electronic water level meter on approximately a one-hour linear frequency throughout the test. The groundwater levels in Monitoring Wells MW-2, MW-3, MW-6A, MW-6B, MW-8A, MW-8B, MW-9A, MW-11A, MW-12A, MW-13A, MW-16A and MW-17A, and the on-site pond were obtained on a two-hour linear frequency throughout the test using electronic water level meters.

In addition to the hand-level measurements, the groundwater levels in Wells MW-3, MW-8A, MW-11A, MW-12A and MW-13A, were monitored with 10 psi pressure transducers and data loggers and measured on a logarithmic time frequency with a maximum time interval of ten minutes throughout the constant rate test. The on-site pond was also monitored on a 10-minute linear frequency using a 10 psi pressure transducer and data logger.

The constant rate pumping test was performed over a 28-hour period. The test was terminated after water levels in the pumping well reached near steady-state conditions. The decision to stop the constant rate test was discussed with representatives of the PADEP. Groundwater samples were collected from a sample port located in the groundwater discharge line near the surface of Well MW-12A at the beginning of the test

(MW-12A Start), 12 hours into the test (MW-12A 12 Hours), and at the completion of the test (MW-12A End). The groundwater samples were analyzed for VOCs on the USEPA TCL. The analytical results are summarized in Table 4 and included in Appendix G.

Upon completion of the constant rate pumping test, the water levels were permitted to recover to hydrostatic conditions. The groundwater recovery period was monitored in the same manner as the initial pumping test and continued until the wells recovered to hydrostatic conditions. The results of the constant rate pumping test are discussed in Section 5.2.2.

The groundwater generated during the constant rate pumping test was contained on site in a 21,000-gallon tank. Upon completion of the step-drawdown and constant rate pumping tests, the water contained in the 21,000-gallon tank was sampled to properly characterize the water for off-site treatment and disposal by Allegheny Liquid Systems.

3.6 BEDROCK INVESTIGATION

Five deep monitoring wells (MW-6B, MW-7B, MW-8B, MW-10B and MW-15) were installed by Eichelbergers, Inc. at the Specialty Metals Plant during the Phase II site investigation. Figure 4 depicts the monitoring well locations. Proposed Monitoring Well MW-14, located on property owned by the U.S. Army Corps of Engineers (USACOE), was unable to be installed in conjunction with the five deep monitoring wells. A landowner access agreement allowing for installation of Well MW-14 could not be reached between Westinghouse and the USACOE.

Four of the five deep monitoring wells (MW-6B, MW-7B, MW-8B and MW-10B) were installed adjacent to the companion shallow well. The remaining deep monitoring well (MW-15) was installed east of Township Road 966, where the unconsolidated deposits and shallow weathered bedrock are dry. Each of the deep monitoring wells was installed in areas where the shallow groundwater unit is either absent or not impacted by site COI based on Phase I results. Four of the five deep monitoring wells were screened in competent bedrock. Well MW-10B was screened at the unconsolidated deposits/weathered bedrock interface, in what may represent a buried bedrock valley northwest of the Westro Building.

3.6.1 Bedrock Drilling Techniques

Borings for the five deep monitoring wells were advanced using eight and six-inch O.D. downhole percussion techniques. Filtered compressed air was utilized to remove the drill cuttings as the borings were advanced. The total depths for the deep monitoring well borings ranged from 64 to 140 feet. The boring logs are included as Appendix C to this report.

The drilling rig, rods, hammer bits and equipment were decontaminated by steam cleaning upon arrival at the facility, between drilling locations and prior to leaving the facility.

Water used and encountered during the drilling of the deep monitoring wells was contained on site in a 21,000-gallon tank for characterization and disposal by Allegheny Liquid Systems.

3.6.2 Borehole Geophysics

Borehole geophysical logging was performed by Appalachian Geophysical Surveys in borings for Monitoring Wells MW-6B, MW-7B, MW-8B and MW-15. Geophysical logs were performed in the open boreholes prior to well installation. The purpose for performing the geophysical logging was to aid in stratigraphic correlation and selection of well screen intervals. Geophysical methods performed included fluid temperature, single point resistance, spontaneous potential, natural gamma, fluid resistivity, caliper and full-wave sonic. The borehole geophysical logging was performed a minimum of 12 hours after the completion of drilling to allow the borehole fluid to stabilize. The results of the geophysical logging program are provided at a vertical scale of one-inch per ten feet in Appendix D. A brief description of each logging tool utilized as part of the site investigation is provided in the following paragraphs.

Fluid Temperature: Fluid temperature logs are continuous records of temperature versus depth of the fluid in a borehole. If there is no flow in or adjacent to a borehole, the temperature will gradually increase with depth due to the natural geothermal gradient. If rapid flow occurs along a fracture, either upward or downward, the temperature of the water in the fracture may be different from the ambient ground temperature. In such instances, the temperature log can indicate intervals of water producing fractures.

Single-Point Resistance: A single lead electrode attached to an insulated cable is lowered into the boring and the return path for the current flow is furnished by the ground electrode which is also made of lead. The single-point resistance log is useful for geologic correlation because of its unique response to changes in lithology and the vertical detail obtained in formations of low to moderate resistance. The single-point resistance log is also sensitive to the presence of water-filled fractures.

Spontaneous Potential: The spontaneous potential log is a graphic plot of the small differences in voltage that develop at the contact between the borehole fluid, the bedrock and/or soil, and the formation fluids. The spontaneous potential is used to aid in geologic correlation and assessment of unit thickness.

The spontaneous potential log was run in conjunction with the single-point resistance log. As discussed above, the single-point resistance log is useful in identifying water-filled fractures. Thus, streaming potential may be generated in zones gaining or losing water, which can sometimes be detected on the spontaneous potential curve by sudden oscillations or by departures from the more typical response in a particular environment.

Natural Gamma: Natural gamma logs are records of the amount of natural gamma radiation emitted from the formation. The principal use of natural gamma logs is for the identification of lithology and stratigraphic correlation. The natural gamma log proved to be a very useful tool for correlating lithology between borings for this investigation.

Fluid Resistivity: Fluid resistivity logs record the resistance to electrical current of the borehole fluid. Logs of fluid resistivity provide data related to the concentration of dissolved solids in the fluid column. Changes in fluid resistivity with respect to depth were interpreted as potential groundwater inflow zones intercepted by the borehole.

Caliper: Caliper logs provide information on the size of the borehole and assist in the identification of encountered fractures. The caliper is a mechanical logging device which consists of a probe with adjustable legs. The probe senses deviations in the wall of the borehole and sends the data to a recorder at the surface.

Full-Wave Sonic: Full-wave sonic logging consists of a transmitter which introduces acoustic energy into the formation. The amount of the acoustic energy which travels through the formation is measured by receivers. This log is useful in identifying fractures in bedrock which may produce groundwater.

3.6.3 Bedrock Monitoring Well Installation

The deep monitoring wells were constructed using threaded, flush joint, two-inch I.D., Schedule 40 PVC screen (0.01-inch slots) and casing. The annular space was backfilled using an appropriately sized sand adjacent to the screen to a depth approximately two feet above the top of the screen. The deep monitoring wells were constructed with ten-foot or twenty-foot screen intervals, depending on the results of geophysical logging and observations during drilling. A minimum three-foot sodium bentonite pellet seal was placed above the sand pack to inhibit vertical migration along the borehole. The remaining annular space was backfilled with cement-bentonite grout using the tremie method. A locking steel protective casing set in a concrete pad, or flush mount cover (MW-7B) and locking pressure cap were installed to protect the wells from damage and surface water infiltration. Monitoring well installation details are included with the appropriate boring log as Appendix C to this report.

Each deep monitoring well was developed using alternating surge and pump techniques. A minimum of five well casing volumes were removed from each well during well development, with the exception of Well MW-7B which went dry after removing approximately two well volumes. The Cummings/Riter representative recorded the pH, specific conductance and temperature of groundwater recovered to verify adequate well development. Well development forms are included as part of the field data information forms (Appendix F). Well development equipment was decontaminated by steam cleaning between wells. Development water was contained on site in a 21,000-gallon tank for characterization and disposal by Allegheny Liquid Systems.

3.7 GROUNDWATER SAMPLING AND ANALYSIS

Following completion of well installation, groundwater from the twelve shallow site monitoring wells (MW-2, MW-3, MW-6A, MW-7A, MW-8A, MW-9A, MW-10A, MW-11A, MW-12A, MW-13A, MW-16A and MW-17A), five deep monitoring wells

(MW-6B, MW-7B, MW-8B, MW-10B and MW-15) and Groundwater Drain GW-1 were sampled. Figure 4 depicts each of these locations. The groundwater samples were analyzed for COI using the methods specified as follows:

- TCL VOCs - Method 8240,
- TAL metals - Methods 6010/7000/9010,
- TPHs - Method 8015,
- Fluoride - Method 340.2,
- Nitrate - Method 353.3,
- Ammonia - Method 350.1,
- TOC - Method 415.1,
- Gross alpha - Method 900.0,
- Gross beta - Method 900.0,
- Total uranium - Method ASTM D2907,
- Uranium isotopes - Method 908.0,
- Total radium - Method 903.0, and
- pH - Method 9040.

Groundwater sampling was conducted no sooner than two weeks after the new monitoring wells had been properly developed, allowing the wells to stabilize to static conditions before sampling. Prior to purging and sampling, the groundwater level and well depth were measured from a fixed point on the well casing. This point was used as the reference mark during the surveying of well head elevations and locations. The water table level and well depth were obtained using an electronic water level indicator. This instrument consists of a spool of dual conductor wire, a probe attached to the end and an indicator. When the probe contacts the water surface, the circuit is closed and a meter light and/or buzzer attached to the spool will signal the contact. The bottom of the well was determined by resting the water level indicator on the well bottom. Measurements were made and recorded to the nearest 0.01-foot for the water level and the nearest 0.1-foot for the well depth.

After water level measurements were completed, each well was purged of at least three well casing volumes, or until the well was purged dry using a clean dedicated Teflon® bailer attached to new dedicated polypropylene rope, an air lift peristaltic pump or a submersible pump with dedicated polyethylene tubing. For two-inch diameter wells, the well casing volume is determined by the following formula:

$$V = \frac{7.481}{144} \pi r^2 h = 0.163h$$

For four-inch diameter wells, the well casing volume is determined by the following formula:

$$V = \frac{7.481}{144} \pi r^2 h = 0.653h$$

where: V = Volume (gallons)
r = Riser pipe radius (inches)
h = Standing water height as determined from water level measurements deducted from the well depth (feet)

A well stabilization test was performed during the purging of each well. Temperature, pH and specific conductance were measured following removal of each well volume. If the last two sets of readings were approximately constant, the purging was considered to be complete. Well purging records are included in the field data information forms (Appendix F).

In addition to the eighteen groundwater samples, two replicate samples (Dup-1 and Dup-2), one rinsate (equipment) sample and aqueous trip blank samples (one per sample shipment) were submitted to the laboratory. The rinsate (equipment) sample was collected by pouring laboratory supplied distilled water into a clean dedicated Teflon® bailer. The distilled water was then transferred from the bailer to the appropriate laboratory supplied bottles, labeled (EB-1) and placed in a cooler containing ice. Sufficient volumes of one sample were collected to allow the laboratory to prepare a matrix spike and a matrix spike duplicate for analysis.

If a well purged dry (i.e., all standing water is removed) prior to removal of three well casing volumes, a well-stabilization test was not required. Such wells were sampled when enough water recharged the well to obtain a sample. The water level was recorded at the time of sampling.

Groundwater samples were collected with clean, dedicated Teflon® bailers attached to new dedicated polypropylene rope. The first bailer of water removed was discarded to rinse the bailer with the sample medium prior to obtaining the sample (unless the bailer was utilized for purging). Samples were poured slowly and at an even rate to minimize aeration into clean containers supplied by the laboratory. Samples were placed in a container with ice immediately upon collection.

Groundwater sampling equipment was dedicated to each monitoring well. Water level indicator probes were decontaminated before initial use and between wells.

Following completion of sampling activities, bailers were air dried, wrapped in a plastic bag, labeled with the appropriate well identification number, and stored in a secure building for future use.

To identify and track each sample through shipping and laboratory analysis, the following documents were prepared:

- Sample labels,
- Chain-of-custody forms, and
- Sample collection forms.

The labels included the project number, project name, sampler's name, sample medium, sample preservative, type of sample (grab or composite), sample number, location, date and time.

Sample collection forms were used to make entries at each sampling station and included information recorded on sample labels, field measurements and observations, including sample color and odor, and are included as part of the field data information forms in Appendix F.

Custody procedures were followed to maintain sample possession. Chain-of-custody forms are included with the laboratory analytical data as Appendix G. The samplers were personally responsible for the care and custody of the samples collected until they were properly transferred or dispatched. Sample labels were completed using waterproof ink.

The results of the groundwater sampling are discussed in Section 6.0. Table 5 summarizes the groundwater analytical results and the laboratory analytical data are included as Appendix G.

3.8 EVALUATION OF THE ON-SITE POND LEVELS AND SITE GROUNDWATER LEVELS

Groundwater levels in site monitoring wells were measured bimonthly for three months using an electronic water level indicator, and recorded to the nearest 0.01-foot. The readings were measured from a survey point on the top of the PVC well casing.

The on-site pond level was also measured with the groundwater levels from a surveyed benchmark. The surface water and groundwater levels were converted to feet above mean sea level (MSL) (Table 6).

The results for water level measurements were utilized to evaluate the following:

- Hydraulic gradients and lateral flow direction for both shallow and deep groundwater;
- Relationship between shallow and deep groundwater units based on groundwater levels for nested wells (i.e., upward or downward vertical hydraulic gradient); and
- Relationship between shallow groundwater and surface water levels for the on-site pond.

The results for surface water and groundwater level measurements are discussed in Section 5.2.

3.9 SURVEYING

The shallow monitoring wells (MW-11A, MW-12A, MW-13A, MW-16A and MW-17A), deep monitoring wells (MW-6B, MW-7B, MW-8B and MW-15) and cased borings in the fill area (B-45 through B-49) were surveyed by a Pennsylvania licensed surveyor for horizontal location (Pennsylvania State Plane Coordinate System) and elevation of ground surface, top of PVC riser pipe and top of steel protective casing to the nearest

0.01-foot above MSL. The survey information is included on the boring log (Appendix C). In addition, four coordinate corners for each of the surficial soil sampling grid areas (Areas 1 through 4) were surveyed for horizontal location as shown on Figure 4.

3.10 ADDITIONAL ASSESSMENT - FORMER ZIRCALOY BURN AREA

Beyond the requirements of the Phase II FSP, the former Zircaloy burn area was further evaluated for the presence of radiological parameters during the Phase II assessment. A magnetometer survey was employed to assist in evaluating possible subsurface ferrous metal. In addition, Westinghouse conducted a radiological survey and test trenching in the former Zircaloy burn area to further delineate the extent of soil and debris exhibiting radiological parameters above background levels. Each of these activities is discussed in the following subsections.

3.10.1 Magnetometer Survey

On October 18, 1995, Cummings/Riter personnel performed a magnetometer survey at the former Zircaloy burn area, located south of the Main Building Shop area and northeast of the on-site pond. The purpose of this survey was to evaluate the presence of magnetic anomalies at the former Zircaloy burn area which possibly may relate to radiological anomalies identified in this area of the site. The following paragraphs briefly describe the theory and equipment used and field operations conducted by Cummings/Riter personnel. The results of this survey are discussed in Section 6.1.

Theory and Equipment: Geophysical magnetic surveys measure local anomalies in the earth's magnetic field. The earth has a magnetic field acting as if its axis is represented by a bar magnet with its north pole at the top of the globe. At any point on the earth's surface, the magnetic field can be characterized by its direction, typically measured with an instrument like a compass, and intensity which can be measured with a magnetometer. The unit of intensity is the gamma and it is defined in terms of the force that a magnetic field will place on a standard magnet. The earth's natural field is approximately 55,000 gammas when measured in southwestern Pennsylvania (Breiner, 1973). Differences from the normal values of the earth's magnetic field correspond to magnetic anomalies which can be measured by a magnetometer. In general, the intensity of the measured anomaly in a geophysical magnetic survey is a function of:

- The mass of the material,
- Its magnetic susceptibility, and
- Its depth below ground surface.

Metallic objects containing iron or steel have high magnetic susceptibility and, when found in sufficient mass and/or close to the surface, can cause local measurable magnetic anomalies.

The magnetometer used in this survey was the Geonics Model 856 Memory Mag Proton Precision Magnetometer which measures the total magnetic field. The unit has a direct digital readout and internal data logging capability. The total magnetic field intensity as measured by a proton precision magnetometer is the magnitude of the earth's field, independent of its direction. A total field magnetometer provides a significant advantage over other instruments in measuring asymmetric anomalies and in the interpretation of anomalies. Furthermore, the quantity that is measured is somewhat independent of the orientation of the sensor and allows the magnetometer to be operated without attention to precise leveling.

Field Operations: The magnetometer survey was conducted by Cummings/Riter personnel on October 18, 1995. The magnetometer was tuned to 55,000 gammas (reference background) prior to initiating the survey. The magnetometer survey was conducted by taking magnetic station readings on a five-meter grid pattern, established by Westinghouse personnel in the former Zircaloy burn area. The magnetic survey field data sheets are included as Appendix H.

Magnetic measurements were repeated at a base station before, during, and at the completion of each survey to assure repeatability of measurements and to determine the diurnal correction caused by the natural drift of the earth's magnetic field. Corrections were unnecessary as this drift proved to be minimal.

Careful attention was paid to removing obvious forms of cultural interference, when possible, prior to making a geophysical measurement. Where sources of metal could not

be removed, they were documented in the field notes so that any effects on measurements could be accounted for in the interpretation. The results of the magnetometer survey are summarized in Section 6.1.

3.10.2 Gamma Survey of Surface Area

In addition to the surficial soil sampling program described in Sections 3.1.1 and 3.1.3, gamma spectrum measurements were made on an established grid pattern for the former Zircaloy burn area. This grid pattern expanded the area investigated during the Phase I investigation. The grid spacing was varied with a tighter grid measurement density around areas which indicated above background readings. Appendix B provides the grid sampling points for this area. The measurement data and the graphical presentation are included in Appendix B.

3.10.3 Trenching Survey

Based on the surficial soil sampling and surface radiological surveys, a remediation effort was undertaken by Energy Systems to clean several small areas. This effort established that in some areas the radiological contamination was not limited to the near surface; therefore, a trenching effort was undertaken.

The objective of the initial test trenches was to identify the general background readings for the Gamma Ray Spectrometer of the soil at a depth of approximately one meter. Test sites were chosen within areas of the Zircaloy burn area previously found to be free of contamination, but adjacent to radiologically contaminated areas. The location of the test trenches is included in Appendix B.

Upon initiation of the first test trench and the discovery of an above-background count rate on construction debris, it was decided to expand the test trench program. The test trenches were dug to a depth range of one to two meters. Observed soil makeup was 0.2 to 0.4 meter of topsoil on top of 0.2 to 1 meter of fill material. Fill material consisted of various types of construction debris (concrete, cinder block, brick, piping, etc.) and included shavings of metal. Indigenous soil consisted of rock and clay and was found underneath the topsoil or uncovered fill material. Areas of the test trenches where fill material was not present were dug to a minimum depth, approximately one meter. In every trench, construction debris was found at various locations. Areas where fill

material was identified were dug to a depth of either two meters or until indigenous soil was encountered. Work progress was undertaken with concern for the safety of the workers and the environment. As material was removed from the ground, frisking for radiological readings was performed as were readings for organic vapors. The topsoil material and indigenous soil readings were consistent with expected background levels. Fill material varied from expected background readings to three times expected readings. Organic vapor readings were background levels. Instances where radiation readings indicated an excessive amount of contamination resulted in the affected soil being placed within an appropriate storage container. This only occurred in Trench #3 where fine metal shavings with radiation levels approaching 200 times the expected background level were found. The resultant debris amounted to approximately two cubic feet of material.

Once a trench was completely open, a gamma ray spectrometer survey was performed every meter, along with the acquisition of soil samples every five meters. Any unusual fill material was retained for sampling purposes as well. Photographs documenting the location and orientation of the test area concluded the sampling procedure for the trench. Closure of the open trench prior to the end of the work day completed the evolution.

Throughout the entire testing process, a red dye-like material, believed to be an oxide from prior operations, was noted in the fill material. The metal shavings found showed no sign of corrosion. These were scattered over the entire area with some pockets of greater density. Analytical results confirmed that shavings were zirconium metal.

Work on Trench #5 halted early due to the discovery of a 30-gallon drum buried one meter from the surface. The content of the drum was a tar-like substance and showed no above background radiological or organic vapor readings; however, the ground surrounding the drum did show elevated organic vapor readings. The drum was sampled, placed within an overpack container along with a small amount of surrounding soil, and put into storage. No further sampling or testing of this trench were performed. Radiological field measurements for this area consisted of background levels, with the exception of one small metal plate which exhibited above background radiation readings. The trenches were backfilled with the excavated material upon completion of this task.

4.0 GEOLOGIC SETTING

4.1 REGIONAL SETTING

Cummings/Riter reviewed published geologic reference material covering the study area to develop an understanding of the regional geologic setting for the Specialty Metals Plant area. The results of this review are provided in the following subsections.

4.1.1 Physiography and Topography

The Specialty Metals Plant is in the Unglaciated Allegheny Plateau section of the Appalachian Plateaus physiographic province (Fenneman, 1938). The Unglaciated Allegheny Plateau is characterized by low broad ridges, although there are many valleys with relief of several hundred feet. The major drainage feature for this area is the Conemaugh River located north and east of the Specialty Metals Plant. The Conemaugh River flows northwest and joins Loyalhanna Creek at Saltsburg to form the Kiskiminetas River.

4.1.2 Unconsolidated Deposits

During the Illinoian stage of glaciation, the aggradation of the Allegheny Valley region by glacial gravels blocked the mouths of the tributary streams from the nonglaciated terrain to the south and caused them to deposit much of their load. After the streams had completed their post-Illinoian downcutting, in part in wholly new courses, these sediments remained as a veneer over the rock terraces and abandoned reaches. These high stream-laid terrace deposits, free from ice-borne material of distant origin, and contemporaneous with the early glacial valley train, are known as the Carmichaels Formation (Piper, 1933).

According to Piper (1933), the most extensive deposits of the broad terraces within the Kiskiminetas basin occur at an altitude of about 1,040 feet above MSL along the Conemaugh River between Blairsville and Tunnelton. The Carmichaels Formation is composed largely of sand, silt and clay of local derivation, with some deeply weathered boulders.

In addition to the terrace deposits, residual soils formed from the weathering of the underlying bedrock are present in the site vicinity. The residual soils are locally indistinguishable from the more prominent terrace deposits.

4.1.3 Bedrock

Surficial bedrock in the vicinity of the Specialty Metals Plant belongs chiefly to the Conemaugh Group of the Pennsylvanian subsystem (Figure 5). Typical bedrock consists of sandstones, shales, limestones, claystones and coals (Figure 6).

The Pennsylvania Allegheny Group underlies the Conemaugh Group and consists of cyclic sequences of sandstone, shale, limestone clay and coal. Based on the structure contours drawn on the Upper Freeport Coal Seam (Figure 7), the Upper Freeport Coal Seam is located approximately 300 feet below the Specialty Metals Plant. According to geological maps presented in Piper (1933), the geologic unit underlying the Specialty Metals Plant corresponds to the Saltsburg Sandstone member. The Saltsburg Sandstone generally lies from 170 to 285 feet above the Upper Freeport Coal. The rock is typically massive, fine-grained, and white, gray or yellow in color. Within short distances, it may grade into a very thin-bedded argilaceous sandstone or a bluish-gray sandy shale or, less frequently, into a coarse-grained or even pebbly irregularly bedded rock (Piper, 1933).

Eight natural gas wells have been drilled and placed into production at the Westinghouse property. Each of the natural gas wells was reportedly advanced to a depth of approximately 3,600 feet bgs.

4.1.4 Structure

The Specialty Metals Plant is located in an area where the bedrock units are folded into a series of anticlines and synclines which generally have a northeast-southwest trend. Specifically, the facility is located approximately 0.6 miles northwest of the axis of the Fayette Anticline and approximately 1.5 miles southeast of the Greensburg Syncline (Figure 5). Based on this location, in addition to structure contours drawn on the Pittsburgh Coal Seam (Wagner, 1975), the rocks underlying the Specialty Metals Plant would be expected to dip to the northwest at a rate of approximately 160 feet per mile.

However, as shown on Figure 7, the structure contours drawn on the Upper Freeport Coal Seam indicate a dip to the northeast at a rate of approximately 170 feet per mile, in response to the northeast plunging Fayette Anticline.

4.2 Site Geology

Information from previous site investigations and observations during this site investigation, along with the published geologic reference material for the site area, were utilized to provide an understanding of the site geologic setting, as discussed in the following subsections.

4.2.1 General

The Specialty Metals Plant is located in the Unglaciated Allegheny Plateau section of the Appalachian Plateau physiographic province on a broad, gently sloping ridge with steep slopes north and east of the facility adjacent to the Conemaugh River (Figure 1). Surface water drainage is generally west across the site via three shallow drainage channels which have been modified by the plant construction, the adjacent railroad bed and the formation of a large man-made pond at the southern limits of the site. Each of these drainage channels ultimately flows to the Conemaugh River. Surface elevations at the facility range from approximately 980 to 1,017 feet above MSL, as compared to the approximate local Conemaugh River elevation of 905 feet MSL.

Review of existing site boring logs and published geologic reports covering the subject site area indicates the Specialty Metals Plant is underlain by fill material placed during plant construction, terrace deposits belonging to the Carmichaels Formation (Quaternary), residual soils formed from in-place weathering of bedrock, and bedrock belonging to the Glenshaw Formation of the Pennsylvania Age Conemaugh Group. Each of these units is discussed further in the following sections.

4.2.2 Unconsolidated Deposits

Boring logs completed for the Phase II monitoring well installation indicate that the unconsolidated deposits immediately underlying the Specialty Metals Plant are variable in nature and thickness and generally consist of brown, orange and gray clayey silt, silt, fine to medium-grained sand and clayey sand, with variable amounts of rock fragments and cobbles. The unconsolidated deposits ranged in thickness from approximately

8.0 feet (MW-16A) to 69.0 feet (MW-10B). The unconsolidated deposits were locally saturated. Hydrostratigraphic cross sections depicting the unconsolidated deposits are provided as Figures 8, 9, 10 and 11.

4.2.3 Bedrock

The bedrock encountered underlying the unconsolidated deposits at the Specialty Metals Plant consists predominately of tan, gray and brown fine to medium-grained sandstone interbedded at depths with shale, sandy shale, gray, black and red-brown shale and coal seams. The uppermost sandstone unit corresponds to the Saltsburg Sandstone unit (Figure 6), based on the reported elevation of the Upper Freeport Coal Seam beneath the Specialty Metals Plant, and is supported by logging of lithology during drilling of boreholes and geophysical logging. The base of the Saltsburg Sandstone unit is correlated across the site as shown on Figure 12 and the hydrostratigraphic cross sections (Figures 8 through 11).

The first mineable coal seam underlying the Specialty Metals Plant is the Upper Freeport Coal Seam, located approximately 300 feet bgs (Figure 7). According to the U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, no underground coal mining has occurred beneath the Specialty Metals Plant.

During the Phase II site investigation, the top of bedrock was encountered at depths ranging from 8 feet bgs (MW-16A) to 69 feet bgs (MW-10B). Based on the depth to bedrock encountered in the Phase I and II borings and previous geotechnical borings performed at the site for building foundation design purposes (Appendix C), the top of bedrock elevation underlying the Specialty Metals Plant was contoured as shown on Figure 13. The bedrock surface underlying the Specialty Metals Plant is somewhat variable with a general slope to the north and east in the areas investigated.

Based on the results for the four deep borings for monitoring well installation, the Saltsburg Sandstone member underlying the Specialty Metals Plant ranged in thickness from approximately 25.5 feet (MW-8B) to 55.5 feet (MW-7B), and the average thickness is approximately 46 feet. The base elevation and thickness of the Saltsburg Sandstone member across the site are depicted on Figure 12, and the hydrostratigraphic cross sections (Figure 8 through 11).

The attitude of the bedrock units underlying the Specialty Metals Plant strike north 45° east and dip to the northwest at an approximate rate of 2.8°, as calculated from a three point problem using a correlated unit identified on natural gamma geophysical logs for borings advanced for installation of Monitoring Wells MW-6B, MW-7B and MW-8B. The calculation and correlated unit are included as Appendix I. This calculated northwest dip corresponds with the structure contours drawn on the Pittsburgh Coal Seam (Wagner, 1975) which show the rocks underlying the Specialty Metals Plant dipping to the northwest at an approximate rate of 160 feet per mile.

5.0 HYDROGEOLOGIC CONDITIONS

5.1 REGIONAL GROUNDWATER SETTING

Groundwater is known to occur in both unconsolidated deposits and bedrock in the surrounding area. Each of these water bearing units is discussed separately below.

5.1.1 Unconsolidated Deposits

The uppermost groundwater-bearing unit underlying the majority of the site area is associated with unconsolidated deposits comprised of terrace deposits of the Carmichaels Formation and residual soil formed from the in-place weathering of the underlying sandstone. The water-bearing properties of the Carmichaels Formation vary due to the variable texture, extent and position of the deposits. Many of the thinner deposits of the Carmichaels, which lie on exposed terraces, are likely to be completely drained. On the broader terraces, however, groundwater may be encountered in the sandy and gravely layers of the formation. The primary source of recharge to these deposits is through direct recharge via precipitation. According to Piper (1933), groundwater yields up to 5 to 10 gpm can be developed where the coarse layers are not subject to drainage.

5.1.2 Bedrock

According to Piper (1933), the Conemaugh Formation is a productive source of groundwater. Sandstone members--the Connellsville, Morgantown, Saltsburg, Buffalo, and Mahoning--are especially productive over extensive areas.

Groundwater occurs in coarse grained, highly permeable zones of the member, which yield up to 100 gpm where the member lies below drainage level. Locally, the massive sandstone members have been extensively fractured, and the joint openings serve as conduits for groundwater circulation. The shale members of the formation, together with the shale facies of the sandstone members, produce limited (generally less than 5 gpm) groundwater from bedding plane partings and from joint openings.

Locally, the collapse and subsidence of the roof above abandoned underground mine entries along the Upper Freeport Coal Seam has induced drainage of the overlying basal members of the Conemaugh Formation so that they are not a source of groundwater. According to the U.S. Department of the Interior, Office of Surface Mining Reclamation and Enforcement, no underground coal mining has occurred beneath the Specialty Metals Plant.

5.2 SITE GROUNDWATER

This study focused on the shallow groundwater-bearing unit occurring in the unconsolidated deposits, and the deep groundwater-bearing unit encountered in bedrock associated with the Saltsburg Sandstone member of the Conemaugh Group. The hydrogeologic properties of these groundwater-bearing units were evaluated during Phase II from shallow groundwater pump testing and surface/groundwater level measurements.

5.2.1 Unconsolidated Deposits

The uppermost groundwater bearing unit is unconfined and associated with the unconsolidated deposits and underlying weathered bedrock at the Specialty Metals Plant. The unconsolidated deposits are locally saturated. Based on borings drilled east of the Specialty Metals Plant along Township Road 966, the shallow groundwater unit was not present along the hillside above the Conemaugh River. This condition may possibly be due to increased stress relief fractures along the steep valley walls adjacent to the Conemaugh River, which may allow drainage of the shallow groundwater into the more competent portion of the bedrock formation. According to Piper (1933), areas where unconsolidated terrace deposits (Carmichaels Formation) are located on exposed terraces are likely to be completely drained.

Groundwater levels were measured bimonthly for a period of three months. The groundwater levels measured in the twelve unconsolidated/weathered bedrock site monitoring wells on September 18, 1995 are primarily representative of water levels for the three-month monitoring period. The groundwater levels were converted to elevations in feet above MSL and contoured as shown on Figure 14. The resulting piezometric surface map indicates that shallow groundwater flow tends to mimic surface topography, with flow generally from west to east across the site. The horizontal hydraulic gradient

varies from upgradient (west) to downgradient (east) locations, with the gradient becoming much steeper east of the Specialty Metals Plant near Township Road 966. Based on September 18, 1995 water level data for Monitoring Wells MW-6A (994.60 feet MSL) and MW-9A (961.30 feet MSL) the average horizontal hydraulic gradient is approximately 0.02 ft/ft. The groundwater levels measured on September 18, 1995 for selected wells are shown in cross section on Figures 8 through 11.

No natural springs or seeps were observed in the vicinity of the Specialty Metals Plant. However, Groundwater Drains GW-1 (active) and GW-2 (abandoned) were reportedly installed to intercept groundwater seepage in the vicinity of the existing sludge drying beds (Figure 4).

5.2.2 Aquifer Test Results

During the constant rate aquifer test, no significant drawdowns were observed in any of the observation wells (MW-3, MW-11A and MW-13A) located 80 to 120 feet from the pumping well (MW-12A). The water levels recorded with an electronic water level meter for the observation wells (MW-3, MW-11A and MW-13A), the background wells (MW-2, MW-6A/6B, MW-9A, MW-8A/8B, MW-16A and MW-17A) and the on-site pond were plotted with Well MW-12A drawdown and the graphs and water levels are included in Appendix J.

Water levels collected from Pumping Well MW-12A during the constant rate test were plotted on semi-logarithmic graph paper and analyzed using a modified nonequilibrium equation. Based on this single analysis for drawdown (feet) versus time (minutes), the transmissivity of the shallow groundwater bearing unit, defined as the transmission capability of the entire thickness of an aquifer, was estimated as 573.9 gallons per day per foot (gpd/ft). The hydraulic conductivity, defined as the capacity of a porous medium, in this case sand, silt and clay deposits, to transmit groundwater flow, was estimated at 47.8 gpd/ft^2. Transmissivity and hydraulic conductivity calculations are included in Appendix J.

Water levels collected from Well MW-12A after the constant rate test had been stopped were also plotted on semi-logarithmic graph paper. However, the analysis of the recharge data plotted for Well MW-12A contradicts the drawdown analysis, and it is believed that

a defective check valve in the submersible pump may be the cause of the invalid recharge data. The aquifer pump test results indicate that shallow groundwater recovery wells may be effective for source removal. However, their effectiveness for hydraulic control will be limited.

5.2.3 Bedrock

Groundwater occurs in the bedrock underlying the unconsolidated deposits at the Specialty Metals Plant. Groundwater circulation is predominately through secondary porosity in the form of fractures and bedding plane partings in the sandstone, shale, and coal units. Cumulative groundwater production in the borings ranged from approximately 0.5 to 40 gpm.

Groundwater levels were measured bimonthly for a period of three months; results are presented in Table 6. The groundwater levels measured in four deep monitoring wells on September 18, 1995 are primarily representative of water levels for the three-month monitoring period and were contoured as shown on Figure 15. The resulting piezometric surface map indicates that groundwater associated with the Saltsburg Sandstone member tends to flow northeast toward the Conemaugh River (Figure 15). The horizontal hydraulic gradient varies from upgradient (southwest) to downgradient (northeast). Based on September 18, 1995 water level data for Monitoring Wells MW-8B (989.89 feet MSL) and MW-7B (943.42 feet MSL), the average horizontal hydraulic gradient is approximately 0.03 ft/ft. The groundwater levels measured on September 18, 1995 ranged from 942.20 to 993.85 feet MSL (Table 6), and are shown in cross sections on Figures 8 through 11.

Based on water level data in the shallow and deep well pairs, a slight downward vertical hydraulic gradient (decreasing head with depth) exists to the south (MW-8A/MW-8B) and to the southwest (MW-6A/MW-6B) of the site, and the downward hydraulic vertical gradient increases to the north (MW-7A/MW-7B). The observed downward vertical hydraulic gradient indicates that the shallow groundwater bearing unit associated with the unconsolidated deposits provides recharge to the underlying bedrock aquifer.

5.2.4 Surface Water/Groundwater Relationship

A benchmark was surveyed at the on-site pond, used for measuring the surface water level of the pond. The surface water level was measured bimonthly corresponding with the site monitoring well levels. Based on the three-month monitoring of water levels, the man-made pond appears to represent a groundwater recharge boundary for the local shallow groundwater unit southeast of the Westro Building, as evidenced by the pond surface water elevation on September 18, 1995 (997.22 feet MSL), as compared to groundwater elevations in nearby Monitoring Wells MW-3 (994.00 feet MSL), MW-12A (994.07 feet MSL), and MW-8A (990.79 feet MSL). Over the three-month monitoring period, the on-site pond elevation was approximately two and one-half feet or more above the nearest groundwater elevation, as measured in Well MW-3.

The head relationship between the surface water drainage east of the facility adjacent to the sludge drying beds and the groundwater level in nearby Monitoring Well MW-2 indicates a potential for shallow groundwater discharge to the surface water drainage course in the vicinity of the sludge drying beds. However, further east the groundwater level measured for Monitoring Well MW-9A on September 18, 1995 indicates a potential for surface water recharge to the shallow groundwater unit in the vicinity of Township Road 966, east of the Industrial Waste Treatment Plant. This condition was also observed in Well MW-15, where the unconsolidated deposits were dry and the uppermost saturated unit encountered was associated with the Saltsburg Sandstone Unit. This relationship may be the result of increased fracturing of the shallow bedrock unit with depth along the hillside adjacent to Township Road 966 in the vicinity of the Conemaugh River.

According to Westinghouse plant personnel, the surface water drainage feature adjacent to the sludge drying beds is concrete lined under the facility parking lots, and reportedly receives only storm water runoff from the roof drains and parking lots east of the Westro and Zircaloy Buildings. Based on a one-time non-precipitation monitoring event conducted in December 1995, the flow from Groundwater Drain GW-1 was observed to be 3.0 gpm, compared to an upstream measurement near location SD-C (Figure 3) of 2.8 gpm. This indicates that GW-1 provides slightly more than 50 percent of the base flow to this surface water drainage feature during non-precipitation events.

Cummings/Riter personnel also measured the stream flow downstream from GW-1. Based on this one-time non-precipitation monitoring event, the downstream flow (5.5 gpm) measured at location SD-B (Figure 3) was slightly less than the combined flow from GW-1 and the upstream monitoring location. This indicates that the portion of the channel downstream from Groundwater Drain GW-1 may represent a losing stream, contributing a portion of its flow to the zone of saturation.

6.0 INVESTIGATION RESULTS

6.1 MAGNETOMETER SURVEY

Magnetometer results were interpreted by means of contouring the field measurements to identify areas where the physical properties of the ground vary from normal values (anomalies). The presence of an anomaly does not necessarily imply the presence of subsurface metal, as other conditions may exist which could produce the same magnetic variation. Cummings/Riter personnel documented the influence of potential causes of magnetic anomalies at the area investigated during this study, such as underground utility lines, utility manhole covers, etc. These potential causes of magnetic anomalies are termed "cultural interferences" and are specifically identified on the field data sheets (Appendix H) and the contour map of magnetic intensity (Figure 16).

Data from the magnetometer survey were plotted and contoured to determine anomalous patterns that might relate to the presence of subsurface metal. Normal background readings for this area ranged from 54,800 to approximately 55,000 gammas. The magnetometer reading (gammas) for each of the survey points is included as Appendix H. A value of 54,800 gammas has been subtracted from the readings and the resulting values have been contoured on Figure 16. A background reading in this area without effects from cultural interference (i.e., utilities and metal covers) or magnetic anomalies associated with buried ferrous metal is generally represented on the contour map by positive readings from 0 to 200 gammas.

The contour map of magnetic intensity (Figure 16) indicates the presence of magnetic anomalies associated with several known cultural features, including an active eight-inch diameter underground gasoline pipeline running approximately east-west through the approximate center of the study area; an active eight-inch underground steel natural gas line along the western portion of the survey area; a four-inch underground steel water line (inactive) along the western portion of the survey area; surface scrap metal (N20, EO); a metal utility cover (N0, E35); metal rebar scrap (N0, E55); and a corrugated metal pipe (N150, E110). Each of these features appears to have created anomalies represented by high magnetic intensity.

Anomalies represented by high magnetic intensity with no known cultural interference are approximately centered at the following grid locations:

- N30, E35;
- N55, E40;
- N65, E45; and
- N50, E95.

6.2 Soil Sampling and Analysis

Ten subsurface soil (fill) samples were selected for laboratory analysis from five soil borings performed as part of this investigation. An additional 164 surficial soil samples were collected for radiological testing by Westinghouse representatives. The soil samples from the northeast fill area selected for laboratory analysis and the analytical parameters tested are provided in Table 2. Additional soil samples selected and analyzed by Westinghouse for radiological parameters are discussed later.

6.2.1 Chemical Analysis

The results for soil headspace screening for each soil (fill) sample collected within the fill area are provided on the appropriate boring log (Appendix C). The results for soil headspace screening for the surficial soil samples are provided in Table 1. Some soil samples exhibited total organic vapor results for headspace screening above background.

The laboratory analytical results for soil samples collected during the site investigation were compared to the *Interim Cleanup Standards for Contaminated Soils*, published by the PADEP (December, 1993). This guidance document lists generic soil levels for a variety of substances and generally describes the methods and assumptions used to arrive at the levels. The use of these levels for a comparison is not intended to be a recommendation for their utilization as site-specific standards or criteria.

Two different groundwater protection levels are provided for each organic compound on the PADEP list, depending on how recently the soil has become impacted. Level 1 is applicable to soils that have been impacted as a result of recent or continuing spills, leaks or discharges. Level 2 applies to soils that have been impacted by spills, leaks or discharges which occurred, in total, more than one year ago. The analytical results for soil samples

collected during this investigation were evaluated using the Level 2 criteria, as no known spills, leaks or discharges have occurred in the past year at the Specialty Metals Plant. In addition, some of the substances on the PADEP list (i.e., trichloroethene) have not been used at the facility for more than five years.

The analytical results for soil samples and the PADEP interim standards for soils are summarized in Table 2 and included in Appendix G. Seven of ten soil samples exceeded the interim the PADEP reference level for nickel (B-45 S-3, B-45 S-7, B-47 S-5, B-47 S-9, B-48 S-5, B-48 S-9, and B-49 S-3). These samples were collected from the fill area located northeast of the Specialty Metals Plant (Figure 4).

6.2.2 Radiological Analysis

The surficial soil samples and borehole samples collected were radiologically screened by counting the sample in a shielded cave using the Model GR-256 NaI gamma spectrum counting instrument. Based on these screening data, representative samples were taken for further radiochemistry analysis by the Radiochemistry Laboratory at the Westinghouse Waltz Mill Facility. These results are presented in Appendix B. These results indicate that for survey Areas 1, 2, and 3, and for the boreholes (B-45 through B-49) the samples analyzed exhibit normal variations in background levels of naturally occurring radioactive materials with one exception. Sample S-5 in Boring B-48 shows evidence of elevated radiation readings due to the presence of sands containing higher levels of natural uranium and thorium. This is consistent with the findings noted in the Phase I report for the presence of such sandy material in the Sand Mound area. This material is apparently discarded casting sand from casting operations previously conducted at the facility.

The borehole logging and gamma spectral analysis conducted in the five boreholes (B-45 through B-49) drilled into the northeast fill area also indicated normally expected variations in radiation levels. The most significant anomaly in the borehole logging results corresponds to the level at which Sample S-5 was taken in Boring B-48. Table 7 provides a summary of results for the borings.

The ground surveys using the Model GR-256 NaI gamma spectrum instrument did not show any anomalous results in Areas 1, 2, and 3. The results in the former Zircaloy burn area (Area 4) indicated areas of elevated radiation. Correspondingly, the soil samples analyzed for this area also show elevated levels of uranium exceeding 30 pCi/g. The isotopic composition of some of these samples indicates that the contaminate is enriched uranium.

The trench excavations made in the former Zircaloy burn area identified the presence of subsurface rubble, some of which showed above background radiation levels. Excavation of Trench #5 was terminated upon discovery of a drum containing an oily material. The chemical analysis of the contained substance is provided in Appendix G.

6.3 GROUNDWATER

As previously discussed, groundwater from 17 monitoring wells and one groundwater drain was sampled and analyzed as part of this investigation. The groundwater samples were analyzed for the COI identified in Section 3.7. The locations for the monitoring wells and Groundwater Drain GW-1, which were sampled during this investigation, are provided on Figure 4.

The groundwater analytical results were evaluated by comparing the concentrations reported by the laboratory with the Pennsylvania Human Health Standards (PA Standards) for Groundwater, (PADEP, 1995). Groundwater analytical results are presented along with the PA Standards for Groundwater in Table 5. The results for TCL VOC analyses are provided for groundwater associated with the unconsolidated deposits/weathered bedrock and the Saltsburg Sandstone Member of the Conemaugh Formation as Figures 18 and 19, respectively.

Two upgradient monitoring well pairs (MW-6A/MW-6B and MW-10A/MW-10B) were sampled during the site investigation. Groundwater sampled from shallow Well MW-6A exceeded the PA Standards for total aluminum (39.9 mg/l), total chromium (0.12 mg/l), total lead (0.071 mg/l), total manganese (1.46 mg/l), total sodium (12.6 mg/l) dissolved thallium (7.86 mg/l), and methylene chloride (6 μg/l). Groundwater from the deep companion Well MW-6B exceeded the PA Standards for total manganese (0.08 mg/l)

total sodium (35.9 mg/l) and methylene chloride (7 μg/l). Groundwater sampled from shallow Well MW-10A located upgradient from the Specialty Metals Plant exceeded the PA Standards for total aluminum (9.0 mg/l), total lead (0.013 mg/l) total manganese (0.45 mg/l) and total sodium (4.9 mg/l). Groundwater from the deep nested Well MW-10B exceeded the PA Standards for total manganese (0.41 mg/l) and total sodium (2.7 mg/l).

Groundwater sampled from companion Monitoring Wells MW-7A and MW-7B, located north of the Main Building Shop area (Figure 4), exceeded the PA Standards for several parameters. Groundwater sampled from shallow Well MW-7A exceeded the PA Standards for total aluminum (1.5 mg/l), total manganese (1.77 mg/l), dissolved selenium (0.07 mg/l), and total sodium (9.5 mg/l). Groundwater sampled from Well MW-7B exceeded the PA Standards for total aluminum (53.8 mg/l), total lead (0.059 mg/l), total manganese (0.82 mg/l), and total sodium (105 mg/l).

Monitoring Wells MW-8A and MW-8B located southeast of the Westro Building (Figure 4) exceeded the PA Standards for several parameters. Groundwater sampled from shallow Well MW-8A exceeded the PA Standard for total aluminum (61.3 mg/l), total chromium (0.12 mg/l), total lead (0.07 mg/l), total manganese (5.31 mg/l), total nickel (0.18 mg/l), total sodium (12.1 mg/l), trichloroethene (6 μg/l) and methylene chloride (6 μg/l). Groundwater sampled from Well MW-8B exceeded the PA Standards for total manganese (0.11 mg/l), total sodium (12.1 mg/l) and methylene chloride (6 μg/l).

Shallow Monitoring Wells MW-3 and MW-12A are located south of the Westro Building (Figure 4). Groundwater sampled from Well MW-3 exceeded the PA Standards for total aluminum (8.9 mg/l), total lead (0.011 mg/l), total manganese (0.44 mg/l), total sodium (6.2 mg/l), trichloroethene (3,100 μg/l), 1,2-dichloroethene (total) (530 μg/l), and vinyl chloride (23 μg/l). Groundwater sampled from Well MW-12A, which is located in close proximity to the former above ground trichloroethene/1,1,1-trichloroethane storage tank, exceeded the PA Standards for total aluminum (3.8 mg/l), total manganese (0.71 mg/l), total sodium (21.9 mg/l), 1,1-dichloroethene (36 μg/l), 1,2-dichloroethene (total) (190 μg/l), 1,1,1-trichloroethane (2,700 μg/l) and trichloroethene (1,800 μg/l).

Monitoring Well MW-12A was utilized for the aquifer pump testing. Three groundwater samples were collected from Monitoring Well MW-12A during the constant rate aquifer test and analyzed for VOCs. Groundwater sampled at the beginning of the constant rate test (MW-12A, Start) exceeded the PA Standards for 1,1,1-trichloroethane (440 μg/l) and trichloroethene (2,500 μg/l). Groundwater sampled after the constant rate test had been running for 12 hours (MW-12A, 12 Hour) exceeded the PA Standards for 1,1,1-trichloroethane (3,600 μg/l) and trichloroethene (840 μg/l). Groundwater sampled at the end of the constant rate test (MW-12A, End) exceeded the PA Standards for 1,1,1-trichloroethane (1,800 μg/l) and trichloroethene (940 μg/l). Analytical results for the samples collected during the constant rate test are presented in Table 4.

Shallow Monitoring Well MW-11A is located at the southwest corner of the Westro Building (Figure 4). Groundwater sampled from Well MW-11A exceeded the PA Standards for total aluminum (7.0 mg/l), total lead (0.008 mg/l), total manganese (0.8 mg/l), total sodium (23.8 mg/l), 1,1,1-trichloroethane (380 μg/l), trichloroethene (100 μg/l) and vinyl chloride (18 μg/l).

Shallow Monitoring Well MW-13A is located at the southeast corner of the Westro Building (Figure 4) Groundwater sampled from Well MW-13A exceeded the PA Standards for total aluminum (9.2 mg/l), total lead (0.013 mg/l), total sodium (18.1 mg/l), total manganese (0.71 mg/l) and trichloroethene (1700 μg/l).

Shallow Monitoring Wells MW-16A and MW-17A are located to the east of the Westro Building and to the south of the Main Building Shop Area (Figure 4). Groundwater sampled from Well MW-16A exceeded the PA Standards for total aluminum (22.9 mg/l), total lead (0.022 mg/l), total manganese (1.81 mg/l), total sodium (10.8 mg/l) and methylene chloride (6 μg/l). Groundwater sampled from Well MW-17A exceeded the PA Standards for total aluminum (79.7 mg/l), total chromium (0.25 mg/l), total lead (0.098 mg/l), total manganese (15.9 mg/l), total nickel (0.32 mg/l), total sodium (3.6 mg/l) and methylene chloride (10 μg/l).

Groundwater sampled from shallow Monitoring Well MW-2, located downgradient of existing sludge drying beds, exceeded the PA Standards for fluoride (5.11 mg/l), nitrate (12.1 mg/l), total aluminum (5.4 mg/l), total manganese (1.96 mg/l), total sodium (60.7 mg/l) and trichloroethene (26 μg/l).

The active groundwater drain (GW-1) reportedly drains shallow groundwater beneath the sludge drying beds to the nearby drainage channel (Figure 4). Groundwater sampled at GW-1 exceeded the PA Standards for total aluminum (0.7 mg/l), total manganese (0.28 mg/l), total sodium (60.7 mg/l), methylene chloride (5 μg/l) and trichloroethene (190 μg/l).

Groundwater sampled from Well MW-9A, located adjacent to Township Road 966, approximately 75 feet southeast (downgradient) from the Industrial Waste Treatment Plant Building (Figure 4), exceeded the PA Standards for total aluminum (21.5 mg/l), total lead (0.024 mg/l), total manganese (13.5 mg/l), total sodium (32.1 mg/l), 1,2-dichloroethene (total) (620 μg/l) and trichloroethene (12,000 μg/l).

Groundwater sampled from Well MW-15, located northeast of the fill area east of Township Road 966, exceeded the PA Standards for total aluminum (1.2 mg/l), total manganese (2.32 mg/l), total sodium (20.5 mg/l), methylene chloride (6 μg/l), and trichloroethene (1,100 μg/l).

It appears as though the reported elevated levels of aluminum, lead, manganese, sodium, gross alpha and low pH represent background conditions because of their ubiquity and consistent levels. In addition, levels of methylene chloride were reported in a laboratory method blank sample, which indicates that the detection of methylene chloride in groundwater samples may be the result of the laboratory analysis process. Additional sampling and analysis of groundwater may be necessary to further evaluate these occurrences.

7.0 SUMMARY OF FINDINGS

The objectives of this site investigation were to evaluate the nature and extent of COI in shallow and deep groundwater, in soils in the northeast fill area, and in four areas identified by Westinghouse where radiological readings exceeded background levels, and to obtain an understanding of the shallow and deep hydrogeologic regime and the surface water/groundwater relationship at the Specialty Metals Plant.

The Phase II FSP findings are summarized as follows:

- Unconsolidated deposits consisting of fill material, terrace deposits and residual soil are present immediately beneath the Specialty Metals Plant. The unconsolidated deposits range from approximately 8.0 to 69.0 feet in thickness.

- The bedrock underlying the Specialty Metals Plant consists predominately of tan, gray and brown, fine to medium-grained sandstone interbedded at depths with shale, sandy shale, gray, black and red-brown shale, and coal seams. The uppermost unit corresponds to the Saltsburg Sandstone Member of the Conemaugh Group.

- The attitude of the bedrock units underlying the Specialty Metals Plant strike north 45° east and dip to the northwest at an approximate rate of 2.8°.

- The uppermost groundwater-bearing unit beneath the Specialty Metals Plant is associated with the unconsolidated deposits and upper weathered bedrock.

- Groundwater flow within the uppermost groundwater-bearing unit tends to mimic surface topography, with flow from west to east across the site. The average horizontal hydraulic gradient on September 18, 1995 was 0.02 ft/ft.

- Transmissivity of the shallow aquifer was estimated as 573.9 gpd/ft with a hydraulic conductivity of 47.8 gpd/ft^2 from the constant rate aquifer test.

- The Aquifer pump test results indicate that shallow groundwater recovery wells may be effective for source removal. However, their effectiveness for hydraulic control will be limited.

- Based upon the aquifer pump test results, groundwater associated with the unconsolidated deposits/weathered bedrock unit is considered to be an aquifer under the PADEP Pennsylvania Land Recycling Act 2 (1995) due to an estimated yield from a spring or a well in the amount of greater than 200 gallons per day, year round.

- Based on the bimonthly water level measurements for a three-month period, the pond located south of the Specialty Metals Plant appears to act as a recharge point for the local shallow groundwater unit. In addition, based on water level data in the shallow and deep companion wells, a downward vertical hydraulic vertical gradient exists indicating that the shallow aquifer associated with the unconsolidated deposits provides recharge to the underlying bedrock aquifer.

- Groundwater sampled from shallow site monitoring wells had reported levels of aluminum, manganese, and sodium for both the upgradient and downgradient monitoring wells that exceeded the PADEP criteria (1995). These levels appear to represent background groundwater quality.

- Samples from the active groundwater drain (GW-1) near the existing sludge drying beds contained trichloroethene at 190 μg/l. Samples from Monitoring Well MW-2 located downgradient of the sludge drying beds also contained fluoride (5.11 mg/l), nitrate (12.1 mg/l) and trichloroethene (26 μg/l) and 1,2-dichloroethene (total) (620 μg/l).

- Groundwater samples collected from shallow wells located south of the Westro Building near the location for the former 1,1,1-trichloroethane/trichloroethene above ground storage tank and "Triclene Pit" contained chlorinated aliphatic hydrocarbons above the PA Standards (1995).

- Groundwater samples collected from shallow Well MW-9A, located 75 feet southeast (downgradient) of the Industrial Waste Treatment Plant Building, exceeded the PA Standards (1995) for trichloroethene (12,000 μg/l) and 1,2-dichloroethene (total) (620 μg/l).

- Groundwater occurs in the bedrock with circulation occurring predominately through secondary porosity in the form of fractures and bedding plane partings in the sandstone, shale, and coal units.

- Groundwater flow within the bedrock flows northeast across the site towards the Conemaugh River. The average horizontal hydraulic gradient on September 18, 1995 was 0.03 ft/ft.

- Groundwater sampled from site monitoring wells screened in the Saltsburg Sandstone had elevated levels of manganese and sodium for both upgradient and downgradient monitoring wells that exceeded the PADEP criteria (1995). These levels appear to represent background groundwater quality.

- Groundwater samples from Well MW-15, located within the Saltsburg Sandstone Formation northeast of the fill disposal area (downgradient), exceeded the PA Standards for trichloroethene (1,100 μg/l).

- Areas where groundwater in both unconsolidated deposits and bedrock exceed interim the PADEP criteria for site related contaminants have been identified. The extent of shallow groundwater impacted by VOCs south of the Westro Building is defined. The extent of VOCs in the bedrock aquifer has not been defined. However, the bedrock units monitored at the site subcrop east of the Specialty Metals Plant, and are bounded by the site physical setting.

- Radiological surveys of three previously identified areas on the site (Areas 1, 2, and 3) established that the above background radiation readings were due to variations in naturally occurring radioactive materials.

- Various surveys (radiological, trenching, and magnetometer) of Area 4, the former Zircaloy burn area, identified subsurface anomalies. Near surface deposits of various rubble were found, some of which exhibit above background radiological readings. There are indications of the possible presence of subsurface metals unrelated to known site features.

- Radiological analysis of soil samples taken from the northeast fill area combined with borehole logging results and downhole NaI Spectral results, indicate variations in radiation levels due to naturally occurring radioactive materials. Soil sample S-5 from Borehole B-48 and the

associated borehole logging at a depth of about 8 to 11 feet bgs identified the presence of a deposit of sand which exhibits radiation levels that indicate the probable presence of naturally occurring uranium and thorium.

- Soil samples collected from the northeast fill area exceeded interim the PADEP criteria for nickel in samples B-45, S-3 and S-7; B-47, S-5 and S-9; B-48, S-5 and S-9; and B-49, S-3. As described in the Data Summary Report (Cummings/Riter, 1995a) the other soil samples were generally found not to exceed the PADEP interim criteria (1993) for any other substances.

Please note that the PADEP is expected to publish additional information on soil cleanup criteria in December 1995 as part of an update of the PADEP's Technical Manual for Act 2, 1995 of the Pennsylvania Legislature.

8.0 SUGGESTED REMEDIAL OBJECTIVES

Based upon the summary of findings described herein, the following remedial objectives are hereby suggested:

- Groundwater extraction with subsequent treatment should be considered for the shallow groundwater impacted by VOCs south of the Westro Building. The remedial objective is to reduce and control VOCs in this area as a potential source.
- Although groundwater associated with bedrock was not found to be impacted over most of the site area; the occurrence of VOCs in a shallow bedrock aquifer (the Saltsburg Sandstone) east of the Specialty Metals Plant near the facility property line should be further evaluated. The remedial objective is to further evaluate the extent and migration potential of these substances in the Saltsburg Sandstone.

As stated in Section 7.0, elevated levels of non-radiological contaminants have not been identified in a significant number of soil samples. Soil remediation for non-radiological parameters does not appear to be necessary. The occurrence of radiological substances in soils continues to be investigated by Westinghouse. It is recommended that these actions be discussed with representatives of the PADEP. A remedial design work plan and schedule would then be submitted to the PADEP for review and comment prior to implementation.

Respectfully submitted,
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TABLES

Table 1
Surface Soil Samples

Area Sample I.D	Date	Headspace Results (ppm) (0-6 in.)	Headspace Results (ppm) (6-12 in.)
1-0,0	8/2/95	1	0
1-8,0	8/2/95	0.1	0
1-16,0	8/2/95	0.5	0
1-24,0	8/2/95	0	0
1,32,0	8/2/95	0	0
1-40,0	8/2/95	0	0
1-0,8	8/2/95	0.4	0
1-8,8	8/2/95	0	0
1-16,8	8/2/95	0	0
1-24,8	8/2/95	0	0
1-32,8	8/2/95	0	0
1-40,8	8/2/95	0	0
1-28,4	8/2/95	0.3	0.1
1-36,4	8/2/95	0.5	0
2-8,0	8/3/95	0.4	0.1
2-8,8	8/3/95	0	0
2-8,16	8/3/95	0	0
2-8,24	8/3/95	0	0.1
2-8,32	8/3/95	0	0
2-8,40	8/3/95	4.4	0.2
2-0,8	8/3/95	1	0.1
2-0,16	8/3/95	0.2	0
2-0,24	8/3/95	0	0
2-0,32	8/3/95	0.1	0
2-0,40	8/3/95	0.1	0.1
3-0,24	8/3/95	1.8	0.2
3-8,24	8/3/95	1	0
3-16,24	8/3/95	1.6	0
3-24,24	8/3/95	0.2	0
3-32,24	8/3/95	0	0
3-40,24	8/3/95	0.1	0
3-48,24	8/3/95	0	0
3-56,24	8/3/95	0	0
3-64,24	8/3/95	0	0
3-0,16	8/3/95	0.4	0.4
3-8,16	8/3/95	0	0
3-16,16	8/3/95	0.2	0.6
3-24,16	8/3/95	0.2	0.4
3-32,16	8/3/95	0.2	0.2
3-40,16	8/3/95	0.2	0.4
3-48,16	8/3/95	1	0.4
3-56,16	8/3/95	0.2	0.2
3-64,16	8/3/95	0.2	0.6
3-16,8	8/3/95	0.2	0.2
3-24,8	8/3/95	0.2	0.2
3-32,8	8/3/95	0.2	0.2
3-40,8	8/3/95	0.2	0.4
3-48,8	8/3/95	0.6	0.4
3-56,8	8/3/95	4.4	--
3-24,0	8/3/95	0.6	0.2
3-32,0	8/3/95	0.4	1.2

Table 1
Surface Soil Samples

Area Sample I.D	Date	Headspace Results (ppm)	
		(0-6 in.)	(6-12 in.)
3-40,0	8/3/95	0.2	0.6
3-64,8	8/3/95	0.2	0.2
3-48,0	8/3/95	0.2	0.2
3-56,0	8/3/95	0.2	0.2
3-50,4	8/3/95	0.2	0.4
3-aff-sw	8/3/95	0.8	0.4
3-aff-se	8/3/95	0.4	0.4
3-aff-nw	8/3/95	0.4	0.4
3-aff-ne	8/3/95	0.4	--
3-aff-comp	8/3/95	--	--
swamp-e	8/3/95	0.2	0.2
swamp-w	8/3/95	0.2	0.8
ditch-n	8/3/95	0	0.2
ditch-s	8/3/95	0.6	0.4
4-aff-1	8/3/95	0.2	0.4
4-aff-2	8/3/95	0.2	0.2
4-aff-3	8/3/95	0.2	0.4
4-78,60	8/3/95	0.1	0.2
4-78,68	8/3/95	0	0
4-70,68	8/3/95	0	0
4-62,68	8/3/95	--	--
4-54,68	8/3/95	--	--
4-46,68	8/3/95	0.2	0
4-46,76	8/3/95	0	0
4-54,76	8/3/95	0	0
4-62,76	8/3/95	0	0.2
4-70,76	8/3/95	0.6	0.6
4-70,84	8/3/95	0.2	0.2
4-62,84	8/3/95	0.1	0.2
4-54,84	8/3/95	0.2	0.2
4-46,84	8/3/95	0	0

a. Sample I.D. consists of the following:
Area Number - North Coordinate, East Coordinate
(1-4) (0,8,etc.) (0,8,etc.)

b. See Figure 3 for sample grid locations and Appendix A for individual sample locations.

Table 2
Soil (Fill) Boring Analytical Results

		Date Sampled:	8/8/95	8/8/95	8/7/95	8/7/95	8/8/95	8/8/95	8/9/95	8/9/95	8/10/95	8/10/95
		Sample I.D:	B-45, S-3	B-45, S-7	B-46, S-1	B-46, S-3	B-47, S-5	B-47, S-9	B-48, S-5	B-48, S-9	B-49, S-1	B-49, S-3
		Depth of Sample (ft):	5-7	15-17	0-2	5-7	10-12	20-22	10-12	20-22	0-2	7.5-9.5
Parameter	Units	PADEP Interim Level	Value Qual	Value Qual	Value Qual	Value Qual	Value Qual	Value Qual	Value Qual	Value Qual	Value Qual	Value Qual
Inorganics:												
Nickel	mg/Kg	200	**735**	**3240**	122	65	**791**	**3330**	**831**	**3220**	160	**299**
Radiological:												
Gross Alpha	pCi/g	--	5.3 +/- 3.9	7.1 +/- 4.2	5.7 +/- 4.4	11 +/- 5	15 +/- 5	25 +/- 6	66 +/- 9	22 +/-6	18 +/- 5	9.0 +/- 4.1
Gross Beta	pCi/g	--	2.2 +/- 5.0	9.1 +/- 5.3	12 +/- 6	15 +/- 6	18 +/- 6	25 +/- 6	83 +/- 8	23 +/- 6	16 +/- 6	10 +/- 5
Radium (Total)	pCi/g	--	0.0 +/- 0.8	1.0 +/- 1.0	0.3 +/- 0.9	1.0 +/- 1.0	1.8 +/- 1.1	2.6 +/- 1.2	0.7 +/- 1.0	1.0 +/- 1.0	1.9 +/- 1.0	1.4 +/- 1.0
Uranium-234	pCi/g	--	0.1 +/- 0.5	0.4 +/- 0.6	0.4 +/- 0.6	2.4 +/- 1.0	3.2 +/- 1.2	3.2 +/- 1.2	0.4 +/- 0.6	9.9 +/- 1.9	2.5 +/- 1.1	0.7 +/- 0.7
Uranium-235	pCi/g	--	0.0 +/- 0.4	0.0 +/- 0.4	0.0 +/- 0.4	0.0 +/- 0.4	0.0 +/- 0.4	0.0 +/- 0.4	0.0 +/- 0.4	0.0 +/- 0.6	0.0 +/- 0.5	0.0 +/- 0.4
Uranium-238	pCi/g	--	0.4 +/- 0.6	0.5 +/- 0.6	0.7 +/- 0.7	0.2 +/- 0.6	1.0 +/- 0.8	0.8 +/- 0.7	0.4 +/- 0.6	4.2 +/- 1.3	1.0 +/- 0.8	0.0 +/- 0.4
Uranium (Total)	ug/g	--	1.2	1.5	2.7	1.9	3.1	3.4	1.9	5.0	1.9	1.6

a. PADEP interim standards listed for inorganics is the generic cleanup standard.
b. Results exceeding PADEP interim standard are **bold**.

Table 3
Groundwater Supply Well Abandonment Summary

Well I.D.	Approximate Depth of Well (feet) [a]	Latitude	Longitude	Date of Abandonment	Diameter of Casing (inch I.D.)	Casing Depth Based on Geophysics (feet)	Amount of Casing Removed (feet)	Number of 94lb. bags of cement [b]
DW-1	140	409918.63	1534837.0	7-26/27-95	12.0	37.0	38.1	95
DW-2	170	409727.83	1534100.36	11-8/9/10-95	12.0	32.0	34.0	101
DW-3	185	409792.60	1533698.10	8-1/2-95	12.0	38.0	4.2	132
DW-4	185	409756.48	1533838.96	7-28/31 -8/1-95	12.0	40.0	36.8	137
DW-5	139	408669.88	1535141.61	7-17/18-95	12.0	22.0	21.0	110
DW-6	164	408641.76	1534288.41	8-3/4-95	14.0	22.0	19.9	108
DW-7	185	409407.64	1534713.99	7-19/20-95	12.5	28.0	5.1	108
DW-8 (c)	--	--	--	--	--	--	--	--
DW-9	200	408314.02	1533943.84	7-20/24/25-95	12.0	46.0	43.5	116

a. As measured during borehole geophysical logging. Actual boring logs were unavailable for groundwater supply wells.
b. Three to five pounds of sodium bentonite per bag of cement were mixed.
c. Groundwater supply Well DW-8 could not be located and is believed to have been covered during surface pond expansion.

Table 4
MW-12A Constant Rate Test Analytical Results

		Well MW-12A		
Parameter	**Units**	**Start 10/11/95**	**12 Hour 10/12/95**	**End 10/12/95**
Acetone	ug/l	<2000	<1000	<1000
Benzene	ug/l	<100	<50	<50
Bromodichloromethane	ug/l	<100	<50	<50
Bromoform	ug/l	<100	<50	<50
Bromomethane	ug/l	<200	<100	<100
2-Butanone (MEK)	ug/l	<200	<100	<100
Carbon disulfide	ug/l	<100	<50	<50
Carbon tetrachloride	ug/l	<100	<50	<50
Chlorobenzene	ug/l	<100	<50	<50
Chlorodibromomethane	ug/l	<100	<50	<50
Chloroethane	ug/l	<200	<100	<100
Chloromethane	ug/l	<200	<100	<100
Chloroform	ug/l	<100	<50	<50
1,1-Dichloroethane	ug/l	<100	<50	<50
1,2-Dichloroethane	ug/l	<100	<50	<50
1,1-Dichloroethene	ug/l	<100	<50	<50
1,2-Dichloroethene (cis)	ug/l	<100	<50	<50
1,2-Dichloroethene (trans)	ug/l	<100	<50	<50
1,2-Dichloropropane	ug/l	<100	<50	<50
1,3- Dichloropropene (cis)	ug/l	<100	<50	<50
1,3-Dichloropropene (trans)	ug/l	<100	<50	<50
Ethylbenzene	ug/l	<100	<50	<50
2-Hexanone	ug/l	<1000	<50	<50
Methylene Chloride	ug/l	<100	<50	<50
4-Methyl-2-pentanone (MIBK)	ug/l	<1000	<500	<500
Styrene	ug/l	<100	<50	<50
1,1,2,2-Terachloroethane	ug/l	<100	<50	<50
Terachloroethene	ug/l	<100	<50	<50
Toluene	ug/l	<100	<50	<50
1,1,1-Trichloroethane	ug/l	440	3600	1800
1,1,2-Trichloroethane	ug/l	<100	<50	<50
Trichloroethene	ug/l	2500	840	940
Vinyl chloride	ug/l	<200	<100	<100
Xylenes (total)	ug/l	<100	<50	<50

TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	GW-1 11/10/94 Value	Qual	GW-1 9/19/95 Value	Qual	MW-2 11/10/94 Value	Qual	MW-2 9/20/95 Value	Qual	MW-3 11/10/94 Value	Qual	MW-3 9/21/95 Value	Qual	MW-3 9/21/95(DUP) Value	Qual
Miscellaneous Parameters:																
Fluoride	mg/l	2	0.79		1.02		**2.7**	U	**5.11**		0.1	U	0.1	U	0.1	U
Ammonia	mg/l NH_3-N	30	0.1	U[c]	0.45		0.1	U	0.1	U	1.3		0.13		0.13	
Nitrate	mg/l NO_3-N	10	1.4		1.46		7.6		**12.1**		0.1	U	0.05	U	0.05	U
pH	pH units	–	6.37		5.99		7.2		7.01		6.88		6.78		6.86	
Total Petroleum Hydrocarbons	mg/l	–	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Total Organic Carbon	mg/l	–	2.0		1.1		3.3		4.1		2.2		1.7		1.9	
Inorganics:																
Aluminum (Total/Dissolved)	mg/l	0.2	**1.3/1.8**[d]		**0.7/0.6**		**3.4/5.9**		**5.4/0.2**	-/U	**1.7/1.5**		**8.9/0.2**	-/U	**9.3/0.2**	-/U
Antimony (Total/Dissolved)	mg/l	0.006	0.1/0.1	U/U	0.2/0.2	U/U	0.1/0.1	U/U	0.2/0.2	U/U	0.1/0.1	U/U	0.2/0.2	U/U	0.2/0.2	U/U
Arsenic (Total/Dissolved)	mg/l	0.05	0.001/0.001	U/U	0.01/0.01	U/U	0.001/0.001	U/-	0.01/0.01	U/U	0.004/0.005		0.01/0.01	-/U	0.01/0.01	U/U
Barium (Total/Dissolved)	mg/l	2	0.055/0.062		0.06/0.06		0.2/0.12		0.12/0.06		0.3/0.19		0.23/0.08		0.24/0.08	
Beryllium (Total/Dissolved)	mg/l	0.004	0.002/0.002	U/U	0.01/0.01	U/U	0.003/0.003		0.01/0.01	U/U	0.002/0.002	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Cadmium (Total/Dissolved)	mg/l	0.005	0.01/0.005	U/U	0.01/0.01	U/U	0.01/0.005	U/U	0.01/0.01	U/U	0.01/0.005	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Calcium (Total/Dissolved)	mg/l	–	26/26		19.9/21.6		150/150		106/125		50/54		70.3/63.0		74.0/62.1	
Chromium (Total/Dissolved)	mg/l	0.1	0.01/0.01	U/U	0.02/0.02	U/U	0.016/0.019		0.02/0.02	U/U	0.023/0.01	-/U	0.02/0.02	-/U	0.02/0.02	U/U
Cobalt (Total/Dissolved)	mg/l	–	0.01/0.01	U/U	0.02/0.02	U/U	0.01/0.01	U/U	0.02/0.02	U/U	0.01/0.01	U/U	0.02/0.02	U/U	0.02/0.02	U/U
Copper (Total/Dissolved)	mg/l	1	0.01/0.012	U/-	0.02/0.02	U/U	0.026/0.028		0.02/0.02	U/U	0.015/0.025		0.03/0.02	-/U	0.02/0.02	-/U
Iron (Total/Dissolved)	mg/l	–	0.75/0.73		0.4/0.3		5.4/7.4		9.4/0.1	-/U	15/14		25.8/3.8		26.0/4.2	
Lead (Total/Dissolved)	mg/l	0.005	0.1/0.1	U/U	0.005/0.005	U/U	0.1/0.1	U/U	0.005/0.005	U/U	0.1/0.1	U/U	**0.011/0.005**	-/U	**0.011/0.005**	-/U
Magnesium (Total/Dissolved)	mg/l	–	3.5/3.9		2.7/2.9		18/20		13.2/14.5		8.8/9.8		17.2/14.2		18.3/13.9	
Manganese (Total/Dissolved)	mg/l	0.05	**0.3/0.3**		**0.28/0.30**		**1.9/2.1**		**1.96/0.01**	-/U	**0.47/0.50**		**0.44/0.33**		**0.44/0.33**	
Mercury (Total/Dissolved)	mg/l	0.002	0.0002/NA	U/-	0.0002/0.0003	U/U	0.0006/NA		0.0002/0.0003	U/U	0.0002/NA	U/-	0.0003/0.0003	U/U	0.0003/0.0003	U/U
Nickel (Total/Dissolved)	mg/l	0.1	0.04/0.04	U/U	0.04/0.04	U/U	**0.14/0.13**		0.07/0.04	-/U	0.04/0.04	U/U	0.04/0.04	U/U	0.04/0.04	U/U
Potassium (Total/Dissolved)	mg/l	–	1/1.2		1.1/1.2		2.2/2.9		2.8/2.6		0.72/0.97		2.4/0.5		2.3/0.5	-/U
Selenium (Total/Dissolved)	mg/l	0.05	0.001/0.001	U/U	0.01/0.01	U/U	0.001/0.001	U/U	0.01/0.01	U/U	0.001/0.001	U/U	0.01/0.005	U/U	0.01/0.005	U/U
Silver (Total/Dissolved)	mg/l	0.1	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Sodium (Total/Dissolved)	mg/l	0.02	**11/14**		**6.3/7.1**		**68/71**		**60.7/70.6**		**5.7/8.1**		**6.2/6.1**		**6.3/5.9**	
Thallium (Total/Dissolved)	mg/l	0.002	0.004/0.004	U/U	0.01/0.01	U/U	0.004/0.004	U/U	0.01/0.01	U/U	0.004/0.004	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Vanadium (Total/Dissolved)	mg/l	–	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U
Zinc (Total/Dissolved)	mg/l	5	0.014/0.028		0.02/0.02	U/U	0.42/0.41		0.17/0.02	-/U	0.039/0.059		0.08/0.02	-/U	0.08/0.02	-/U
Radiological:																
Gross Alpha	pCi/l	–	2	U	0.8 +/- 1.2		38 +/- 6		76 +/- 35		19 +/- 4		19 +/- 7		16 +/- 7	
Gross Beta	pCi/l	–	3	U	0.3 +/- 2.1		34 +/- 4		92 +/- 26		13 +/- 4		13 +/- 5		14 +/- 6	
Radium (Total)	pCi/l	–	1	U	0.1 +/- 0.8		1	U	5.5 +/- 3.7		1	U	3.8 +/- 3.6		3.5 +/- 2.8	
Uranium-234	pCi/l	–	0.6	U	0.1 +/- 0.7		1.0 +/- 0.8		1.4 +/- 1.1		1.9 +/- 0.7		0.6 +/- 0.9		0.2 +/- 0.7	
Uranium-235	pCi/l	–	0.6	U	0.0 +/- 0.5		0.6	U	0.0 +/- 0.5		0.6	U	0.0 +/- 0.5		0.0 +/- 0.5	
Uranium-238	pCi/l	–	0.6	U	0.3 +/- 0.8		0.8 +/- 0.6		0.4 +/- 0.8		1.0 +/- 0.6		0.2 +/- 0.8		0.0 +/- 0.6	
Uranium (Total)	mg/l	–	0.001	U	0.0006		0.003		0.0028		0.001	U	0.0017		0.0020	

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TABLE 5
GROUNDWATER A[illegible]YTICAL RESULTS

		Sample ID:	GW-1				MW-2				MW-3					
		Sample Date:	11/10/94		9/19/95		11/10/94		9/20/95		11/10/94		9/21/95		9/21/95(DUP)	
Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	Value	Qual	Value	Qual	Value	Qual	Value	Qual	Value	Qual	Value	Qual	Value	Qual
Volatile Organics:																
Acetone	ug/l	–	100	U	10	U	100	U	14		100	U	10	U	500	U
Benzene	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Bromodichloromethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Bromoform	ug/l	–	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Bromomethane	ug/l	10	10	U	10	U	10	U	10	U	10	U	10	U	500	U
2-Butanone (MEK)	ug/l	–	10	U	10	U	10	U	10	U	10	U	10	U	500	U
Carbon disulfide	ug/l	–	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Carbon tetrachloride	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Chlorobenzene	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Chlorodibromomethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Chloroethane	ug/l	–	10	U	10	U	10	U	10	U	10	U	10	U	500	U
Chloromethane	ug/l	–	10	U	10	U	10	U	10	U	10	U	10	U	500	U
Chloroform	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	250	U
1,1-Dichloroethane	ug/l	–	5	U	5	U	8.8		15		5	U	5	U	250	U
1,2-Dichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	250	U
1,1-Dichloroethene	ug/l	7	5	U	5	U	5	U	5	U	**21**		5		250	U
cis-1,2-Dichloroethene	ug/l	70	5	U	NA		5	U	NA		**590**		NA		NA	
trans-1,2-Dichloroethene	ug/l	100	5	U	NA		5	U	NA		5.7		NA		NA	
1,2-Dichloroethene (total)	ug/l	–		NA[e]	5	U	NA		5	U	NA		**530**		250	U
1,2-Dichloropropane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	250	U
cis-1,3-Dichloropropene	ug/l	–	5	U	5	U	5	U	5	U	5	U	5	U	250	U
trans-1,3-Dichloropropene	ug/l	–	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Ethylbenzene	ug/l	700	5	U	5	U	5	U	5	U	5	U	5	U	250	U
2-Hexanone	ug/l	–	50	U	10	U	50	U	10	U	50	U	10	U	500	U
Methylene chloride	ug/l	5	5	U	**5**		5	U	5	U	5	U	5	U	250	U
4-Methyl-2-pentanone (MIBK)	ug/l	–	50	U	10	U	50	U	10	U	50	U	10	U	500	U
Styrene	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	250	U
1,1,2,2-Tetrachloroethane	ug/l	–	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Tetrachloroethene	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Toluene	ug/l	1,000	5	U	5	U	5	U	5	U	77		5	U	250	U
1,1,1-Trichloroethane	ug/l	200	5	U	5	U	25		37		5	U	5	U	250	U
1,1,2-Trichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	250	U
Trichloroethene	ug/l	5	**150**		**190**		**12**		**26**		**1,500**		**3,100**		**4,600**	
Vinyl chloride	ug/l	2	10	U	10	U	10	U	10	U	**220**		**23**		500	U
Xylenes (Total)	ug/l	10,000	5	U	5	U	5	U	5	U	5	U	5	U	250	U

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TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	MW-6A 11/10/94 Value	MW-6A 11/10/94 Qual	MW-6A 9/19/95 Value	MW-6A 9/19/95 Qual	MW-6B 9/19/95 Value	MW-6B 9/19/95 Qual	MW-7A 11/10/94 Value	MW-7A 11/10/94 Qual	MW-7A 9/18/95 Value	MW-7A 9/18/95 Qual	MW-7B 9/18/95 Value	MW-7B 9/18/95 Qual
Miscellaneous Parameters:														
Fluoride	mg/l	2	0.1	U	0.1	U	0.2		0.1	U	0.1		0.24	
Ammonia	mg/l NH_3-N	30	0.1	U	0.25		0.55		0.1	U	0.2		0.25	
Nitrate	mg/l NO_3-N	10	0.1	U	0.1		0.06		0.1	U	0.05	U	0.54	
pH	pH units	–	6.86		6.22		7.49		6.34		6.44		7.44	
Total Petroleum Hydrocarbons	mg/l	–	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Total Organic Carbon	mg/l	–	4.7		2.3		1.3		3.3		1.7		4.9	
Inorganics:														
Aluminum (Total/Dissolved)	mg/l	0.2	**2.9/1.8**		**39.9/0.2**	-/U	0.2/0.2	U/U	**0.85/NA**		**1.5/0.2**	-/U	**53.8/29.2**	
Antimony (Total/Dissolved)	mg/l	0.006	0.1/0.1	U/U	0.2/0.2	U/U	0.2/0.2	U/U	0.1/NA	U/-	0.2/0.2	U/U	0.2/0.2	U/U
Arsenic (Total/Dissolved)	mg/l	0.05	0.002/0.002		0.02/0.01	-/U	0.01/0.01	U/U	0.001/NA		0.01/0.01	-/U	0.02/0.01	
Barium (Total/Dissolved)	mg/l	2	0.23/0.15		0.44/0.08		0.51/0.49		0.1/NA		0.11/0.08		1.63/0.99	
Beryllium (Total/Dissolved)	mg/l	0.004	0.002/0.002	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.002/NA	U/-	0.01/0.01	U/U	0.01/0.01	U/U
Cadmium (Total/Dissolved)	mg/l	0.005	0.01/0.005	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.005/NA	U/-	0.01/0.01	U/U	0.01/0.01	U/U
Calcium (Total/Dissolved)	mg/l	–	24/28		18.5/18.0		41.3/39.3		21/NA		21.1/19.8		57.3/41.4	
Chromium (Total/Dissolved)	mg/l	0.1	0.016/0.011		**0.12/0.02**	-/U	0.02/0.02	U/U	0.01/NA	U/-	0.02/0.02	U/U	0.07/0.05	
Cobalt (Total/Dissolved)	mg/l	–	0.01/0.01	U/U	0.04/0.02	-/U	0.02/0.02	U/U	0.024/NA		0.03/0.02		0.02/0.02	U/U
Copper (Total/Dissolved)	mg/l	1	0.03/0.02		0.07/0.02	-/U	0.02/0.02	U/U	0.01/NA	U/-	0.02/0.02	U/U	0.02/0.02	U/U
Iron (Total/Dissolved)	mg/l	–	17/8.2		69.5/3.4		0.1/0.1	-/U	9.9/NA		19.7/13.4		30/17.8	
Lead (Total/Dissolved)	mg/l	0.005	0.1/0.1	U/U	**0.071/0.005**	-/U	0.005/0.005	U/U	0.1/NA	U/-	0.005/0.005	U/U	**0.059/0.038**	
Magnesium (Total/Dissolved)	mg/l	–	6.7/7.9		8.7/4.7		9.3/8.8		11/NA		7.4/6.6		15/9.6	
Manganese (Total/Dissolved)	mg/l	0.05	**2/2**		**1.46/1.19**		**0.08/0.07**		**1.7/NA**		**1.77/1.55**		**0.82/0.52**	
Mercury (Total/Dissolved)	mg/l	0.002	0.0003/NA		0.0002/0.0003	U/U	0.0002/0.0003	U/U	0.0002/NA	U/-	0.0002/0.0003	U/U	0.0002/0.0003	U/U
Nickel (Total/Dissolved)	mg/l	0.1	0.04/0.04	U/U	0.06/0.04	-/U	0.04/0.04	U/U	0.04/NA	U/-	0.04/0.04	U/U	0.06/0.04	
Potassium (Total/Dissolved)	mg/l	–	0.98/1.2		5.7/0.7		1.0/1.0		1.8/NA		1.5/0.9		4.9/3.1	
Selenium (Total/Dissolved)	mg/l	0.05	0.002/0.001	-/U	0.01/0.01	U/U	0.01/0.01	U/U	0.001/NA	U/-	**0.01/0.07**	U/-	0.01/0.01	U/U
Silver (Total/Dissolved)	mg/l	0.1	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/NA	U/-	0.01/0.01	U/U	0.01/0.01	U/U
Sodium (Total/Dissolved)	mg/l	0.02	**14/18**		**12.6/13.4**		**35.9/37.5**		**10/NA**		**9.5/9.1**		**105/105**	
Thallium (Total/Dissolved)	mg/l	0.002	0.004/0.004	U/U	**0.01/7.86**	U/-	0.01/0.01	U/U	0.004/NA	U/-	0.01/0.01	U/U	0.01/0.01	U/U
Vanadium (Total/Dissolved)	mg/l	–	0.05/0.05	U/U	0.09/0.05	-/U	0.05/0.05	U/U	0.05/NA	U/-	0.05/0.05	U/U	0.05/0.05	U/U
Zinc (Total/Dissolved)	mg/l	5	0.12/0.06		0.27/0.02	-/U	0.02/0.02	U/U	0.026/NA		0.06/0.02	-/U	0.18/0.13	
Radiological:														
Gross Alpha	pCi/l	–	49 +/- 6		80 +/- 19		4.4 +/- 2.7		14 +/- 3		5.7 +/- 2.3		269 +/- 60	
Gross Beta	pCi/l	–	45 +/- 4		64 +/- 12		3.9 +/- 2.3		23 +/- 4		3.5 +/- 2.9		112 +/- 36	
Radium (Total)	pCi/l	–	1	U	2.2 +/- 1.1		0.4 +/- 0.9		3	U	0.3 +/- 0.9		15 +/- 2	
Uranium-234	pCi/l	–	2.6 +/- 0.7		0.2 +/- 0.8		0.8 +/- 0.8		0.6	U	0.3 +/- 0.8		5.1 +/- 1.7	
Uranium-235	pCi/l	–	0.6	U	0.0 +/- 0.5		0.0 +/- 0.4		0.6	U	0.0 +/- 0.6		0.0 +/- 0.6	
Uranium-238	pCi/l	–	2.8 +/- 0.7		0.1 +/- 0.7		0.1 +/- 0.6		0.6	U	0.0 +/- 0.6		4.2 +/- 1.6	
Uranium (Total)	mg/l	–	0.001	U	0.0051		0.0021		0.001		0.0054		0.0036	

TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	MW-6A 11/10/94 Value	Qual	MW-6A 9/19/95 Value	Qual	MW-6B 9/19/95 Value	Qual	MW-7A 11/10/94 Value	Qual	MW-7A 9/18/95 Value	Qual	MW-7B 9/18/95 Value	Qual
Volatile Organics:														
Acetone	ug/l	--	100	U	10	U	10	U	100	U	16		10	U
Benzene	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U
Bromoform	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U
Bromomethane	ug/l	10	10	U	10	U	10	U	10	U	10	U	10	U
2-Butanone (MEK)	ug/l	--	10	U	10	U	10	U	10	U	10	U	10	U
Carbon disulfide	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U
Chlorobenzene	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U
Chlorodibromomethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U
Chloroethane	ug/l	--	10	U	10	U	10	U	10	U	10	U	10	U
Chloromethane	ug/l	--	10	U	10	U	10	U	10	U	10	U	10	U
Chloroform	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U
1,2-Dichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene	ug/l	7	5	U	5	U	5	U	5	U	5	U	5	U
cis-1,2-Dichloroethene	ug/l	70	5	U	NA		NA		5	U	NA		NA	
trans-1,2-Dichloroethene	ug/l	100	5	U	NA		NA		5	U	NA		NA	
1,2-Dichloroethene (total)	ug/l	--	NA		5	U	5	U	NA		5	U	5	U
1,2-Dichloropropane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U
trans-1,3-Dichloropropene	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U
Ethylbenzene	ug/l	700	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/l	--	50	U	10	U	10	U	50	U	10	U	10	U
Methylene chloride	ug/l	5	5	U	6		7		5	U	5	U	5	U
4-Methyl-2-pentanone (MIBK)	ug/l	--	50	U	10	U	10	U	50	U	10	U	10	U
Styrene	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U
Tetrachloroethene	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U
Toluene	ug/l	1,000	5	U	5	U	5	U	5	U	5	U	5	U
1,1,1-Trichloroethane	ug/l	200	5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-Trichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	2	10	U	10	U	10	U	10	U	10	U	10	U
Xylenes (Total)	ug/l	10,000	5	U	5	U	5	U	5	U	5	U	5	U

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TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	MW-8A 11/10/94 Value	Qual	MW-8A 9/19/95 Value	Qual	MW-8B 9/19/95 Value	Qual	MW-9A 11/10/94 Value	Qual	MW-9A 11/10/94(DUP) Value	Qual	MW-9A 9/21/95 Value	Qual
Miscellaneous Parameters:														
Fluoride	mg/l	2	0.1	U	0.1	U	0.1		0.1	U	0.1	U	0.11	
Ammonia	mg/l NH_3-N	30	0.1	U	0.37		0.43		0.2		0.14		0.3	
Nitrate	mg/l NO_3-N	10	0.1	U	0.81		0.05	U	0.1	U	0.1	U	0.05	U
pH	pH units	--	5.97		5.88		6.92		6.44		6.45		6.21	
Total Petroleum Hydrocarbons	mg/l	--	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Total Organic Carbon	mg/l	--	2.8		3.2		1.3		2.7		2.6		2.4	
Inorganics:														
Aluminum (Total/Dissolved)	mg/l	0.2	**6.5/3.5**		**61.3/0.2**	-/U	0.2/0.2	U/U	**11/6.5**		**4.8/5.6**		**21.5/0.2**	-/U
Antimony (Total/Dissolved)	mg/l	0.006	0.1/0.1	U/U	0.2/0.2	U/U	0.2/0.2	U/U	0.1/0.1	U/U	0.1/0.1	U/U	0.2/0.2	U/U
Arsenic (Total/Dissolved)	mg/l	0.05	0.001/0.001	U/-	0.03/0.01	-/U	0.01/0.01	U/U	0.003/0.001		0.001/0.002		0.03/0.01	-/U
Barium (Total/Dissolved)	mg/l	2	0.85/0.42		1.06/0.11		0.81/0.71		0.1/0.1		0.088/0.097		0.13/0.01	
Beryllium (Total/Dissolved)	mg/l	0.004	0.002/0.002	-/U	0.01/0.01	U/U	0.01/0.01	U/U	0.002/0.002	U/U	0.002/0.002	U/U	0.01/0.01	U/U
Cadmium (Total/Dissolved)	mg/l	0.005	**0.01/0.008**		0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.005	U/U	0.01/0.005	U/U	0.01/0.01	U/U
Calcium (Total/Dissolved)	mg/l	--	30/38		26.2/18.1		35.1/31.9		28/30		27/30		25.5/25.4	
Chromium (Total/Dissolved)	mg/l	0.1	0.01/0.016	U/-	**0.12/0.02**	-/U	0.02/0.02	U/U	0.052/0.043		0.039/0.036		0.08/0.02	-/U
Cobalt (Total/Dissolved)	mg/l	--	0.11/0.089		0.14/0.03		0.02/0.02	U/U	0.029/0.018		0.01/0.016	U/-	0.04/0.02	-/U
Copper (Total/Dissolved)	mg/l	1	0.038/0.028		0.10/0.02	-/U	0.02/0.02	U/U	0.026/0.027		0.014/0.026		0.03/0.02	-/U
Iron (Total/Dissolved)	mg/l	--	41/21		136/0.8		1.7/1.2		29/14		11/12		67.4/0.1	-/U
Lead (Total/Dissolved)	mg/l	0.005	0.1/0.1	U/U	**0.07/0.005**	-/U	0.005/0.005	U/U	0.1/0.1	U/U	**0.1/0.27**	U/-	**0.024**/0.005	-/U
Magnesium (Total/Dissolved)	mg/l	--	8.6/9.3		14.6/5.2		5.6/5.1		9.4/8.7		7.8/8.6		11.5/6.5	
Manganese (Total/Dissolved)	mg/l	0.05	**5.2/4.4**		**5.31/2.69**		**0.11/0.10**		**6.4/6.6**		**6.5/6.6**		**13.5/2.81**	
Mercury (Total/Dissolved)	mg/l	0.002	0.0003/NA		0.0002/0.0003	U/U	0.0002/0.0003	U/U	**0.0027**/NA		0.0012/NA		0.0003/0.0003	U/U
Nickel (Total/Dissolved)	mg/l	0.1	0.08/0.077		**0.18**/0.04	-/U	0.04/0.04	U/U	0.057/0.041		0.04/0.056	U/-	0.06/0.04	-/U
Potassium (Total/Dissolved)	mg/l	--	1.3/1.3		7.5/1.4		0.9/0.8		1.9/1.6		1.4/1.7		3.3/1.3	
Selenium (Total/Dissolved)	mg/l	0.05	0.001/0.001	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.001/0.001	U/U	0.001/0.001	U/U	0.01/0.005	U/U
Silver (Total/Dissolved)	mg/l	0.1	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Sodium (Total/Dissolved)	mg/l	0.02	**5.9/9**		**7.6/8.0**		**12.1/10.9**		**26/30**		**28/31**		**32.1/30.1**	
Thallium (Total/Dissolved)	mg/l	0.002	0.004/0.004	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.004/0.004	U/U	0.004/0.004	U/U	0.01/0.01	U/U
Vanadium (Total/Dissolved)	mg/l	--	0.05/0.05	U/U	0.14/0.05	-/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	-/U
Zinc (Total/Dissolved)	mg/l	5	0.093/0.073		0.42/0.02	-/U	0.02/0.02	U/U	0.076/0.067		0.031/0.055		0.11/0.02	-/U
Radiological:														
Gross Alpha	pCi/l	--	25 +/- 5		391 +/- 93		1.8 +/- 1.7		20 +/- 4		20 +/- 4		40 +/- 15	
Gross Beta	pCi/l	--	46 +/- 4		236 +/- 54		1.8 +/- 2.1		34 +/- 4		21 +/- 4		96 +/- 12	
Radium (Total)	pCi/l	--	2 +/- 1		2.3 +/- 1.8		1.6 +/- 1.6		1	U	1	U	5.1 +/- 3.1	
Uranium-234	pCi/l	--	12.3 +/- 3.8		2.8 +/- 1.3		0.0 +/- 0.6		0.6	U	1.8 +/- 0.5		0.8 +/- 0.9	
Uranium-235	pCi/l	--	0.8 +/- 0.6		0.0 +/- 0.4		0.0 +/- 0.5		0.6	U	0.6	U	0.0 +/- 0.5	
Uranium-238	pCi/l	--	14.7 +/- 4.3		2.2 +/- 1.1		0.0 +/- 0.5		0.6	U	1.6 +/- 0.5		0.6 +/- 0.9	
Uranium (Total)	mg/l	--	0.001	U	0.0145		0.0028		0.001		0.001	U	0.0034	

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TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	MW-8A 11/10/94 Value	Qual	MW-8A 9/19/95 Value	Qual	MW-8B 9/19/95 Value	Qual	MW-9A 11/10/94 Value	Qual	MW-9A 11/10/94(DUP) Value	Qual	MW-9A 9/21/95 Value	Qual
Volatile Organics:														
Acetone	ug/l	–	100	U	10	U	10	U	100	U	100	U	250	U
Benzene	ug/l	5	5	U	5	U	5	U	5	U	5	U	130	U
Bromodichloromethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	130	U
Bromoform	ug/l	–	5	U	5	U	5	U	5	U	5	U	130	U
Bromomethane	ug/l	10	10	U	10	U	10	U	10	U	10	U	250	U
2-Butanone (MEK)	ug/l	–	10	U	10	U	10	U	10	U	10	U	250	U
Carbon disulfide	ug/l	–	5	U	5	U	5	U	5	U	5	U	130	U
Carbon tetrachloride	ug/l	5	5	U	5	U	5	U	5	U	5	U	130	U
Chlorobenzene	ug/l	100	5	U	5	U	5	U	5	U	5	U	130	U
Chlorodibromomethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	130	U
Chloroethane	ug/l	–	10	U	10	U	10	U	10	U	10	U	250	U
Chloromethane	ug/l	–	10	U	10	U	10	U	10	U	10	U	250	U
Chloroform	ug/l	100	5	U	5	U	5	U	5	U	5	U	130	U
1,1-Dichloroethane	ug/l	–	5	U	5	U	5	U	6.6		6.2		130	U
1,2-Dichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	130	U
1,1-Dichloroethene	ug/l	7	5	U	5	U	5	U	**20**		**19**		130	U
cis-1,2-Dichloroethene	ug/l	70	5	U	NA		NA		**3,300**		**2,900**		NA	
trans-1,2-Dichloroethene	ug/l	100	5	U	NA		NA		29		25		NA	
1,2-Dichloroethene (total)	ug/l	–	NA		5	U	5	U	NA		NA		**620**	
1,2-Dichloropropane	ug/l	5	5	U	5	U	5	U	5	U	5	U	130	U
cis-1,3-Dichloropropene	ug/l	–	5	U	5	U	5	U	5	U	5	U	130	U
trans-1,3-Dichloropropene	ug/l	–	5	U	5	U	5	U	5	U	5	U	130	U
Ethylbenzene	ug/l	700	5	U	5	U	5	U	5	U	5	U	130	U
2-Hexanone	ug/l	–	50	U	10	U	10	U	50	U	50	U	250	U
Methylene chloride	ug/l	5	5	U	**6**		**6**		5	U	5	U	130	U
4-Methyl-2-pentanone (MIBK)	ug/l	–	50	U	10	U	10	U	50	U	50	U	250	U
Styrene	ug/l	100	5	U	5	U	5	U	5	U	5	U	130	U
1,1,2,2-Tetrachloroethane	ug/l	–	5	U	5	U	5	U	5	U	5	U	130	U
Tetrachloroethene	ug/l	5	5	U	5	U	5	U	**6**		**5.6**		130	U
Toluene	ug/l	1,000	5	U	5	U	5	U	5	U	5	U	130	U
1,1,1-Trichloroethane	ug/l	200	5	U	5	U	5	U	24		22		130	U
1,1,2-Trichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	130	U
Trichloroethene	ug/l	5	5	U	**6**		5	U	**22,000**		**21,000**		**12,000**	
Vinyl chloride	ug/l	2	10	U	10	U	10	U	**49**		**47**		250	U
Xylenes (Total)	ug/l	10,000	5	U	5	U	5	U	5	U	5	U	130	U

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TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	MW-10A 11/10/94 Value	Qual	MW-10A 9/18/95 Value	Qual	MW-10B 9/18/95 Value	Qual	MW-10B 9/18/95(DUP) Value	Qual	MW-11A 9/20/95 Value	Qual	MW-12A 9/21/95 Value	Qual	MW-13A 9/20/95 Value	Qual
Miscellaneous Parameters:																
Fluoride	mg/l	2	0.1	U	0.1	U	0.11		0.12		0.1	U	0.1	U	0.1	U
Ammonia	mg/l NH_3-N	30	0.1	U	0.25		0.56		0.52		0.34		0.14		0.14	
Nitrate	mg/l NO_3-N	10	0.1	U	0.05		0.05	U	0.05	U	0.05		0.05	U	0.05	U
pH	pH units	--	5.36		4.86		7.11		7.20		6.08		6.11		7.02	
Total Petroleum Hydrocarbons	mg/l	--	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Total Organic Carbon	mg/l	--	2.8		3.4		1.1		1.0		2.7		2.1		3.1	
Inorganics:																
Aluminum (Total/Dissolved)	mg/l	0.2	**1.5/5.7**		**9.0**/0.2	-/U	0.2/0.2	U/U	0.2/0.2	U/U	**7.0**/0.2	-/U	**3.8**/0.2	-/U	**9.2**/0.2	-/U
Antimony (Total/Dissolved)	mg/l	0.006	0.1/0.1	U/U	0.2/0.2	U/U	0.2/0.2	U/U	0.2/0.2	U/U	0.2/0.2	U/U	0.2/0.2	U/U	0.2/0.2	U/U
Arsenic (Total/Dissolved)	mg/l	0.05	0.001/0.001	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Barium (Total/Dissolved)	mg/l	2	0.095/0.28		0.12/0.06		0.46/0.46		0.40/0.41		0.28/0.20		0.10/0.08		0.18/0.09	
Beryllium (Total/Dissolved)	mg/l	0.004	0.002/**0.006**	U/-	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Cadmium (Total/Dissolved)	mg/l	0.005	0.01/**0.013**	U/-	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Calcium (Total/Dissolved)	mg/l	--	7.5/24		6.9/5.8		42.5/43.5		37.9/39.7		40.8/39.8		23.5/24.5		32/33.2	
Chromium (Total/Dissolved)	mg/l	0.1	0.01/0.01	U/U	0.02/0.02	-/U	0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U	0.03/0.02	-/U
Cobalt (Total/Dissolved)	mg/l	--	0.023/0.042		0.05/0.04		0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U
Copper (Total/Dissolved)	mg/l	1	0.01/0.053		0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	U/U	0.02/0.02	-/U
Iron (Total/Dissolved)	mg/l	--	4.8/10		17.8/0.9		1.1/0.8		1.0/0.7		34.5/23.2		23.2/14.5		50.8/16.7	
Lead (Total/Dissolved)	mg/l	0.005	0.1/0.1	U/U	**0.013**/0.005	-/U	0.005/0.005	U/U	0.005/0.005	U/U	**0.008**/0.005	-/U	0.005/0.005	U/U	**0.013**/0.005	-/U
Magnesium (Total/Dissolved)	mg/l	--	4.3/6.5		5.8/4.3		7.1/7.3		6.3/6.7		15.2/13.6		11.8/11.4		8.2/7.0	
Manganese (Total/Dissolved)	mg/l	0.05	**0.37/0.55**		**0.45/0.35**		**0.41/0.42**		**0.37/0.39**		**0.82/0.74**		**0.79/0.73**		**0.71/0.63**	
Mercury (Total/Dissolved)	mg/l	0.002	0.001/NA		0.0013/0.0003	-/U	0.0002/0.0003	U/U	0.0002/0.0003	U/U	0.0002/0.0003	U/U	0.0003/0.0003	U/U	0.0002/0.0003	U/U
Nickel (Total/Dissolved)	mg/l	0.1	0.04/0.04	U/U	0.04/0.04	U/U	0.04/0.04	U/U	0.04/0.04	U/U	0.04/0.04	U/U	0.04/0.04	U/U	0.04/0.04	U/U
Potassium (Total/Dissolved)	mg/l	--	0.5/0.77	U/-	2.3/0.5	-/U	1.0/0.9		0.8/0.8		2.8/1.3		2.8/1.9		2.6/1.0	
Selenium (Total/Dissolved)	mg/l	0.05	0.001/0.001	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.005	U/U	0.01/0.01	U/U
Silver (Total/Dissolved)	mg/l	0.1	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Sodium (Total/Dissolved)	mg/l	0.02	**4.5/6.8**		**4.9/4.3**		**3.1/3.5**		**2.7/3.1**		**23.8/23.2**		**21.9/22.0**		**18.1/19.0**	
Thallium (Total/Dissolved)	mg/l	0.002	0.004/0.004	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U
Vanadium (Total/Dissolved)	mg/l	--	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U	0.05/0.05	U/U
Zinc (Total/Dissolved)	mg/l	5	0.035/0.1		0.06/0.05		0.02/0.02	U/U	0.02/0.02	U/U	0.05/0.02	-/U	0.04/0.02	-/U	0.09/0.02	-/U
Radiological:																
Gross Alpha	pCi/l	--	7 +/- 2		36 +/- 9		1.4 +/- 1.4		0.8 +/- 3.5		9.5 +/- 4.7		5.7 +/- 3.1		20 +/- 7	
Gross Beta	pCi/l	--	8 +/- 4		23 +/- 6		2.4 +/- 2.2		0 +/- 10		7.2 +/- 4.4		8.6 +/- 2.8		22 +/- 5	
Radium (Total)	pCi/l	--	1	U	0.8 +/- 0.5		0.2 +/- 0.4		0.5 +/- 0.4		1.2 +/- 2.6		0.0 +/- 2.4		5.8 +/- 3.7	
Uranium-234	pCi/l	--	0.7 +/- 0.6		0.0 +/- 0.6		0.0 +/- 0.6		0.0 +/- 0.6		0.0 +/- 0.4		0.0 +/- 0.6		0.0 +/- 0.4	
Uranium-235	pCi/l	--	0.6	U	0.0 +/- 0.5		0.0 +/- 0.5		0.0 +/- 0.5		0.0 +/- 0.4		0.0 +/- 0.5		0.0 +/- 0.4	
Uranium-238	pCi/l	--	0.6	U	0.0 +/- 0.6		0.0 +/- 0.6		0.0 +/- 0.6		0.0 +/- 0.4		0.0 +/- 0.7		0.0 +/- 0.5	
Uranium (Total)	mg/l	--	0.001	U	0.0027		0.0012		0.0003	U	0.0038		0.0020		0.0028	

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TABLE 5
GROUNDWATER ANALYTICAL RESULTS

		Sample ID:	MW-10A				MW-10B				MW-11A		MW-12A		MW-13A	
		Sample Date:	11/10/94		9/18/95		9/18/95		9/18/95(DUP)		9/20/95		9/21/95		9/20/95	
Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	Value	Qual	Value	Qual	Value	Qual	Value	Qual	Value	Qual	Value	Qual	Value	Qual
Volatile Organics:																
Acetone	ug/l	--	100	U	10	U	10	U	10	U	16		10	U	10	U
Benzene	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Bromoform	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Bromomethane	ug/l	10	10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-Butanone (MEK)	ug/l	--	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Carbon disulfide	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Chlorobenzene	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Chlorodibromomethane	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Chloroethane	ug/l	--	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chloromethane	ug/l	--	10	U	10	U	10	U	10	U	10	U	10	U	10	U
Chloroform	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane	ug/l	--	5	U	5	U	5	U	5	U	60		90		5	U
1,2-Dichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene	ug/l	7	5	U	5	U	5	U	5	U	6		**36**		5	U
cis-1,2-Dichloroethene	ug/l	70	5	U	NA		NA		NA		NA		NA		NA	
trans-1,2-Dichloroethene	ug/l	100	5	U	NA		NA		NA		NA		NA		NA	
1,2-Dichloroethene (total)	ug/l	--	NA		5	U	5	U	5	U	33		**190**		21	
1,2-Dichloropropane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U	5	U
trans-1,3-Dichloropropene	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Ethylbenzene	ug/l	700	5	U	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/l	--	50	U	10	U	10	U	10	U	10	U	10	U	10	U
Methylene chloride	ug/l	5	5	U	5	U	5	U	5	U	**7**		5	U	5	U
4-Methyl-2-pentanone (MIBK)	ug/l	--	50	U	10	U	10	U	10	U	10	U	10	U	10	U
Styrene	ug/l	100	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	ug/l	--	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Tetrachloroethene	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Toluene	ug/l	1,000	5	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1,1-Trichloroethane	ug/l	200	5	U	5	U	5	U	5	U	**380**		**2,700**		5	U
1,1,2-Trichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U	5	U	5	U
Trichloroethene	ug/l	5	5	U	5	U	5	U	5	U	**100**		**1,800**		**1,700**	
Vinyl chloride	ug/l	2	10	U	10	U	10	U	10	U	**18**		10	U	10	U
Xylenes (Total)	ug/l	10,000	5	U	5	U	5	U	5	U	5	U	5	U	5	U

TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	MW-15 Value	MW-15 Qual	MW-16A Value	MW-16A Qual	MW-17A Value	MW-17A Qual	GW-EQB Value	GW-EQB Qual	EB-1 Value	EB-1 Qual
		Sample Date:	9/20/95		9/20/95		9/20/95		11/10/94		09/19/95	
Miscellaneous Parameters:												
Fluoride	mg/l	2	0.29		1.32		0.1	U	0.1	U	0.1	U
Ammonia	mg/l NH_3-N	30	0.15		0.1	U	0.1	U	0.1	U	0.1	U
Nitrate	mg/l NO_3-N	10	0.5		0.54		0.48		0.2		0.05	U
pH	pH units	--	7.00		4.54		6.08		5.94		6.44	
Total Petroleum Hydrocarbons	mg/l	--	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
Total Organic Carbon	mg/l	--	3.8		3.1		5.3		1.0	U	1.0	U
Inorganics:												
Aluminum (Total/Dissolved)	mg/l	0.2	**1.2/2.1**		**22.9/2.0**		**79.7/0.2**	-/U	0.1/0.1	U/U	0.2/0.2	U/U
Antimony (Total/Dissolved)	mg/l	0.006	0.2/0.2	U/U	0.2/0.2	U/U	0.2/0.2	U/U	0.1/0.1	U/U	0.2/0.2	U/U
Arsenic (Total/Dissolved)	mg/l	0.05	0.01/0.01	U/U	0.01/0.01	-/U	0.04/0.01	-/U	0.001/0.001	U/U	0.01/0.01	U/U
Barium (Total/Dissolved)	mg/l	2	0.45/0.05		0.19/0.05		0.94/0.24		0.02/0.02	U/U	0.01/0.01	U/U
Beryllium (Total/Dissolved)	mg/l	0.004	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.002/0.002	U/U	0.01/0.01	U/U
Cadmium (Total/Dissolved)	mg/l	0.005	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.005	U/U	0.01/0.01	U/U
Calcium (Total/Dissolved)	mg/l	--	44.2/8.7		9.3/8.7		20.4/48.0		1/1	U/U	0.5/0.5	U/U
Chromium (Total/Dissolved)	mg/l	0.1	0.02/0.02	U/U	0.03/0.02	-/U	**0.25/0.02**	-/U	0.01/0.01	U/U	0.02/0.02	U/U
Cobalt (Total/Dissolved)	mg/l	--	0.02/0.03	U/-	0.04/0.03		0.21/0.02	-/U	0.01/0.01	U/U	0.02/0.02	U/U
Copper (Total/Dissolved)	mg/l	1	0.02/0.02	U/U	0.03/0.02	-/U	0.14/0.02	-/U	0.01/0.01	U/U	0.02/0.02	U/U
Iron (Total/Dissolved)	mg/l	--	3.9/0.1	-/U	48.2/0.1	-/U	360/28.1		0.032/0.03	-/U	0.1/0.1	U/U
Lead (Total/Dissolved)	mg/l	0.005	0.005/0.005	U/U	**0.022/0.005**	-/U	**0.098/0.005**	-/U	0.1/0.1	U/U	0.005/0.005	U/U
Magnesium (Total/Dissolved)	mg/l	--	34.8/3.7		6/3.7		25.2/16.5		0.5/0.54	U/-	0.5/0.5	U/U
Manganese (Total/Dissolved)	mg/l	0.05	**2.32/1.44**		**1.81/1.44**		**15.9/0.89**		0.01/0.01	U/U	0.01/0.01	U/U
Mercury (Total/Dissolved)	mg/l	0.002	0.0002/0.0003	U/U	0.0002/0.0003	U/U	0.0002/0.0003	U/U	0.0002/NA	U/-	0.0002/0.0003	U/U
Nickel (Total/Dissolved)	mg/l	0.1	0.06/0.04	-/U	0.06/0.04	-/U	**0.32/0.04**	-/U	0.04/0.04	U/U	0.04/0.04	U/U
Potassium (Total/Dissolved)	mg/l	--	3.3/1.6		3.7/1.6		13/1.5		0.5/0.5	U/U	0.5/0.5	U/U
Selenium (Total/Dissolved)	mg/l	0.05	0.01/0.01	U/U	0.01/0.01	U/U	0.01/0.01	U/U	0.001/0.001	U/U	0.01/0.01	U/U
Silver (Total/Dissolved)	mg/l	0.1	0.01/0.01	U/U	0.01/0.01	U/U	0.02/0.01	-/U	0.01/0.01	U/U	0.01/0.01	U/U
Sodium (Total/Dissolved)	mg/l	0.02	**20.5/10.6**		**10.8/10.7**		**3.6/28.1**		**1/2.4**	U/-	0.5/0.5	U/U
Thallium (Total/Dissolved)	mg/l	0.002	0.01/0.01	U/U	0.01/0.01	U/U	0.02/9.79		0.004/0.004	U/U	0.01/0.01	U/U
Vanadium (Total/Dissolved)	mg/l	--	0.05/0.05	U/U	0.05/0.05	U/U	0.21/0.05	-/U	0.05/0.05	U/U	0.05/0.05	U/U
Zinc (Total/Dissolved)	mg/l	5	0.02/0.04	U/-	0.15/0.04		0.62/0.02	-/U	0.005/0.019	U/-	0.02/0.02	U/U
Radiological:												
Gross Alpha	pCi/l	--	30 +/- 7		61 +/- 17		116 +/- 41		2	U	0.3 +/- 0.7	
Gross Beta	pCi/l	--	13 +/- 4		51 +/- 11		136 +/- 32		3	U	0.9 +/- 2.1	
Radium (Total)	pCi/l	--	0.0 +/- 2.4		13 +/- 5		25 +/- 5		1	U	0.0 +/- 0.8	
Uranium-234	pCi/l	--	21 +/- 3		0.6 +/- 0.7		1.1 +/- 1.0		0.7 +/- 0.5		0.0 +/- 0.7	
Uranium-235	pCi/l	--	0.03 +/- 0.70		0.0 +/- 0.4		0.0 +/- 0.6		0.6	U	0.0 +/- 0.5	
Uranium-238	pCi/l	--	20 +/- 3		0.6 +/- 0.7		0.5 +/- 0.9		1.7 +/- 0.7		0.0 +/- 0.5	
Uranium (Total)	mg/l	--	0.0499		0.0109		0.0082		0.001	U	0.0009	

TABLE 5
GROUNDWATER ANALYTICAL RESULTS

Parameter	Units[a]	PA Human[b] Health Standard (<2500 TDS)	MW-15 9/20/95 Value	MW-15 Qual	MW-16A 9/20/95 Value	MW-16A Qual	MW-17A 9/20/95 Value	MW-17A Qual	GW-EQB 11/10/94 Value	GW-EQB Qual	EB-1 09/19/95 Value	EB-1 Qual
Volatile Organics:												
Acetone	ug/l	–	11		10	U	13		100	U	10	U
Benzene	ug/l	5	5	U	5	U	5	U	5	U	5	U
Bromodichloromethane	ug/l	100	5	U	5	U	5	U	5	U	5	U
Bromoform	ug/l	–	5	U	5	U	5	U	5	U	5	U
Bromomethane	ug/l	10	10	U	10	U	10	U	10	U	10	U
2-Butanone (MEK)	ug/l	–	10	U	10	U	10	U	10	U	10	U
Carbon disulfide	ug/l	–	5	U	5	U	5	U	5	U	5	U
Carbon tetrachloride	ug/l	5	5	U	5	U	5	U	5	U	5	U
Chlorobenzene	ug/l	100	5	U	5	U	5	U	5	U	5	U
Chlorodibromomethane	ug/l	100	5	U	5	U	5	U	5	U	5	U
Chloroethane	ug/l	–	10	U	10	U	10	U	10	U	10	U
Chloromethane	ug/l	–	10	U	10	U	10	U	10	U	10	U
Chloroform	ug/l	100	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethane	ug/l	–	5		5	U	5	U	5	U	5	U
1,2-Dichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U
1,1-Dichloroethene	ug/l	7	5	U	5	U	5	U	5	U	5	U
cis-1,2-Dichloroethene	ug/l	70	NA		NA		NA		5	U	NA	
trans-1,2-Dichloroethene	ug/l	100	NA		NA		NA		5	U	NA	
1,2-Dichloroethene (total)	ug/l	–	120		5	U	5	U	NA		5	U
1,2-Dichloropropane	ug/l	5	5	U	5	U	5	U	5	U	5	U
cis-1,3-Dichloropropene	ug/l	–	5	U	5	U	5	U	5	U	5	U
trans-1,3-Dichloropropene	ug/l	–	5	U	5	U	5	U	5	U	5	U
Ethylbenzene	ug/l	700	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/l	–	10	U	10	U	10	U	50	U	10	U
Methylene chloride	ug/l	5	**6**		**6**		**10**		5	U	5	U
4-Methyl-2-pentanone (MIBK)	ug/l	–	10	U	10	U	10	U	50	U	10	U
Styrene	ug/l	100	5	U	5	U	5	U	5	U	5	U
1,1,2,2-Tetrachloroethane	ug/l	–	5	U	5	U	5	U	5	U	5	U
Tetrachloroethene	ug/l	5	5	U	5	U	5	U	5	U	5	U
Toluene	ug/l	1,000	5	U	5	U	5	U	5	U	5	U
1,1,1-Trichloroethane	ug/l	200	9		5	U	5	U	5	U	5	U
1,1,2-Trichloroethane	ug/l	5	5	U	5	U	5	U	5	U	5	U
Trichloroethene	ug/l	5	**1,100**		5	U	5	U	5	U	5	U
Vinyl chloride	ug/l	2	10	U	10	U	10	U	10	U	10	U
Xylenes (Total)	ug/l	10,000	5	U	5	U	5	U	5	U	5	U

Notes:
(a) Units defined as: (mg/l) = milligrams per liter
(pCi/l) = picocuries per liter
(ug/l) = micrograms per liter
(b) PADEP Ingestion Criteria (from PADEP Statewide Human Health Standards for Groundwater (App. B-1, Act 2)).
(c) U - Analyte not detected above quantitation limit.
(d) Results exceeding PADEP Ingestion Criteria are bold and shaded.
(e) NA - Sample not analyzed for this compound.

CUMMINGS RITER

Table 6
Water Level Measurements

Monitoring Point	Reference Elevation Top of PVC Casing (feet MSL[a])	Water Level 9/11/95 (feet MSL)	Water Level 9/18/95 (feet MSL)	Water Level 9/29/95 (feet MSL)	Water Level 10/9/95 (feet MSL)	Water Level 10/23/95 (feet MSL)	Water Level 11/10/95 (feet MSL)
MW-2	987.86	978.73	978.61	978.56	979.19	979.46	981.20
MW-3	1003.08	994.00	994.00	993.73	993.67	993.54	993.43
MW-6A	1006.58	994.72	994.60	994.37	994.25	994.04	993.98
MW-6B	1006.14	993.84	993.85	993.52	993.42	993.29	993.17
MW-7A	993.92	982.42	982.72	984.47	984.62	984.74	984.91
MW-7B	991.22	943.53	943.42	942.86	942.51	942.40	942.25
MW-8A	1003.57	990.84	990.79	990.41	990.29	990.22	990.20
MW-8B	1003.69	989.97	989.89	989.49	989.35	989.17	988.99
MW-9A	980.82	961.29	961.30	961.10	961.21	961.44	961.52
MW-10A	1017.03	997.62	997.48	997.13	996.84	996.53	996.10
MW-10B	1016.23	991.06	991.15	990.66	990.36	990.18	989.87
MW-11A	1004.29	993.99	994.02	993.72	993.67	993.53	993.42
MW-12A	1001.30	994.40	994.07	993.75	993.75	993.65	993.50
MW-13A	1003.60	993.67	993.70	993.43	993.38	993.26	993.24
MW-15	982.17	941.72	942.20	942.18	942.92	944.44	943.64
MW-16A	989.22	983.92	983.92	983.86	983.83	983.76	983.97
MW-17A	1003.09	990.99	990.91	990.68	990.59	990.41	990.42
Surface Pond[b]	999.32	997.32	997.22	996.82	996.67	996.62	995.87

a. Elevation is in feet above mean sea level.
b. Reference point for surface pond is benchmark on catwalk.

TABLE 7
SUBSURFACE SOIL SAMPLE INFORMATION

Boring B-45

Depth Interval (feet)	CRC Sample ID	West. Sample ID	Gamma Count (cpm/gram)	Well Log Anomaly	NaI Spectra
0-1	S-1		5.23		
1-2					
2-3					
3-4	S-2		4.05	Strong 350 cps	7.25 cps @ peak W2=124cps
4-5					
5-6	S-3 *		3.58		
6-7					
7-8					
8-9	S-4	B414 **	7.97		
9-10					
10-11	S-5		5.83		
11-12					
12-13					
13-14	S-6		4.87		
14-15					
15-16	S-7 *		5.06		
16-17					
17-18					
18-18.5					

Boring B-46

Depth Interval (feet)	CRC Sample ID	West. Sample ID	Gamma Count (cpm/gram)	Well Log Anomaly	NaI Spectra
0-1	S-1 *		5.82		
1-2				Strong 350 cps	
2-3					7.6 cps @ peak W2=139cps (2-3')
3-4	S-2		6.24		
4-5					
5-6	S-3 *	B413 **	3.44		
6-7					
7-8					
8-9					4.2 cps @ peak W2=81cps (8.3-8.7')
9-10				Weak 250 cps	
10-10.9					

CUMMINGS RITER

TABLE 7
SUBSURFACE SOIL SAMPLE INFORMATION

Boring B-47

Depth Interval (feet)	CRC Sample ID	West. Sample ID	Gamma Count (cpm/gram)	Well Log Anomaly	NaI Spectra
0-1	S-1		3.79		
1-2					
2-3					background region 3.7 cps @ peak W2=54cps
3-4	S-2		no recovery		
4-5					
5-6	S-3		6.42		
6-7					
7-8					
8-9	S-4		3.77	Strong 550 cps @ mid	
9-10					
10-11	S-5 *		4.92		
11-12					
12-13					
13-14	S-6		5.92		9.8 cps @ peak W2=174cps (14.5-15.0')
14-15					
15-16	S-7		5.24		
16-17					
17-18					
18-19	S-8	B415 **	8.16		
19-20					
20-21	S-9 *		5.16		
21-22					
22-23					
23-24	S-10		6.01	Strong 500 cps	10.7 cps @ peak W2=161cps (24.0-24.5')
24-25					
25-26	S-11		5.05		
26-27					
27-28					
28-29	S-12		3.83		
29-29.5					

Boring B-48

Depth Interval (feet)	CRC Sample ID	West. Sample ID	Gamma Count (cpm/gram)	Well Log Anomaly	NaI Spectra
0-1	S-1		5.53		
1-2					
2-3				Weak 250 cps	
3-4	S-2		5.81		
4-5					
5-6	S-3		3.31		
6-7					
7-8					
8-9	S-4		498	Very strong 1250 cps	26 cps @ peak W2=202cps (9.5-10.0')
9-10					
10-11	S-5 *	B416 **	6.96		
11-12					
12-13					
13-14	S-6		5.14		
14-15					
15-16	S-7		no recovery		
16-17				Background region	
17-18					
18-19	S-8		6.10		7.9 cps @ peak W2=146cps (19.6-20.1')
19-20					
20-21	S-9 *		4.65		
21-22					
22-23					
23-24	S-10		3.21		
24-24.5					

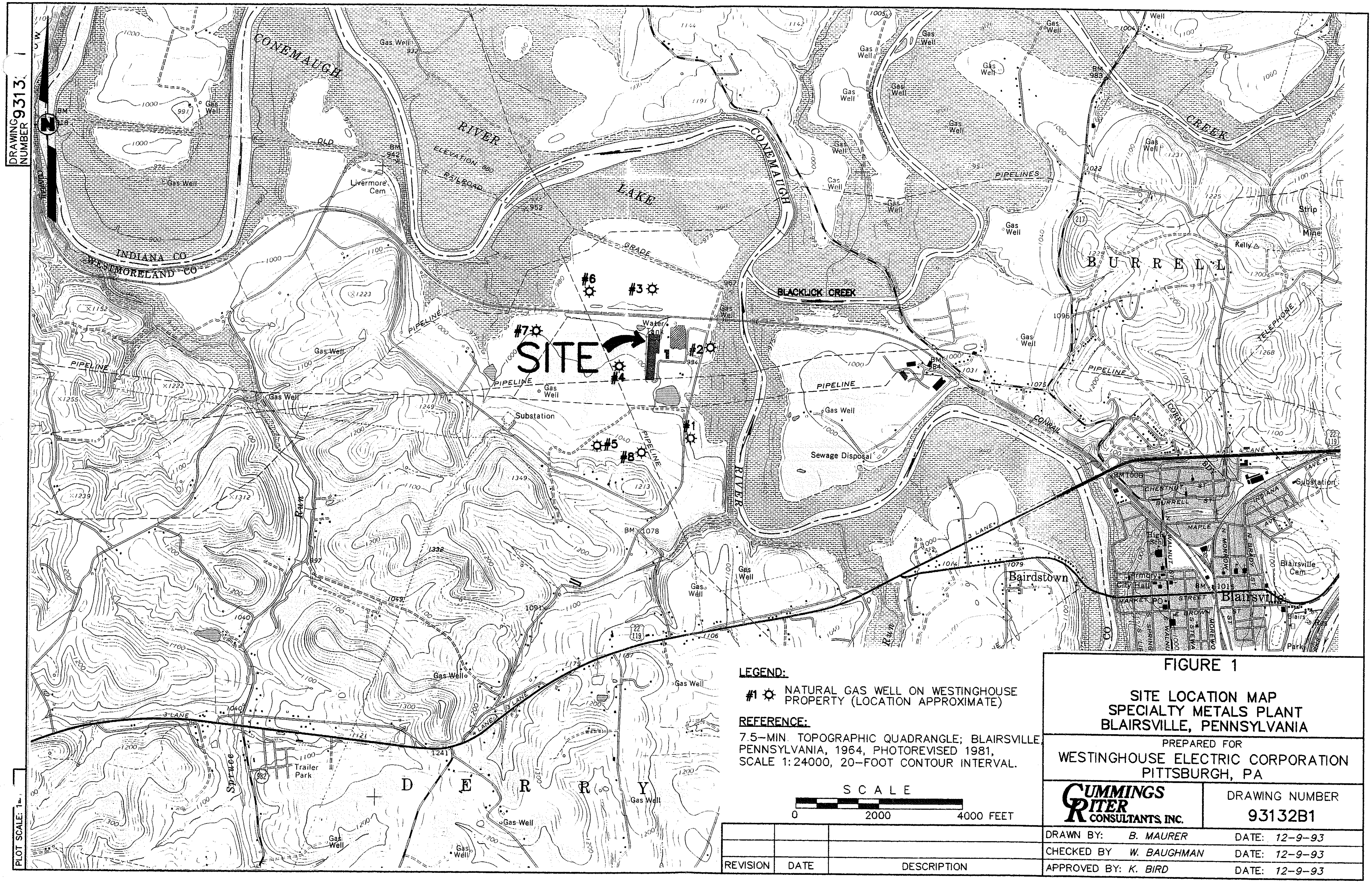
CUMMINGS RITER

TABLE 7
SUBSURFACE SOIL SAMPLE INFORMATION

Boring B-49					
Depth Interval (feet)	**CRC Sample ID**	**West. Sample ID**	**Gamma Count (cpm/gram)**	**Well Log Anomaly**	**NaI Spectra**
0-1	S-1 *	B417 **	3.82	None	background region 2.5 cps @ peak W2=48cps
1-2					
2-3					
3-4					
4-5					
5-6	S-2		3.73		
6-7					
7-8					
8-9	S-3 *		3.47		
9-10					
10-11	S-4		3.68		
11-12					

* See Table 2 for analytical results.
** See Appendix B for analytical results.

FIGURES



LEGEND:

#1 ☼ NATURAL GAS WELL ON WESTINGHOUSE PROPERTY (LOCATION APPROXIMATE)

REFERENCE:

7.5-MIN. TOPOGRAPHIC QUADRANGLE; BLAIRSVILLE, PENNSYLVANIA, 1964, PHOTOREVISED 1981, SCALE 1:24000, 20-FOOT CONTOUR INTERVAL.

SCALE

0 2000 4000 FEET

FIGURE 1

SITE LOCATION MAP
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PA

CUMMINGS RITER CONSULTANTS, INC.

DRAWING NUMBER
93132B1

REVISION	DATE	DESCRIPTION

DRAWN BY:	B. MAURER	DATE: 12-9-93
CHECKED BY	W. BAUGHMAN	DATE: 12-9-93
APPROVED BY:	K. BIRD	DATE: 12-9-93

DRAWING NUMBER 93132F1

LEGEND:

— · · —	PONDS/STREAMS
┼┼┼┼┼┼	RAILROAD
—— 980 ——	SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.

1' CONTOUR INTERVAL

APPROXIMATE SCALE

0 100 200 FEET

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

CUMMINGS RITER CONSULTANTS, INC.
CORPORATE HEADQUARTERS
339 Haymaker Road
Parkway Building, Suite 201
Monroeville, PA 15146
(412) 373-5240
Fax: (412) 373-5242

EASTERN REGIONAL HEADQUARTERS
258 Chapman Road
Suite 202
Newark, DE 19702
(302) 731-9668
Fax: (302) 731-9609

FIGURE 2

SITE PLAN

SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR

WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

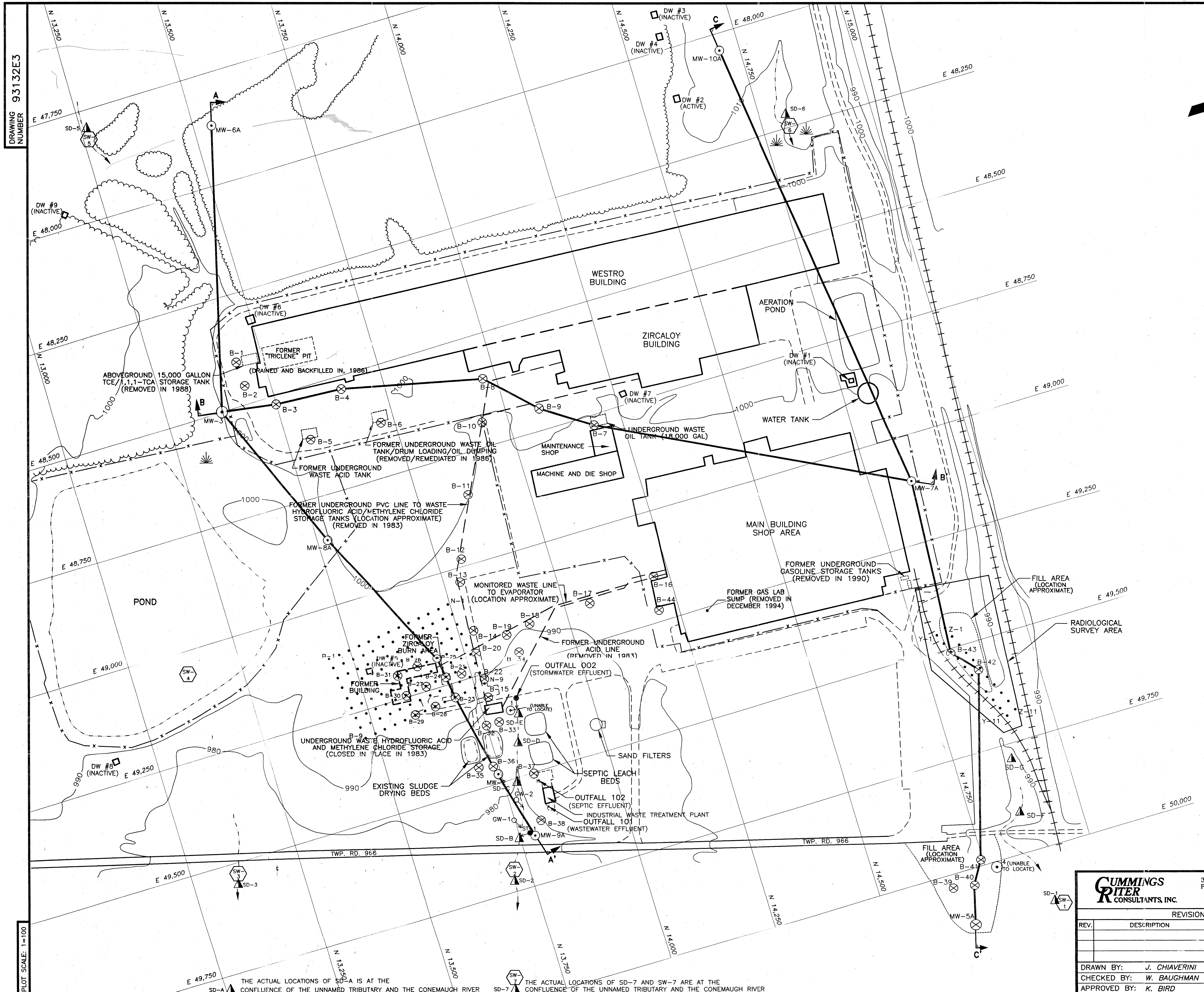
SIZE	DRAWING NUMBER:	
F		93132F8

DRAWN BY:	B. MAURER	DATE: 11-17-95	SCALE: 1"=100'	REV.
CHECKED BY:	D. CUSICK	DATE: 11-17-95		
APPROVED BY:	W. BAUGHMAN	DATE: 11-17-95		

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

PLOT SCALE 1=1



LEGEND:

- PONDS/STREAMS
- FENCE
- RAILROAD
- SURFACE WATER SAMPLE LOCATION
- STORMWATER DISCHARGE
- GROUNDWATER DISCHARGE
- GROUNDWATER SUPPLY WELL
- CONTOURS (FEET ABOVE MEAN SEA LEVEL)
- TREE LINE
- VEGETATION
- EXISTING MONITORING WELL
- SOIL BORINGS
- SURFACE SOIL SAMPLES (25-FOOT GRID)
- SEDIMENT SAMPLE LOCATIONS
- HYDROSTRATIGRAPHIC CROSS-SECTION (SEE FIGURES 8 AND 9)

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.
2. ADDITIONAL SEDIMENT SAMPLES WILL ALSO BE COLLECTED AT THE OUTFALLS OF THE THREE DRAINAGE CHANNELS INTO THE RIVER.
3. BORING AND WELL LOCATIONS SURVEYED BY LAND SURVEYING SERVICES, BRIDGEPORT, WEST VIRGINIA, NOVEMBER 1994.

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

10' CONTOUR INTERVAL

APPROXIMATE SCALE 0 100 200 FEET

CUMMINGS RITER CONSULTANTS, INC.
3180 William Pitt Way
Pittsburgh, PA 15238
(412) 826-3366
Fax: (412) 826-3367

FIGURE 3
SAMPLE LOCATION PLAN SPECIALITY METALS PLANT BLAISVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	J. CHIAVERINI	DATE: 1/13/95
CHECKED BY:	W. BAUGHMAN	DATE: 1/13/95
APPROVED BY:	K. BIRD	DATE: 1/13/95

SIZE	DRAWING NUMBER	REV.
E	93132E3	
SCALE: 1"=100'	SHEET 1 OF 1	

DRAWING NUMBER 93132F1

LEGEND:

—— · ——	PONDS/STREAMS
++++++++	RAILROAD
—— 980 ——	SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)
DW-7	FORMER GROUNDWATER SUPPLY WELL
MW-16A	GROUNDWATER MONITORING WELL
B-47	SOIL BORING PERFORMED IN FILL AREA
GW-1	GROUNDWATER DISCHARGE
D D'	HYDROSTRATIGRAPHIC CROSS SECTION
(AREA 2)	SURFACE SOIL SAMPLE AREA (SEE APPENDIX A FOR INDIVIDUAL SAMPLE LOCATIONS)

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.

1' CONTOUR INTERVAL

APPROXIMATE SCALE

0 100 200 FEET

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

PLOT SCALE: 1=100

CUMMINGS RITER CONSULTANTS, INC.
CORPORATE HEADQUARTERS
339 Haymaker Road
Parkway Building, Suite 201
Monroeville, PA 15146
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Fax: (412) 373-5242
EASTERN REGIONAL HEADQUARTERS
256 Chapman Road
Suite 202
Newark, DE 19702
(302) 731-9668
Fax: (302) 731-9609

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	J. BRADLEY	DATE: 9/13/95
CHECKED BY:	D. CUSICK	DATE: 11/15/95
APPROVED BY:	W. BAUGHMAN	DATE: 11/15/95

FIGURE 4

PHASE II SAMPLE LOCATION PLAN

SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
F	93132F1	

SCALE: 1"=100' SHEET 1 OF 1

DRAWING NUMBER 93132A4

SOURCE
U.S.G.S. Folio 110
Maps 42 and 43

EXPLANATION

Pm
Monongahela Gp.

Pcc
Casselman Fm.

Pcg
Glenshaw Fm.

Pa
Allegheny Gp.

FIGURE 5
REGIONAL GEOLOGIC MAP
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

REFERENCE:

PENNSYLVANIA GEOLOGICAL SURVEY, 1981, "ATLAS OF PRELIMINARY GEOLOGIC QUADRANGLE MAPS OF PENNSYLVANIA," EDITED BY T.M. BERG AND C.M. DODGE.

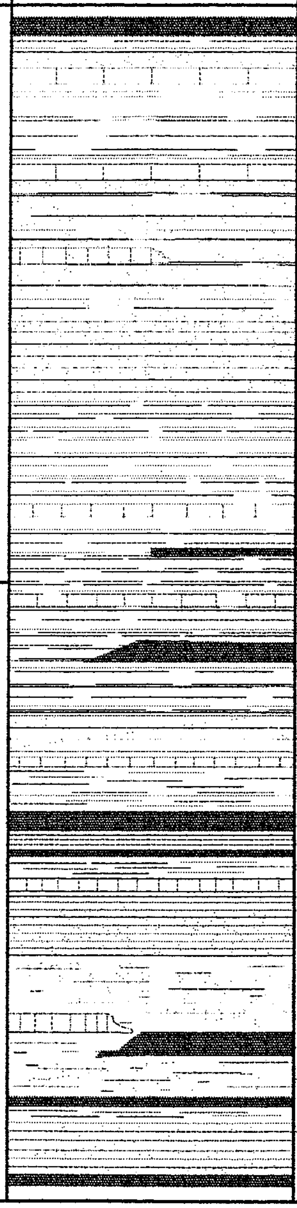
APPROXIMATE SCALE
0 1 2 MILES

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

CUMMINGS RITER CONSULTANTS, INC.

DRAWING NUMBER
93132A4

REVISION	DATE	DESCRIPTION			
			DRAWN BY:	B. MAURER	DATE: 12-14-94
			CHECKED BY	W. BAUGHMAN	DATE: 12-15-94
			APPROVED BY:	P. O'HARA	DATE: 12-15-94

PERIOD	GROUP (SYMBOL)	THICKNESS (IN FEET)	FORMATION (SYMBOL)	COLUMNAR SECTION	MEMBER, BEDS, AND OTHER MINOR UNITS
PENNSYLVANIAN	CONEMAUGH (Pc)	500–750	CASSELMAN (Pcc)		PITTSBURGH COAL
					UPPER PITTSBURGH LIMESTONE
					CONNELLSVILLE SANDSTONE
					CLARKSBURG LIMESTONE
					MORGANTOWN SANDSTONE
					WELLERSTOWN CLAY
					BIRMINGHAM SHALE
					DUQUESNE COAL
			GLENSHAW (Pcg)		AMES LIMESTONE
					HARLEM COAL
					PITTSBURGH RED BEDS
					SALTSBURG SANDSTONE
					SECTION UNDERLYING STUDY AREA
					UPPER BAKERSTOWN COAL
					WOODS RUN LIMESTONE
					LOWER BAKERSTOWN COAL
					CAMBRIDGE (PINE CREEK) LIMESTONE
					BUFFALO SANDSTONE
					BRUSH CREEK SHALE
					BRUSH CREEK LIMESTONE
					BRUSH CREEK COAL
					UPPER MAHONING SANDSTONE
					MANHONING COAL
					MANHONING (THORTON) COAL
					LOWER MANHONING CLAY
					UPPER FREEPORT COAL

REFERENCE:
GREATER PITTSBURGH REGION PROPERTIES AND USES OF CLAYS AND SHALES, 1976, PENNSYLVANIA GEOLOGICAL SURVEY, M-71.

FIGURE 6
GENERALIZED STRATIGRAPHIC COLUMN SPECIALITY METALS PLANT BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

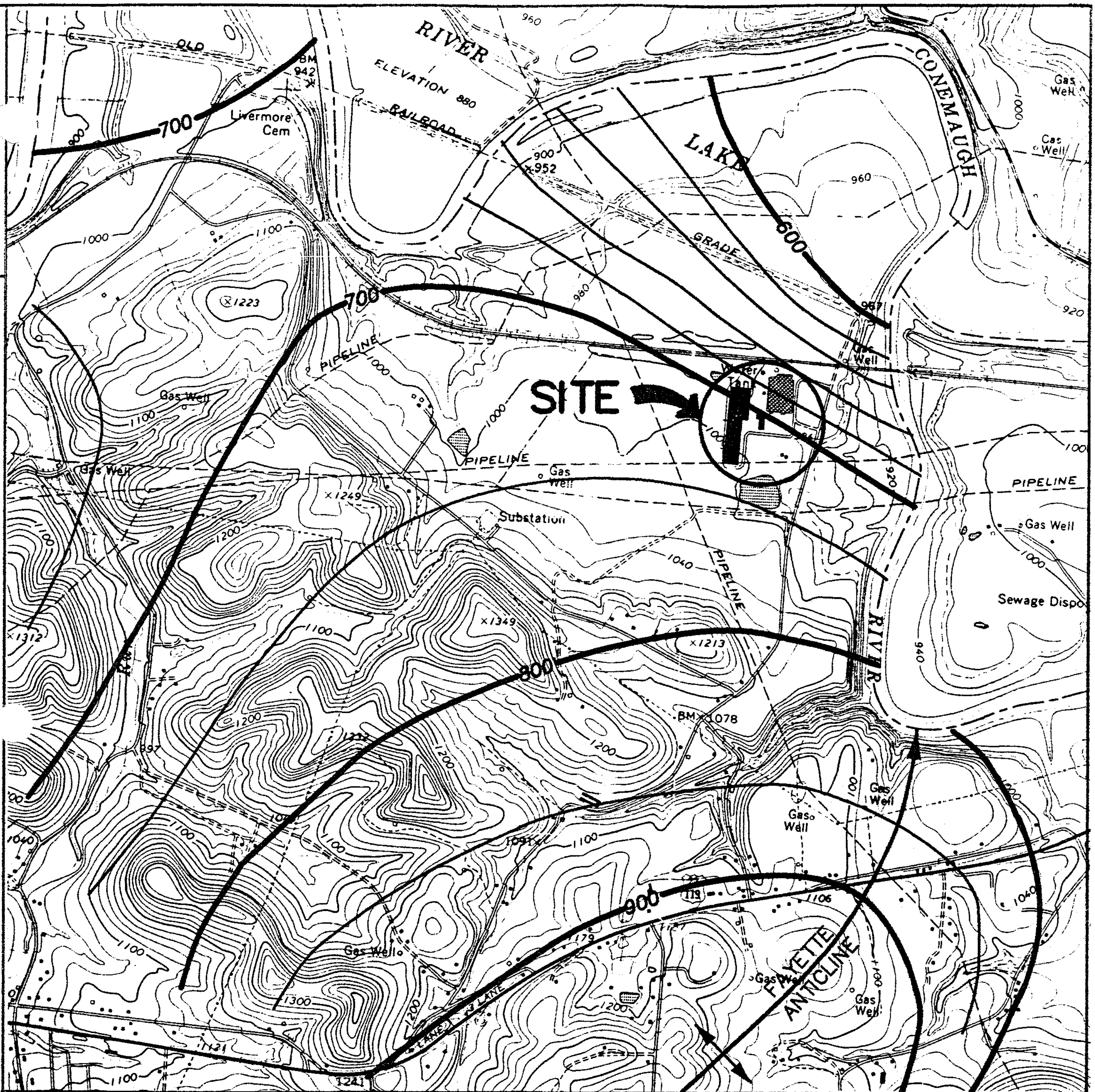
CUMMINGS RITER CONSULTANTS, INC.

DRAWING NUMBER 93132A2

			DRAWN BY: S. SWARTZBECK	DATE: 11-7-94
			CHECKED BY B. MAURER	DATE: 11-8-94
REVISION	DATE	DESCRIPTION	APPROVED BY: W. BAUGHMAN	DATE: 11-8-94

DRAWING NUMBER 93132A2

DRAWING NUMBER 93132A5



LEGEND:

700 — BASE OF UPPER FREEPORT COAL (FEET ABOVE MEAN SEA LEVEL, 20 AND 50-FOOT CONTOUR INTERVALS)

REFERENCE:

US DEPARTMENT OF THE INTERIOR, OFFICE OF SURFACE MINING RECLAMATION AND ENFORCEMENT.

APPROXIMATE SCALE

0 2000 4000 FEET

FIGURE 7

STRUCTURE CONTOUR MAP UPPER FREEPORT COAL SEAM SPECIALTY METALS PLANT BLAIRSVILLE, PENNSYLVANIA

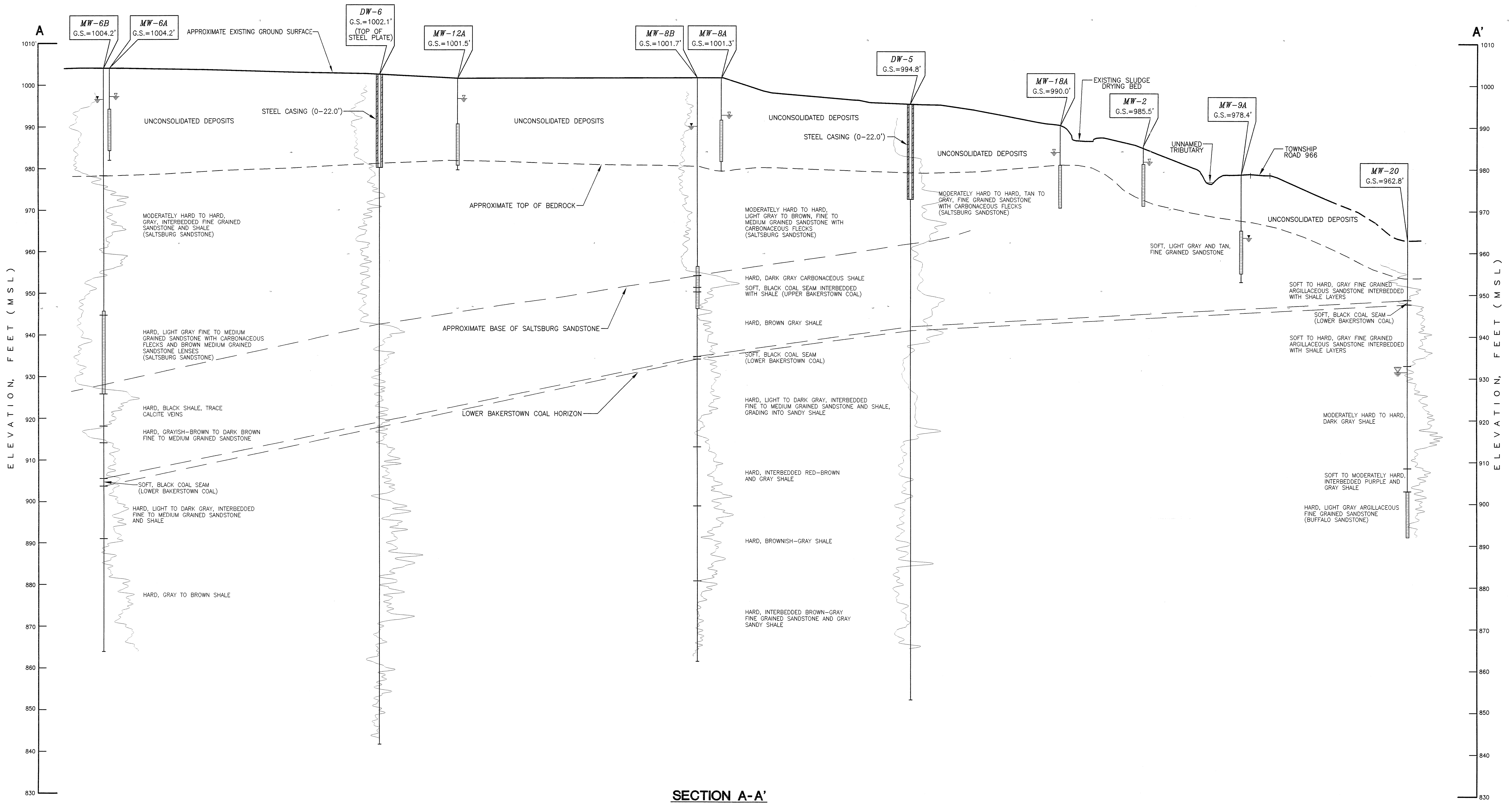
PREPARED FOR

WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

CUMMINGS RITER CONSULTANTS, INC.

DRAWING NUMBER
93132A5

			DRAWN BY: B. MAURER	DATE: 12-14-94
			CHECKED BY W. BAUGHMAN	DATE: 12-15-94
REVISION	DATE	DESCRIPTION	APPROVED BY: P. O'HARA	DATE: 12-15-94



SECTION A-A'

HORIZONTAL SCALE
70 0 70 140 FEET

VERTICAL SCALE
10 0 10 20 FEET

VERTICAL EXAGGERATION = 7X

LEGEND:

- SALTSBURG SANDSTONE GROUNDWATER ELEVATION - 9/27/96
- BUFFALO SANDSTONE GROUNDWATER ELEVATION - 9/27/96
- UNCONSOLIDATED DEPOSITS/WEATHERED BEDROCK - 9/27/96
- MONITORING WELL SCREEN INTERVAL
- NATURAL GAMMA GEOPHYSICAL LOG
- STEEL CASING IN FORMER PRODUCTION WELLS (DW) BASED ON GEOPHYSICS BEFORE WELL ABANDONMENT

NOTES:

1. ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.
2. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL AND BEDROCK CONDITIONS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURRING AT THESE BORING LOCATIONS. ALSO THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE BORING LOCATIONS.
3. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS AND GEOPHYSICAL DATA. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS, AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.
4. CORRELATION OF THE LOWER BAKERSTOWN COAL SEAM IS BASED ON GEOPHYSICAL DATA AND VISUAL LITHOLOGIC DESCRIPTIONS FROM TEST BORINGS. DUE TO ITS DISCONTINUOUS NATURE, THE COAL SEAM MAY NOT BE PRESENT IN SELECT LOCATIONS.
5. PRODUCTION WELLS DW-5 AND DW-6 WERE ABANDONED DURING THE PHASE II INVESTIGATION (1995).

REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
1	ADDED MONITORING WELLS MW-18A AND MW-20 WITH STRATIGRAPHY AND CORREALTIONS. ALSO, UPDATED WATER LEVELS	11-4-96	

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FIGURE 9

HYDROSTRATIGRAPHIC CROSS SECTION A-A'

SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE F | DRAWING NUMBER: 93132E15

DRAWN BY: T. McKEE	DATE: 10-18-96	SCALE: AS SHOWN	REV. 1
CHECKED BY: D. CUSICK	DATE: 11-15-95		
APPROVED BY: W. BAUGHMAN	DATE: 11-15-95		

PLOT SCALE: 1=1

SECTION B–B'

HORIZONTAL SCALE: 60 0 60 120 FEET

VERTICAL SCALE: 10 0 10 20 FEET

VERTICAL EXAGGERATION = 6X

LEGEND:

- DEEP GROUNDWATER ELEVATION – 9/18/95
- SHALLOW GROUNDWATER ELEVATION – 9/18/95
- MONITORING WELL SCREEN INTERVAL
- NATURAL GAMMA GEOPHYSICAL LOG
- STEEL CASING IN FORMER PRODUCTION WELLS (DW) BASED ON GEOPHYSICS BEFORE WELL ABANDONMENT

NOTES:

1. ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.
2. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL AND BEDROCK CONDITIONS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURRING AT THESE BORING LOCATIONS. ALSO THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE BORING LOCATIONS.
3. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS AND GEOPHYSICAL DATA. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS, AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.
4. PRODUCTION WELLS DW-4 AND DW-9 WERE ABANDONED DURING THE PHASE II INVESTIGATION.

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REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	J. BRADLEY	DATE:	9/29/95
CHECKED BY:	D. CUSICK	DATE:	11/15/95
APPROVED BY:	W. BAUGHMAN	DATE:	11/15/95

FIGURE 9
HYDROSTRATIGRAPHIC CROSS SECTION B–B'
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE: E
DRAWING NUMBER: 93132E16
REV.:
SCALE: AS SHOWN
SHEET 1 OF 1

DRAWING NUMBER 93132E16

PLOT SCALE: 1=1

LEGEND:

- SALTSBURG SANDSTONE GROUNDWATER ELEVATION – 9/27/96
- UNCONSOLIDATED DEPOSITS/WEATHERED BEDROCK GROUNDWATER ELEVATION – 9/27/96
- MONITORING WELL SCREEN INTERVAL
- NATURAL GAMMA GEOPHYSICAL LOG

NOTES:

1. ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.
2. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL AND BEDROCK CONDITIONS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURRING AT THESE BORING LOCATIONS. ALSO THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE BORING LOCATIONS.
3. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS AND GEOPHYSICAL DATA. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS. IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.
4. TOP OF BEDROCK ELEVATION UNDERLYING THE WESTRO BUILDING WAS OBTAINED FROM FOUNDATION TEST BORINGS (EUGENE HANNIGAN CONSULTING ENGINEERS, 1974).

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REVISIONS

REV.	DESCRIPTION	DATE	APPROVED
1	ADDED SEEP LOCATION (SP-1) AND UPDATED WATER LEVELS	11-9-96	

DRAWN BY:	J. BRADLEY	DATE:	9/29/95
CHECKED BY:	D. CUSICK	DATE:	11/15/95
APPROVED BY:	W. BAUGHMAN	DATE:	11/15/95

FIGURE 11
HYDROSTRATIGRAPHIC CROSS SECTION C–C'
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE: E | DRAWING NUMBER: 93132E17 | REV. 1
SCALE: AS SHOWN | SHEET 1 OF 1

DRAWING NUMBER 93132E17
PLOT SCALE: 1=1

D:\PROJECTS\93-132\93132E17 11/12/96 9:41:09 am

DRAWING NUMBER 93132E18

LEGEND:

- DEEP GROUNDWATER ELEVATION - 9/18/95
- SHALLOW GROUNDWATER ELEVATION - 9/18/95
- MONITORING WELL SCREEN INTERVAL
- NATURAL GAMMA GEOPHYSICAL LOG
- STEEL CASING IN FORMER PRODUCTION WELLS (DW) BASED ON GEOPHYSICS BEFORE WELL ABANDONMENT

NOTES:

1. ELEVATIONS IN FEET ABOVE MEAN SEA LEVEL.
2. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL AND BEDROCK CONDITIONS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURRING AT THESE BORING LOCATIONS. ALSO THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE BORING LOCATIONS.
3. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE TEST BORINGS AND GEOPHYSICAL DATA. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE TEST BORINGS, AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE TEST BORINGS MAY VARY FROM THOSE INDICATED.
4. PRODUCTION WELL DW-7 WAS ABANDONED DURING THE PHASE II INVESTIGATION.

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REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	J. BRADLEY	DATE:	9/29/95
CHECKED BY:	D. CUSICK	DATE:	11/15/95
APPROVED BY:	W. BAUGHMAN	DATE:	11/15/95

FIGURE 11
HYDROSTRATIGRAPHIC CROSS SECTION D-D'
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE E | DRAWING NUMBER 93132E18 | REV.
SCALE: AS SHOWN | SHEET 1 OF 1

PLOT SCALE: 1=1

DRAWING NUMBER 93132F5

LEGEND:

— ·· — ·· —	PONDS/STREAMS
++++++++++	RAILROAD
—— 980 ——	SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)
● DW-7	FORMER GROUNDWATER SUPPLY WELL
MW-16A	GROUNDWATER MONITORING WELL
(909')	BASE OF SALTSBURG SANDSTONE UNIT ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- -920- - -	BASE OF SALTSBURG SANDSTONE STRUCTURE CONTOUR (FT. MSL)

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.
2. BASE OF SALTSBURG SANDSTONE UNIT ELEVATION DETERMINED FROM NATURAL GAMMA GEOPHYSICAL LOGGING AND/OR VISUAL CLASSIFICATION OF ROCK CUTTINGS DURING BOREHOLE DRILLING.

1' CONTOUR INTERVAL

APPROXIMATE SCALE

0 100 200 FEET

PLOT SCALE: 1=1

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

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REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY: J. BRADLEY		DATE: 9/13/95
CHECKED BY: D. CUSICK		DATE: 11/2/95
APPROVED BY: W. BAUGHMAN		DATE: 11/2/95

FIGURE 12

STRUCTURE CONTOURS – BASE OF SALTSBURG SANDSTONE

SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
F	93132F5	
SCALE: 1"=100'	SHEET 1 OF 1	

LEGEND:

— · — · —	PONDS/STREAMS
++++++++	RAILROAD
——980——	SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)
● DW-7	FORMER GROUNDWATER SUPPLY WELL
MW-16A	GROUNDWATER MONITORING WELL
△ B-12	TEST BORING PERFORMED DURING PHASE I INVESTIGATION
▲ B-1	FOUNDATION BORING (LOCATION APPROXIMATE)
(977.9')	ELEVATION OF TOP OF BEDROCK IN FEET ABOVE MEAN SEA LEVEL (MSL)
—980— —	TOP OF BEDROCK ELEVATION CONTOURS IN FEET ABOVE MEAN SEA LEVEL (MSL)

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.

1' CONTOUR INTERVAL

APPROXIMATE SCALE

0 100 200 FEET

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

PLOT SCALE: 1=1

DRAWING NUMBER 93132F2

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	J. BRADLEY	DATE: 10/11/95
CHECKED BY:	D. CUSICK	DATE: 11/15/95
APPROVED BY:	W. BAUGHMAN	DATE: 11/15/95

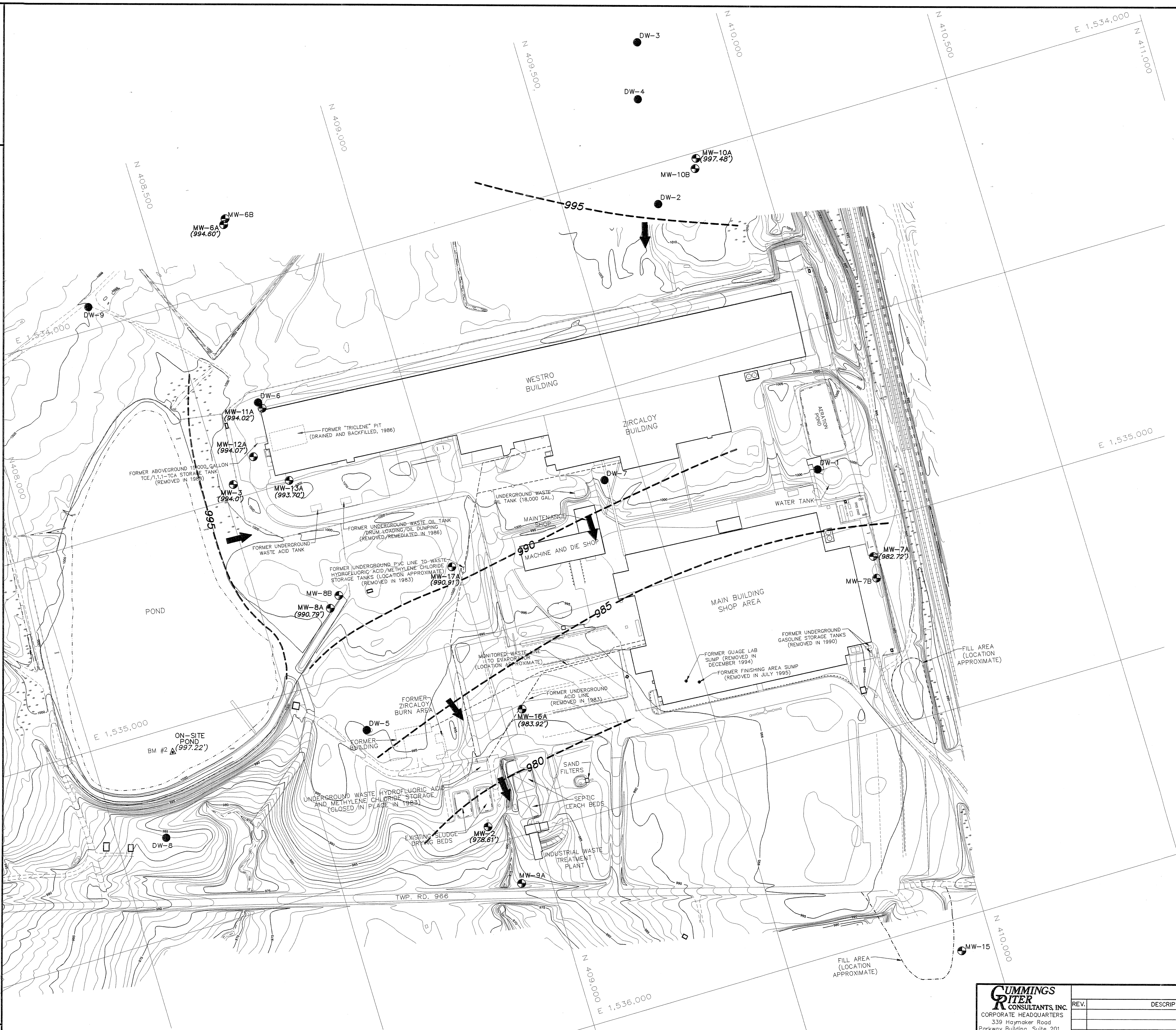
FIGURE 13

CONTOUR MAP – TOP OF BEDROCK

SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
F	93132F2	
SCALE: 1"=100'	SHEET 1 OF 1	



LEGEND:

- PONDS/STREAMS
- RAILROAD
- 980 — SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)
- DW-7 — FORMER GROUNDWATER SUPPLY WELL
- MW-16A — GROUNDWATER MONITORING WELL
- 960 — GROUNDWATER EQUIPOTENTIAL LINE IN FEET ABOVE MEAN SEA LEVEL (MSL) SEPTEMBER 18, 1995
- (943.42') GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
- INFERRED GROUNDWATER FLOW DIRECTION BASED ON EQUIPOTENTIAL LINES

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.

1' CONTOUR INTERVAL

APPROXIMATE SCALE 0 100 200 FEET

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

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REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	J. BRADLEY	DATE: 10/11/95
CHECKED BY:	D. CUSICK	DATE: 11/15/95
APPROVED BY:	W. BAUGHMAN	DATE: 11/15/95

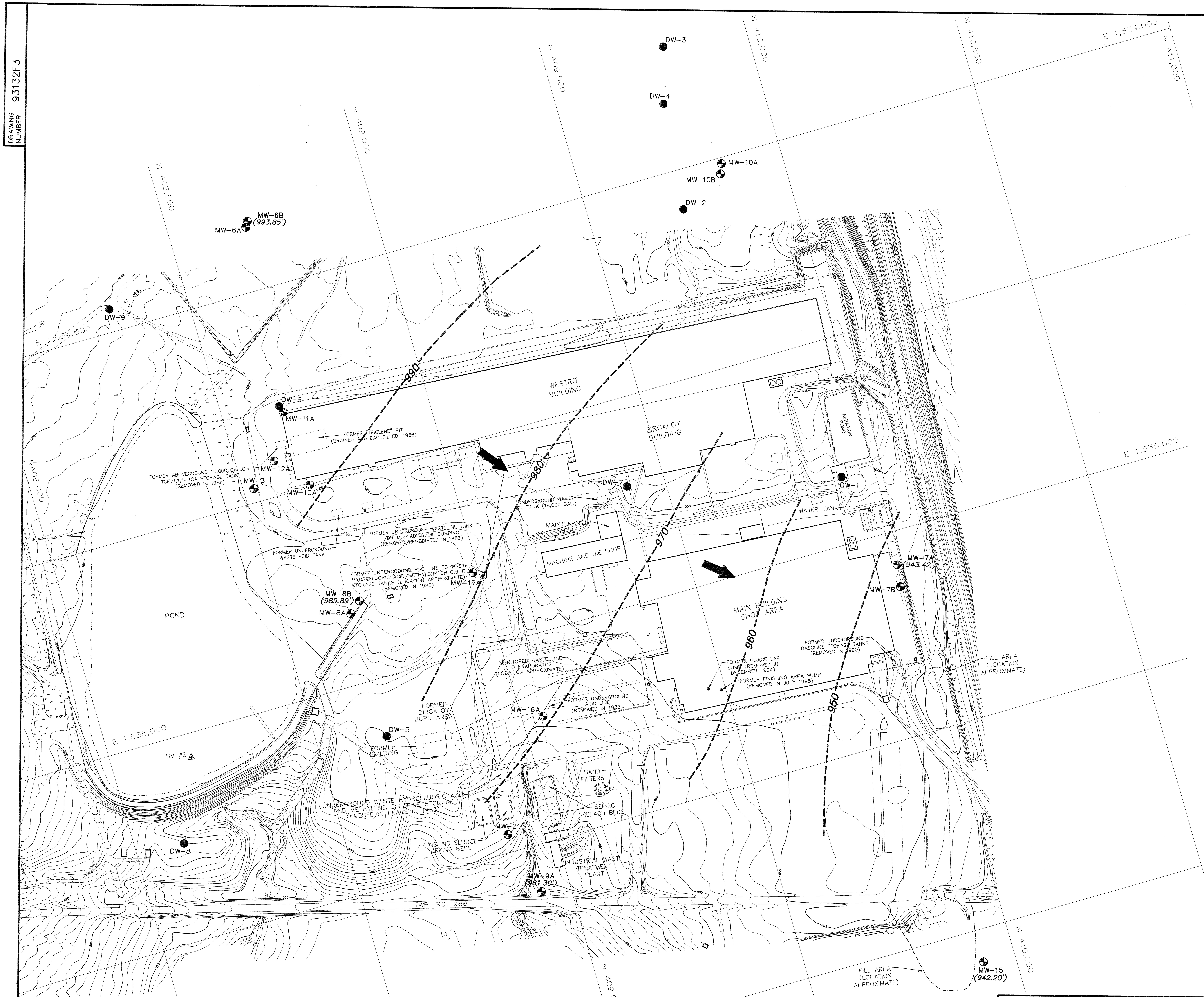
FIGURE 14
PIEZOMETRIC SURFACE MAP
UNCONSOLIDATED DEPOSITS/WEATHERED BEDROCK
SEPTEMBER 18, 1995
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE F | DRAWING NUMBER 93132F4 | REV.
SCALE: 1"=100' | SHEET 1 OF 1

PLOT SCALE: 1=1

DRAWING NUMBER 93132F3



LEGEND:

— - —	PONDS/STREAMS
+++++	RAILROAD
—980—	SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)
DW-7 ●	FORMER GROUNDWATER SUPPLY WELL
MW-16A ⊕	GROUNDWATER MONITORING WELL
960 - - - -	GROUNDWATER EQUIPOTENTIAL LINE IN FEET ABOVE MEAN SEA LEVEL (MSL) SEPTEMBER 18, 1995
(943.42')	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL) – SALTSBURG SANDSTONE
➡	INFERRED GROUNDWATER FLOW DIRECTION BASED ON EQUIPOTENTIAL LINES

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.
2. MONITORING WELL MW-10B IS SCREENED AT THE UNCONSOLIDATED DEPOSITS/BEDROCK INTERFACE. WATER LEVEL DATA FROM WELL MW-10B WAS NOT UTILIZED IN CONSTRUCTION OF THIS FIGURE.

1' CONTOUR INTERVAL

APPROXIMATE SCALE 0 100 200 FEET

PLOT SCALE: 1=1

REFERENCE:
WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

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REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	J. BRADLEY	DATE: 10/11/95
CHECKED BY:	D. CUSICK	DATE: 11/2/95
APPROVED BY:	W. BAUGHMAN	DATE: 11/2/95

FIGURE 15
PIEZOMETRIC SURFACE MAP
SALTSBURG SANDSTONE – SEPTEMBER 18, 1995

SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
F	93132F3	
SCALE: 1"=100'	SHEET 1 OF 1	

DRAWING NUMBER 93132E19

8" STEEL GASOLINE LINE
(LOCATION APPROXIMATE)

SCALE 0 10 20 METERS

LEGEND:

CONTOUR OF EQUAL MAGNETIC INTENSITY, IN GAMMAS

NOTE:

1. A VALUE OF 54,800 GAMMAS HAS BEEN SUBTRACTED FROM THE MEASURED MAGNETIC INTENSITIES TO PRODUCE THE CONTOURS SHOWN ON THIS FIGURE.
2. MAGNETIC INTENSITIES WERE MEASURED ON A 5 METER GRID OVER THE AREA INDICATED.
3. MAGNETIC ANOMALIES ARE INTERPRETED AS READINGS GREATER THAN 200 GAMMAS OR LESS THAN 0 GAMMAS.
4. A MAGNETIC LOW (i.e. LESS THAN 0 GAMMAS) IS NORMALLY LOCATED IMMEDIATELY NORTH OF A MAGNETIC HIGH (GREATER THAN 200 GAMMAS) IN THE PRESENCE OF A MAGNETIC ANOMALY.

REFERENCE:
WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

PLOT SCALE: 1=32.8

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	B. MAURER	DATE:	11/5/95
CHECKED BY:	D. CUSICK	DATE:	11/15/95
APPROVED BY:	W. BAUGHMAN	DATE:	11/15/95

FIGURE 16
MAGNETOMETER SURVEY
FORMER ZIRCALOY BURN AREA
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA
PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
E	93132E19	
SCALE: 1" = 10m	SHEET 1 OF 1	

LEGEND:

CONTOUR OF EQUAL RADIOACTIVITY (IN GAMMAS), AS MEASURED BY A GAMMA RAY SPECTROMETER

NOTE:

1. GAMMA RAY SPECTROMETER READINGS WERE MEASURED ON A 2-METER GRID OVER THE AREA INDICATED.

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

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REVISIONS

REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	B. MAURER	DATE: 11/5/95
CHECKED BY:	D. CUSICK	DATE: 11/15/95
APPROVED BY:	W. BAUGHMAN	DATE: 11/15/95

FIGURE 17

GAMMA RAY SPECTROMETER SURVEY
FORMER ZIRCALOY BURN AREA

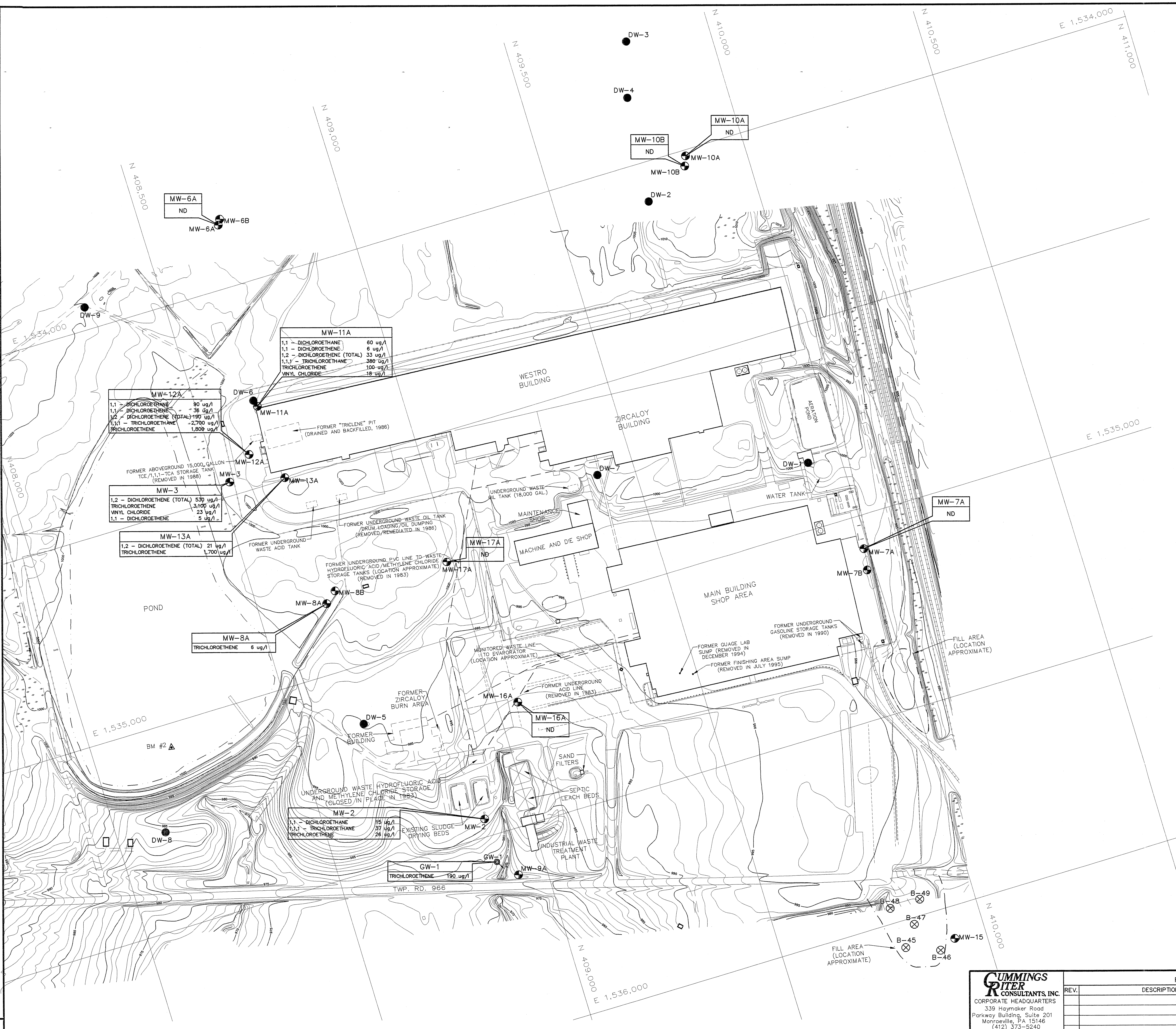
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
E	93132E20	

SCALE: 1" = 10m SHEET 1 OF 1

DRAWING NUMBER 93132F7



LEGEND:

— · —	PONDS/STREAMS
┼┼┼┼┼┼┼	RAILROAD
—980—	SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)
● DW-7	FORMER GROUNDWATER SUPPLY WELL
MW-16A	GROUNDWATER MONITORING WELL
⊗ B-47	SOIL BORING PERFORMED IN FILL AREA
GW-1	GROUNDWATER DISCHARGE

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.
2. RESULTS FOR ACETONE AND METHYLENE CHLORIDE WERE NOT UTILIZED IN THE CONSTRUCTION OF THIS FIGURE DUE TO THEIR PRESENCE IN LABORATORY BLANK SAMPLES.
3. "ND" INDICATES THAT NO VOCs WERE DETECTED AT THIS SAMPLE LOCATION.

1' CONTOUR INTERVAL

APPROXIMATE SCALE 0 100 200 FEET

PLOT SCALE: 1=1

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

DRAWN BY:	T. McKEE	DATE: 11/12/95
CHECKED BY:	D. CUSICK	DATE: 11/15/95
APPROVED BY:	W. BAUGHMAN	DATE: 11/15/95

FIGURE 18
UNCONSOLIDATED DEPOSITS/WEATHERED BEDROCK GROUNDWATER VOC CONCENTRATIONS
SEPTEMBER, 1995

SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
F	93132F7	
SCALE: 1"=100'	SHEET 1 OF 1	

LEGEND:

- PONDS/STREAMS
- RAILROAD
- 980 SURFACE CONTOURS (FEET ABOVE MEAN SEA LEVEL)
- DW-7 FORMER GROUNDWATER SUPPLY WELL
- MW-16A GROUNDWATER MONITORING WELL
- B-47 SOIL BORING PERFORMED IN FILL AREA

NOTES:

1. TOPOGRAPHIC CONTOURS AND PROPERTY FEATURES WERE PROVIDED BY OTHERS AND HAVE NOT BEEN VERIFIED BY CUMMINGS/RITER.
2. RESULTS FOR ACETONE AND METHYLENE CHLORIDE WERE NOT UTILIZED IN THE CONSTRUCTION OF THIS FIGURE DUE TO THEIR PRESENCE IN LABORATORY BLANK SAMPLES.
3. "ND" INDICATES THAT NO VOCs WERE DETECTED AT THIS SAMPLE LOCATION.

1' CONTOUR INTERVAL

APPROXIMATE SCALE
0 100 200 FEET

REFERENCE:

WESTINGHOUSE ELECTRIC CORPORATION, SPECIALTY METALS DIVISION, BLAIRSVILLE, PENNSYLVANIA; FIGURE 6; TITLED: "SURFACE AND GROUND WATER QUALITY MONITORING LOCATIONS NEAR PLANT FACILITIES," PROJECT P6043.

PLOT SCALE: 1=1

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FIGURE 19
SALTSBURG SANDSTONE
GROUNDWATER VOC CONCENTRATIONS
SEPTEMBER, 1995
SPECIALTY METALS PLANT
BLAIRSVILLE, PENNSYLVANIA

PREPARED FOR
WESTINGHOUSE ELECTRIC CORPORATION
PITTSBURGH, PENNSYLVANIA

SIZE	DRAWING NUMBER	REV.
F	93132F6	
SCALE: 1"=100'	SHEET 1 OF 1	