



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

SEP 30 2005

EPA Region 5 Records Ctr.



255563

REPLY TO THE ATTENTION OF

Mr. Douglas P. Scott, Director
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, IL 62706

SR-6J

Dear Mr. Scott:

The United States Environmental Protection Agency (U.S. EPA) is providing you with this letter to document U.S. EPA concurrence with the Explanation of Significant Differences (ESD) for the Central Illinois Public Service Company (CIPS) signed by you on September 6, 2005. The purpose of the ESD is to document three specific changes to the 1992 Record of Decision (ROD). These changes to the ROD are:

- Allow Ameren CIPS to conduct a pilot study on an alternate treatment method in an attempt to reduce or eliminate the length of operation time of the current groundwater pump and treat system.
- Revise the clean-up objectives for benzo(a)pyrene, as a new Maximum Contaminant Level(MCL) has been recently established for this constituent; and
- Update the clean-up objectives related to surface water quality standards for the other contaminants of concern based on new toxicity information.

The ESD allows CIPS to conduct a pilot study for chemical oxidant injection for 90 days. If monitoring conducted determines that the study is effective, a ROD amendment would then be necessary for the alternate treatment method to be implemented.

The U.S. EPA concurs with the ESD to conduct a study on an alternative treatment method, to eliminate or reduce the length of operation time of the current groundwater pump and treat system. The ESD is enclosed and is part of this letter. Thank you for your cooperation in addressing these developments at the CIPS Site.

Sincerely yours,

Richard C. Karl, Director
Superfund Division

Enclosure



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 NORTH GRAND AVENUE EAST, P.O. BOX 19276, SPRINGFIELD, ILLINOIS 62794-9276 – (217) 782-3397
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ROD R. BLAGOJEVICH, GOVERNOR

DOUGLAS P. SCOTT, DIRECTOR

217-524-1655

September 13, 2005

Mr. James N. Mayka
United States Environmental Protection Agency
77 West Jackson Boulevard
Mail Code S-5J
Chicago, Illinois 60604-3507

Re: 0218160007 – Christian County
Ameren – Central Illinois Public Service
ILD 981 781 065
Superfund/Technical Reports

Dear Mr. Mayka:

The purpose of this letter is to transmit the Explanation of Significant Difference document for the Ameren – Central Illinois Public Service National Priorities List (NPL) site in Taylorville, Illinois for your review and concurrence. The Illinois Environmental Protection Agency (Illinois EPA) would appreciate your response on this document at your earliest convenience.

If you should have any questions, need any additional information, or require any assistance regarding this matter, please contact me at 217-524-1655 or via electronic mail at: clarence.smith@epa.state.il.us.

Respectfully,

Clarence L. Smith, Manager
Federal Site Remediation Section
Division of Remediation Management
Bureau of Land

Attachment

EXPLANATION OF SIGNIFICANT DIFFERENCES

AMEREN CIPS National Priorities List Site

0218160007 – Christian County

ILD 981 781 065

Taylorville, Illinois

August, 2005

Introduction to the Site and Statement of Purpose

This Explanation of Significant Differences (ESD) has been prepared for the Ameren, Central Illinois Public Service National Priorities List (NPL) Site (Ameren CIPS, formerly known as CIPS -Taylorville) in Taylorville, Illinois to document three specific changes in the 1992 Record of Decision (ROD). These changes are:

- Allow Ameren CIPS to conduct a pilot study on an alternate treatment method in an attempt to reduce or eliminate the length of operation time of the current groundwater pump and treat system;
- Revise the clean-up objective for benzo(a)pyrene, as a new Maximum Contaminant Level (MCL) has been recently established for this constituent; and
- Update the clean-up objectives related to surface water quality standards for the other contaminants of concern as identified in Table 5 based on new toxicity information.

Specifically, Ameren CIPS will be conducting a study using an alternative treatment method. The goal of this study is to eliminate or reduce the length of operation time of the current groundwater pump and treat system will be required to operate to achieve completion of the clean-up standards set forth within the ROD. Further, since the time the ROD was signed, a Maximum Contaminant Level (MCL) for benzo(a)pyrene has been established, and the clean-up objective for this parameter will be changed to reflect this. However, since September 1992, toxicity information has become available for compounds that previously had no data, and, in addition, the toxicity data for a number of compounds has changed. In order to ensure that the requirements set within the ROD continue to be protective, surface water quality standards were re-calculated utilizing new toxicity information for the contaminants of concern. Table 5 identifies the newly calculated standards. Illinois EPA considers the new numbers to be more precise and to more accurately reflect concentrations that are protective of human health and the environment because new and more accurate toxicity data has been utilized within its calculations. Therefore, Illinois EPA shall require the effluent from the pump and treat facility to meet all new standards where the concentration is lower than that identified within the 1992 ROD.

There are three distinct categories for post-ROD changes, and the United States Environmental Protection Agency (U.S. EPA) and Illinois Environmental Protection Agency (Illinois EPA) have determined these proposed changes to the 1992 ROD fit the Explanation of Significant Differences (ESD) category.

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SITE CHARACTERISTICS

The Ameren CIPS site is located at 917 South Webster Street in Taylorville, Christian County, Illinois. The site is owned by Ameren CIPS and is slightly less than one acre in size (please refer to Figure 1). The site is bordered on the north by typical residential block arrangements; on the south by Seaman Estates subdivision that consists of eight large wooded tracts with single family residences on several, all of which surround Seaman Estates Pond; on the east by Manners Park, a large multi-use public park for Taylorville; and to the west by the Ameren CIPS pole yard and Norfolk Southern railroad tracks (please refer to Figure 2).

HISTORY OF CONTAMINATION

A Manufactured Gas Plant (MGP) operated on the site from 1883 to 1932. In 1932 the plant closed and most of the aboveground structures were torn down while the belowground tanks were apparently filled with debris and left in place (Hanson Engineers, Phase I). Contamination was discovered at the site by a septic tank contractor on October 20, 1985 (Cochran), and Ameren CIPS notified the Illinois EPA of the discovery. The company began an on-site investigation, identifying coal tar and its constituents. Coal tar is a byproduct of the coal gasification process and is comprised mainly of polynuclear aromatic hydrocarbons (PAHs) such as naphthalene and benzo(a)anthracene as well as volatile organic compounds (VOCs) such as benzene and toluene.

SITE GEOLOGY AND CHARACTERISTICS

The site is underlain by a largely unconfined aquifer, which moves from a northeast to southwest direction through fairly well sorted sand and gravel. This sand and gravel aquifer extends to approximately ninety (90) feet below ground surface where it is underlain by bedrock comprised of limestone and dolomite. The uppermost geologic unit is loess, a wind blown material, which ranges from 5 to 10 feet in depth. The loess consists of very fine sand, silt, and clay that allow recharge of the aquifer from the surface. The water table beneath the site is approximately fifteen (15) feet below ground surface (Hanson Engineers, Phase II).

IMMEDIATE AND REMOVAL ACTIONS

In response to a notice issued by Illinois EPA pursuant to Section 4(q) of the Illinois Environmental Protection Act (Act, 415 Illinois Compiled Statutes 5/4(q)), Ameren CIPS began an Immediate Removal Action at the site on January 19, 1987. The purpose of the removal action was to remove the source material, which posed a principal threat to human health and the environment.

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Above and belowground structures associated with the gas plant were removed. On-site contaminated soil was removed to an average of ten feet below ground surface. Approximately 9,000 cubic yards of contaminated soil was removed and transported to Peoria Disposal Company Landfill for disposal (please refer to Figure 3). Figure 3 displays the extent of excavations within the main area of the facility, and Figure 4 displays Area A south of the site. Additionally, an area of approximately 600 feet by 50 feet was excavated from the drainage swale running off-site towards the Seaman Estate Pond. The depth of the off-site excavation averaged about three feet. A total of 3,000 cubic yards was excavated from the drainage swale and transported to Peoria Disposal Company Landfill for disposal. The off-site excavation within Area A, identified in Figure 4, addressed all off-site sediments impacted by the site which posed a human health risk outside of the acceptable risk range of 1×10^{-4} to 1×10^{-6} . The off-site excavation within Area A addressed all off-site sediments impacted by the site that posed a human health risk outside of U.S. EPA's acceptable risk range. The excavation was completed in March 1987. The excavations were filled with clean soils from off-site (Illinois, Record).

Twenty soil borings were conducted surrounding the facility at off-site locations. None of the samples taken from the borings immediately surrounding the site had detectable levels of PAHs. As provided within Hanson Engineer's *Work Plan for Providing Phase II Site Investigation and Remedial Alternative Development*, representative samples from regular intervals (2.5 to 5 feet) were classified by the field geologist and screened with organic vapor analysis. No odors or visual observations of contamination were noted for vadose zone soils within any of the borings immediately surrounding the site (Hanson Engineers, Field Investigation). As such, no vadose zone samples were analyzed within the laboratory for individual PAHs. Field scientist's observations confirmed the expectation that, with the exception of sediments south of the site, off-site soils were not impacted because surface drainage flowed onto the site from the east, west and northerly directions. Presumably, the lack of contamination within off-site soils (with the exception of sediments within the drainage swale) prompted risk managers to exclude these locations from further evaluation within the risk assessment.

As part of the removal action, Ameren CIPS extended a water main to five properties south of the site in order to remove those residents from private well water and provide them with municipal potable water. The water main loop was completed in October 1987. In December of 1988, Ameren CIPS extended the on-site fence surrounding the site to adjacent properties to the south in order to further restrict access to the site (John Mathis).

REMEDIAL ACTION SELECTION AND IMPLEMENTATION

As stated within the Record of Decision, the remedy selected for this site is Alternative 5 – Soil/Sediment Removal, Institutional Controls and Groundwater Treatment. As noted within the

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decision summary of the ROD, the responsible party under the direction of Illinois EPA had already implemented the source remedial component of the selected remedy. This work consisted of removal of grossly contaminated soils down to the water table on the former gas plant site, as well as removal of highly contaminated sediments in the drainage swale serving the site, disposal of these contaminated materials in a permitted off-site landfill, and backfilling and regrading of excavation areas with clean off-site soils, followed by application of a surface gravel course or revegetation, as appropriate. This source control action to eliminate a portion of potential human health risks and minimize groundwater problems was accompanied by provision of public water to downgradient residents, implementation of a groundwater and surface water/pond monitoring program, and land use/deed restrictions, as practicable, on potentially affected properties.

The remedial action at the site continues to comply with the narrative and numeric requirements within the National Contingency Plan (NCP, 40 Code of Federal Regulations (CFR) 300-399) and the Applicable or Relevant and Appropriate Regulations (ARARs) identified under the Illinois Environmental Protection Act, and the reuse continues to remain protective.

The pump and treat facility was designed and continues to be operated in accordance with Resource Conservation and Recovery Act of 1976, as amended (RCRA) ARARs. Contaminated filter media, and personal protective equipment continue to be analyzed, shipped and disposed of in accordance with RCRA and State solid waste regulations. Spent carbon taken from the carbon treatment columns from within the facility are taken off-site by the service contractor for re-generation, and re-use at the Ameren CIPS facility.

No changes have occurred at the Federal level to the Clean Air Act of 1990, as amended (CAA) or at the State level within 35 Illinois Administrative Code (IAC) Subtitle B that call into question the protectiveness of the remedy.

The remedy has produced a past compliance with the Clean Water Act of 1972, as amended (CWA) as well as the Illinois surface water regulations. Surface water numerical standards will continue to be utilized to monitor the remedial action in the future. In addition to the requirements set forth within the CWA, the Seaman Estate Pond Annual Monitoring Program ensures that the remedial action continues to be protective through an intensive monitoring of surface water, fish tissue and sediment within the pond.

The selected remedy includes a groundwater component that addressed the remaining principal threat posed by groundwater contamination through an active treatment program. The remedial action continues to comply with the SDWA as well as the State's 35 IAC 620 regulations. As discussed within the ROD, a Groundwater Management Zone (GMZ) has been instituted at the

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site based on the regulations at 35 IAC 620.250. The remedy continues to meet the requirements necessary for a GMZ to remain in effect. Groundwater numerical standards, which will be utilized to monitor the remedial action in the future, are discussed within the section below.

The clean-up objectives set forth within the ROD for groundwater were based on the drinking water regulations at 40 CFR 141 and 35 IAC 620, including any proposed standards, as well as risk based criteria. Since the ROD was signed in September 1992, an MCL of 0.0002 milligrams per liter (mg/L) for benzo(a)pyrene and of 0.005 mg/L dichloromethane have been established. The table below compares the newly promulgated levels to those established within the ROD.

Compound	ROD Objective	Newly Promulgated MCL
benzo(a)pyrene	0.00023 mg/L	0.00020 mg/L
dichloromethane	0.0002 mg/L	0.005 mg/L

No changes to the ROD are necessary based on the newly promulgated MCL for dichloromethane. Since the MCL is higher than the clean-up objective set within the ROD, the original standard will continue to be utilized. However, the newly promulgated MCL for benzo(a)pyrene is lower than the clean-up objective set within the ROD therefore, the clean-up objective will be changed to reflect the new limit.

Clean-up objectives set within the ROD for surface water focus on concentrations of contaminants within the treated water to be discharged (i.e., effluent limitations) as well as concentrations of the surface water body to which the effluent is discharged. The effluent limitations and surface water quality concentrations set forth within the ROD are the same for each contaminant because the ROD assumes the discharge occurs into a stream with no existing flow. Clean-up objectives set within the ROD for surface water are contained within Table 2.3 (attached). Toxicity data taken from the scientific literature along with formulas from within 35 IAC Part 302 were utilized to calculate the maximum allowable concentrations set forth within the ROD. However, since September of 1992, toxicity information has become available for compounds that previously had no data, and, in addition, the toxicity data for a number of compounds has changed. In order to ensure that the requirements set within the ROD continue to be protective, surface water quality standards were re-calculated utilizing new toxicity information for the contaminants of concern. Table 5 identifies the newly calculated standards. Illinois EPA considers the new numbers to be more precise and to more accurately reflect concentrations that are protective of human health and the environment because new and more accurate toxicity data has been utilized within its calculations. Therefore, Illinois EPA shall

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require the effluent from the pump and treat facility to meet all new standards where the concentration is lower than that identified within the 1992 ROD.

The institutional controls at the site, in the form of deed restrictions, continue to be in effect for all the properties. The properties include the site itself along with three parcels of land immediately south of the site (please refer to Figure 5). These parcels are also fenced and No Trespassing signs are posted. In addition, there was an agreement with the property owners along Seaman Estates prohibiting the use of groundwater for consumption, and the private wells were properly plugged and abandoned. The institutional controls continue to serve their intended purpose and are protective of human health and the environment.

BASIS FOR THE DOCUMENT

A Remedial Action Work Plan for In-Situ Chemical/Biological Oxidation was submitted to Illinois EPA for review. The work plan discusses injecting a chemical oxidizer below ground in two areas of the site where fuel oil and manufactured gas residuals (which are primarily coal tar) contaminate the soil and groundwater. The controlled oxidation process employs hydrogen peroxide to destroy some of the organic hydrocarbon contamination and make the remainder more available for consumption by microorganisms in the soil (biological treatment). This remedial technology has proven effective at other sites contaminated by organic compounds as a result of gas manufacturing and wood treating operations and petroleum spills.

The basic components of the proposed study are:

- Turn off the existing pump and treat system for 90 days to allow for the installation of the enhanced treatment system (estimated time required for completion approximately 30 days) and allow time for the process to work (60 days)
- Inject the chemical oxidizer product at a depth between 10 and 40 feet below the surface, using a 4-inch diameter geoprobe
- Collect soil and groundwater samples to assess the effectiveness of the chemical/biological process and to monitor the migration of contaminated groundwater (90 days)
- Resume operation of the pump and treat system and monitor the quality of the treated water released to Seaman Pond (365 days)

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Computer modeling projects that the contaminated groundwater should migrate no more than 28 feet, remaining within the site boundaries, during the 90 days the pump and treat system is not operating. If actual monitoring or sampling results indicate that the contaminated groundwater is traveling further than modeling predicted and/or it has the potential to travel outside the boundaries of the site, Ameren will resume pump and treat operations.

Ameren CIPS will be evaluating the sampling and monitoring results throughout the duration of the pilot project. Upon completion, Ameren CIPS will review the monitoring results to try to determine whether further treatment with the chemical/biological agent would be beneficial or necessary and whether the current pump and treat system continues to be necessary. Ameren would still, however, continue to operate and maintain the pump and treat system until such time that a formal request for change could be reviewed and granted by the appropriate entities.

DESCRIPTION AND SUMMARY OF SIGNIFICANT DIFFERENCE

A study will be conducted at the Ameren CIPS site in Taylorville using a chemical oxidant injected 10 to 40 feet below the surface. The treatment system that has been in place and operated as prescribed by the ROD will be temporarily suspended for the duration of the study. However, close monitoring will be conducted to insure neither the chemical oxidant nor the contamination will migrate beyond the boundaries of the site. Monitoring will also be conducted to determine the effectiveness of the study.

The current ROD specifies that Ameren CIPS will continue to operate the pump and treat system until the clean-up objectives for the site have been achieved. Ameren CIPS, through the use of an alternative treatment technology, may be able to reduce the time needed before the clean-up objectives are met and, consequently, they may reduce or eliminate the necessity of the pump and treat system. Should the study show that oxidant injection has resulted in achieving the clean-up objectives, the pump and treat system will be turned off. However, groundwater monitoring will be continued.

Since the ROD was written in 1992, an MCL for benzo(a)pyrene has been established that is lower than the clean-up objective set within the ROD. The clean-up objective for benzo(a)pyrene will be changed to reflect the newly established MCL.

Additionally, since September 1992, toxicity information has become available for compounds that previously had no data, and, the toxicity data for a number of compounds has changed. In order to ensure that the requirements set within the ROD continue to be protective, surface water quality standards were re-calculated utilizing new toxicity information for the contaminants of

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concern. The updated clean-up objectives related to surface water quality standards based on this new toxicity information for the other contaminants of concern are identified in Table 5.

EVALUATION OF ALTERNATIVES

This component is not applicable to ESDs.

SUPPORT AGENCY COMMENTS

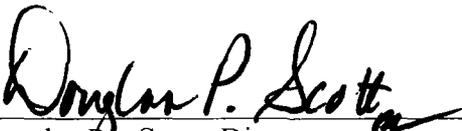
The U.S. EPA, as the support agency, approves the changes identified in the ESD.

STATUTORY DETERMINATIONS

This ESD does not fundamentally change the remedy for the Ameren CIPS site and therefore, the existing ROD remains protective. Given that the study will be conducted solely within the site boundaries and monitoring will be conducted to ensure migration does not occur beyond the boundaries, the proposed change complies with the NCP and the statutory requirements of Section 121 of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA or Superfund).

PUBLIC PARTICIPATION COMPLIANCE

The Illinois EPA will publish in the local newspaper a notice of availability and a brief description of the ESD. This ESD will be made available to the public by placing it in the Administrative Record File and information repository. A public information session will be conducted, and the details of this event will also be published in the newspaper. A formal public comment period is not required when issuing an ESD.



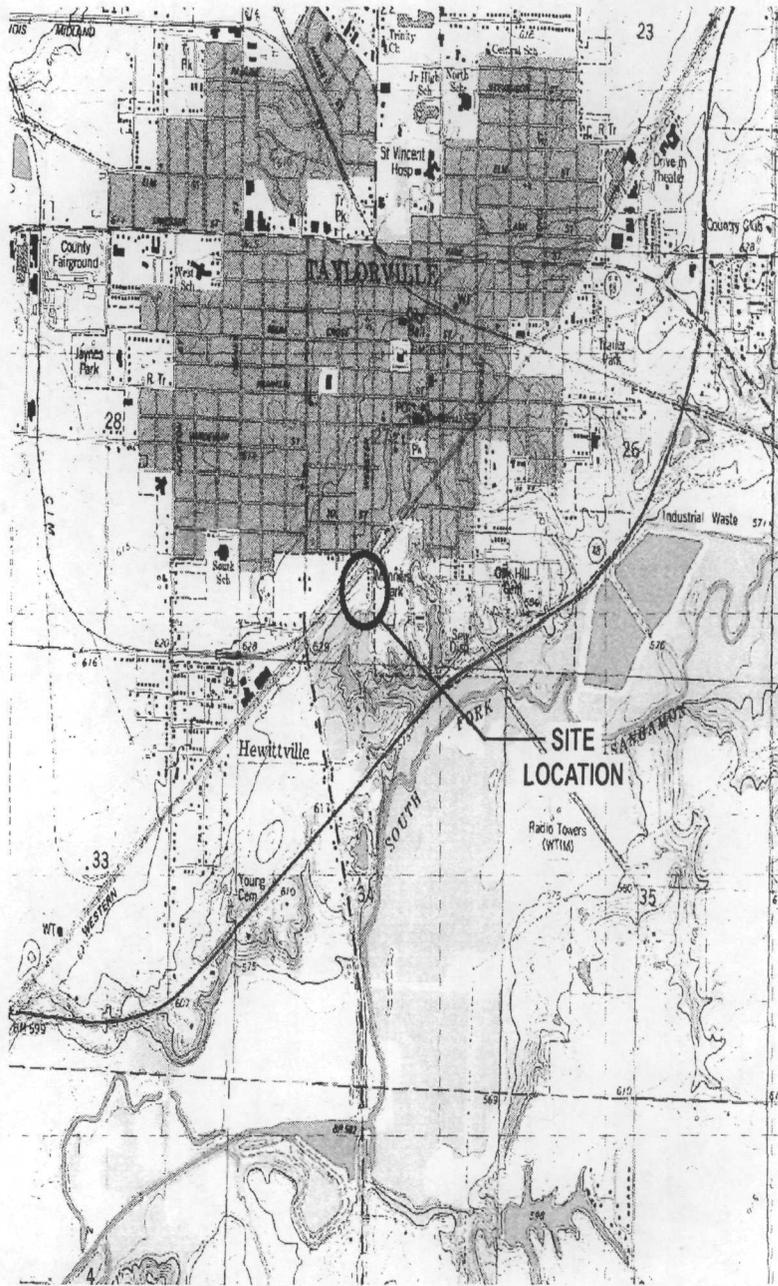
Douglas P. Scott, Director
Illinois EPA

9/6/05

Date

Richard C. Karl, Director
Superfund Division
U.S. EPA, Region V

Date

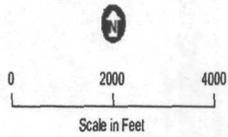


Source: USGS 7.5' Quadrangle, Taylorville, IL. Photorevised 1982

P:\31110026\SITE LOCATION.CDR RLG - 001 - 00.CDR



QUADRANGLE LOCATION



Scale in Feet

Figure 1

SITE LOCATION MAP
Former CIPS Manufactured Gas Plant Site
Taylorville, Illinois

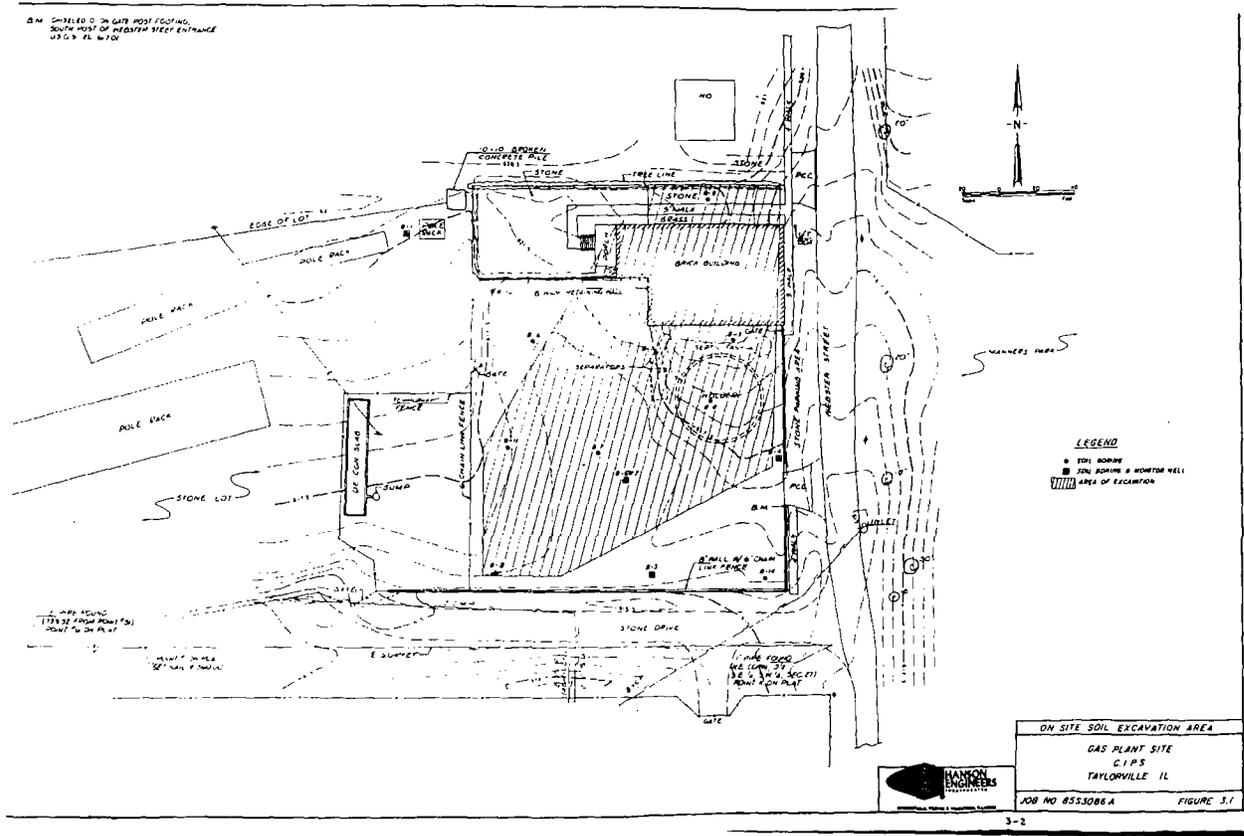


Figure 3

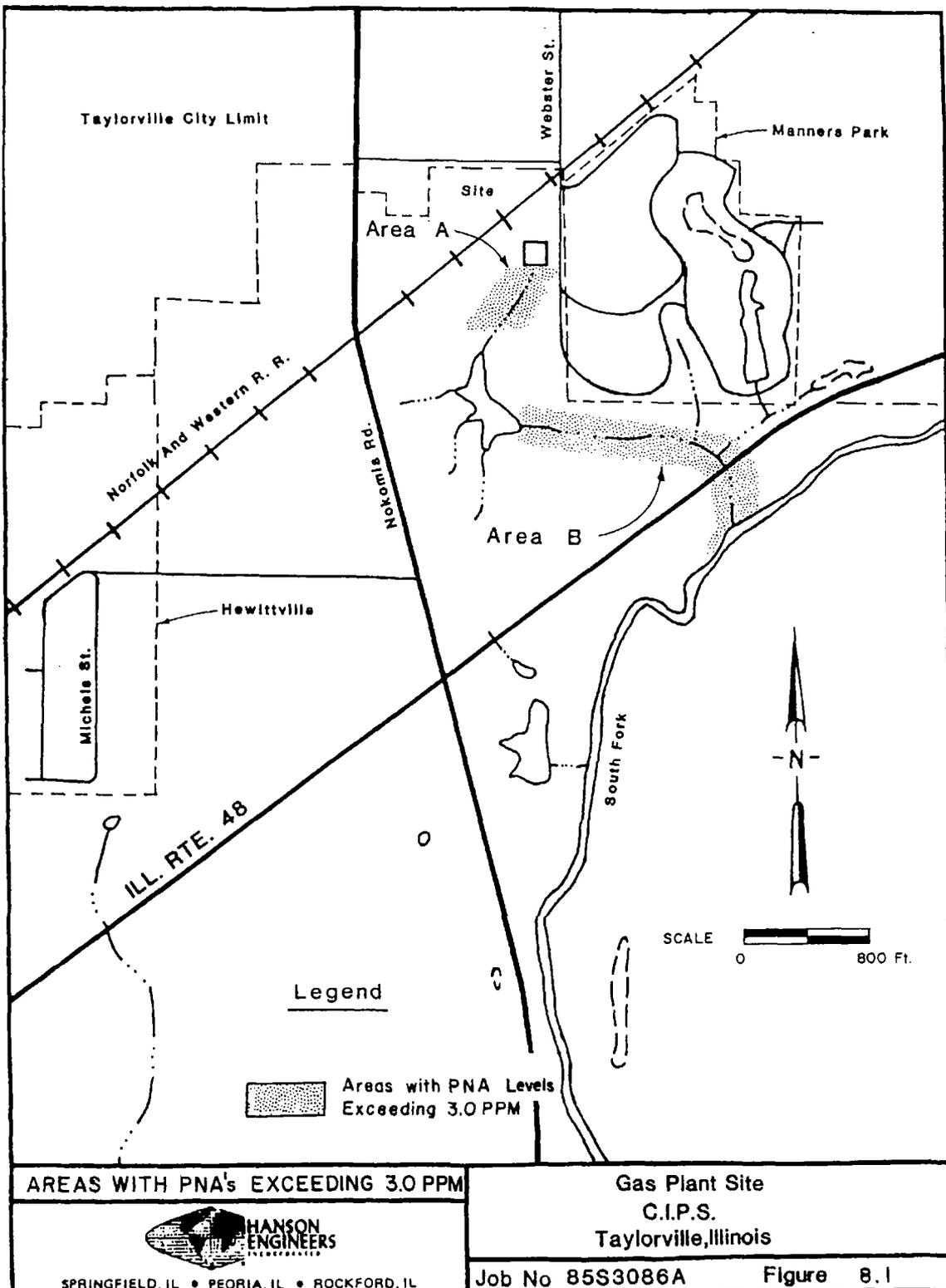


Figure 4

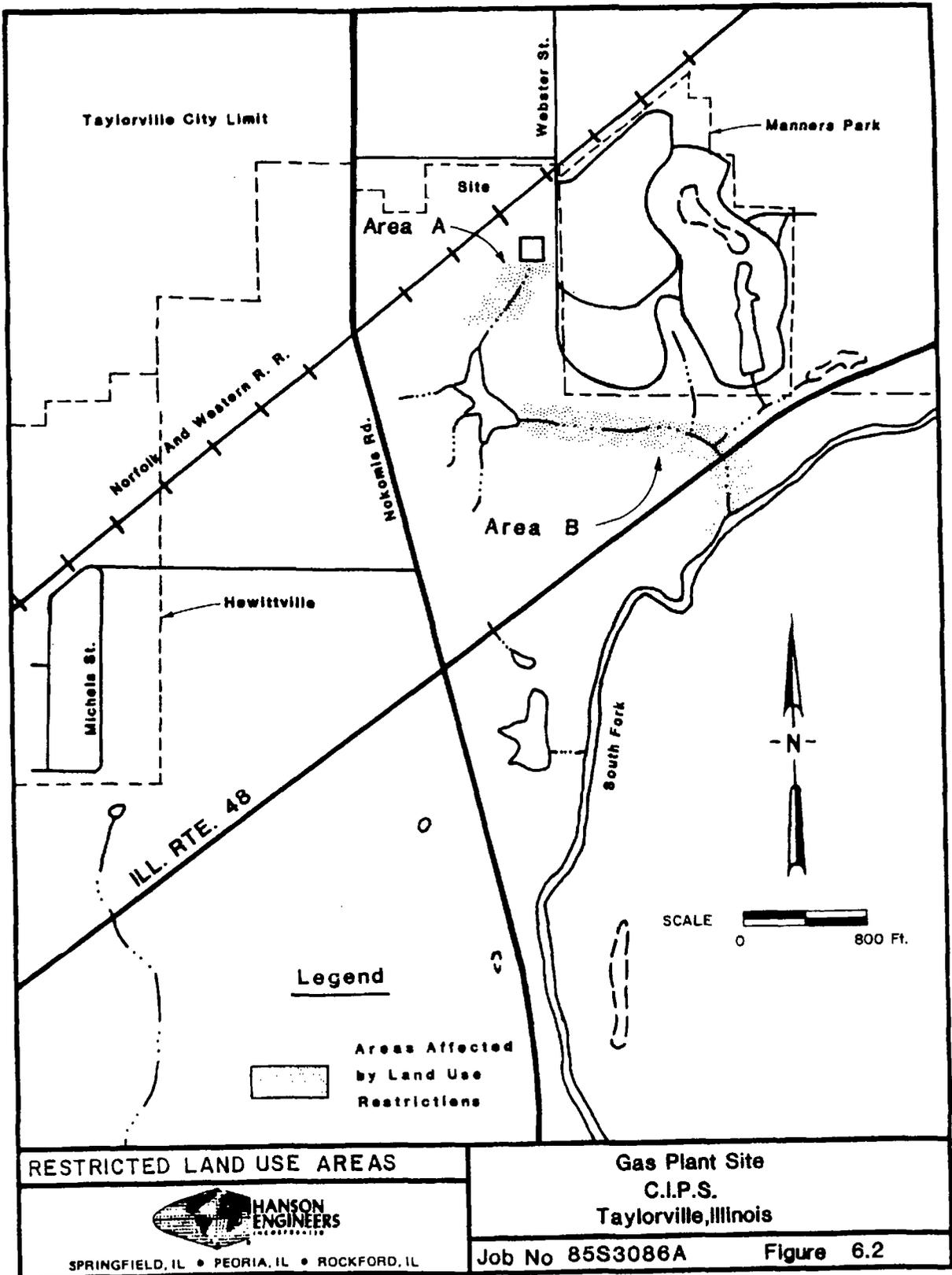


Figure 5