



STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

MEMO

FROM: Chuck Gipp, Director, Dept. of Natural Resources

Cc: Bruce Trautman, Deputy Director, Dept. of Natural Resources
Bill Ehm, Administrator, Environmental Services Division
Sharon Tahtinen, Legislative Liaison, Dept. of Natural Resources
Alex Moon, Chief, Land Quality Bureau

DATE: December 22, 2014

RE: Hazardous Waste Disposal Site Registry Annual Report

Pursuant to 455B.427 the annual report of the registry listing current hazardous waste or hazardous waste disposal sites in Iowa is provided. In lieu of a printed report the Department has created and maintains a web site for the registry's annual report. The web site is updated as new information becomes available throughout the year. The report can also be viewed at

<http://www.iowadnr.gov/InsideDNR/RegulatoryLand/ContaminatedSites/HazWasteSitesRegistry/RegisteredSitesbyName.aspx>

If you have any questions, please contact Matt Culp at 515-725-8337 or matt.culp@dnr.iowa.gov.

Hazardous Substance Remedial Fund and Sites Registry

The Hazardous Substance Remedial Fund and Sites Registry fulfill obligations under Sections 455B.424, 455B.426 and 455B.427 of the Code of Iowa. These sections require a full accounting to the Legislature and the Governor regarding the Hazardous Substance Remedial Fund and a report regarding sites listed on the Registry of Hazardous Waste Disposal Sites each January. The web site is updated as new information becomes available throughout the year. This report and reports for prior years are available on CD by request from Matt Culp at 515-725-8337 or Matt.Culp@dnr.iowa.gov.

[Hazardous Substance Remedial Fund](#)

Changes to the Registry of hazardous waste or hazardous substance disposal sites.

The Iowa Legislature has adopted the following provisions, effective July 1, 2011:

Sec. 5. Section 455B.426, Code 2011, is amended by adding the following new subsections:

NEW SUBSECTION 3. Beginning July 1, 2011, a new site shall not be placed on the registry of confirmed hazardous waste or hazardous substance disposal sites.


NEW SUBSECTION 4. A site placed on the registry of confirmed hazardous waste or hazardous substance disposal sites prior to July 1, 2011, shall be removed upon the execution of a uniform environmental covenant pursuant to the provisions of chapter 455I relating to the contaminated portions of the property listed on the registry. A site may also be removed from the registry pursuant to section 455B.427, subsection 4. More information can be found on our [Environmental Covenants](#) page.

NEW SUBSECTION 5. If no sites remain listed on the registry of confirmed hazardous waste or hazardous substance disposal sites, the department shall recommend to the general assembly the repeal of this section and sections 455B.427 through 455B.432.

The purpose of these amendments is to transition the state to the use of uniform environmental covenants for the management of hazardous waste disposal sites in Iowa. Iowa Code Chapter 455I, the Uniform Environmental Covenants Act, was adopted in 2005 and provides a mechanism for the protection of human health and the environment from harms arising from hazardous waste or hazardous substance disposal sites. New sites have not been added to the Registry since 1995. These amendments provide for a process to allow for the removal of the remaining sites from the Registry either through remediation or the establishment of an environmental covenant.

Restriction on the Sale and Change in Use of Property

When a site is listed on the registry, a notice of listing is recorded in the county recorders office and becomes part of the chain of title. [Iowa Code section 455B.430](#)  prohibits (1) any "substantial change" in the use of

the property without prior written approval by the director of the IDNR; and (2) any sale, conveyance or transfer of title to the property without the director's prior approval. Property owners should submit a written request for approval to the director of the IDNR explaining the planned change in use or the proposed sale of the property. The director is required to respond within thirty days. Property owners may appeal an adverse decision of the director and request an administrative hearing. See [Iowa Code section 455B.430\(3\)](#) .


If the director has reason to believe there has been a substantial change in use or sale without prior approval, he may file an action in Iowa District Court to enjoin the activity and assess a penalty up to \$1,000 per day of violation.


Registry of Hazardous Waste Disposal Sites

The department maintains an assessment file for each site listed in the Registry. These files are located in the Central Records Section of the IDNR Des Moines office. Individual site records may also be accessed through the [contaminated sites database](#). For most sites, these files contain the results of comprehensive site investigations. The site information package contains a detailed review of the site and is used as the basis for listing and classifying the sites in the Registry. However, not all the known hazardous waste or contaminated sites that exist in the state are listed on the Registry. Contact Matt Culp at 515-725-8337 or Matt.Culp@dnr.iowa.gov for further information regarding specific locations or sites.

- [Registered Sites by County](#)
- [Registered Sites by Name](#)

Classification Categories

All sites listed on the Registry are classified according to the relative priority listing for remedial action at the site. During the initial listing, the site must be placed in one of the first four classifications ("a", "b", "c", or "d"). While a site is listed on the Registry, its classification can be changed because of site cleanup activities or because of new information about the site. The five classification categories are specified in [Section 455B.427.3 of the Code of Iowa](#) .

- [Classification Categories](#) 
- No reclassifications for 2014

Registry of Hazardous Waste or Hazardous Substance Disposal Sites

Registry Classification

All sites listed on the Registry are classified according to the relative priority listing for remedial action at the site. The five classification categories are specified in Section 455B.427.3 of the Code of Iowa. During the initial listing, the site must be placed in one of the first four classifications ("a", "b", "c", or "d"). The action priorities for the five classifications are shown in the following table.

While a site is listed on the Registry, its classification can be changed because of site cleanup activities or because of new information about the site.

| Registry Priority Classifications | | |
|-----------------------------------|-------------------------------|---|
| Class | Action Required | Site Condition |
| "a" | Immediate Action Required | Causing or presenting an imminent danger of irreversible or irreparable damage to the public health or environment. |
| "b" | Action Required | Significant threat to the environment. |
| "c" | Action May Be Deferred | Not a significant threat to the environment. |
| "d" | Requires Continued Management | Site properly closed. |
| "e" | No Further Action Required | Site properly closed no evidence of present or potential adverse impact. |

Hazardous Waste Registry Contaminant Legend






| | |
|---------------|---|
| BTEX: | Benzene, toluene, ethyl-benzene, xylenes (constituents of gasoline) |
| Metals: | General term for heavy metals (i.e. lead) |
| PAHs: | Poly-aromatic hydrocarbons |
| PCBs: | Polychlorinated bi-phenols |
| PCP: | Pentachloro-phenol (preservative) |
| Pesticides: | May include herbicides, insecticides, banned products (i.e. DDT) |
| Radiological: | Radioactive waste |
| VOCs: | Volatile Organic Compounds |

Registered Sites by County with Priority Classifications

The following table shows the counties that contain registered sites along with the priority classifications, the year added to the registry, and the primary contaminant for each site. The list is in alphabetical order by the county in which the sites are located and then by the site name. There was no site reclassifications in 2014.

[Contaminant Legend](#) 

Registry of Hazardous Waste or Hazardous Substance Disposal Sites

| County Name | Site Name | Class | Year Listed | Primary Contaminant(s) |
|-------------|---|-------|-------------|------------------------|
| Appanoose | McGraw-Edison  | B | 1990 | Metals / VOCs |
| Benton | Belle Plaine Coal Gas  | B | 1990 | PAHs |
| Black Hawk | John Deere Waterloo  | B | 1990 | PCBs / Dioxin / VOCs |
| Cass | Atlantic Coal Gas  | B | 1990 | BTEX / PAHs |
| Cerro Gordo | Mason City Coal Gas  | D | 1990 | PAHs |

| | | | | |
|------------|--|-------|------|------------------------|
| | Northwestern States Portland Cement Co PDF | D | 1992 | Kiln Dust (CaO) |
| Clinton | Collis Corporation PDF | C | 1984 | PCBs / Metals |
| | Todtz Farm (Camanche Landfill) PDF | B | 1989 | Metals / VOCs |
| Dallas | Progressive Foundry (Former Waste Disposal Site) PDF | D | 1991 | Metals |
| Des Moines | Burlington Northern Railroad (Grease Lake) PDF | D | 1990 | VOCs |
| | United States of America (IAAP) PDF | B / D | 1986 | Munitions / RDX / TNT |
| Dubuque | John Deere Sanitary Landfill PDF | D | 1991 | Metals |
| | Peoples Natural Gas PDF | D | 1989 | BTEX / PAHs |
| | State of Iowa - Dubuque PDF | D | 1987 | Foundry Waste / Metals |
| Floyd | LaBounty Site PDF | D | 1984 | Metals / VOCs |
| | Shaw Avenue Dump Site PDF | D | 1990 | Metals / VOCs |
| Franklin | United Hydraulics PDF | D | 1989 | VOCs / Metals / BTEX |
| Hardin | Iowa Falls Coal Gas PDF | B | 1990 | BTEX / PAHs |
| Iowa | Amana Refrigeration, Inc PDF | D | 1993 | VOCs |
| Jasper | Newton Dump Site PDF | D | 1984 | Metals |
| Jefferson | Fairfield Coal Gasification Plant PDF | D | 1989 | PAHs |
| Lee | Fort Madison Landfill (Rodeo Dump / Park) PDF | D | 1989 | Metals / VOCs |
| | Grimes Property Site (Sheller Globe / United Technologies) PDF | D | 1989 | Metals / VOCs |
| Linn | US Nameplate PDF | B | 1984 | VOCs |
| | Ralston Site PDF | D | 1990 | Metals / VOCs |
| | Square D Company PDF | D | 1992 | VOCs |
| Mahaska | Mitrisin Disposal Site (Clow Corporation) PDF | D | 1984 | Foundry Waste / Metals |
| Marion | Rolscreen PDF | D | 1990 | PCP Preservative |
| Montgomery | Red Oak Landfill PDF | D | 1986 | VOCs |
| Muscatine | Brei Landfill PDF | D | 1990 | VOCs |
| | Monsanto Company PDF | B | 1990 | Pesticides |
| Polk | Dico Company, Inc PDF | D | 1984 | VOCs |
| | Williams / (Magellan) Des Moines Terminal PDF | D | 1990 | BTEX |
| Scott | Aluminum Company of American (ALCOA) PDF | D | 1990 | PCBs |
| | Davenport Coal Gas PDF | D | 1990 | PAHs |
| | Hopkins, RV (Sludgemaster, Barriers, Inc) PDF | D | 1984 | Metals |
| Sioux | Vogal Paint & Wax Company PDF | D | 1984 | Metals / VOCs |
| Story | Ames Laboratory, Chemical Disposal Site PDF | D | 1991 | Radiological |
| Union | Wellman Dynamics / Fansteel Corporation PDF | C | 1992 | Radiological / Acids |
| Wapello | John Deere Ottumwa Works PDF | D | 1989 | Metals / VOCs |
| Woodbury | Mid America Tanning PDF | D | 1989 | Metals |
| Wright | Belmond Pesticide Disposal Site PDF | D | 1984 | Chlorinated Pests |

+ Volunteer Opportunities



Alphabetical Listing of Registered Sites by Name

This is an alphabetical listing of the sites contained in the Registry of Hazardous Waste or Hazardous Substance Disposal Sites.

Scrolling to a name and selecting the site name will open the site summary and map in .pdf format. Acrobat Reader is required to read the .pdf format.

[A](#) [B](#) [C](#) [D](#) [E](#) [F](#) [G](#) [H](#) [I](#) [J](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [Q](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) [X](#) [Y](#) [Z](#)

- [Aluminum Company Of America \(Alcoa\)](#)  - Riverdale, Iowa
- [Amana Refrigeration, Inc](#)  - Middle Amana, Iowa
- [Ames Laboratory, Chemical Disposal Site](#)  - Ames, Iowa
- [Atlantic Coal Gas](#)  - Atlantic, Iowa
- [Belle Plaine Coal Gas](#)  - Belle Plaine, Iowa
- [Belmond Pesticide Disposal Site](#)  - Belmond, Iowa

- [Brei Landfill](#)  - Muscatine, Iowa
- [Burlington Northern Railroad \(Grease Lake\)](#)  - West Burlington, Iowa

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- [Collis Corporation](#)  - Clinton, Iowa
- [Davenport Coal Gas](#)  - Davenport, Iowa
- [Dico Company, Inc](#)  - Des Moines, Iowa
- [Fairfield Coal Gasification Plant](#)  - Fairfield, Iowa
- [Fort Madison Landfills](#)  - Fort Madison

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- [Grimes Property Site \(Sheller Globe/United Technologies\)](#)  - Keokuk, Iowa
- [Hopkins, R.V., Inc. \(Sludgemaster, Barriers, Inc.\)](#)  - Davenport, Iowa
- [Iowa Falls Coal Gas](#)  - Iowa Falls, Iowa
- [John Deere Sanitary Landfill](#)  - Dubuque, Iowa
- [John Deere Ottumwa Works](#)  - Ottumwa, Iowa
- [John Deere Waterloo](#)  - Waterloo, Iowa

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- [LaBounty Site](#)  - Charles City, Iowa
- [Mason City Coal Gas](#)  - Mason City, Iowa
- [McGraw-Edison](#)  - Centerville, Iowa
- [Mid America Tanning](#)  - Sergeant Bluff, Iowa
- [Mitrising Disposal Site \(Clow Corportion\)](#)  - Oskaloosa, Iowa
- [Monsanto Company](#)  - Muscatine, Iowa

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- [Newton Dump Site](#)  - Newton, Iowa
- [Northwestern States Portland Cement Company](#)  - Mason City, Iowa
- [Peoples Natural Gas](#)  - Dubuque, Iowa
- [Progressive Foundry \(Former Waste Disposal Site\)](#)  - Perry, Iowa
- [Ralston Site](#)  - Cedar Rapids, Iowa
- [Red Oak Landfill](#)  - Red Oak, Iowa
- [Rolscreen](#)  - Pella, Iowa
- [Shaw Avenue Dump Site](#)  - Charles City, Iowa
- [Square D Company](#)  - Cedar Rapids, Iowa
- [State Of Iowa - Dubuque](#)  - Dubuque, Iowa

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- [Todtz Farm \(Camanche Landfill\)](#)  - Camanche, Iowa
- [U.S. Nameplate](#)  - Mt. Vernon, Iowa
- [United Hydraulics](#)  - Hampton, Iowa
- [United States Of America \(IAAP\)](#)  - Middleton, Iowa
- [Vogel Paint And Wax Company](#)  - Orange City, Iowa
- [Wellman Dynamics / Fansteel Corporation](#)  - Creston, Iowa

ALUMINUM COMPANY OF AMERICA (ALCOA)
(Riverdale, Iowa)

GENERAL DESCRIPTION

The ALCOA site is located in Sections 23, 24, 25, and 26 of Township 78N, Range 4E, Scott County, Iowa. The site occupies 445 acres adjacent to the Mississippi River Pool #15 (MRP15). The Aluminum Company of America is the owner of record. The site was entered on the Registry in November 1990.

SITE CLASSIFICATION

The site is classified “d” closed requires further management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **The primary type of hazardous waste: PCB’s and tetrachloroethylene (PCE)**

The ALCOA facility produces rolled aluminum plate, sheet, and foil and used an unlined waste oil surface impoundment located approximately 150 feet from the Mississippi River for disposal of oil and grease, pickling fluids, solvents, and paint wastes. In 1979, ALCOA determined the waste oil in the impoundment was contaminated with polychlorinated biphenyls (PCBs). In 1981, ALCOA removed 2.8 million gallons of waste oil and sludge from the impoundment. Some waste was disposed off-site and the remaining sludge was solidified in place with cement kiln dust to control PCB releases. ALCOA installed groundwater-monitoring wells around the perimeter of the impoundment. The monitoring indicated improvement; however, additional action was determined to be necessary. In August 1989 ALCOA informed EPA of additional PCB problems in the soil and groundwater. In December 1989, ALCOA informed IDNR of a tetrachloroethylene (PCE) contamination of undetermined volume in the area around two PCE storage tanks

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary Environmental concerns at this site are water quality of surface water (the Mississippi River), groundwater and detrimental effect on flora and fauna of the Mississippi. The primary public health concerns are possible exposure to contaminated soil, groundwater and consumption of fish containing contaminants.**

Under the terms of a 1984 Administrative Order of Consent (AOC), a cut-off trench was installed to collect groundwater containing oil from the impoundment from reaching the Mississippi River. In addition, the impoundment (with remaining stabilized sludge) was capped with a low permeability compacted clay.

From 1983 to 1987 fish tissue and river sediment studies were conducted in Mississippi River Pool 15 (MRP15). The Iowa Department of Natural Resources (IDNR) evaluated this data and issued a Fish Consumption Advisory. This advisory notified the public that certain fish in MRP15 could contain levels of PCBs above the FDA tolerance level of 5ppm. In April 1990, IDNR issued a second fish consumption advisory for carsuckers (also referred to as white carp). The Fish Consumption Advisories recommended not eating carp and carsuckers taken along the Iowa side of the river.

In July 1990, EPA and ALCOA signed another AOC requiring additional fish and sediment studies in MRP15 and in the outfalls from the ALCOA facility to the river. Fish sampling events were conducted in 1990, 1992, 1994, 1996 and 1998. The analytical results from all the samplings events showed declining levels of PCBs in fish from MRP15. In August of 2000 the IDNR lifted the Fish Consumption Advisories for carp and carsuckers because PCBs in fish tissue were below the tolerance limit of 2 ppm of total PCBs.

No PCB contamination has been found in the bedrock aquifer. However, chlorinated solvents (PCE,; TCE; 1,2DCE and vinyl chloride) have been found in monitoring and process water wells at concentrations well above drinking-water standards.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for this site under the CERCLA program.

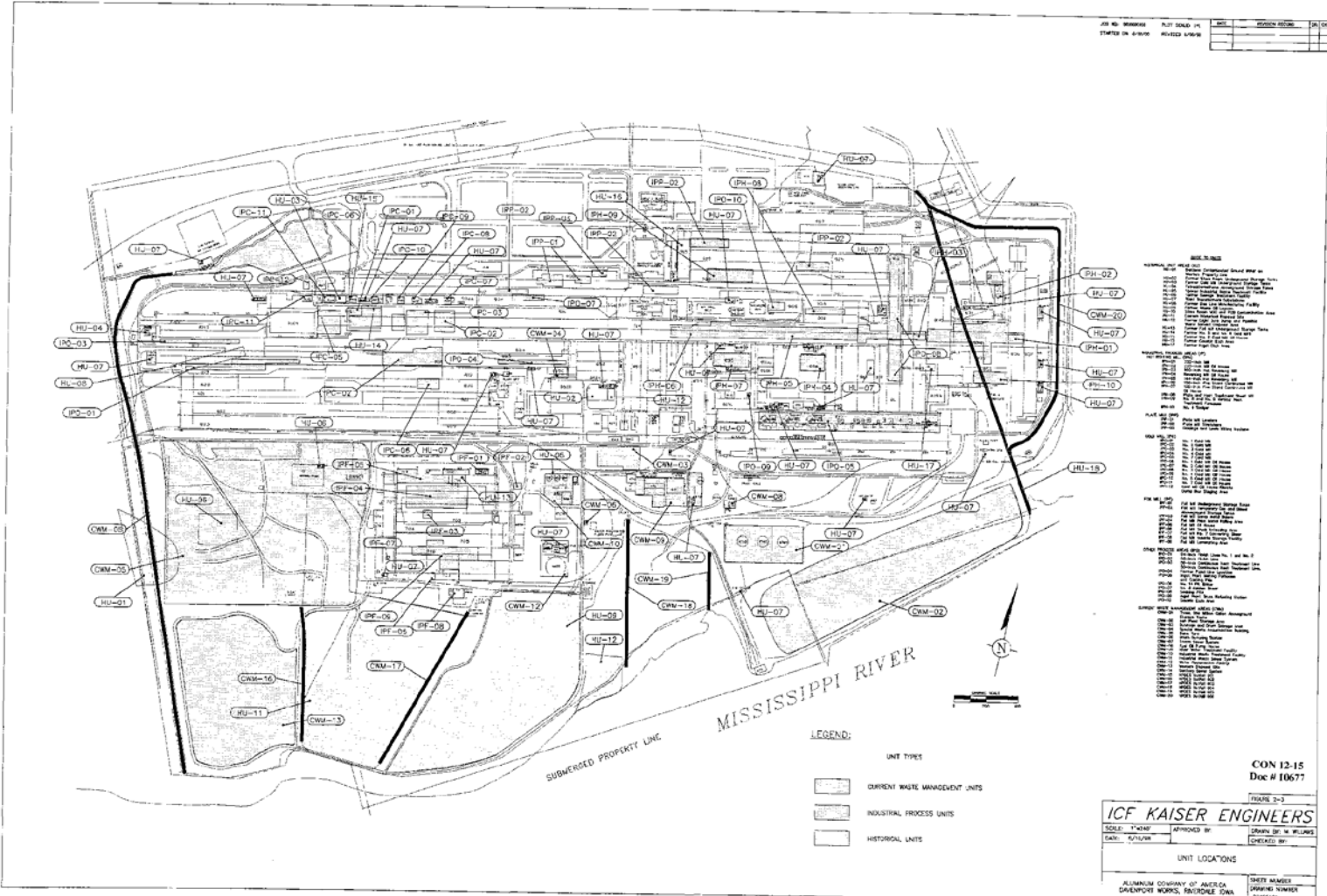
The EPA and ALCOA signed an Administrative Order on Consent in August 1995. This AOC established a process (Overview of Cleanup Strategy) by which ALCOA will evaluate and assess 81 additional areas of potential contamination and, if necessary, conduct removal actions.

In 2002 ALCOA completed a site-wide groundwater remedial investigation that concluded that the production well PW-6 is containing groundwater contamination and substantially preventing off-site migration of contaminants. PW-6 has been in continuous operation since 1989 as a recovery well for containment of groundwater contamination. Water from PW-6 is treated prior to discharge to the Mississippi River.

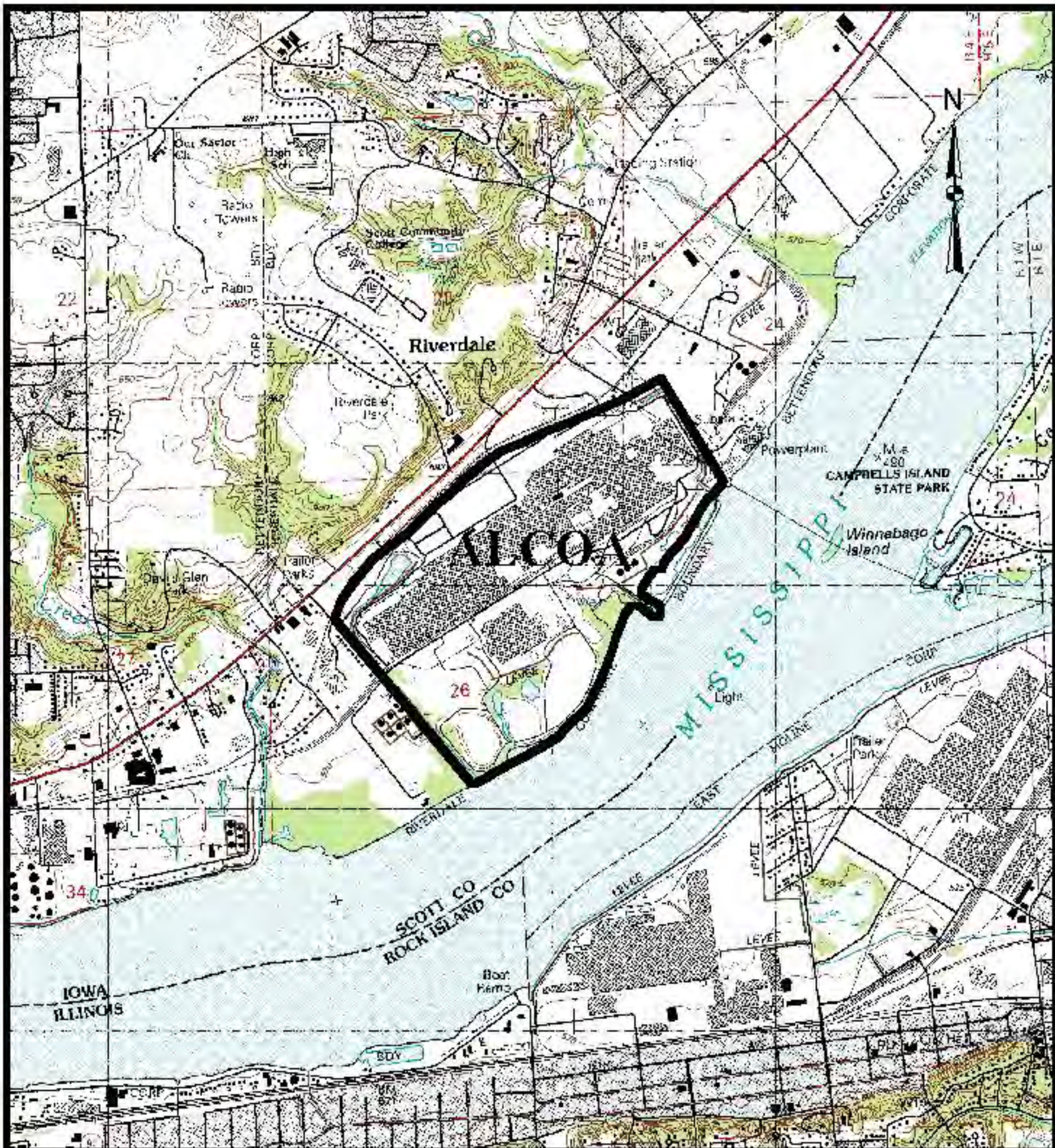
In 2004the EPA issued a Record of Decision (ROD) for ground water contamination at the ALCOA property as well as for sediment and aquatic contamination of Pool #15 of the Mississippi River (MRP15). The ROD called for: continued operation of the ground water treatment system, institutional controls to prevent installation of on-site drinking water wells, and continued use of the property for industrial purposes only and monitoring of ground water, river sediment and fish (tissue).

In 2009 the EPA entered into a consent order with ALCOA to prepare and implement remedial design/remedial action (RD/RA) in accordance with the 2004 ROD. In 2013Alcoa has continued with implementation of the remedial action in accordance with the RD/RA work plan.

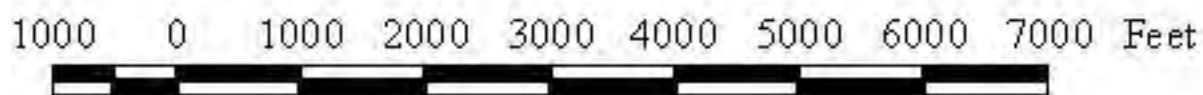
2014: Implementation of a Long-Term Monitoring Plan (LTMP) and the Groundwater Containment, Extraction and Treatment System (GCETS)



Map of ALCOA facility



Contour Interval 10 Feet



WHIRLPOOL CORP. AMANA APPLIANCE DIVISION, INC

(Middle Amana, Iowa)

GENERAL DESCRIPTION

The site has two separately identified disposal areas within the property owned by Maytag Corporation located immediately south of Middle Amana, Iowa. The 16.5-acre **Middle Amana Dump** (MAD) site is on the east-end of the Amana property, and the 14-acre **Process Well Field** (PWF) site is generally located from the central to the southern boundary of the Amana property. Both areas are in the SE 1/4 of Section 28, T81N, R9W, Iowa County, Iowa. The southern tip of the PWF site is in the NE 1/4 of Section 33, T81N, R9W.

SITE CLASSIFICATION

The site is classified "d" in accordance with 455B.427.3. The site is properly closed, but requires continued management. The site entered the Registry in 1993.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Chlorinated Hydrocarbons: trichloroethylene (TCE) and 1,1,1-trichloroethane (TCE), 1,1,1-trichloroethane, trans-1,2-dichloroethylene, 1,1-dichloroethane, and 1,1-dichloroethylene**

The Amana Refrigeration manufacturing facility has been operating at the site since 1934. The facility manufactures refrigerators and other appliances. The manufacturing operation has included plating, painting, and degreasing activities. The degreasing solvents include trichloroethylene (TCE) and 1,1,1-trichloroethane. TCE were used as a degreasing solvent from 1956 to 1968.

The site contains an abandoned tailrace channel, which was used by Middle Amana as a municipal dump. Amana Refrigeration also used the dump for the disposal of hazardous wastes from 1956 until the dump was closed in 1970. The closed dump was covered with about three feet of dirt. An estimated 500 cubic yards of municipal and hazardous wastes were disposed in the dump. The hazardous wastes included TCE degreaser sludge, methylene chloride foam flush waste, paint wastes, and foam wastes. The site also contained a (former) ditch from which an undetermined volume of TCE or TCE waste may have been discharged from the plant, and is now covered by a plant building addition.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The Primary environmental concern is protection of the surface waters and related flora and fauna of the Iowa River.**
- **The Primary public health concern is exposure to contaminated drinking water.**

Environmental Concern

The Amana Refrigeration facility is located within the flood plain of the Iowa River. The river is approximately 1/4 mile south of the facility. The river is within the headwaters of the Coralville Reservoir and is used for recreational and fishing activities. Two outflow ditches from the facility (#002 and #003 are monitored for total toxic organic compounds that are regulated by federal effluent guidelines that require TTO monitoring and effluent limits. The IDNR the department regulates the release of contaminants in the ditch through an NPDES permit.

Public Health Concern

In September 1982, a composite groundwater sample was taken from the seven wells used by Amana Refrigeration for process water and drinking water. The results showed TCE contamination at 135 ug/L. During a subsequent investigation by the USEPA TCE contamination was detected as high as 4,100 ug/L. Since that time the facility has obtained its drinking water from the nearby city well, while its own wells have been used exclusively for process water. In response to the apparent contamination, Amana Refrigeration initiated a series of groundwater investigations in 1983. These have included monthly or quarterly monitoring of several process wells and monitoring wells.

The community of Middle Amana is one of several Amana colonies that receive drinking water from a system of six wells that blends water. One of the wells (#8) located near the site is used as a standby for that system. Amana Refrigeration also receives drinking water from the city. An Amana process well (#4) that had demonstrated the highest TCE contamination was shut down in July 1991. The level of contamination in this well varied from below detection limits to 1,800 PPB with the average contaminant level of approximately 500 PPB with no apparent trend.

Results from a monitoring well (WF-14S) located up-gradient from process well #4 indicates the former ditch (TCE degreaser location) may be another source area. Results from monitoring well (WF-14S) through 2004 continue to detect elevated levels of TCE.

The Middle Amana drinking water well and the process wells all use the Iowa River alluvial aquifer. The Middle Amana well is only 34 feet deep. The six process wells are from 25 to 30 feet deep. The general direction of groundwater movement in the alluvial aquifer is south towards the nearby Iowa River. The TCE contamination plume appears to be captured by the draw down of the process wells. Monitoring wells south of the process wells indicate little or no contamination is leaving the site. Samples have been collected from the Middle Amana municipal well for volatile organic analyses. The results were below detection limits for all compounds, including the contaminants in the process well field..

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for the site.

Amana Refrigeration proposed remedial actions for the MAD site in August 1987. The department reviewed and approved the remedial plan in September 1989. The remedial actions were completed in July 1990. Afterwards the surface was black topped for use as a parking lot. The remedial actions included the following:

- Construction of slurry barrier walls on the east and west ends of the dump to prevent the migration along the former tailrace channel.
- Construction of an impervious cap to prevent infiltration into the waste materials.
- Installation and operation of a monitoring system to ensure the integrity of the containment system.

Amana has been conducting groundwater monitoring at the site since April 1984. The plant process wells are capturing most of the contaminated groundwater, which is discharged at surface water (outfall # 001).

Groundwater Response Action Plan for submitted to IDNR to address commingled BTEX and chlorinated hydrocarbon plume. The former solid waste dumpsite located on the Amana property was formerly closed with concurrence with Solid Waste Section of IDNR and no further assessment actions or remediation of the waste dump is required.

Annual ground water monitoring is conducted to assure effectiveness of ground water contamination plume containment system.



Date: 2/10/2010 10:55:52 AM File: D:\projects\1744207\GIS\Projections_Midwest_Use.mxd

- ◆ Well Sampled May 2009
- ◆ Well Sampled May and October 2009
- Well Not Sampled
- c-VOC Groundwater Exceedances
- c-VOC Groundwater Detections

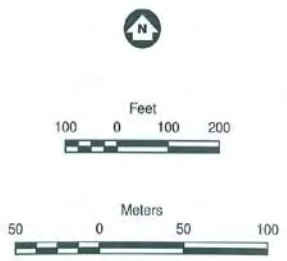


Figure 12
 Groundwater Quality Data
 Chlorinated VOCs
 May and October 2009
 Amana Refrigeration
 Middle Amana, Iowa



- ◆ Well Sampled May 2009
- ◆ Well Sampled May and October 2009
- Well Not Sampled
- BTEX Groundwater Exceedances
- BTEX Groundwater Detections

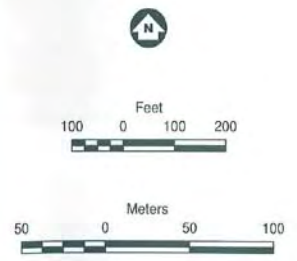
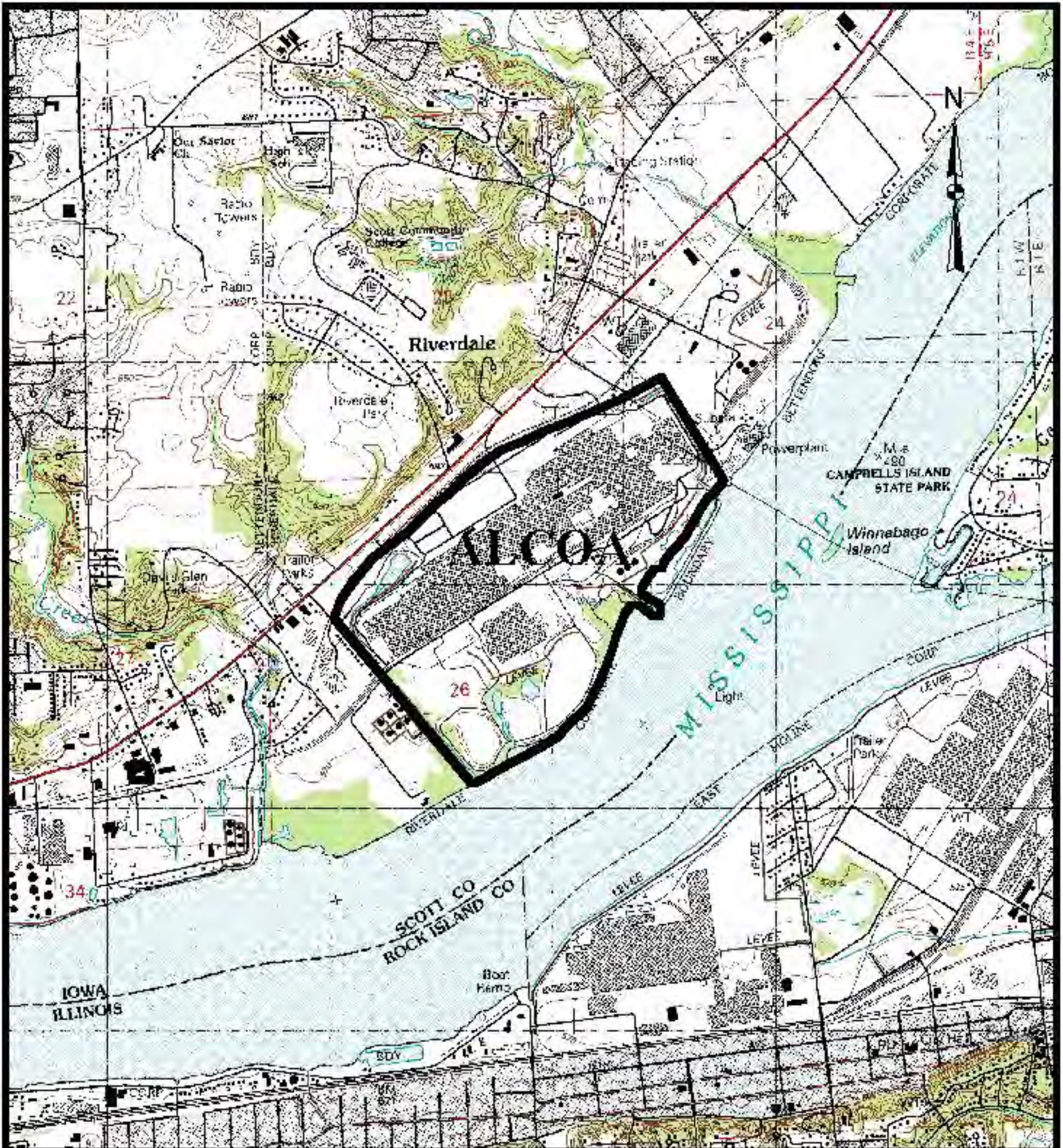


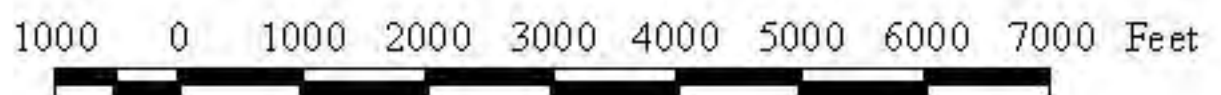
Figure 13
 Groundwater Quality Data
 BTEX
 May and October 2009
 Amana Refrigeration
 Middle Amana, Iowa

Bar Plotter Date: 2/17/2010 2:44:42 PM File: I:\projects\19\448071\GIS\figs\fig13_mwa\fig13_mwa.dwg

(Aluminum Company of America)



Contour Interval 10 Feet



AMES LABORATORY, CHEMICAL DISPOSAL SITE

(Ames, Iowa)

GENERAL DESCRIPTION

The Ames Laboratory Chemical Disposal (CDS) site is located north of Ontario Street on Scholl Road, Ames, Iowa. The site occupies 2 acres in the Southeast 1/4 of the Northeast 1/4 and in the Northeast 1/4 of the Southeast 1/4 of Section 32, T84N, R24W, Story County, Iowa. The site is owned by Iowa State University and was entered on the Registry in July 1991.

SITE CLASSIFICATION

The site is classified “d” Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **The types of hazardous was at this site are radioactive materials, volatile organic compounds and heavy metals**

Ames Laboratory operated by the Iowa State University (ISU) Institute for Physical Research and Technology, for the U.S. Department of Energy (DOE). Starting in the early 1950s the site was used as an uncontrolled disposal area for the laboratory equipment and chemicals from ISU researchers. The quantities and types of materials disposed of during that period are unknown.

In the late 1950s, ISU erected a fence around the area of the chemical disposal site. From 1957 to 1966 the site was used for the disposal of radioactive materials and hazardous chemicals. Nine unlined pits, used to bury radiological and hazardous chemicals contained in steel pails, drums and plywood boxes, were located at the southeast corner of the CDS site. Substances identified as buried at the site include thorium waste, uranium waste, beryllium oxide, yttrium, asbestos, lithium, mercury, thallium salts, cyanide, and zirconium.

Another location within the fenced area (west of the pits) was used to burn uranium metal shavings and other debris directly on to the ground surface. Remediation of the burn area was conducted in 1980 and again in 1987. Surface contamination was also discovered in 1987 and was partially remediated. A soil investigation conducted in 1990 revealed elevated levels of thorium and uranium in several areas of the CDS.

Assessment activities at the site include groundwater monitoring and soil sampling. In 1993, groundwater contamination with radioactive isotopes was found in the on-site alluvial aquifer. Further assessment of the extent of groundwater contamination was completed in 1998. The groundwater remains contaminated with radioactive materials, volatile organic compounds and heavy metals. The heavy metal concentration of uranium is as high as 7,500 ug/L, while the Gross Alpha and Beta measurements of radionuclides in groundwater are as high as 2,600 pCi/L. The safe drinking water standard (MCL) for Gross Alpha is 15 pCi/L.

SUMMARY OF HEALTH AND ENVIRONMENTAL IMPACTS

- **The primary environmental and public health concern is exposure to radioactive waste.**

The Ames Laboratory Chemical Disposal site is located within the city of Ames, Iowa. The site is situated at the head of a ravine that drains to Squaw Creek approximately 1,800 feet west of the site. The creek flows five miles to the southeast into the South Skunk River. The Ames water wells are located approximately three miles east and southeast of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIATION

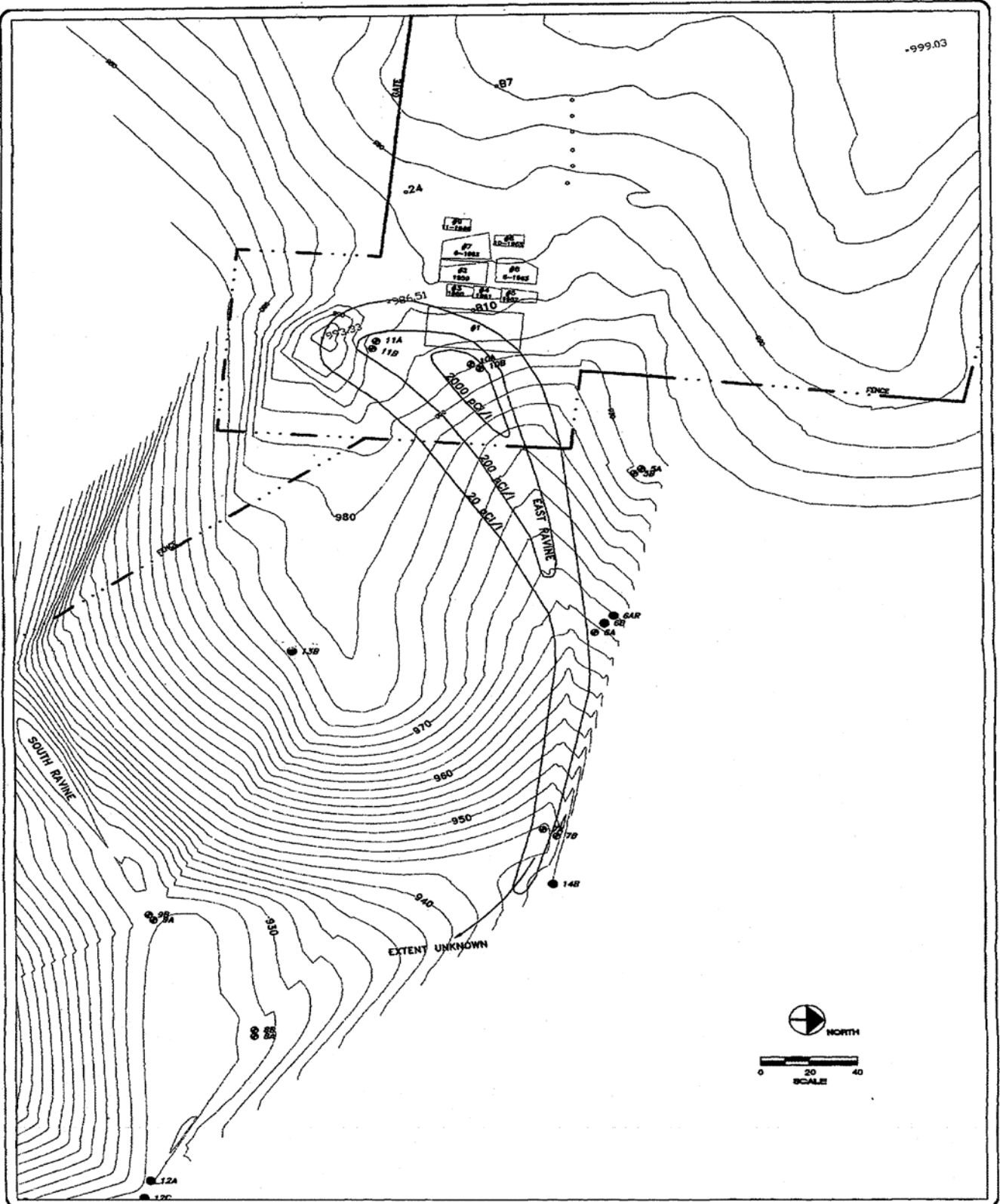
The U.S. Department of Energy provided funding to Ames Laboratory and Iowa State University to conduct a site assessment to fully characterize the contamination at the site. An Interim Removal Action (IRA) was proposed by Ames Laboratory and approved by the department in April 1993. The IRA was conducted in 1994. As part of the removal action, the area of the nine burial pits was excavated to an average depth of nine feet. Approximately 2,000 cubic yards of contaminated soil and debris were removed to a disposal facility. A walkover survey was conducted in September 1995, which revealed radiation hotspots. Contaminated soil was removed from two of the hotspots until radiation levels were below twice background.

Monitoring wells at the site were removed prior to the 1994 excavation. New monitoring wells were installed in 1995 as part of a final Phase II Remedial Investigation. The report of the investigation was submitted in August 1996 along with a Focused Feasibility Study/Proposed Plan. The report concluded the groundwater contamination exceeded acceptable risk-based criteria. The EPA, Iowa DNR, Iowa Department of Health, and Iowa State University all expressed concerns over the residual soil contamination and level of groundwater pollution at the site. All the regulatory agencies requested additional site investigation and expanded groundwater monitoring.

Additional assessment work was initiated in the spring of 1997, including an investigation into the bedrock. Surface and sub-surface soil samples were collected to further identify the extent of soil contamination. This assessment was completed in 1998 and the information obtained from this investigation was used to determine what further remedial action is required at the site.

Surface soils with radiation levels more than twice background were removed in August 1998 (six 55-gallon drums). The area was resurveyed for compliance in September 1998. The groundwater plume was determined to be in a steady state at the site and was not expected to be a threat to Squaw Creek or the public water supply. The Iowa Department of Public Health determined no further action was necessary other than annual groundwater monitoring.

Annual ground water monitoring was conducted from 2002 through 2007 for gross alpha and gross beta, thorium and uranium. Analytical results indicated that there is no migration of residual contamination beyond the defined plume (see map). The IDNR as granted approval to terminate ground water monitoring at the site but it will remain listed on the Registry due to existing residual radiological ground water contamination.



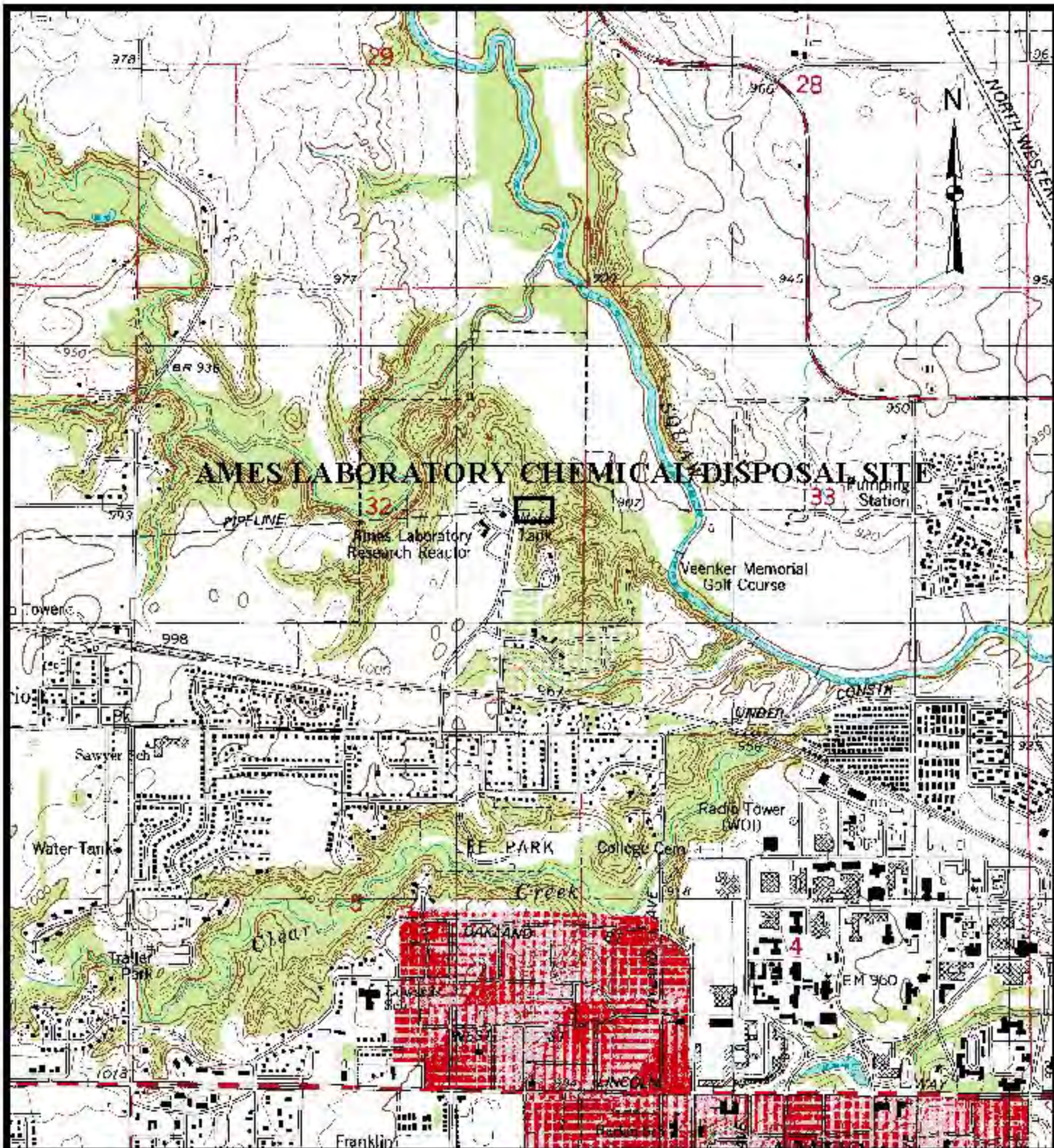
FOX Engineering Associates, Inc.
 1551 Airport Road
 Ames, Iowa 50010
 Phone: 515 233-0000
 FAX: 515 233-0103

CHEMICAL DISPOSAL SITE
 ESTIMATED GROUNDWATER PLUME
 GROSS ALPHA CONTAMINATION
 AMES LABORATORY
 AMES, IOWA

FIGURE: 7

| REVISION | NO. | DATE |
|----------|-------------|--------|
| DRAWN | PROJECT NO. | DATE |
| JAK | 2609-94A | 4/1/98 |

(Ames Laboratory)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 Feet



ATLANTIC COAL GAS SITE

(Atlantic, Iowa)

GENERAL DESCRIPTION

The Atlantic Coal Gas site is an 0.88-acre site located on Lots 2 through 12 in Block 71 on the northwest corner of Poplar and Second Streets in the city of Atlantic, Cass County, Iowa. This location is platted in the NE 1/4 of the SW 1/4 of Section 5, T76N, R36W. The site was entered on the Registry in March 1990.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. Hazardous substances have been disposed of at the site, posing a significant threat to the environment

TYPE AND QUANTITY OF HAZARDOUS WASTE

The Atlantic Gas Company operated a coal gasification plant at the site between 1905 and 1925. During that time, an unknown quantity of coal tar was disposed at the site and contaminated the on-site soil. The current occupant of the south half of the site has six underground storage tanks, which were installed in 1928 and 1940. The tanks stored motor vehicle fuels. Leakage from the UST's formed a layer of free product on the top of the water table and has come in contact with the coal tar, dissolving part of it, and accelerating its migration. The groundwater at the site is now contaminated with the following hazardous substances: benzene, toluene, xylenes, acenaphthene, and acenaphthylene.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located within Atlantic, Iowa and located 0.6 mile from well field. Troublesome Creek is located approximately 0.7 mile north of the site, flowing west to its confluence with the East Nishnabotna River, which is located 0.7 mile west of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency at the site. The IDNR and Iowa Electric and Light Company (IES Utilities) entered a consent decree to assess and cleanup the site. This is a two-phase project. Phase I involved groundwater remediation and free product removal. Phase II involved source removal and contaminated soil removal.

The Phase I groundwater treatment and free product recovery system was completed in the summer of 1991. Extraction of pumpable material from the gas holder began in the third quarter of 1992. The Phase II Remedial Investigation/Feasibility Study (RI/FS) reports were submitted to the department in April 1993 (RI) and May 1993 (FS). The Remedial Action Plan for the removal of non-pumpable contaminated material from within and adjacent to the gas holder was submitted to the department in September 1994. An Interim Remedial Action was undertaken at the site in the spring of 1996. Pure coal tar was removed from the gas holder structure at the site and contaminated soil was removed from the vicinity of the gas holder.

Remediation of the MGP site has been suspended although ground water monitoring is ongoing. The focus of the remediation has shifted to two nearby leaking underground storage tank (LUST) sites because the groundwater contamination from the LUST sites is commingled with the MGP site. Tier II assessments completed for both LUST sites indicated that remediation is necessary. Quarterly ground water monitoring in support of site closure and to demonstrate natural attenuation is being conducted.

2007: Significant action includes submittal of annual groundwater monitoring report to IDNR and the installation of a soil vapor extraction (SVE) system at the neighboring Gasoline Alley LUST site, which impacts the MGP site.

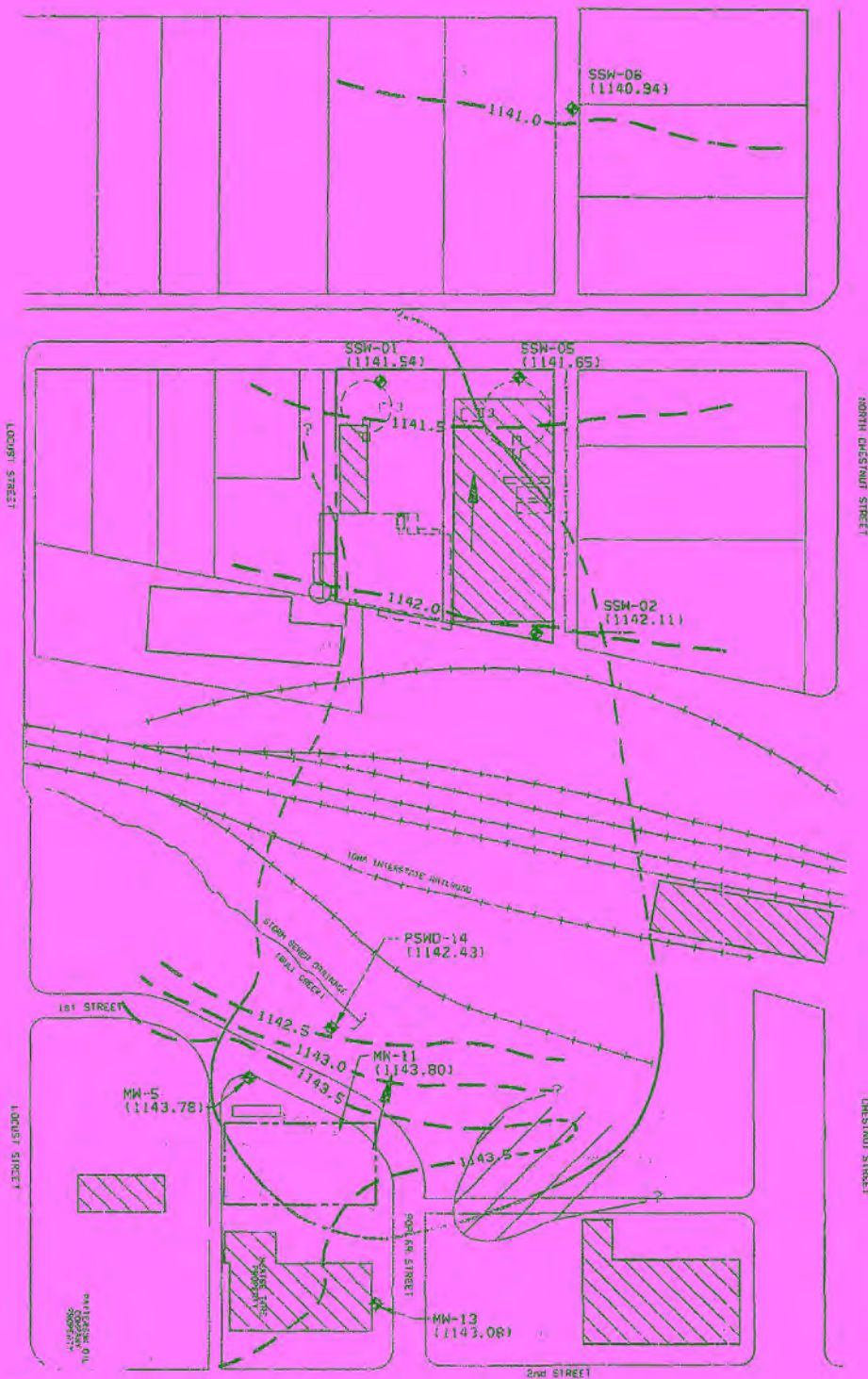
2010: The following activities were completed in association with the Atlantic MGP site:

- Annual ground water monitoring was conducted in June 2010.
- The 2009 and 2010 ground water monitoring reports were prepared.

2011: The annual ground water monitoring report was conducted and approved by IDNR

2012: The annual ground water monitoring was conducted and a sample split with IDNR was conducted.

2014: Monitoring wells were abandoned and an Environmental Covenant will be implemented to restrict site usage.



LEGEND:

- MW-5 EXISTING MONITORING WELL
- GROUND WATER SAMPLE NOT COLLECTED SEPTEMBER 1999
- AREA WHERE FLOATING PRODUCT WAS OBSERVED, SEPTEMBER 1999
- EXISTING STRUCTURES
- FORMER STRUCTURES
- FENCE
- 1136.0 GROUND WATER CONTOURS AND ELEVATION
- GROUND WATER FLOW DIRECTION
- EXTENT OF GROUND WATER CONTAMINANT PLUME BASED ON SEPTEMBER 1999 MONITORING DATA
- ESTIMATED EXTENT OF GROUND OF GROUND WATER CONTAMINANT PLUME BASED ON EXTRAPOLATION AND HISTORICAL GROUND WATER MONITORING DATA

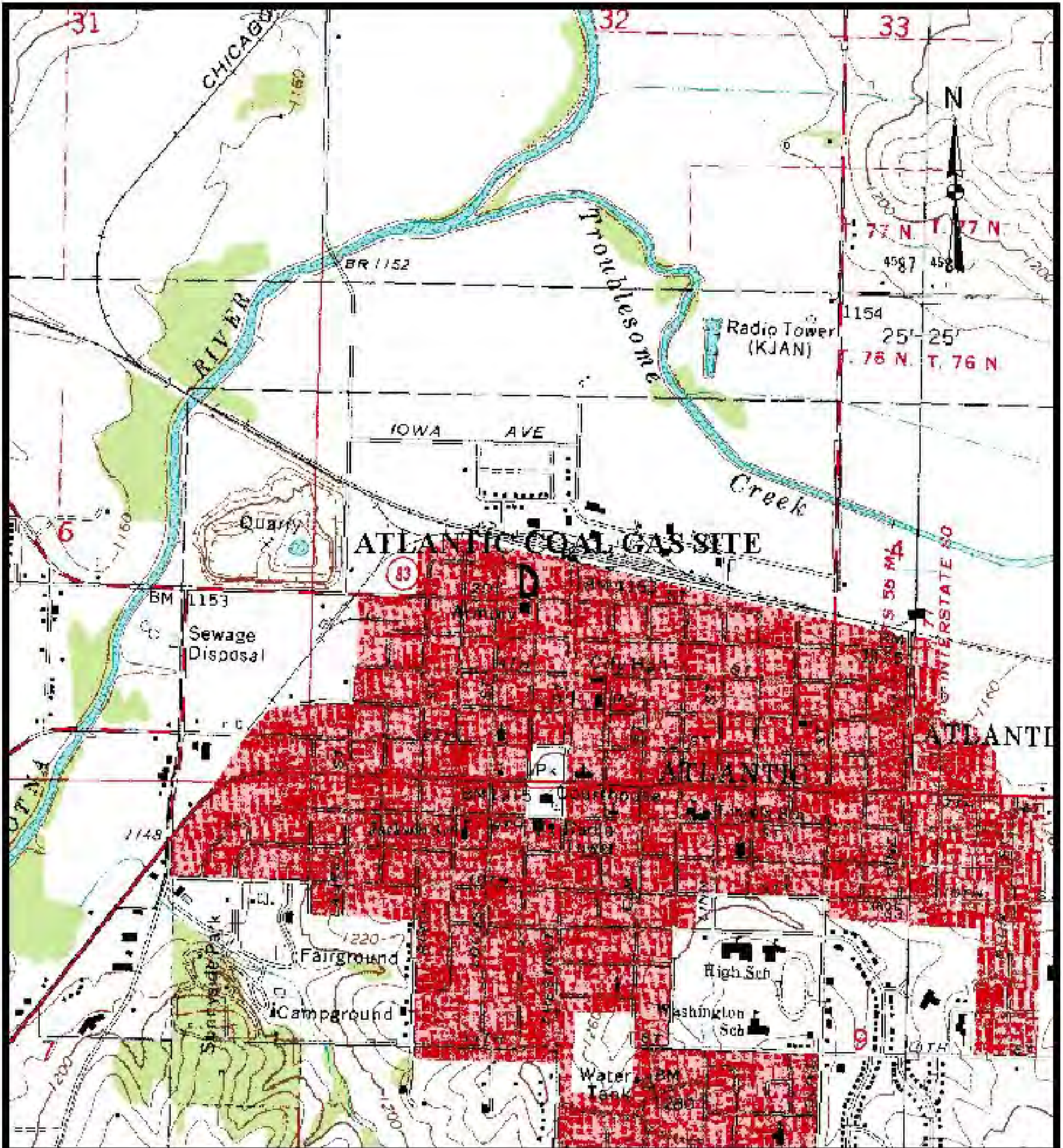
NOTES:

1. WELLS MW-6 & MW-3 WERE NOT USED IN GROUND WATER CONTOURING BECAUSE OF THEIR ANOMALOUS VALUES BOTH WERE HIGHER THAN SURROUNDING WELLS.
2. CONTOUR INTERVAL 0.5 FT
3. EXTENT OF GROUND WATER CONTAMINANT PLUME BASED ON IDNR ACTION LEVEL OF 0.2 MICROGRAMS PER LITER PER INDIVIDUAL POLYNUCLEAR AROMATIC HYDROCARBON.

FIGURE 3
GROUND WATER ELEVATION CONTOURS
AND EXTENT OF GROUND WATER
CONTAMINATION SEPTEMBER 1999
 ATLANTIC HSP SITES
 DATE: 10/05/99 BY: 100100018



(Atlantic Coal Gas Site)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 Feet

BELLE PLAINE COAL GAS
(Belle Plaine, Iowa)

GENERAL DESCRIPTION

The Belle Plaine Coal Gas site is a 0.6-acre site located in the S 1/2 of the NE 1/4 of the SW 1/4 of Section 20, T82N, R12W, Benton County, Iowa. The site is owned by Alliant Energy. The site was entered on the Registry in August 1990.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. Hazardous substances have been disposed of at the site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Iowa Electric and Power Company and its predecessors operated the Belle Plaine coal gasification plant from 1906 to 1946. During the operation of the plant, approximately 70,080 gallons of coal tar waste and an unknown amount of spent iron oxide were disposed of at the site. The gas plant was torn down in 1947. An operations and maintenance building was constructed in the 1950s. In 1970 an annex was constructed to the east.

HEALTH AND ENVIRONMENTAL IMPACTS

The Belle Plaine Coal Gas site is located within the city limits of Belle Plaine. Minnow Creek is located 600 feet south of the site. The junction of Iowa Creek and the Iowa River occurs 2.5 miles south of the site. The IES facility is using bottled water for drinking purposes because their water supply pipes travel through buried coal tar pits.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for the site.

On August 8, 1985, Iowa Electric unearthed a portion of a coal tar pit when they were searching for a gas line. The coal tar residue and soil were removed from the area, placed in 12 PCB barrels, and stored on site. In August 1987 another coal tar pit was discovered. The wastes were excavated and stored on site.

From June 1985 to June 1987 three investigations were conducted at the site. Soil, sediment, surface water, and groundwater samples were collected from the site during these investigations. Compounds detected at the site include polynuclear aromatic hydrocarbons (PAHs) which are common coal tar constituents. Some of the PAHs are carcinogenic. The compounds detected in notable quantities are listed in Table 1:

Table 1:

| | |
|----------------------|------------------------|
| Acenaphthylene | Chrysene |
| Anthracene | Fluoranthene |
| Benzene | Fluorene |
| Benzo(a)anthracene | Indeno(1,2,3-cd)pyrene |
| Benzo(b)fluoranthene | Phenanthrene |
| Benzo(k)fluoranthene | Pyrene |
| Benzo(a)pyrene | |

Site investigations were conducted in November and December 1991. A report was submitted to the department in late 1993. Based on the results of the investigation, further actions were recommended. The Remedial Investigation/Feasibility Study (RI/FS) reports were submitted to the department in May 1992 (RI) and August 1992 (FS).

2004: Additional source area investigations and related revised risk assessment have been conducted. An interim soil removal and site remediation are planned and ground water monitoring is on going.

2008: Additional environmental site assessment activities carried out during the fall of 2008 will be reported to the IDNR by late December 2008. No remedial activities have been scheduled yet.

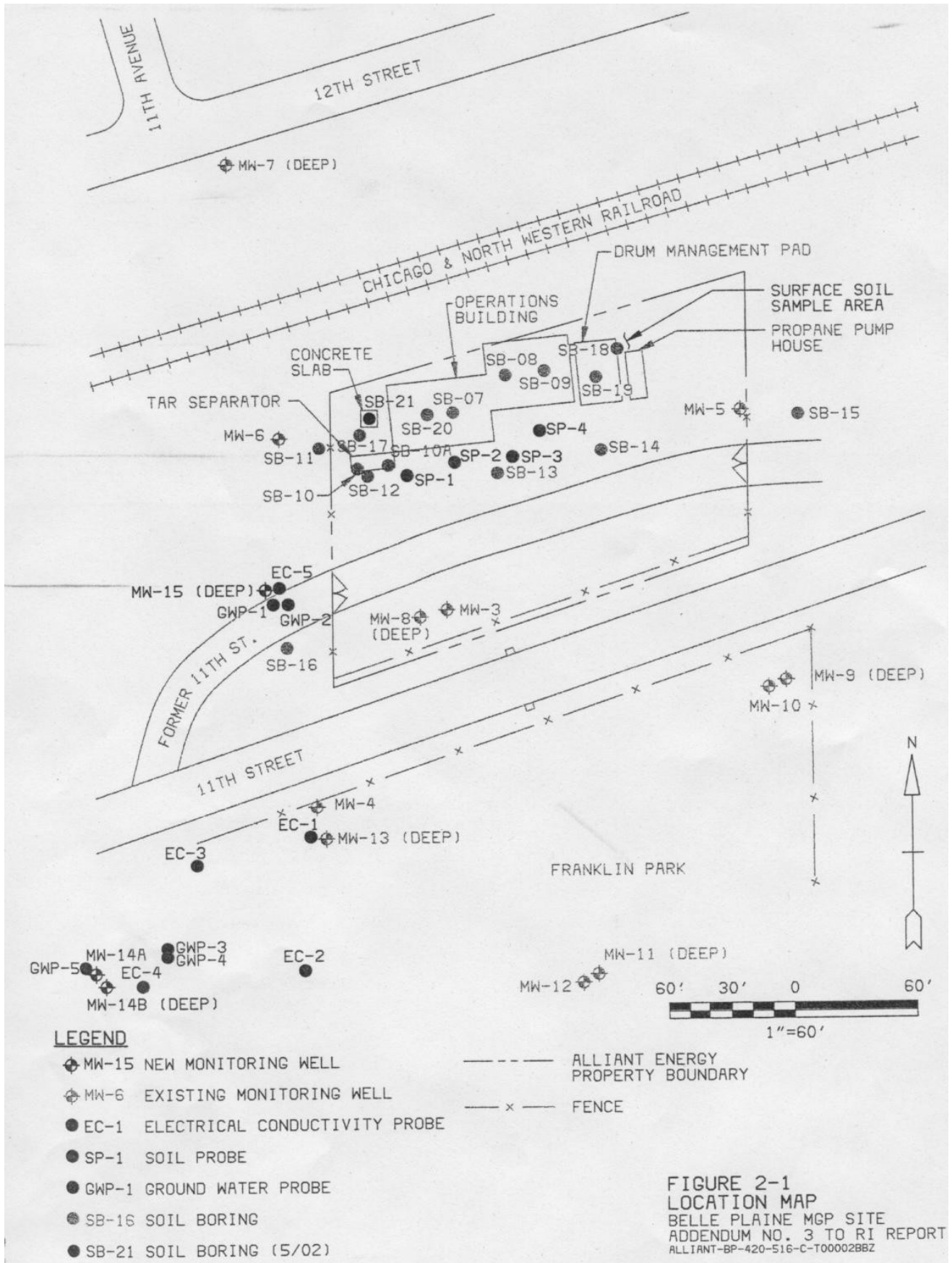
2009: This location is used to maintain and store equipment used to remediate all the other manufactured gas plant (MGP) sites across the State of Iowa Alliant Energy is responsible for and has no plans to do any further assessment or remedial actions at this location until the other MGP sites across the state are complete.

2010: Other than groundwater monitoring, Alliant Energy has no plans to do any further actions at this location until the other Alliant Energy MGP sites across the state are complete.

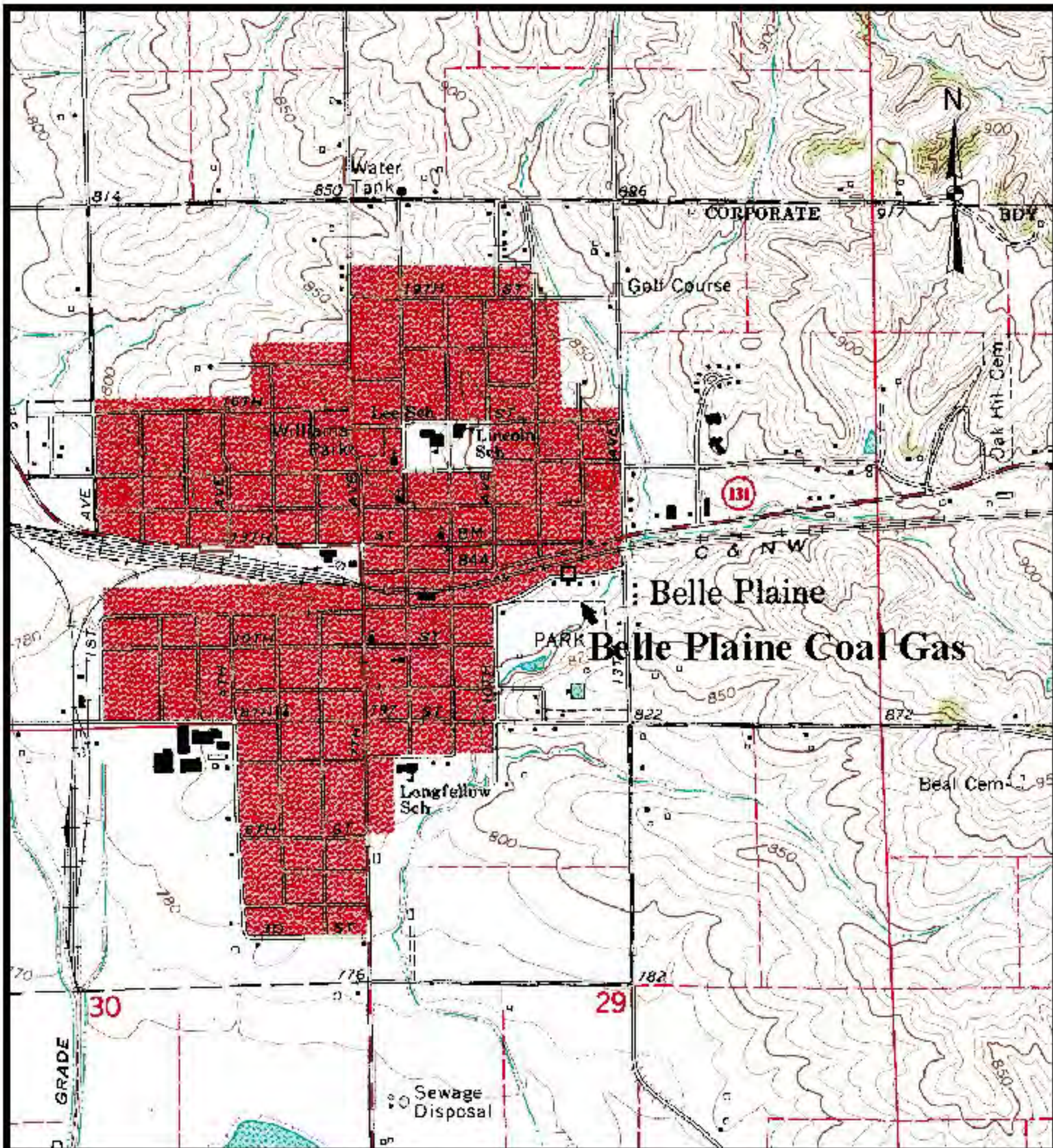
2012: Site monitoring continued through 2012. Site assessment activities are scheduled to begin in 2013

2013: Continued site monitoring through 2013 with remedial actions beginning December 2013.

2014: Removal of coal tar contaminated soil was carried out in December 2013 through January 2014 removing approximately 2,730 tons of contaminated soil. The soil was transported to the SKB Lansing Landfill near Austin, Minnesota for disposal. Some additional soil removal may be required on the western boundary of the site.



(Belle Plaine Coal Gas)



Contour Interval 10 Feet



BELMOND PESTICIDE DISPOSAL SITE

(Formerly Simpson Property)

(Belmond, Iowa)

GENERAL DESCRIPTION

The site is located adjacent to the Iowa River on the north side of Belmond, Iowa. It is on land generally described as the SE 1/4 of the NW 1/4 of the NW 1/4 of Section 19, T92N, R23W Wright County, Iowa. The land was previously owned by the city of Belmond and used as a city dump. The site was entered on the Registry in 1984.

SITE CLASSIFICATION

In 2001 the classification of this site is revised to “d”. Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

In October 1966 a tornado caused extensive damage to the city of Belmond. As part of the town cleanup, about 80 tons of pesticides, all in granular or powdered form, were disposed at the site.

This disposal was conducted by Armour Agriculture Chemical Company, under the supervision of the Iowa Department of Agriculture. A trench was excavated about eight feet below existing grade for the pesticide wastes. The trench was about four feet wide at the bottom and twelve feet wide at the top. The site was used until 1976 for the disposal of solid waste. The site soils are generally sands and gravels with localized clay units. Under a search warrant in October 1983, soil samples were obtained from the site. Dieldrin, aldrin, and parathion were detected in all samples. Knox weed, 2,4-D, EPTAM, DDT, and heptachlor were identified in some of the soil samples.

The groundwater is between 10 and 20 feet below the surface. This surficial aquifer appears to be hydraulically connected to the Iowa River. In 1983 several private and public wells around the site were tested for contaminants. The results were negative for all contaminants expected at the site. Some of these wells were sampled again in 1985 and all results were normal. However, trans-1,2-dichloroethene was observed at low levels in spring water south of the site. The relationship of this contaminant to the site is unknown.

An emergency administrative order was issued to the site owners and the city of Belmond in August 1984. The order required submission of a plan of study to determine the extent of contamination, identify groundwater movement, and propose a plan of remedial action. This order was appealed and the hearing officer's decision ruled in favor of the appellants.

During September 1986 the EPA performed a Site Investigation. Four monitoring wells were installed and five soil borings were drilled around or on the site. Surface water and surface sediment samples were collected upgradient and downgradient from the site. Groundwater samples were collected from nearby shallow drinking water wells and from the four monitoring wells. The water samples showed no contamination above background levels. Several soil/sediment samples contained contaminants above background values. The pesticides aldrin (31 ppb) and dieldrin (12 ppb) were found in the soil sample 8.5 feet north of the pesticide disposal trench.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

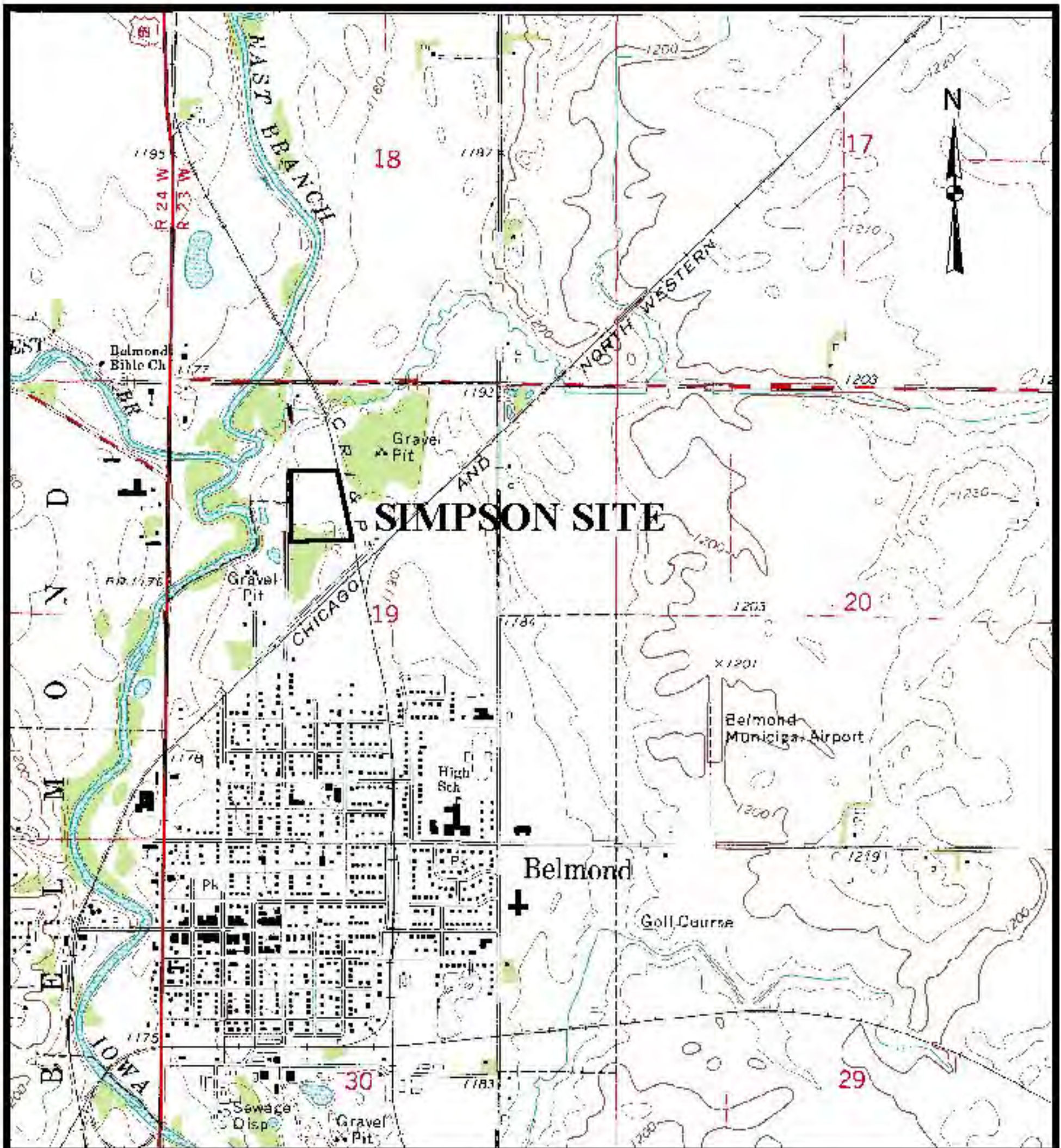
The Final Health Assessment for the site was completed in November 1991. The results of that assessment were that no evidence was observed that human exposure is occurring from the site. The site could pose a future health concern if human activity disrupts the integrity of the disposal area or if there is migration of pesticides through groundwater to potable water wells.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

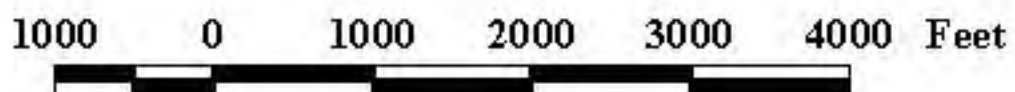
The EPA was the lead agency from the 1986 investigation through the Final Health Assessment in 1991. The health assessment recommended periodically sampling on-site groundwater monitoring wells for pesticides and verifying the direction of groundwater flow at the waste site. The EPA has referred the site back to state authority for further action. An assessment was conducted by EPA and it was determined that a removal action was not warranted.

The site is closed but receives periodic field inspection by IDNR.

(Simpson, Mr. & Mrs. George)



Contour Interval 10 Feet



BREI LANDFILL

(Muscatine, Iowa)

GENERAL DESCRIPTION

The Brei Landfill is located on a farm about 5 1/2 miles east of the corporate limits of Muscatine, Iowa. The site occupies approximately 21 acres in the SW 1/4 of the SE 1/4 of Section 24, T77N, R1W, Muscatine County, Iowa. The site was entered on the Registry in August 1990.

SITE CLASSIFICATION

The site is classified "d" in accordance with 455B.427.3. The site is properly closed but requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Vinyl chloride, trans-1-2-dichloroethene, 1,2-dichloropropane, ethylbenzene, 1,1,1-trichloroethane, methylene chloride, toluene, and xylenes**
- **Industrial waste included an estimated 802,000 pounds of paint sludge and 10,000 tons of tannery sludge.**

The city of Muscatine operated a non-permitted dump at the site from August 1968 through December 1975 before the implementation of the state's program of industrial waste tracking. Municipal and industrial wastes were dumped into ravines 30 to 50 feet deep. The trash and commercial wastes were not covered and generally not burned.

In April 1985 the Iowa Department of Water, Air, and Waste Management (IDWAWM) collected a water sample from the intermittent creek leading away from the landfill and from a residential well after the owner expressed concern over the quality of the water. Water samples collected contained vinyl chloride, trans-1-2-dichloroethene, 1,2-dichloropropane, ethylbenzene, 1,1,1-trichloroethane, methylene chloride, toluene, and xylenes.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is exposure to contaminated drinking water in surrounding private wells**
- **The primary environmental concern(s) are leachate from site to surface water and general groundwater quality**

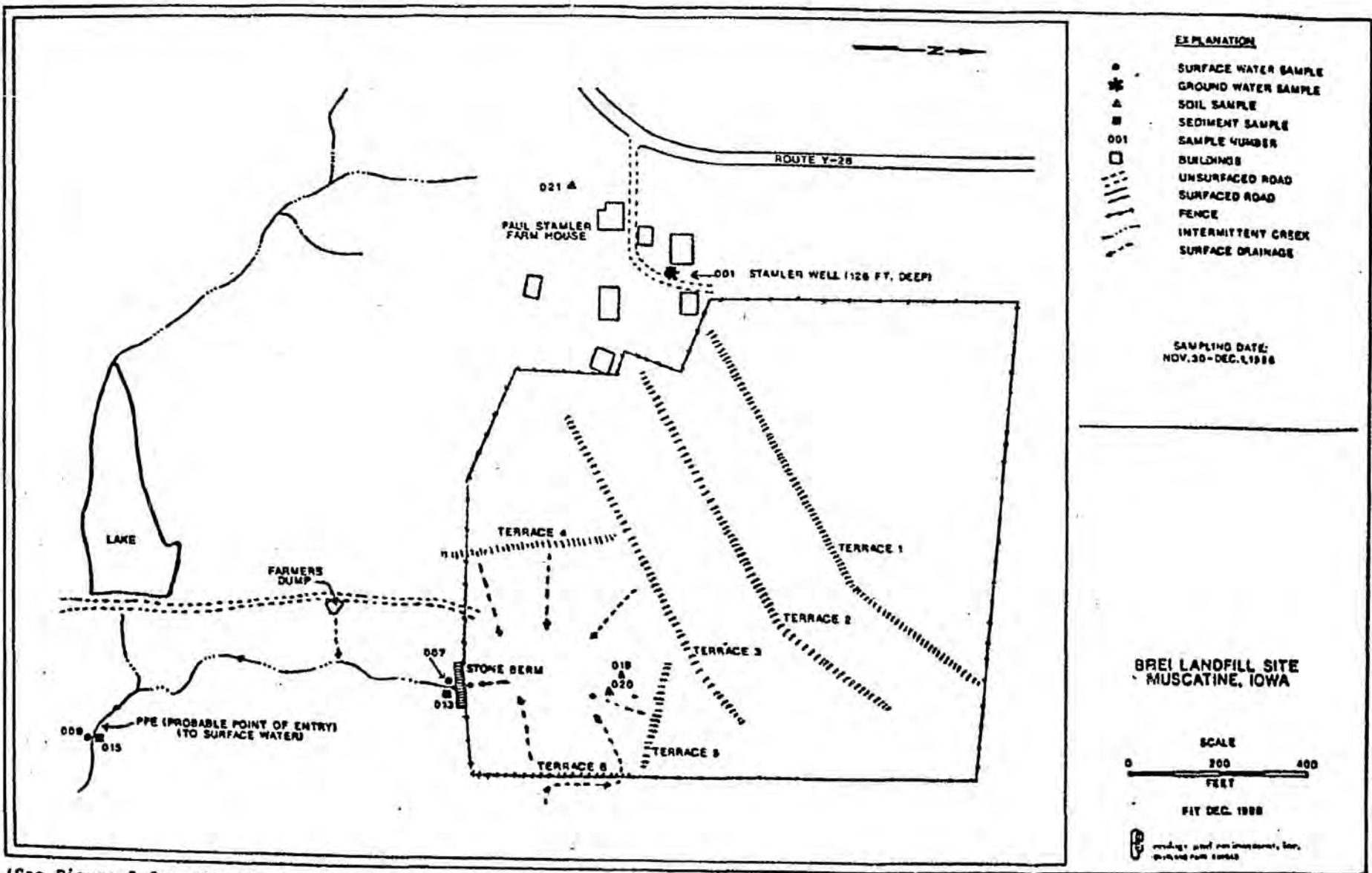
The only source of drinking water within a four-mile radius of the site is private wells. The Iowa Department of Natural Resources fish hatchery is also approximately a mile south-southeast of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIATION

The EPA has referred the site back to state authority with a recommendation for further surface water and groundwater monitoring. There are no monitoring wells on-site. The absence of a liner beneath the landfill increases the potential for the release of contaminants to surface and groundwater. Periodic inspection of the land fill cover is conducted by IDNR. The IDNR conducts periodic site inspections of surface cover and sample surface water and local private well. The most recent sampling event was conducted in March of 2009. A water sample was collected from the Stamler private well and was analyzed for volatile organic compounds (VOCs) and metals. The only constituent detected in the water sample was barium at a concentration of 0.48 mg/L which is below the drinking water standard of 2 mg/L.



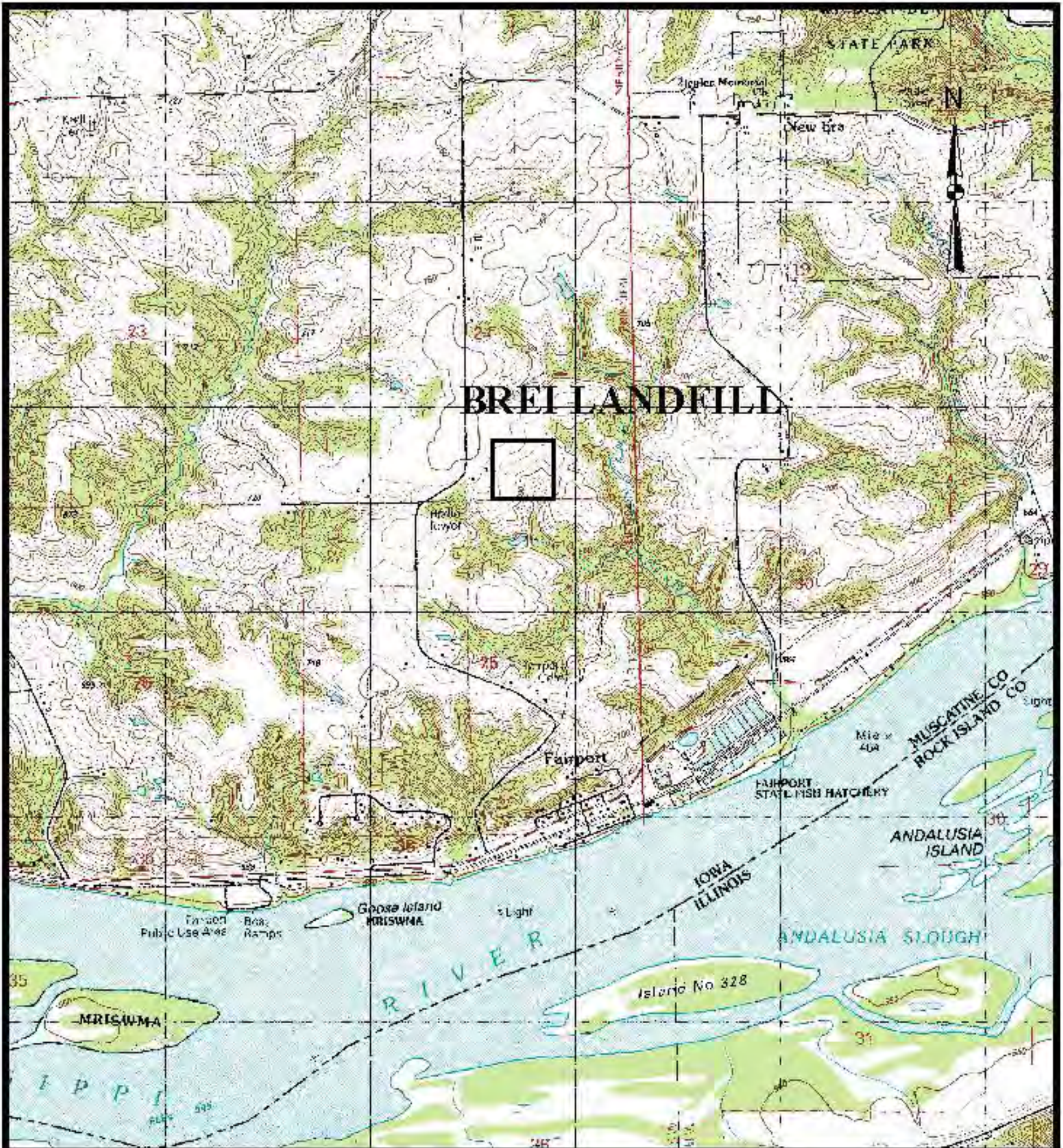
Site Photo 2014



(See Figure 3 for Off-Site Sample Locations)

SAMPLE LOCATION MAP

(Brei Landfill)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet

BNSF (GREASE LAKE)
(West Burlington, Iowa)

GENERAL DESCRIPTION

BNSF operated a locomotive repair installation south of the site. The repair work included wreck repair, major overhauls, and painting. The site is located in the West 1/2 of Section 25, Township 70 N, Range 3 W, Des Moines County, Iowa. The site includes a small landfill and drainage channel leading to Grease Lake, Grease Lake itself and a small portion of Honey Creek north of the lake. The site covers approximately 12 acres and is owned by BNSF. Grease Lake was used as a disposal site for shop and sanitary waste from 1927 until 1976. Part of the site was leased to City of Burlington for use as a landfill until 1973. The site was entered on the Registry in March 1990. Since the site was entered on the Registry, further investigations have shown soil, groundwater, and surface water contamination south and west of the boundaries of the Registry Site Grease Lake.

SITE CLASSIFICATION

In 2004 this site is re-classified to “d”, Site Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- Waste lubrication and hydraulic oils, tetrachloroethylene and other halogenated degreasing solvents, waste diesel fuel, mineral spirits, paint thinners, other spent non-halogenated solvents, waste sodium hydroxide, and sanitary wastes.

The facility used Lyxol, mineral spirits, and a chlorinated solvent blend for parts cleaning. These spent solvents are hazardous wastes based on the characteristic of ignitability. Tetrachloroethylene (PCE) was used as a degreasing solvent until 1983. Painting waste is hazardous based on the characteristics of ignitability and EP toxicity for lead and chromium. Industrial wastewater (which includes paint stripping waste) is pre-treated (oil and grit removal and then dissolved air flotation) prior to discharge to the sanitary sewer.

Volatile organic compounds found at elevated concentrations in Grease Lake include tetrachloroethylene (PCE), trichloroethylene (TCE), and 1,2-trans-dichloroethylene. Analysis of shallow sediment samples identified PCB-1260, 2-methylnaphthalene, chloro-benzene, xylenes, lead and arsenic are present above background levels. Sampling of the unnamed stream to the west of the site found intermittent and low significant levels of PCE in the stream.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

PCE contamination has been found in fractured bedrock at depths up to 160 feet. However, the deeper Maple Mill Shale formation forms a substantial boundary to contaminant movement, thus protecting the underlying aquifer used by the city of West Burlington for water supply, however off-site groundwater contamination does not appear to be a problem. The city of West Burlington, Iowa obtains its municipal water from a well located a mile southwest of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

EPA is the lead agency at the site. Since 1994, BNSF has been conducting routine groundwater and surface water monitoring and is conducting an ongoing (phased) investigation of PCE in groundwater and in the unnamed stream to the northwest of the source area. Information provided in these investigations indicates surface waters of unnamed creek are impacted by contaminated groundwater discharging to the creek.

2002: In April 2002 BNSF signed an Administrative Order on Consent (AOC) with USEPA. The AOC prescribed the development of an Interim Measure Work Plan (IMWP) to address potential groundwater contamination discharging to Unnamed Creek. The IMWP was submitted to EPA in July of 2002 and was approved in September

2002. Subsequent to the approval of the IMWP it was determined that a Human Health and Ecological Risk Assessment (HHERA) would also be conducted to determine if (remedial) measures would be required for Unnamed Creek.

2003: A first Quarter Groundwater and Surface Water Monitoring report and a revised Interim Measures Work Plan (IMWP) Incorporating the (HHERA) were submitted for EPA review and comment in June 2003. In August, a Preliminary Human Health and Ecological Conceptual Site Model was submitted for EPA approval. In September a Second Quarter Ground Water and Surface Water Monitoring report was submitted for EPA approval.

2004:

- July 2004: Semi-annual Ground Water and Surface Water Monitoring Report, and work plan for Final RCRA Facility Investigation (RFI) were submitted.
- September 2004: Human Health and Ecological Risk Assessment Work Plan for Final RFI submitted.
- November 2004: Human Health Risk Assessment report for Unnamed Creek. Conclusion of the report is that the discharge of ground water to Unnamed Creek does not present significant risk to public health.
- December 2004: Screening Level Ecological Risk Assessment and Biological Assessment (**SLERA**) report. Results of report that no evidence of adverse impacts to aquatic receptors.
- Indoor Air Evaluation Work Plan was submitted to assess the potential vapor intrusion to buildings on site.

2005:

- Submittal of Final Indoor Air Evaluation Work Plan for EPA approval.
- Submittal of Semiannual Groundwater and Surface water Monitoring Report for DNR review.
- Submittal of Phase I RCRA Facility Investigation (RFI).
- Submittal of Final Addendum for Ambient and Indoor Air Sampling report for the Phase I RCRA Facility Investigation QA plan.
- Submittal of Summary report for Industrial Sewer cleaning and Inspection

2006:

- Submittal of (Fall) 2005 Semiannual Groundwater and Surface water Monitoring Report
- Submittal of Spring 2006 Semiannual groundwater and surface water report
- Indoor Air Evaluation Report submitted 9/14/06
- Submittal of Phase II RCRA Facility Investigation Work Plan

2008:

- Semi-annual monitoring reports received.

2009:

- Revised Facility-Wide Ground Water Investigation
- Treatability Study Work Plan

2010:

- Implementation of supplemental investigation field work including treatability studies
- 2009 Annual surface and groundwater monitoring report
- Spring 2010 semi-annual surface and groundwater monitoring report
- Site Assessment Work Plan

2011:

- Quarterly site progress reports submitted for review and comment
- Site Assessment Work Plan (Addendum #1) to 2010 work plan.

2012:

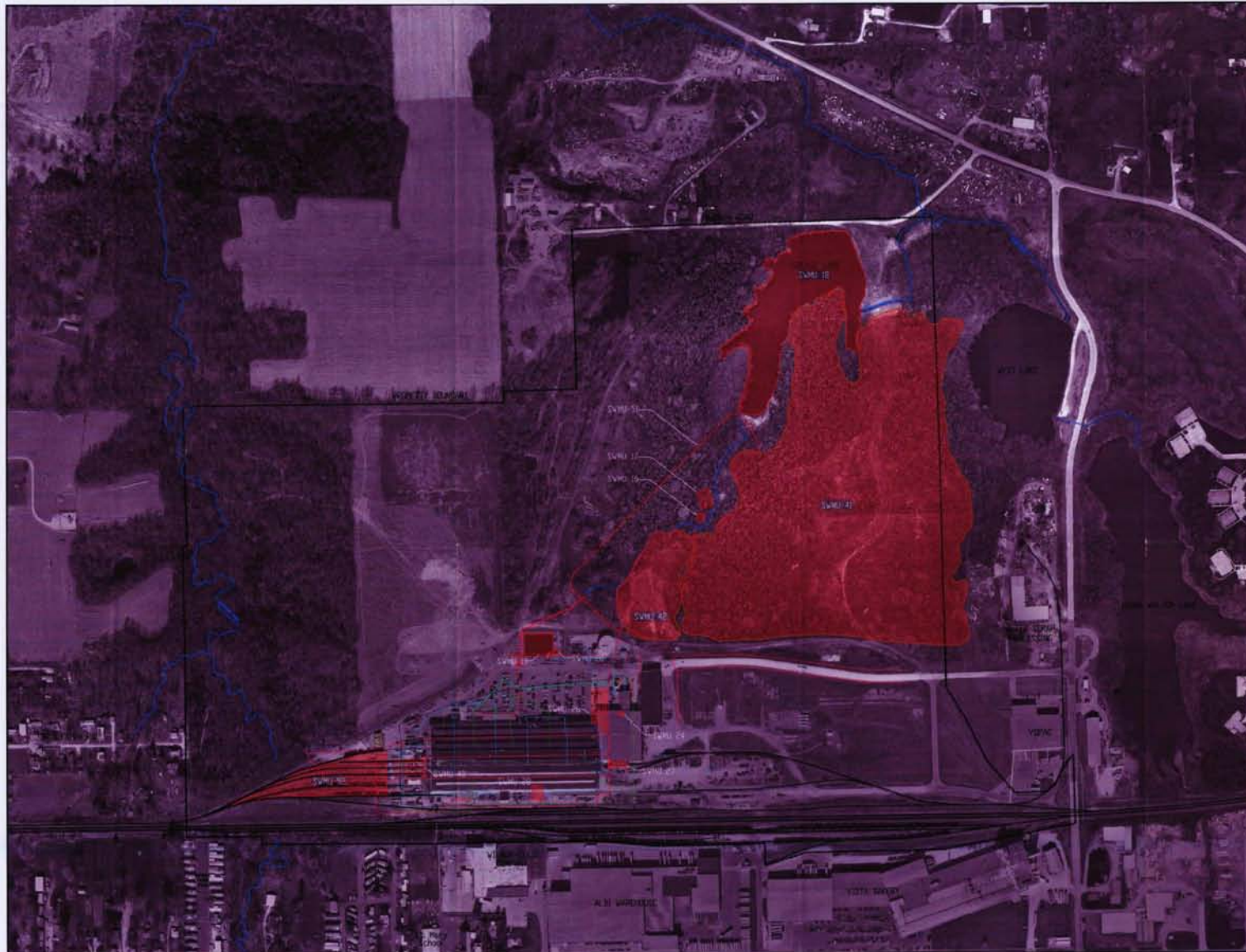
- Submittal of revised RCRA Facility Investigation Report
- EPA commented on revised RCRA Facility Investigation Report
- Soil vapor sampling performed
- Submitted, for EPA approval, additional investigations conducted to support the RFI as follows:
- *Deep Bedrock Drilling Report, March 23, 2012*
- *Southern Property Boundary Well Pumping Test Report, March 26, 2012*
- *Facility-Wide Groundwater Investigation Report, Update III, April 12, 2012*

2013:

- Submitted *2012 Annual Groundwater Monitoring Report*, February 22, 2013
- Submitted *Revised RCRA Facility Investigation, (RFI) Report, June 28, 2013*, to address comments prepared by the EPA in 2012.
- Submitted revised Ecological and Human Health Risk Assessments, as sections within the RFI, to address comments prepared by the EPA in 2012.
- *Submitted Spring 2013 Groundwater Monitoring Report, August 8, 2013*
- EPA approved the *Vapor Investigation Report, August 29, 2013*, that concluded:
VOCs are not present in near surface groundwater along the southern property boundary in the area investigated, PCE detected in ambient air samples was not associated with the site, and does not present an unacceptable risk to residents adjacent to the site
- EPA approved the *2012 Deep Bedrock Drilling Report* with modifications

2014: The following reports were submitted

- **Annual monitoring report**
- **RCRA Facility Investigation Report**
- **Spring 2013 Monitoring report**
- **2012 Surface and Groundwater Monitoring report**



LEGEND

- Property Boundary
- Railroad Tracks
- SWMU 15
- SWMU 16
- SWMU 17
- SWMU 18
- SWMU 19
- SWMU 20
- SWMU 21

| SWMU No. | SWMU Name |
|----------|--|
| SWMU 15 | Wastewater Collection System |
| SWMU 16 | North Pond |
| SWMU 17 | SWP1 Pond Storage Basin |
| SWMU 18 | Green Lake Surface Impoundment |
| SWMU 19 | Primary Wastewater Treatment Plant aeration |
| SWMU 20 | Primary Sludge Wastewater Pond |
| SWMU 21 | Final Sludge Wastewater Storage Pond |
| SWMU 22 | Process Pond |
| SWMU 23 | Plant Sludge, Settling and Former Sludge Bed |
| SWMU 24 | Former Sewerage Treatment Facility |
| SWMU 25 | Construction, Settling Area |
| SWMU 26 | Storage Landfill |
| SWMU 27 | SWP1 Company Construction Landfill |
| SWMU 28 | Former Lake Storage Basin |
| SWMU 29 | West Holding Tank Area |

Note: The actual boundaries of SWMU 15 are currently undefined. The boundaries shown on this figure are approximate. The area is not shaded to avoid visual obstruction of other map features.

CON 12-15
Doc #14926



AERIAL PHOTOGRAPHY ©2010 TRC

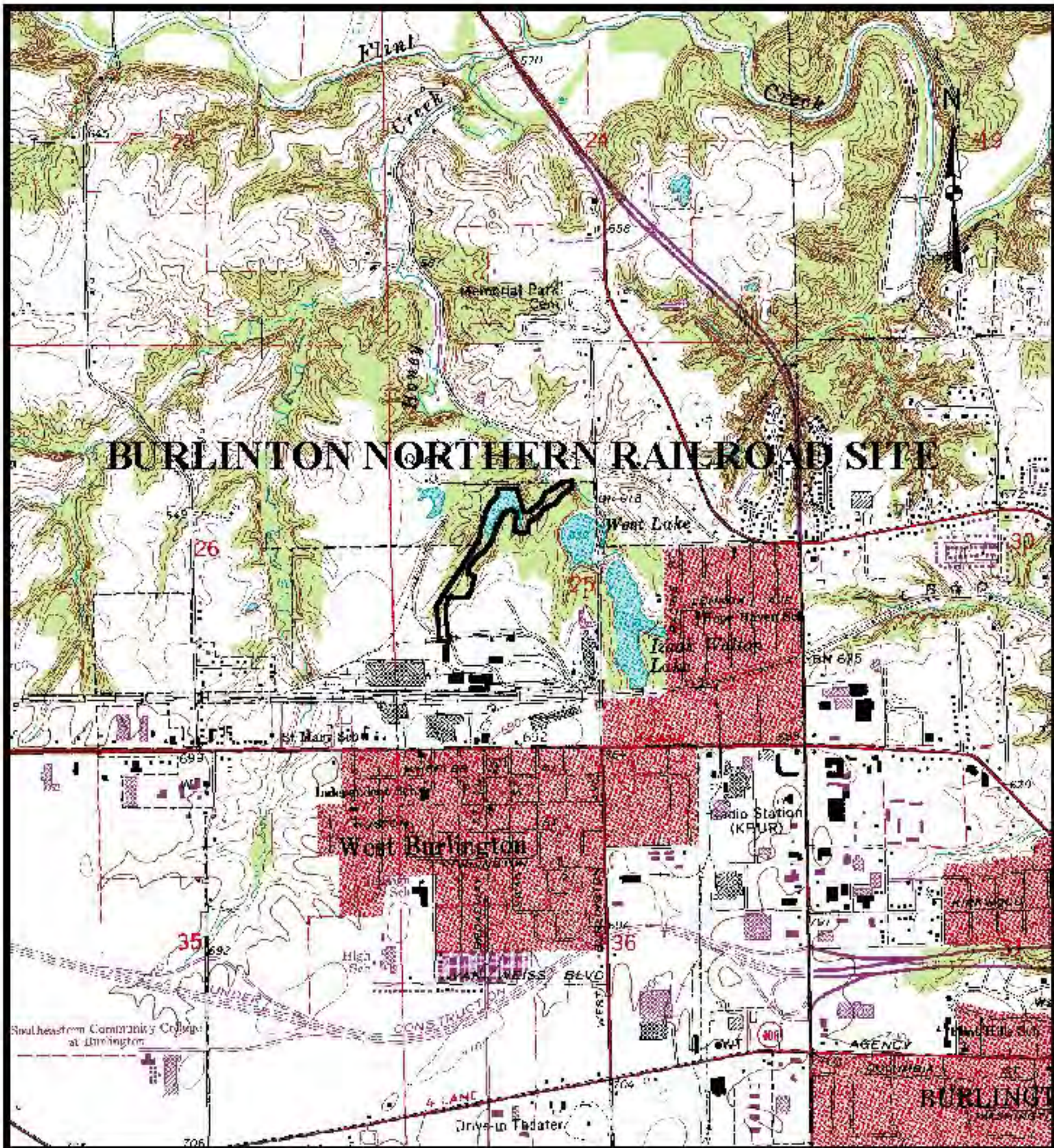
Facility Setting and Location of Solid Waste Management Units
SWP1 WEST BURLINGTON FACILITY
BURLINGTON, IOWA

| | | |
|------------------------|------------------|------------------------|
| DATE: 07/15/2010 | BY: JAMES D. ... | PROJECT NO.: 100000000 |
| PROJECT NO.: 100000000 | DATE: 07/15/2010 | SCALE: AS SHOWN |
| PROJECT NO.: 100000000 | DATE: 07/15/2010 | SCALE: AS SHOWN |
| PROJECT NO.: 100000000 | DATE: 07/15/2010 | SCALE: AS SHOWN |

TRC 10 SOUTH HANCOCK PLAZA CHICAGO, IL 60606-3007

FIGURE PLATE 1

(Burlington Northern Railroad)



BURLINGTON NORTHERN RAILROAD SITE



IOWA

Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet



COLLIS CORPORATION

(Clinton, Iowa)

GENERAL DESCRIPTION

The Collis Corporation is located within the limits of the city of Clinton, Iowa and is generally described as the SE 1/4 of the NW 1/4 of Section 14, T81N, R6E, Clinton County, Iowa. **Southern Steel and Wire Holding Co.** (Chamberlain Manufacturing Corporation) owns and operates Collis a manufacturing facility, which produces shelving, baskets, and accessories for refrigeration equipment. Steel wire is used to fabricate products and several metal finishing techniques are employed. These techniques include zinc plating followed by chromium conversion coating, lacquer dip and baking, and epoxy coating. The site is about 12.5 acres. The site was entered on the Registry in December 1984.

SITE CLASSIFICATION

The site is classified "c" in accordance with 455B.427.3.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Groundwater monitoring has identified elevated levels of chromium, cyanide, nickel, lead, trichloroethylene, arsenic, trans-1,2-dichloroethylene, dichlorofluoromethane, zinc, and total organic halides.**

From 1970 to 1979, chrome plating wastewater treatment sludge was placed in six lagoons located on plant property. An estimated total of 1,090 cubic yards of sludge were disposed of in these lagoons. The lagoons were constructed without any type of liner or leachate collection system. The estimated depth of the sludge is approximately five feet. Also, before 1980, site contamination occurred through numerous spills and leaks from containers and equipment and overflows.

EPA regulates the lagoons under the RCRA program. Part or all of four of the original six lagoons still exist at the site. The area containing the original six lagoons is about 150 feet wide by 300 feet long and is located near the northernmost corner of the plant site. Portions of the existing lagoons have been filled and the containment embankment graded level with surrounding ground. The lagoons also contained water-soluble oil that leached from metal shavings deposited about 50 yards from the lagoons in the late 1970s.

Eleven soil samples collected in the area of the lagoons showed PCBs and elevated levels of several metals in most of the samples. The PCB-Aroclor 1260 was found as high as 53 ppm. The metals included chromium (670 ppm), Copper (4,000 ppm), lead (878 ppm), and zinc (3020 ppm).

The EPA received a closure plan from Collis to remove all contaminated sludge and soil in the lagoon area. Collis began to remove the hazardous waste sludge in November 1986 and continued until February 1987. About 11,000 tons of sludge were removed and transported off-site as a hazardous waste. Prior to sludge removal, about 270,000 gallons of liquid were removed from the impoundments and treated for cyanide destruction in temporary treatment tank structures. The treated liquid was discharged to the sanitary sewer. After sludge removal, another 90,000 gallons of liquids were pumped from the area and removed for off-site treatment.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The Collis facility is located on the Mississippi River floodplain. The soils consist of alternating layers of clay and silts with varying layers of fine to coarse sand or silty sand. Depths to the limestone bedrock range from 6 to 118 feet. Past discharges of wastewater and sludge have caused water quality violations in Mill Creek. Surface water samples indicate there is a significant increase in copper, zinc, and cyanide downstream of the plant's wastewater discharge point. Collis and EPA agree this contamination was caused by the plant's wastewater discharge rather than groundwater flow. Concern over this contamination has decreased due to a revision of the Collis NPDES permit.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTION

A plan to close the surface lagoons was developed in 1998 through a Consent Agreement and Consent Order for sludge removal, back filling, and site grading. The EPA is regulating this site under RCRA authority. The state will continue to coordinate with EPA to assure proper cleanup. Collis is also conducting a RCRA Facility Investigation under an EPA order (VII-94-H-0001).

In 1998 the Remedial Facility Investigation (RFI) Report addressing soil, groundwater and sediment and surface water Manufacturer's Ditch was completed. In 2000 the Additional Investigation Activities: Interim Report (an additional assessment) of the extent of ground water contamination within bedrock and off site contamination was completed. In October 2002, a RCRA Facility Investigation: Interim Measures Work Plan (Aquifer Test) was submitted for aquifer characterization for purpose of evaluating corrective action alternatives. Also, RCRA Facility Investigation: Corrective Measures Work Plan Addendum submitted for the purpose of further characterization of extent of soil and ground water contamination.

2003: The U.S. Environmental Protection Agency (USEPA) provided technical review comments on a Draft RFI/CMS work plan. The purpose of the work plan was to provide a strategy for completing the investigation of soil and groundwater contamination at the facility. Facility representatives and USEPA are planning to meet early in 2004 to discuss USEPA comments on the draft work plan and the revisions that will be required in order for the work plan to be approved.

2004: The EPA met with Collis representatives in February 2004 to discuss the technical review comments prepared by the EPA after the EPA reviewed the RFI/CMS Work Plan. Collis subsequently submitted a revised RFI/CMS Work Plan in August 2004, which is currently being evaluated by EPA. The EPA anticipates having an approved RFI/CMS Work Plan in place in early 2005.

2*005: An RFI/CMS work plan was reviewed and approved by the EPA in April 2005. Environmental fieldwork consisting of soil sampling and the installation and sampling of additional new monitoring wells was completed during the summer of 2005. As of December 2005 Collis is in the process of preparing a report on the results of this fieldwork. Upon receipt of this report, the EPA will review it to determine whether the extent of soil and groundwater contamination has been characterized sufficiently to support performing a baseline risk assessment, which is the next step in the corrective action process.

2007: An RFI site assessment report was completed and reviewed by EPA. EPA identified deficiencies in the RFI report, and requested that Collis conduct additional sampling to determine vertical and lateral extent of contamination in soil and groundwater. This additional sampling work will occur in 2008.

2008: Collis submitted a Draft Supplemental Remedial Facility Investigation Work Plan and Quality Assurance Project Plan (QAPP) in February 2008. A Revised Supplemental RFI Work Plan and QAPP submitted in May. The EPA met with Collis representatives in October 2008 to discuss completion of the RFI.

2009: EPA granted a 6-month extension for initiation of RFI field activities. Collis submitted Final RFI Supplemental Work Plan in March 2009. EPA met with Collis representative to discuss comments on Final RFI Work Plan.

2010: Remedial Facility Investigation was conducted and received EPA review and comment

2011: Corrective Measures Work Plan, Groundwater Sampling Plan and Vapor Intrusion work plan were approved by EPA.

2012: Quarterly monitoring of groundwater, surface water sampling, and soil vapor sampling were conducted. This information was submitted to EPA in Quarterly Groundwater Monitoring Reports.

2013: A Consent Agreement and Final Order (CAFO) filed on March 27, 2013 (EPA Docket No. RCRA-07-2012-0014) required a Focused Soil Sampling (FSS) project in two areas where hazardous waste storage occurred to determine whether there were releases and to determine whether any further remedial action was warranted. The CAFO also required Collis, Inc. to perform supplemental Environmental Projects (SEP) to conform to RCRA requirements. As a result of the enforcement action, Collis, Inc. has reduced its RCRA generator status from a large quantity generator (LQG) to a conditionally exempt small quantity generator (CESQG). The EPA is currently reviewing the Focused Soil Sampling Final Report and SEP Completion Report.

A site visit was conducted by EPA personnel in July, 2013. The purpose of the site visit was to observe field soil sampling activities being performed under the Consent Agreement and Final Order (CAFO) in the matter of Collis, Inc. – Docket No. RCRA-07-2012-0014. Other activities included meeting facility personnel, conducting meetings at the beginning and end of the visit; touring the buildings, observing the manufacturing processes, touring the property, locating the solid waste management areas (SWMUs), and locating the groundwater monitoring wells.

2014:

- **EPA review and comment of Quality Assurance Project Plan.**
- **EPA terminated Consent Agreement upon full implementation of required actions in the agreement.**
- **EPA completed review of Draft 2012 Sampling Summary Report.**
- **EPA conditional approval of RCRA Corrective Action Report**
- **EPA approval of Final 2012 Sampling Summary Report**
- **Conditional approval of Phase II Groundwater Monitoring Work Plan**

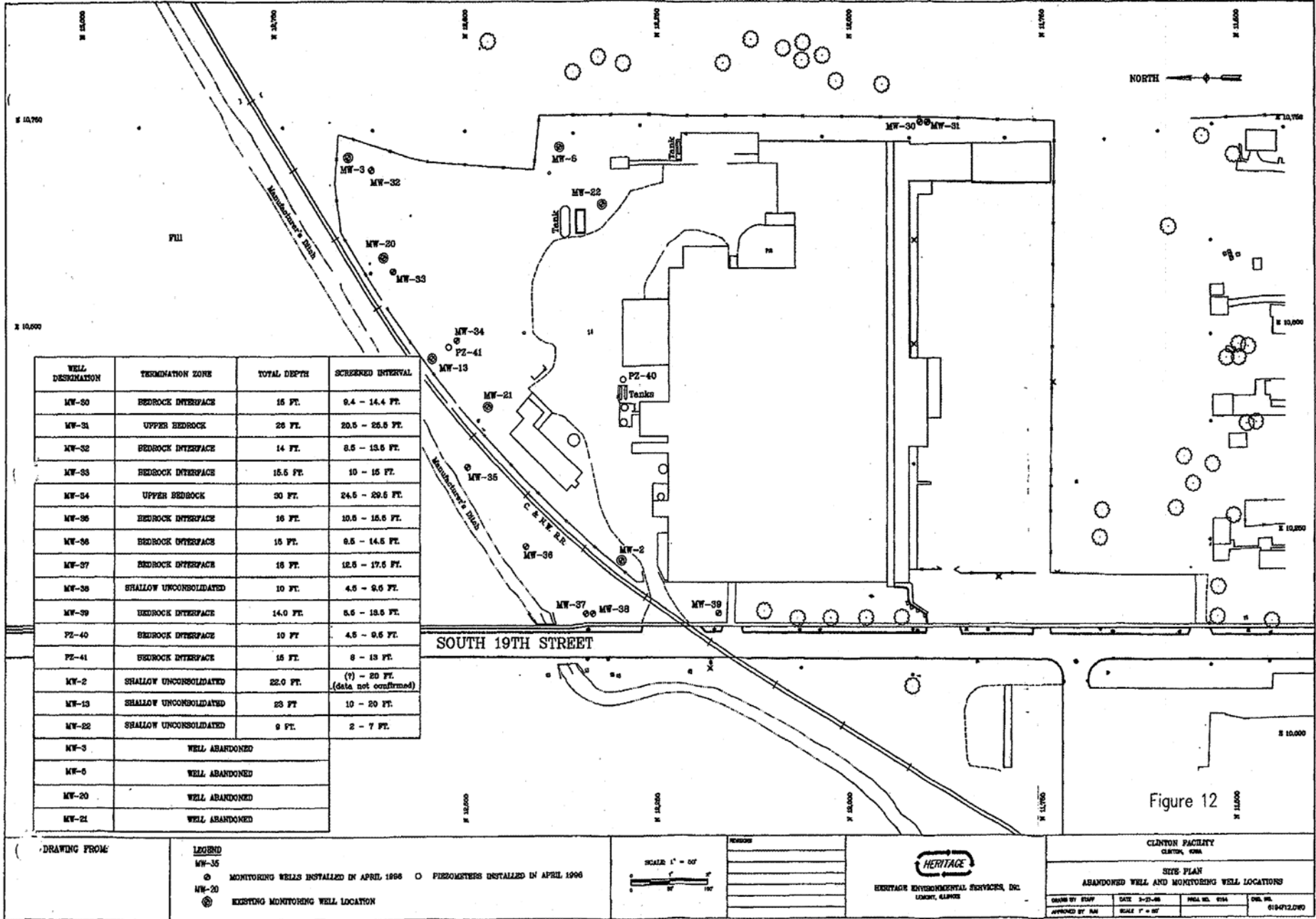
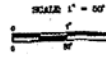


Figure 12

DRAWING FROM:

LEGEND

- MW-35 ○ MONITORING WELLS INSTALLED IN APRIL 1996
- PIZOMETERS INSTALLED IN APRIL 1996
- MW-20 ○ MONITORING WELLS INSTALLED IN APRIL 1996
- ⊙ EXISTING MONITORING WELL LOCATION



REVISION

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HERITAGE ENVIRONMENTAL SERVICES, INC.
LEICHT, ALABAMA

CLINTON FACILITY
CLINTON, MISSISSIPPI

SITE PLAN
ABANDONED WELL AND MONITORING WELL LOCATIONS

| | | | |
|-----------------|----------------|----------------|------------|
| DESIGN BY STAFF | DATE 3-27-98 | PANEL NO. 010A | DWG. NO. |
| APPROVED BY RM | SCALE 7" = 80' | | 614712.DWG |

(Collis Corporation)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet



DAVENPORT COAL GAS

(Davenport, Iowa)

GENERAL DESCRIPTION

The Davenport Coal Gas site is a 1.8-acres located in Section 36, T78N, R3E, Scott County, Iowa. The site is north of 3rd Street, between LeClaire Street and East River Drive, Davenport, Iowa. The site originally included 6.2 acres until the remediation of the property in 1988. From 1855 to 1907, a coal gasification plant operated at the site. Subsequently, the site was used by French and Hecht, a manufacturer of metals and wheels. In 1987 the site was sold to Rejuvenate Davenport Inc., a nonprofit organization that prepared the site for construction of the new Quad-City Times building. The site is owned by **Lee Enterprises, Inc. and Rejuvenate Davenport, Inc.** The site was entered on the Registry in November 1990.

SITE CLASSIFICATION

The site is classified “d” properly closed, requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

During site investigations in 1987 and 1988, extensive coal tar contamination was found in the soil and groundwater. Much of the contaminated soil was excavated during remedial activities from July 1988 to October 1988. During the removal of the soil, the bedrock beneath the site was found to be contaminated with coal tar. Additional remedial work was also needed for an area where soil removal was not implemented, which is located in the southern portion of the site. Further sampling is needed to determine the level of contamination in this area. In November 1988 Rejuvenate Davenport retained ownership of the un-excavated, contaminated property and sold the remainder of the site to Lee Enterprises.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located within the Quad Cities, which includes the cities of Davenport and Bettendorf, Iowa, and Rock Island and Moline, Illinois. The main channel of the Mississippi River is located about 350 feet southeast of the site.

Directly across the main channel of the Mississippi River from the site is Arsenal Island. Parts of the island and Sylvan Slough form an important wildlife habitat. Additional wildlife habitats are located downstream of the site near Pelican Island, Credit Island, Pettifer Island, Nahant Marsh, and the confluence of the Mississippi and Rock Rivers.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for the site. The Iowa Department of Natural Resources (IDNR) requires sampling of the down gradient monitoring wells to be analyzed for coal tar constituents: benzene, ethylbenzene, toluene, xylenes, and 16 polynuclear aromatic hydrocarbons.

In March 1990 the portion of the site owned by Lee Enterprises was cleaned to the bedrock. A groundwater remediation system (completed in 1992) has been discontinued. This included carving a de-watering trench through bedrock and installing drainage pipes. Three additional down gradient monitoring wells were installed south and southwest of the site giving a total of five down gradient wells. The results from samples collected in February 1996 showed groundwater from one of the wells is contaminated with petroleum hydrocarbons and polynuclear aromatic hydrocarbons above state action levels. On site soil remediation is complete. Ground water contamination that extends (off site) to the south under 3rd Street has been fully characterized. See accompanying figures below.

2006: Five ground water monitoring wells were closed and properly abandoned.

2008: As required in rule, the IDNR received and approved a request to sell the site

2014: No significant actions required or taken

Figure A.

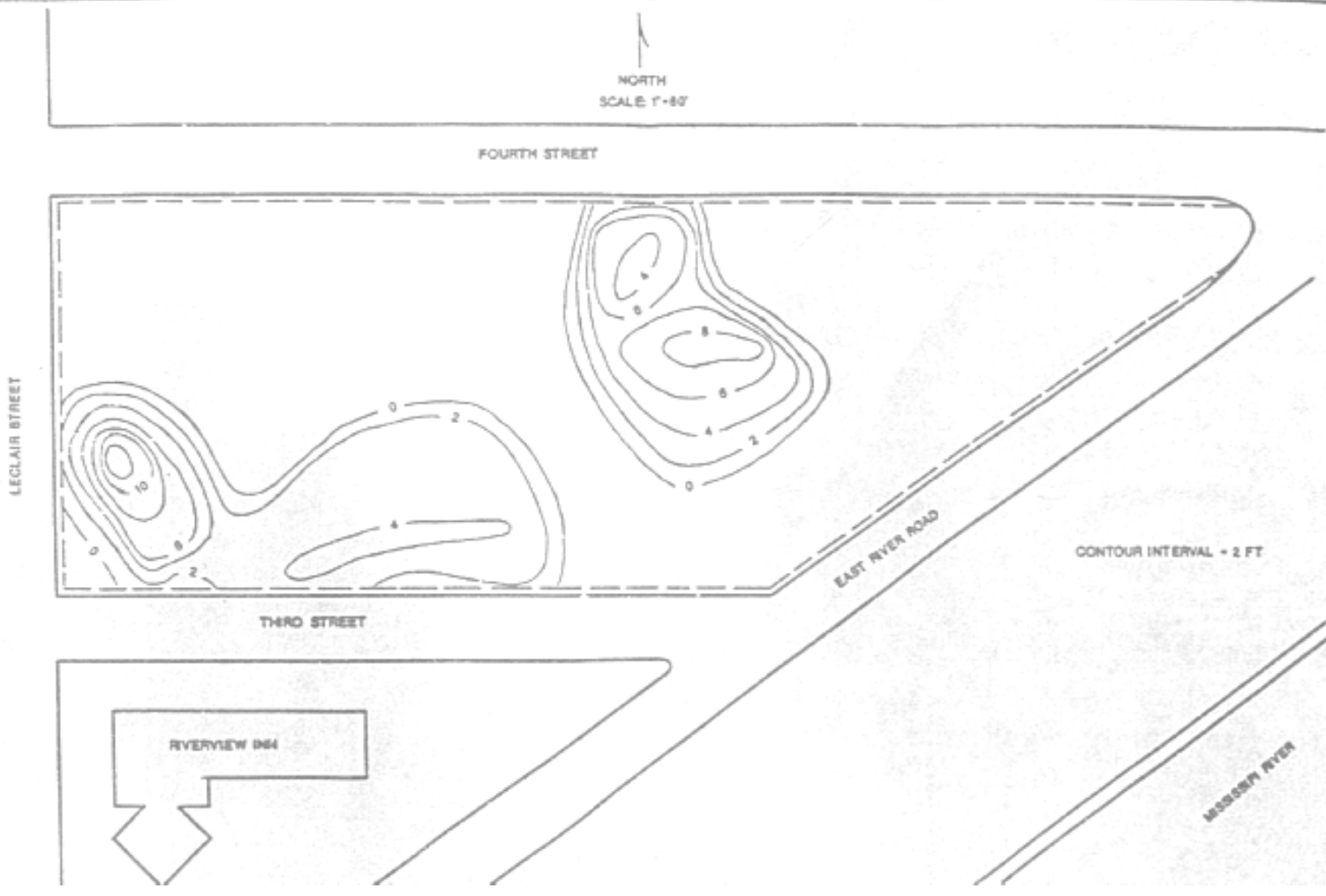
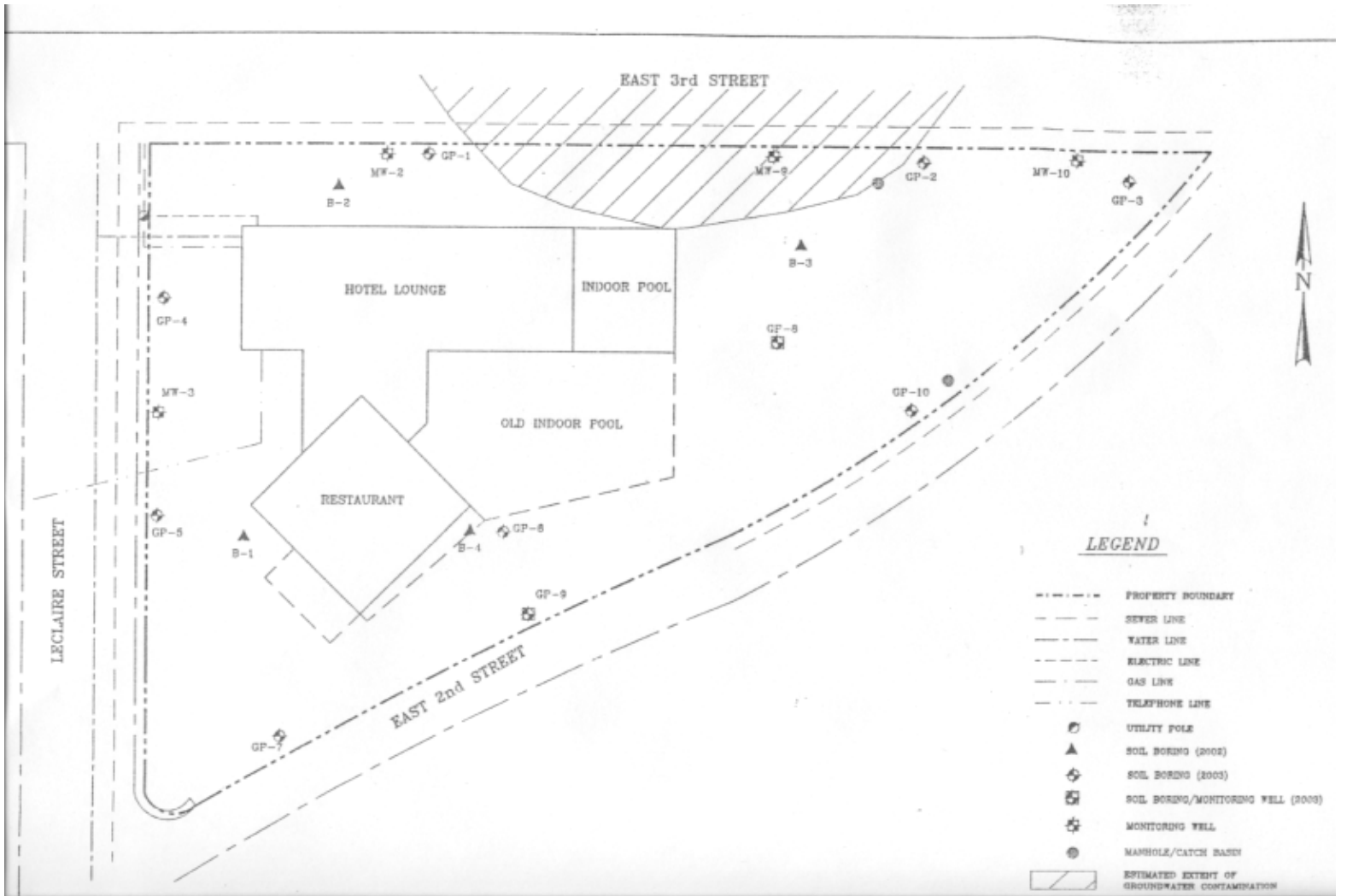
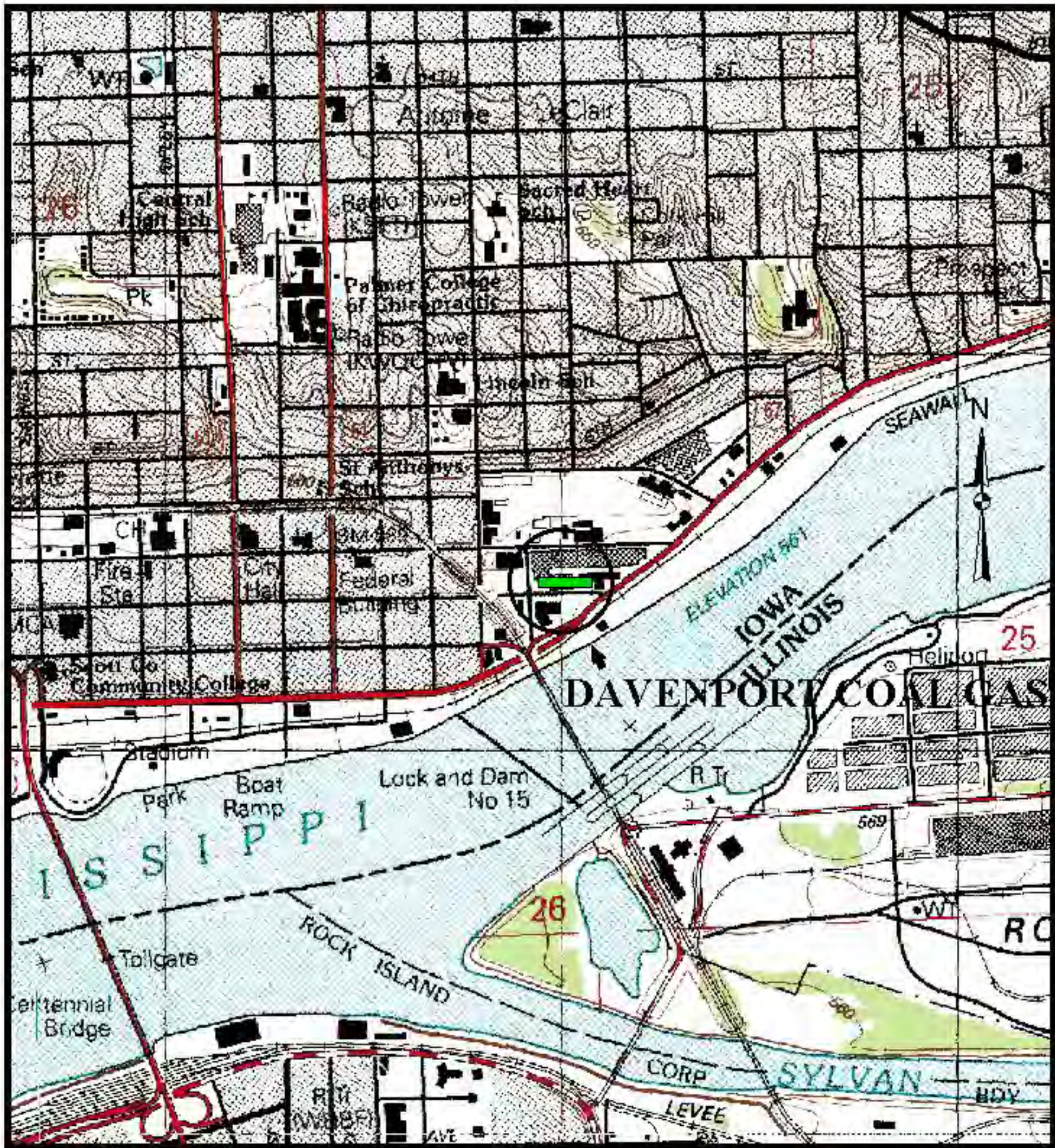


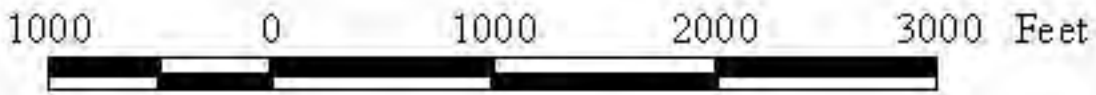
Figure B.



(Davenport Coal Gas)



Contour Interval 10 Feet



DICO COMPANY, INC.
(Des Moines, Iowa)

GENERAL DESCRIPTION

The site is located within the city of Des Moines on land described as the East 1/2 of Section 8, T78N, R24W, Polk County, Iowa and Pt. Lot 1, Tax Parcel 926-2-3. The property is owned by Titan Wheel International, Inc. The site was entered on the Registry in 1984. The EPA placed the site on the National Priorities List (NPL) in September 1983. The EPA and the IDNR initially discovered trichloroethylene (TCE) in the Des Moines water supply in 1975 during a national survey of water supplies, it was determined that TCE was released on the Dico property.

Pesticide-contaminated soils were discovered in at Dico in 1987 during the construction of the groundwater treatment system. These soils were excavated and stored on-site, then land-farmed on-site, and capped. Subsequent investigations found pesticides in buildings and shallow soils throughout the site. These are primarily banned pesticides including aldrin, dieldrin and DDT.

SITE CLASSIFICATION

In 2001 the classification of this site was revised to “d” Site properly closed, requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **TCE, vinyl chloride, and cis-1,2-dichloroethylene are the major contaminants which have been observed in the groundwater at the facility.**

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The Dico site is located on the floodplain of the Raccoon River just west of downtown Des Moines in an industrial and business area of the city. The Des Moines Water Works plant is located about 2,500 feet southwest of the Dico plant. The northernmost portion of the water works infiltration gallery is about 900 feet from the Dico plant. The Des Moines Water Works serves a population of about 300,000. In September 1983 TCE was measured at 94 ppb in the Des Moines water supply. The amount of TCE in the drinking water was greatly decreased by closing an additional valve in the North Gallery in October 1983. Presently, the Des Moines Water Works tests the water each day for a variety of chemicals, including TCE, to assure safe levels in the drinking water. No significant contamination has been found in water from the North Gallery since the groundwater remediation system was put into operation in 1987.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

An administrative order was issued to Dico in 1986 requiring response actions at the site. These response actions consist of:

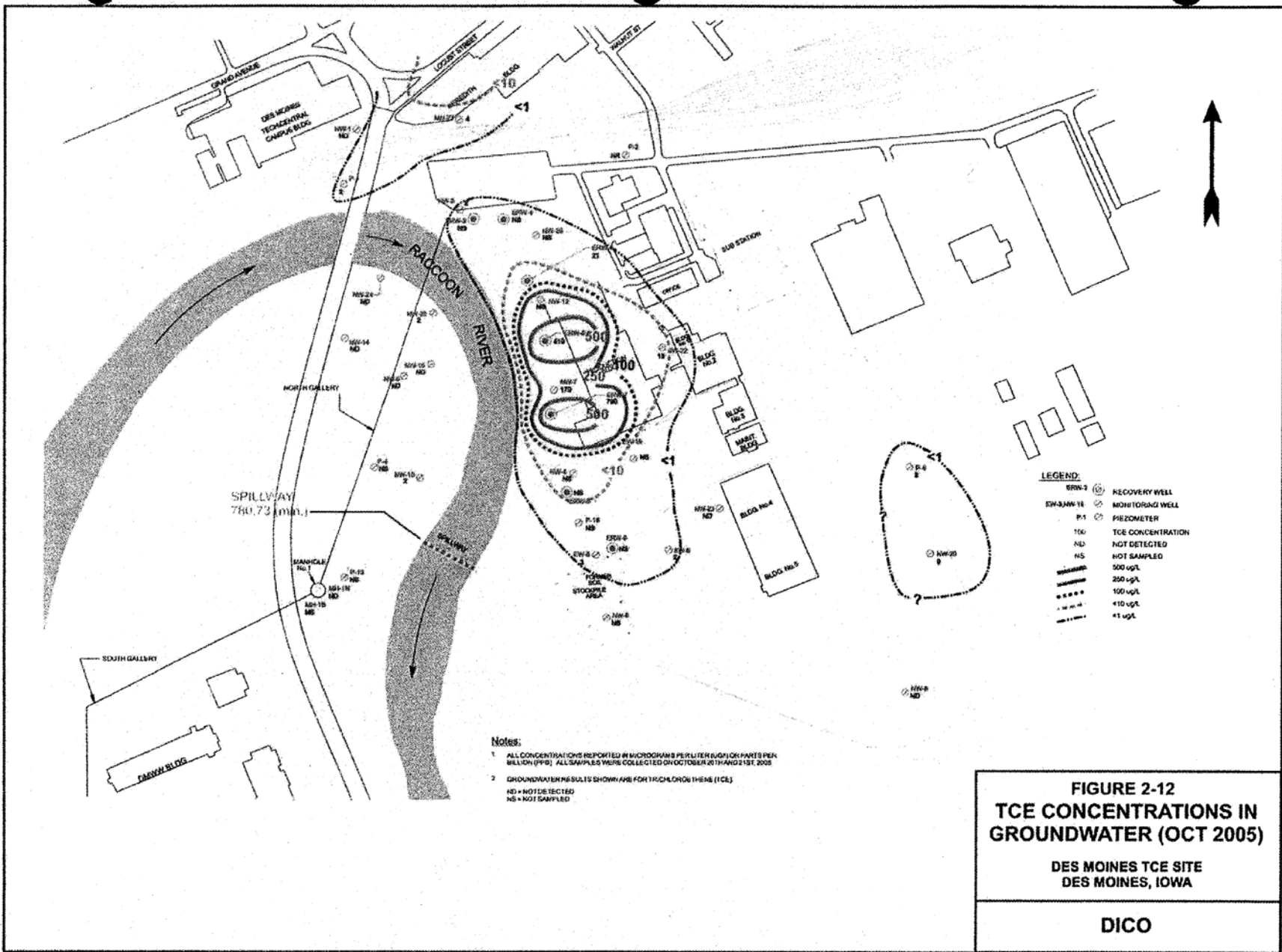
- Isolating the northernmost portion of the North Gallery from the remainder of the gallery system with a physical barrier to restrict groundwater flow into the North Gallery.
- Groundwater collection and removal systems to collect the contaminated groundwater and to control groundwater movement.
- Treatment and discharge of the extracted groundwater and release to the Raccoon River until the water in the aquifer is cleaned to below drinking water standards.

In December 1987, groundwater recovery system became operational. This system consists of seven recovery wells, which pump ground water to an air stripper for treatment prior to discharge to the Raccoon River. The system continues to effectively control the contaminant plume and prevent contaminants from entering the Des Moines Water Works infiltration gallery. The system has removed about 3,000 gallons of TCE since its startup in 1987. Levels of TCE entering the air stripper have decreased from about 2,500 ppb initially to about 200-300 ppb currently. Continued operation of the groundwater recovery system and monitoring of groundwater is planned.

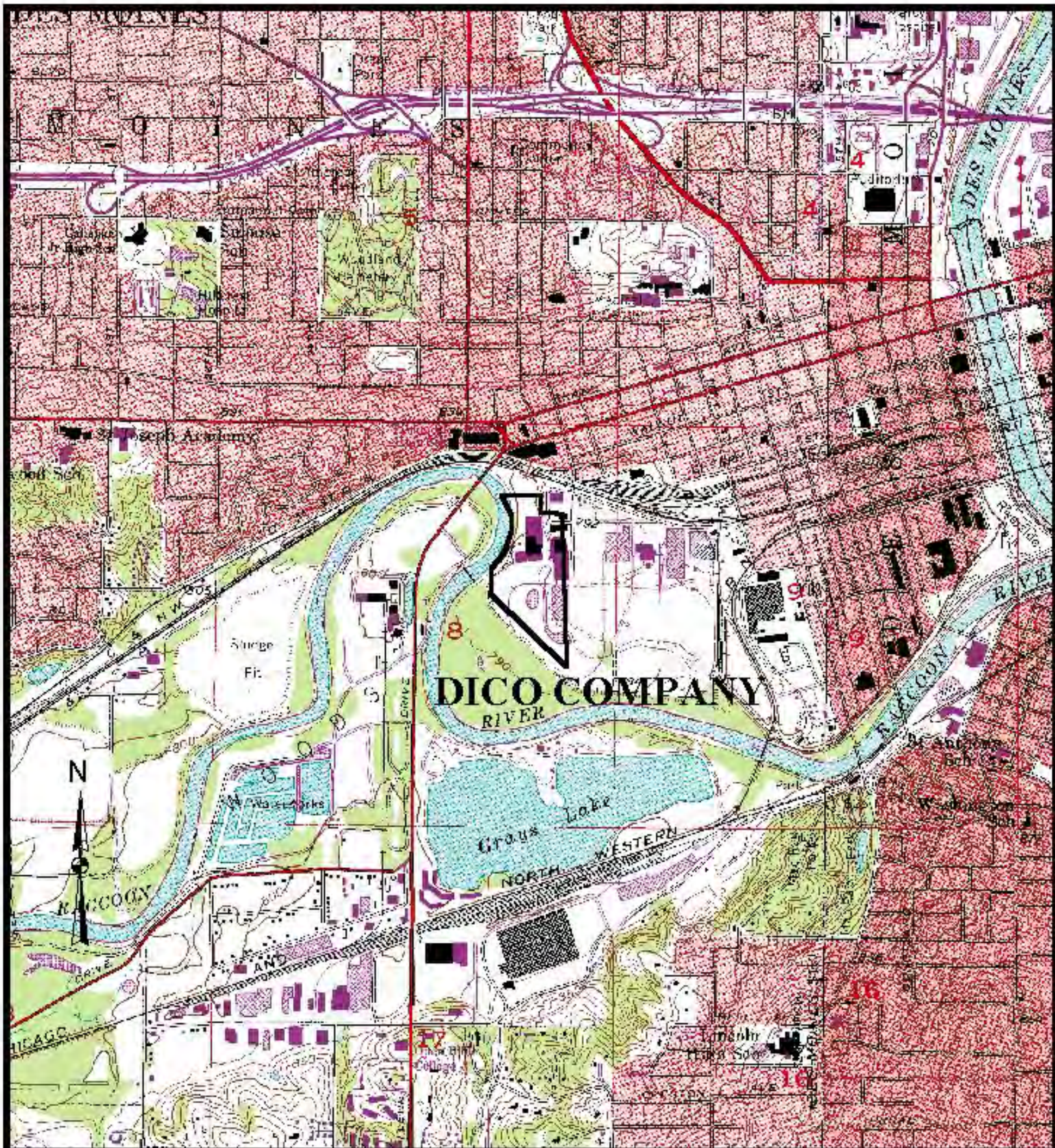
Remedial action to address the residual pesticide contamination in the plant buildings and soils around the site were completed in 1994. These actions included cleaning and sealing of interior building surfaces and placing an asphalt cap over soils with residual contamination. Additional remedial investigations to better define the contaminant source and address residual pesticide contamination were finalized in 1996. A Record of Decision (ROD) incorporating both investigations was completed in 1996. The ROD acknowledged the work done to clean the site buildings and the placement of the asphalt cap over soils with contaminants as final actions. In addition, the ROD requires routine maintenance of the building and cap, periodic sampling of sediments in the "South Pond Area", and land use restrictions to prevent inappropriate use of the site. Dico ceased manufacturing operations at the site in 1995.

Buildings #4 and 5 were demolished in 2007. In April 2013 the fifth Superfund five-year review was released which concluded that the remedy remains protective in the short term, but recommends additional actions to ensure protection in the long-term..

Actions in 2013 included continued operation of the groundwater pump-and-treat system and groundwater monitoring.



(Dico Company)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet



FAIRFIELD COAL GASIFICATION PLANT

(Fairfield, Iowa)

GENERAL DESCRIPTION

The site is located in the center of the SE 1/4 of Section 26, T72N, R10W, Jefferson County, Iowa. The 0.5-acre site occupies all of Lot 5 in Block 1 of the Southwestern Addition to Fairfield and that part of South Seventh Street between Burlington and Washington Avenues and is owned by Alliant Energy Corporation. The site was entered on the Registry in August 1989. The EPA placed the site on the National Priorities List in August 1990.

SITE CLASSIFICATION

In 2000 this site was reclassified “d” Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

A coal gasification plant was operated at the site from 1878 until 1950, when the plant was closed and the equipment removed. During its operation, coal tar, iron oxide wastes, and associated coal gasification wastes were generated at the plant. Unknown quantities of these wastes were disposed of at the site, contaminating the soil and the surficial aquifer. Iowa Electric contracted a field investigation of the site during 1985-1986. The EPA began investigating the site in 1986. Groundwater samples collected from monitoring wells at the site indicate the presence of several hazardous substances. The contaminants identified in groundwater include Benzene, Toluene, Xylenes, Styrene, Ethylbenzene, 2,4-Dimethylphenol, Phenanthrene, Anthracene, Pyrene, Chrysene, Benzo(a)anthracene, Benzo(a)pyrene, Naphthalene, Fluorene.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERS

The site is located within Fairfield, Iowa. Most city residents obtain their drinking water from a municipal system that has deep wells and storage lakes located northeast of the city. An unnamed stream accepts the surface runoff from the site. It discharges into Cedar Creek 2.9 miles southwest of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency at the site.

In 1990 the EPA issued a Record of Decision that included excavation of coal tar and contaminated soil and for treatment of contaminated ground water. A ground water treatment pilot study was completed in 1992. And remedial action began in 1993.

Alliant Energy conducted source (coal tar) and contaminated soil removal at the Fairfield Coal Gasification site from 1993 to 1995. Ground water treatment has been conducted from 1990 to 2001. Monitoring has determined that contaminated groundwater has not migrated beyond the property boundary. The ground water treatment system was shut down in 2001 to conduct a one-year monitored natural attenuation (MNA) study. Two additional monitoring wells were installed to track the results of the study and will be sampled quarterly.

Institutional controls will be implemented to prevent the use of groundwater in the affected area that include deed restrictions and environmental easements to be administered by IDNR. The department will continue to coordinate with the EPA to assure proper cleanup.

2003: The Monitored Natural Attenuation study was extended for two more years, with quarterly ground water monitoring conducted in February, May and August of 2003.

2004: An annual report will be submitted to EPA, a Monitoring Natural Attenuation report will be prepared to document and evaluate this remedial approach for the period between September 2002 and August 2003. Four quarterly MNA ground water sampling events were conducted.

2005: A Monitoring/Natural Attenuation report was submitted that documents and evaluates the effectiveness of this remedial approach for the period between November 2003 to August 2004. The report recommended additional five-year MNA study, which is under review by EPA. One monitoring event was conducted. Based on the data collected to date, a revised approach to ground water management will be developed and proposed in 2006.

2006: A Technical Impracticability Evaluation Report was submitted for the site and to propose that EPA invoke a TI waiver for the site. This report also recommended that the ROD be amended to incorporate this waiver and that the ground water remedy be modified. EPA and IDNR are reviewing the report to determine if the conclusions are valid and that the recommendations will continue to protect human health and the environment. The site will be undergoing its next 5-year review in 2007.

2007: Completion of EPA Five Year Review. Vapor Intrusion Investigation Work Plan and Annual Report were approved.

2008: Vapor Intrusion Report submitted for EPA review and approval and the annual ground water monitoring was completed.

2009: Annual ground water monitoring report completed and draft environmental covenant prepared

In 2010, the following activities were completed in association with the Fairfield MGP site:

- Annual ground water monitoring was conducted in August 2010, and the annual ground water monitoring report was prepared.
- Quarterly monitoring of dense non-aqueous phase liquid levels in site monitoring and extraction wells was conducted.
- Monthly status reports were prepared for Region 7 EPA.
- Additional documentation support was provided to Region 7 EPA in support of a technical impracticability waiver.
- The draft environmental covenant was prepared.

In 2011 the following activities were completed in association with the Fairfield MGP site

- Quarterly DNAPL monitoring was conducted.
- Annual ground water monitoring was conducted.
- The revised technical impracticability evaluation report was transmitted to IDNR and EPA.
- The annual ground water monitoring report was prepared.
- The environmental covenant was drafted.

In 2012 the following activities were completed in association with the Fairfield MGP site

- The 2011 Annual site ground water monitoring report
- Completion of the fourth Five Year Review Report
- Site Optimization Review Study was completed. An Optimization Review Study is a systematic site review by a team of independent technical experts, to identify opportunities to improve remedy protectiveness, effectiveness and cost efficiency, and to facilitate progress toward completion of site work. Installation of deep wells recommended in optimization study (these wells will be installed and sampled in December 2012)
- Continued Quarterly DNAPL monitoring that may be revised to annual DNAPL monitoring going forward based on the conclusions of the optimization study

In 2013 the following activities were completed in association with the Fairfield MGP site

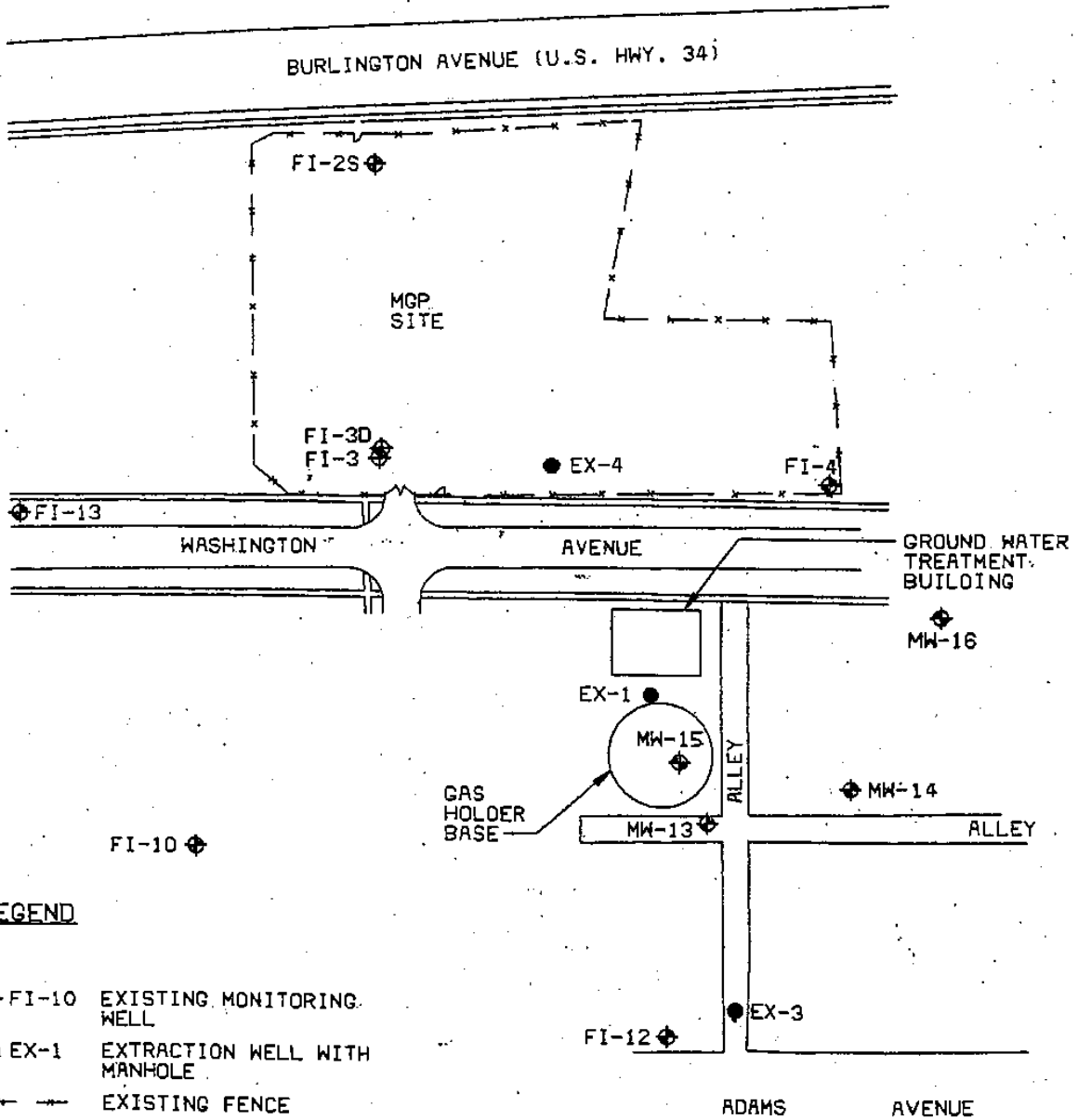
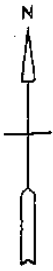
- The 2012 annual site groundwater monitoring report was prepared.
- Two deep monitoring wells were installed based on the recommendations of the 2012 Optimization Study.
- Annual groundwater and DNAPL monitoring was conducted.
- Preparation of the 2013 annual site groundwater monitoring report began.
- The environmental covenant was drafted.

In 2014 the following activities were completed.

- 2013 Annual Groundwater Monitoring Report was completed
- Waste Management Technical memorandum for Substation improvements
- An Environmental Covenant is being prepared for site use restrictions

ATTACHMENT 2
SITE PLAN

FI-6



LEGEND

- ◆ FI-10 EXISTING MONITORING WELL
- EX-1 EXTRACTION WELL WITH MANHOLE
- - - EXISTING FENCE

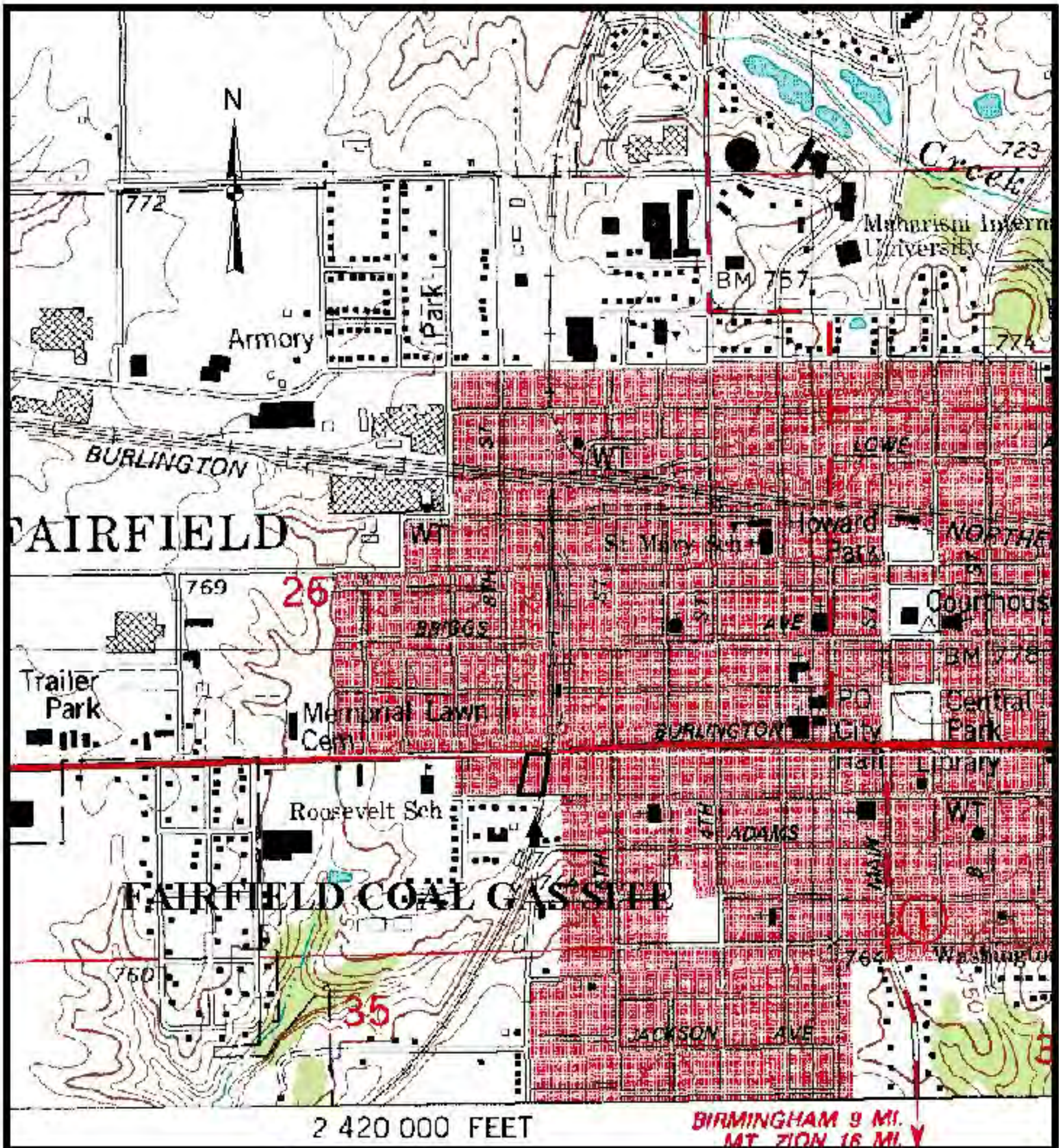
FI-1
1 BLOCK TO
THE SOUTH

◆ FI-11

100' 50' 0 100' 200'



(Fairfield Coal Gas)



Contour Interval 10 Feet

1000 0 1000 2000 3000 Feet

FORT MADISON LANDFILL (Rodeo Park Dump)

(Fort Madison, Iowa)

GENERAL DESCRIPTION

The site is located in the SW 1/4 of Section 27, the SE 1/4 of Section 28, the NE 1/4 of Section 33, and the NW 1/4 of Section 34, all in T68N, R4W. The site is on the north side of the city of Fort Madison, Lee County, Iowa. The 105-acre site consists of two former landfills owned by the city of Fort Madison (solid waste permit #56-SDP-05-88). The site was entered on the Registry in November 1989. The west part of the site is the old Rodeo Park Dump. Its two disposal cells were used from an unknown date until 1972. The east part of the site is the Old Fort Madison Landfill. Its two disposal cells were used from mid-1970 until November 1980. Both landfills received municipal wastes and large quantities of industrial wastes containing various hazardous substances.

SITE CLASSIFICATION

The site is classified "d" in accordance with 455B.427.3 upon completion of closure activities in 1994.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Landfill records indicate hazardous substances have been disposed of at the site including 120 drums of sulfur-contaminated soil, 1,100 lbs of 75% DDT, 15 drums of methylene chloride/polyurethane, 104 drums of 50% xylenes and 20% dimethyl-formamide, 5,000 lbs. cellulose nitrate, 6,000 gallons of spent sulfuric acid, drums of chromate destruction sludge, 3,800 gallons of distillation sludge, over 500,000 gallons of liquid paint waste, and unknown volume of potassium cyanide and chlorinated hydrocarbons.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

Many rural residents in the area rely on private wells that draw water from the lower Pleistocene aquifer. Fort Madison also has two municipal wells that use the same aquifer. The wells are located two miles southeast of the site but are not considered at risk. The site is located near two surface streams; French Creek and Fork Creek. Both creeks flow through the city of Fort Madison and discharge into the Mississippi River. The Rodeo Park Landfill is part of a larger municipal park and is the site of an annual rodeo.

SUUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The Planning, Permitting, and Engineering Services Section of the Energy and Waste Management Bureau of IDNR is the lead agency at the site.

The site's owner has completed various investigative and remedial actions required by the 1989 Administrative Order. These activities include:

- Implement grading and drainage improvements:

This activity began in April 1991 and final grading and capping were completed in the summer of 1994.

- A groundwater investigation report:

The report was submitted in April 1991 and approved in November 1992.

- Complete installation of leachate wells and gas venting and submit a report of well installation:

Four leachate piezometers have been installed. The piezometers are used to evaluate the effectiveness of the toe drain, installed as part of the Leachate Control Plan.

- Submit a Leachate Control Plan (LCP) and construct the system:

The LCP was submitted in July 1992. The final LCP was approved in May 1994 and construction was completed in 1994. Phase I of the LCP required installation of a toe drain in each fill area to an elevation below the surface seeps. The leachate from the Rodeo Park Dump is pumped to a storage tank at the top of the ravine. Leachate collected from the city of Ft. Madison landfills is pumped and stored in the Lee County leachate storage lagoon. The leachate from both sites is hauled to the city of Fort Madison wastewater treatment facility.

- A leachate treatability report was submitted in April 1991 and reviewed in November 1992. As recommended in the report, the leachate is hauled to the Fort Madison Publicly Owned Treatment Works (POTW).
- A Final closure plan with a Hydrogeologic Monitoring System Plan (HMSP) was submitted as part of the April 1991 groundwater investigation. It was reviewed and conditionally approved in November 1992. Baseline groundwater and surface water monitoring was initiated in January 1993 and completed in 1994. Semi-annual monitoring continues to date.
- A Final closure/post closure plan (C/PCP) was submitted on January 24, 1994 and supplemented on May 23, 1994. The C/PCP was approved as part of the Closure Permit (#56-SDP-88C) which was issued May 26, 1994. Certification of the completion of closure regrading, capping, and revegetation was submitted on June 29, 1994. The Closure Permit requires routine inspections, maintenance, and monitoring for 30 years.

- Remedial Action Performance Reports:

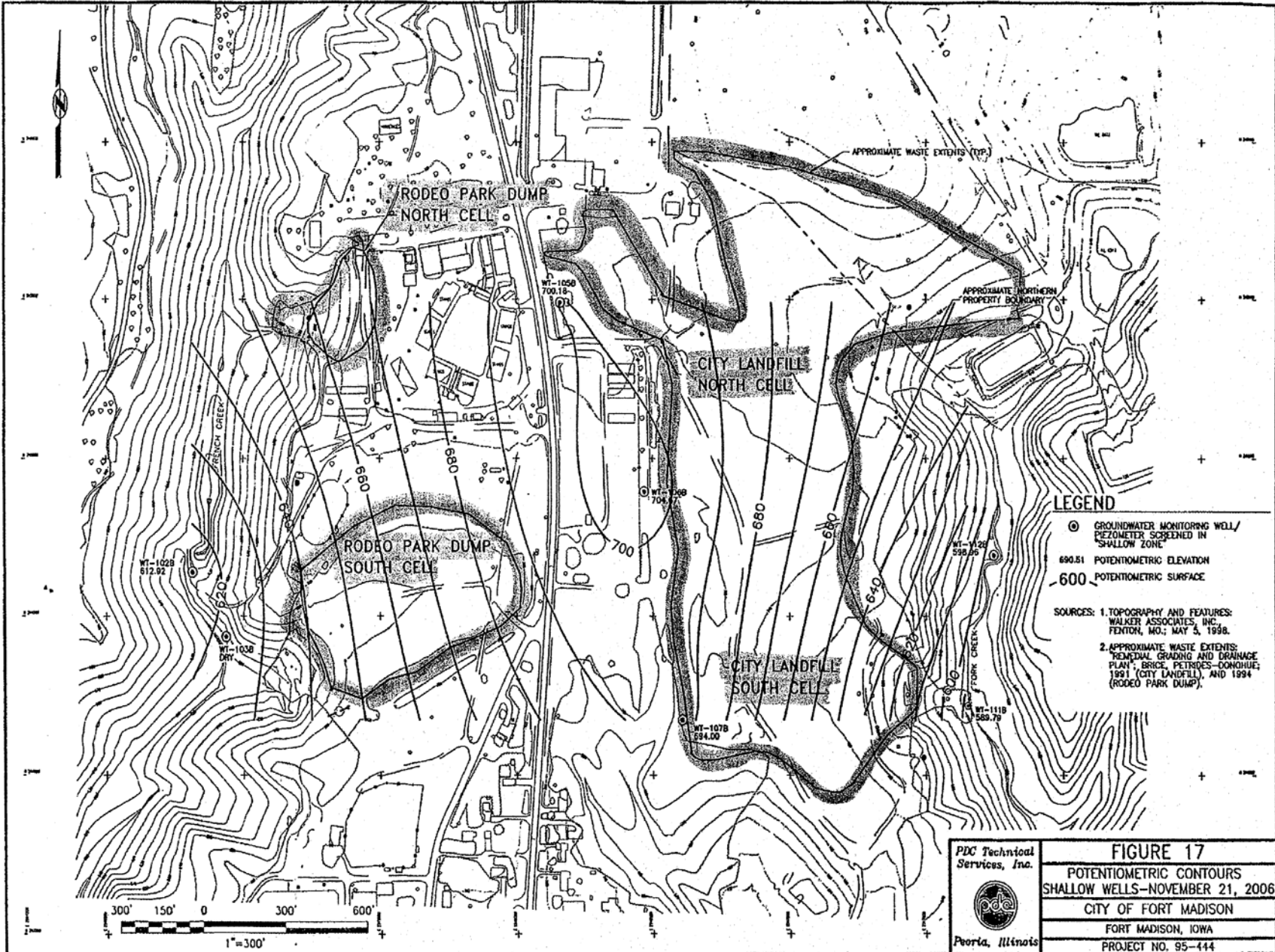
Since implementation of the LCP, annual surface water and groundwater quality monitoring at the sites has indicated general compliance with the water quality standards.

Semiannual inspections are performed and an annual reporting of site conditions submitted to Solid Waste Section of IDNR. This report includes summary of general conditions, as well as groundwater quality, surface water quality, leachate removal volumes, and methane gas monitoring data. These semiannual reports may be found at the web link below.

Link-<https://programs.iowadnr.gov/solidwaste/reports/DocumentDNA.aspx>

Sort by -Permit Number

Select Permit No. – 56-SDP-05-88



LEGEND

- ⊙ GROUNDWATER MONITORING WELL/
PIEZOMETER SCREENED IN
SHALLOW ZONE
- 690.51 POTENTIOMETRIC ELEVATION
- 600- POTENTIOMETRIC SURFACE

SOURCES: 1. TOPOGRAPHY AND FEATURES:
WALKER ASSOCIATES, INC.
FENTON, MO.; MAY 5, 1998.

2. APPROXIMATE WASTE EXTENTS:
REMEDIAL GRADING AND DRAINAGE
PLAN, BRUCE PETROES-COMHAUE,
1991 (CITY LANDFILL), AND 1994
(RODEO PARK DUMP).

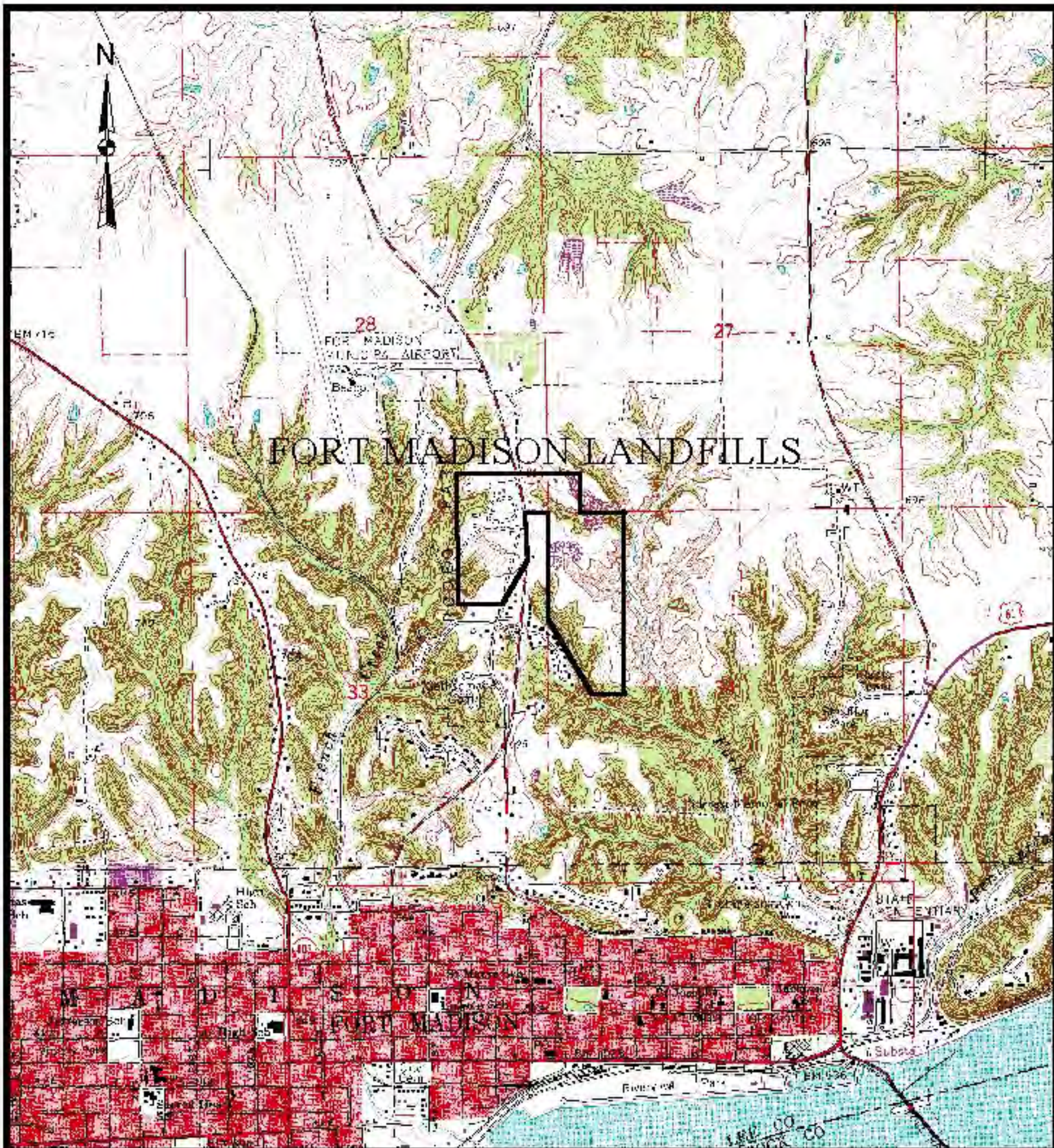
PDC Technical
Services, Inc.



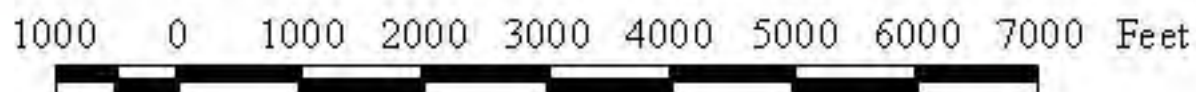
Peoria, Illinois

FIGURE 17
POTENTIOMETRIC CONTOURS
SHALLOW WELLS—NOVEMBER 21, 2006
CITY OF FORT MADISON
FORT MADISON, IOWA
PROJECT NO. 95-444

(Fort Madison Landfills)



Contour Interval 10 Feet



SHELLER GLOBE/ UNITED TECHNOLOGIES

(Grimes Property Keokuk, Iowa)

GENERAL DESCRIPTION

The site is located approximately 4 miles north of the city of Keokuk, Lee County, Iowa. The 33.5 acre site occupies the SW 1/4 of the SW 1/4 of Section 35, T66N, R5W. The site owned by David Grimes was entered on the Registry in September 1989. The EPA placed the site on the National Priorities List (NPL) in August 1990. From 1947 to 1970 the site was used by the Sheller-Globe Corporation for open burning of solvents and disposal of industrial waste. Wastes were deposited directly into an open ravine with no liner or diversion system present. The original owner was David Grimes, however the property is controlled exclusively by United Technologies Automotive Systems, Inc. through a long term access agreement.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- Wastes and contaminants known to be present include scrap rubber stripping, polyurethane foam, paint sludges which contained heavy metals, methyl ethyl ketone, benzene, toluene, bis(2-ethylhexyl)phthalate, methylene chloride, and other solvents. Although the exact amount of waste is unknown, it is estimated that the total waste volume may be 200,000 cubic yards. Estimates have suggested that up to 55,000 gallons of solvents have been placed in the landfill.

Arsenic, chromium, lead, nickel, and zinc have been detected in monitoring wells significantly above background levels. Toluene and bis(2-ethylhexyl)phthalate were also detected in groundwater at the site. Soil samples collected near a leaking drum exposed at the site indicate the potential for contamination. The samples contained 1.1 mg/kg methyl ethyl ketone, 1 mg/kg benzene, 0.9 mg/kg toluene, 620 mg/kg bis(2-ethylhexyl)phthalate, and 290 mg/kg di-n-octyl phthalate.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located in a rural area. It is believed nearly all local residents within 3 miles use groundwater from either the unconfined aquifer or the shallow bedrock aquifer as their sole water supply. There was an on-site well that was 300-feet deep that has been permanently abandoned.

Two intermittent streams border the site on the north and east and capture the surface runoff from the site. These streams converge near the site and flow into Lamalees Creek about one mile to the northwest. Lamalees Creek discharges into the Mississippi River approximately 2.5 miles downstream from the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency and will continue to oversee activities at the site. In October 1990 the EPA and Sheller-Globe signed an Administrative Order on Consent for a Remedial Investigation and Feasibility Study (RI/FS) at the site. The EPA completed its Baseline Risk Assessment in June 1994. The Record of Decision (ROD) was issued in September 1995. The remedy selected in the ROD includes the following:

- Deed restrictions limiting future use of the site to non-residential purposes.
- Demolition of the on-site house. The demolition debris and other waste was successively covered with a thin clay lift, fabric filter, three 8-inch lifts of compacted clay, and a 12-inch layer of compacted topsoil. After seeding, an erosion control mat was spread and staked over the soil cover.

- Removal of all drums exposed at the ground surface. A total of 167 drums were found and disposed at the house site.
- Placement of a 12-inch soil layer in areas with ash material exposed at the surface. Four separated areas were covered with soil and seeded. There were also several divots from partially buried drums that were filled with soil and seeded.
- Seeding areas of contamination that are not currently vegetated. Several bare areas received some topsoil and were seeded.

A Remedial Design/Remedial Action Work Plan was submitted to EPA for review in January 1999 and approved in April 1999. The remedial action was conducted in November 1999 under the terms of a 1998 Consent Decree. A Superfund five-year review was conducted on the site in 2005, which concluded that the remedy is performing as expected and remains protective.

A site inspection was conducted in May of 2010 by EPA for the 2nd Superfund five-year review. No problems were identified at that time. The 2nd Superfund Five-year review in 2010 concluded that the remedy continues to be protective of human health and the environment. The last site inspection in June of 2012 found site conditions to be satisfactory. The next site inspection is scheduled for spring of 2014. The department will continue to coordinate with the EPA to assure proper inspection and maintenance of the site. The next Five-year Site Review scheduled for 2015.

MARSH LINE INT 3000

CALVIN WESTERMEYER

MONTRÖSE TOWNSHIP
SECTION 25
TOWNSHIP 35 N. R. 14 W.
LEE COUNTY, IOWA

JACKSON TOWNSHIP
SECTION 2
TOWNSHIP 35 N. R. 14 W.
LEE COUNTY, IOWA

VERNON VARNER

FRANCIS BLHOT

HUBINGER COMPANY

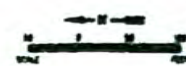
- LEGEND**
- CENTERLINE ROAD
 - R.O.S. LINE
 - RIGHT OF WAY
 - CENTERLINE BARRAGE DAM
 - FENCE LINE
 - SHEDDING WALL
 - SHEDDING WALL - SEE PLAN LOCATION
 - TOL. SURFACE
 - SURFACE TO SURFACE
 - 100' PVI
 - 200' PVI
 - 300' PVI
 - 400' PVI
 - 500' PVI
 - 600' PVI
 - 700' PVI
 - 800' PVI
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 - 9900' PVI
 - 10000' PVI

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 OF PROPOSED 100' ROAD
 100' ROAD TO P.P. 0.0' ROAD
 100' ROAD TO P.P. 0.0' ROAD

NO. 2. 0.0' ROAD TO P.P. 0.0' ROAD
 OF PROPOSED 100' ROAD
 100' ROAD TO P.P. 0.0' ROAD
 100' ROAD TO P.P. 0.0' ROAD

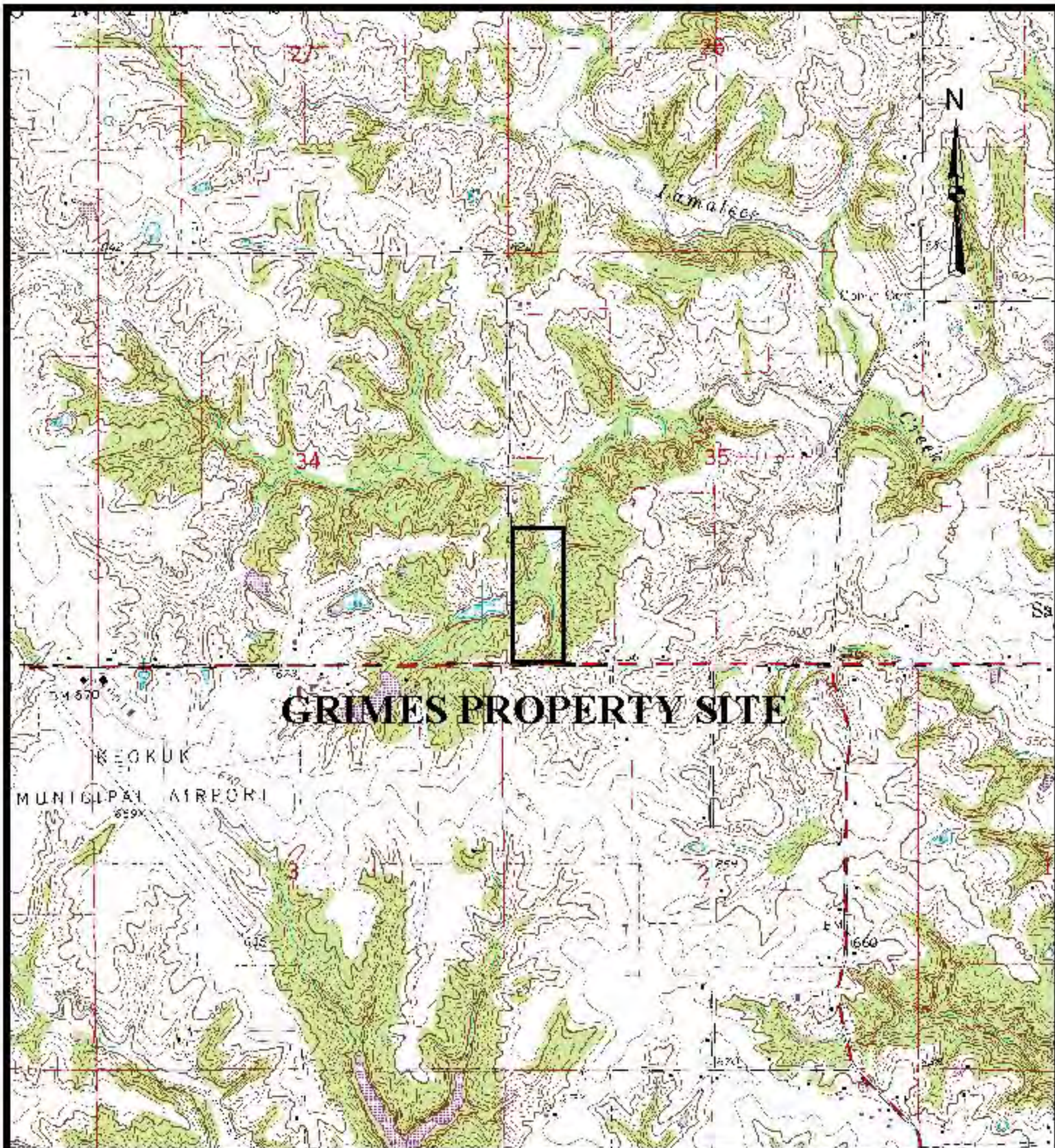
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 OF PROPOSED 100' ROAD
 100' ROAD TO P.P. 0.0' ROAD
 100' ROAD TO P.P. 0.0' ROAD

N.B. ELEVATIONS SHOWN ARE BASED ON
 MEAN SEA LEVEL UNLESS OTHERWISE NOTED
 AND ARE SUBJECT TO CHANGE AS THE
 SURVEY IS PROGRESSING



Engineering and Surveying
 Francis Blhot & Associates
 1000 North 1st Street
 Des Moines, Iowa 50319
 Phone: 515-281-1111
 Fax: 515-281-1112

(Grimes Property Site)



Contour Interval 10 Feet



HOPKINS, R.V., INC.
(SLUDGEMASTER, BARRIERS, INC.)
(Davenport, Iowa)

GENERAL DESCRIPTION

The site is located in Davenport, Iowa, in an industrial area next to the Mississippi River. The 6.7-acre site is in the SW 1/4, Section 34, T78N, R3E, Scott County, Iowa. The site is owned by R.V. Hopkins, Inc., and was entered on the Registry in 1984.

Industrial activities have been conducted in the vicinity of the site since the mid-1800s. A stone quarry occupied most of the site at the turn of the century. The former quarry, which was initially 40 to 60 feet deep, was used as a landfill from 1935 until 1975. Wastes disposed in the area may have included caustic sludge, acids, metals, waste oil, paint sludge, batteries, and paint pigments. The landfill has been covered with a dirt cap. In addition to the landfill, part of the site was used by a battery company, which cracked lead batteries at the site.

R.V. Hopkins (RVH) began operating as a drum reconditioner in 1951, across the street from its present location. In 1964, the facility moved to its present location. RVH reconditions approximately 10,000 metal drums per month at the site. During the reconditioning process, RVH generates several hazardous waste streams.

SITE CLASSIFICATION

This site is classified "d" Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- An estimated 400,000 cubic yards of lead contaminated soil are located in the old landfill.
- The hazardous waste generated by RVH includes burner ash, paint waste, baghouse dust, and caustic wash sludge. These wastes exhibit one or more hazardous characteristic, or are listed hazardous waste. Most commonly the wastes show the EP toxicity characteristic for lead (D007). Other classifications are for ignitability (D001), corrosivity (D002), and EP toxicity for chromium (D008). The listed wastes are spent non-halogenated solvents (F003 & F005).
- A total of 3,610 drums of hazardous removed and properly disposed off-site in 1994. As of 1996, a total of 337 drums of burner ash and 338 drums of bag house dust.
- In May 1997, 1,313 drums of various types of waste were on site.
- In addition to drum storage, there was also a waste pile of "Sludgemaster" treated paint waste. The waste pile was a hazardous waste by characteristic of EP toxicity for D007 (lead) and D008 (chromium). Approximately 385 cubic yards of waste were in the waste pile in 1985. The pile was removed and properly disposed off-site in 1994.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located in an industrial-commercial section of Davenport, Iowa. It is adjacent to the Mississippi River at river mile 481. Internal drainage to a ditch discharges directly to a side channel of the Mississippi River without treatment. The site is in the ten-year floodplain. The river reach is an important spawning area and commercial fishing area. It also is an access area for recreational uses. A water sample from the site's drainage ditch was taken in August 1981. The test results showed several metal concentrations above Class "C" Water Quality Standards as summarized in Table 1 on the following page.

Surface soils appear to be contaminated throughout the site with a variety of compounds. The most common contaminant is lead, but also included are other heavy metals, PCBs, pesticides, volatile organic compounds, and

semi-volatile compounds. The more contaminated surface soils have lead levels at about 10,000 ppm. Lead contamination is as high as 60,000 ppm, and some soils samples have shown EP toxicity for lead (D007). In the area of the former landfill, sub-surface soils have shown lead contamination down to twenty feet.

The soils at the site, outside the boundary of the old landfill, are classified as sands and gravel. As in many floodplains, this area has an extensive alluvial aquifer, which serves as a source of water for private wells. Uses include drinking, bottling, and processing. The static water level of this alluvial aquifer is estimated as less than 15 feet below the surface. The Silurian/Devonian bedrock aquifer is immediately below and hydraulically connected with the alluvial aquifer. Normal groundwater flow is expected to go from the bedrock to the alluvial aquifer. However, local drawdown could reverse this situation, allowing contamination of the bedrock aquifer.

Shallow groundwater samples were collected in the area of R.V. Hopkins in May 1985. The levels of chromium and mercury were 7 and 1.9 times the background levels. Lead was as much as 2.5 times above the Primary Drinking Water Standard. The five groundwater monitoring wells were sampled again in December 1985. At all five wells, total metals exceeded at least one of the Drinking Water Standards for cadmium, chromium, or lead. For filtered samples, the Drinking Water Standard was exceeded only for cadmium.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA (RCRA) is the lead agency and will continue the management and remediation of this site under the RCRA program. The EPA completed a RCRA Facility Assessment (RFA) at the site on June 8-11, 1993. The RFA provided a detailed review of the site's current and past solid waste management units. The assessment documented the continued violation of the RCRA regulations and the widespread contamination at the site.

On September 30, 1997, the EPA issued a Unilateral Administrative Order to the facility requiring the removal and proper off-site disposal of the waste piles and drums of hazardous waste and to comply with the RCRA hazardous waste regulatory requirements.

EPA has approved a closure plan for disposal areas and waste piles, drum storage areas in compliance with RCRA hazardous waste regulatory requirements. The plan, which is being implemented over the next four year calls for covering landfill area with additional soil and vegetation, and paving other areas. With EPA approval of the closure plan the site is being reclassified as "d" Site Properly Closed Requires Continued Management.

2004: The facility is continuing to implement the approved closure plan that includes concrete paving as an institutional control. In 2004 concrete paving was reported as being installed over 100,000 square feet. The facility continues to provide a hazardous waste compliance audit once each year.

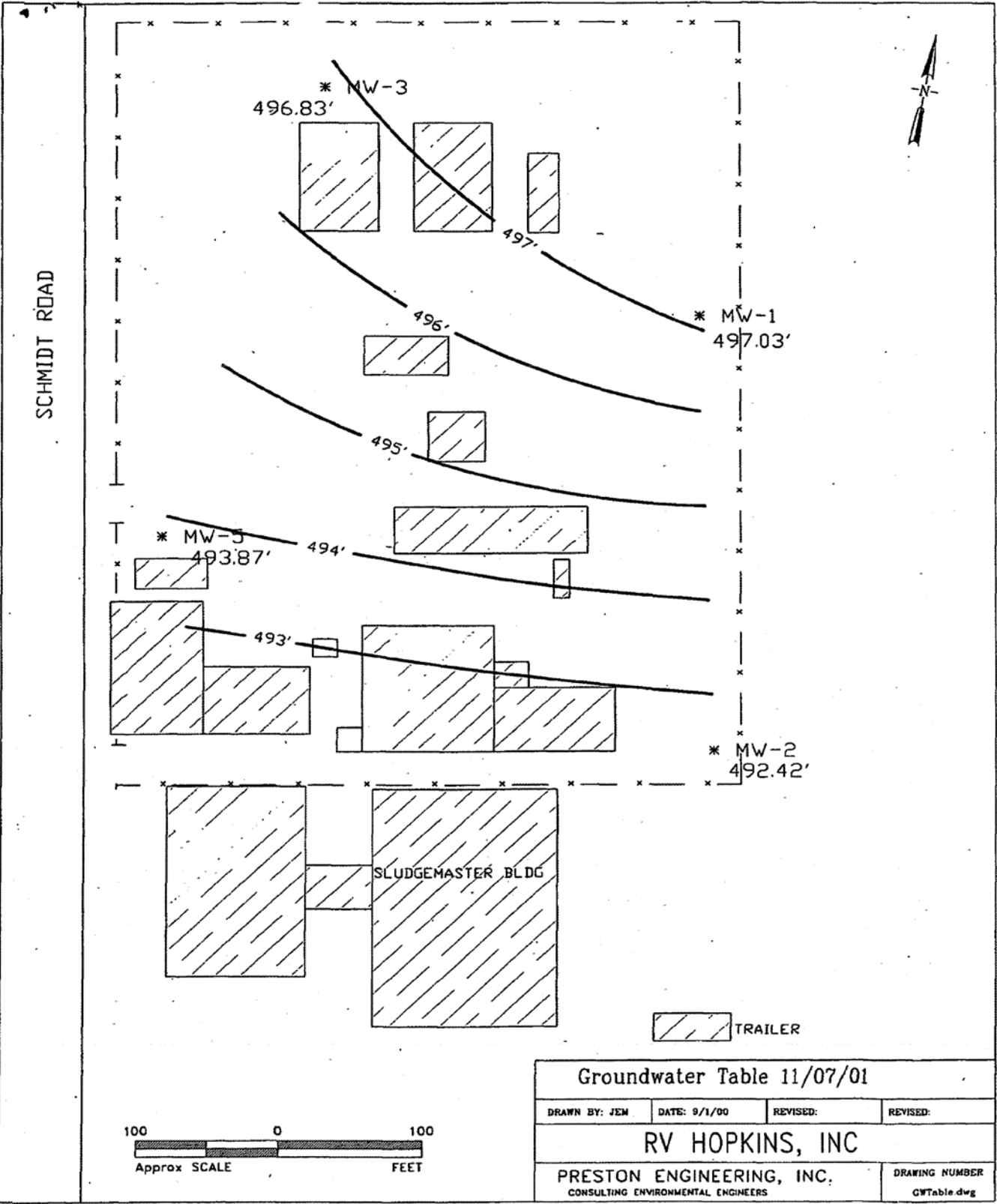
2007: EPA denies release of credit and disputing RP's projected post-closure cost estimate. The department will coordinate with the EPA to assure continued proper management of site.

2010 No database entries since 9/24/2007 – EPA refusal to release letter of credit

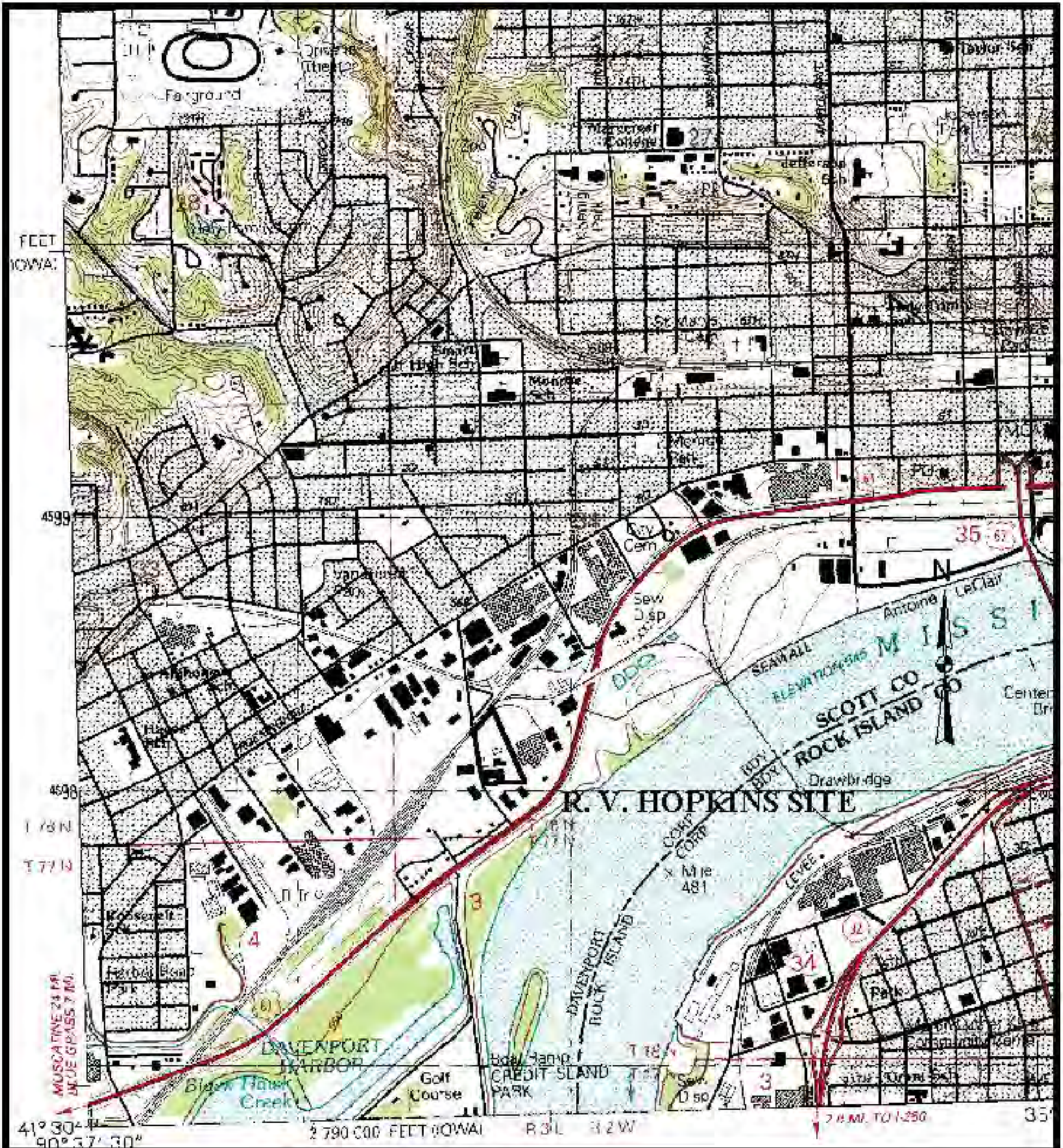
2012 EPA (in 6/14/2012 letter) is maintaining their requirement for letter of credit in lieu of established post-closure costs

2013 EPA (in 6/14/2012 letter) notified RP that proposed closure plan is incomplete. Required waste removal, building decontamination, and soil capping

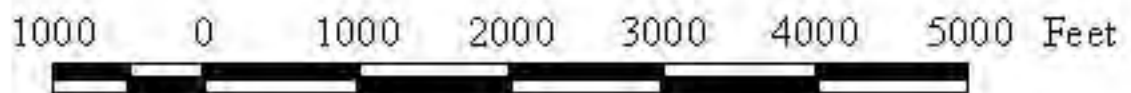
2014 EPA Nothing in 2014



| | | | |
|---|--------------|----------|-------------------------------|
| Groundwater Table 11/07/01 | | | |
| DRAWN BY: JEM | DATE: 9/1/00 | REVISED: | REVISED: |
| RV HOPKINS, INC | | | |
| PRESTON ENGINEERING, INC. CONSULTING ENVIRONMENTAL ENGINEERS | | | DRAWING NUMBER GWTable.dwg |



Contour Interval 10 Feet



IOWA FALLS COAL GAS SITE

(Iowa Falls, Iowa)

GENERAL DESCRIPTION

The Iowa Falls Coal Gas Site occupies 0.35 acre in the SE 1/4 of the NW 1/4 of Section 18, T89N, R20W, Hardin County, Iowa Falls, Iowa. The property is owned by IES Utilities (formerly Iowa Electric Light and Power Company). The site was entered on the Registry in May 1990.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. Hazardous substances have been disposed of at the site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZRADOUS WASTE

A coal gasification plant was operated at the site from 1909 to 1949. During its operation, coal tar, iron oxide waste, and associated coal gasification wastes were generated at the plant. Unknown quantities of these wastes have been disposed of at the site. During December 1986 constituents of coal tar waste were found in a storm sewer and in an unnamed creek south of the site. An analysis of the waste sludge identified twelve polynuclear aromatic hydrocarbons (PAHs) for a combined total concentration of PAHs of 106,690 ug/l. A groundwater investigation was conducted during October 1988. Analytical results of on-site monitoring wells showed a total PAH concentration of 3,061 ug/l, benzene at 1,200 ug/l, xylenes at 1,300 ug/l, ethylbenzene at 1,600 ug/l, arsenic at 28 ug/l, and total cyanide at 490 ug/l.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located within the city limits of Iowa Falls, Iowa. The city obtains its water from six municipal wells located northwest of the site. The nearest city well is located approximately 3,000 feet from the site.

Surface drainage from the site is from the north to the south, with discharge into a small unnamed creek just south of the site. This unnamed creek begins at a storm sewer that crosses beneath the site. The creek flows south approximately 1,000 feet and discharges into the Iowa River. The Iowa River flows west to east through Iowa Falls. Local fishermen have reported that fish taken in the Iowa River below the site's storm sewer outfall have a creosote taste and odor.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency at the site. A Feasibility Study (FS) was submitted to the department that outlined the completed and planned activities for the site.

Coal tar waste has been excavated and removed from the tar separator, septic tank, and storm sewer. Contaminated sediment has been removed from the creek bed on the south side of the site. The remedial action plan for contaminated soil removal and groundwater treatment was submitted to the department in 1994.

Other activities included the excavation of shallow contaminated soil and the placement of a cap over the site to reduce surface water infiltration. Off-site groundwater monitoring and periodic surface water sampling are being conducted. There will also be periodic inspections and repairs, if required, to the storm sewer.

2007: An evaluation of the practicability of recovering dense non-aqueous phase liquids from the subsurface is currently being completed. After completion of this evaluation and any subsequent actions, it is expected that ground water monitoring in support of site closure will begin. The department will continue to work closely with the owner to ensure proper monitoring and cleanup of the site.

2010, the following site assessment activities were completed in association with the Iowa Falls MGP site:

- Monitoring wells were installed based on the 2009 ground water probing results and sampled.
- A summary report of the 2009 soil and ground water probing and 2010 ground water sampling fieldwork was prepared.
- A feasibility study to address the storm sewer was prepared.

2011 the following site activities were completed in association with the Iowa Falls MGP site.

- DNAPL monitoring was conducted semi-annually.
- The environmental covenant for the railroad property was drafted.

2012 the following site activities were completed

- Measurement and recovery of free product DNAPL, including additional monitoring wells
- Vapor intrusion assessment and site investigation was completed
- Remedial Investigation Feasibility (RI/FS) addendum report completed

2013:

- Storm sewer inspection and sampling and remedial plan prepared

2014:

- Implementation of remedial action for storm sewer and an Environmental Covenant will be implemented on MGP site and neighboring railroad property.



NOTE
1. CONCENTRATIONS ARE IN mg/kg.

LEGEND

- SP-2 SOIL PROBE
- EXISTING STRUCTURE
- - - FORMER STRUCTURE
- x FENCE
- o RAILING
- - - ALLIANT ENERGY PROPERTY BOUNDARY

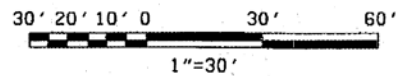
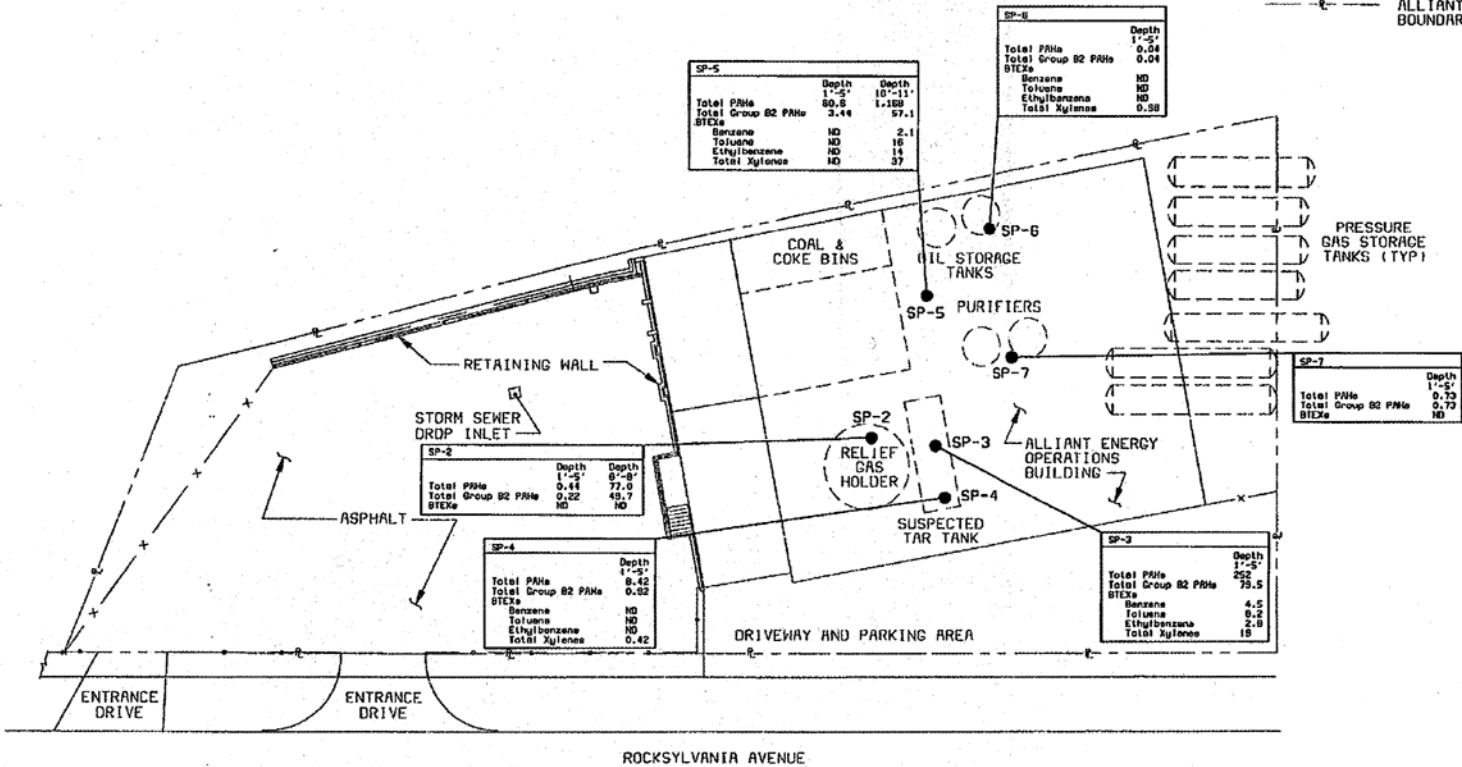
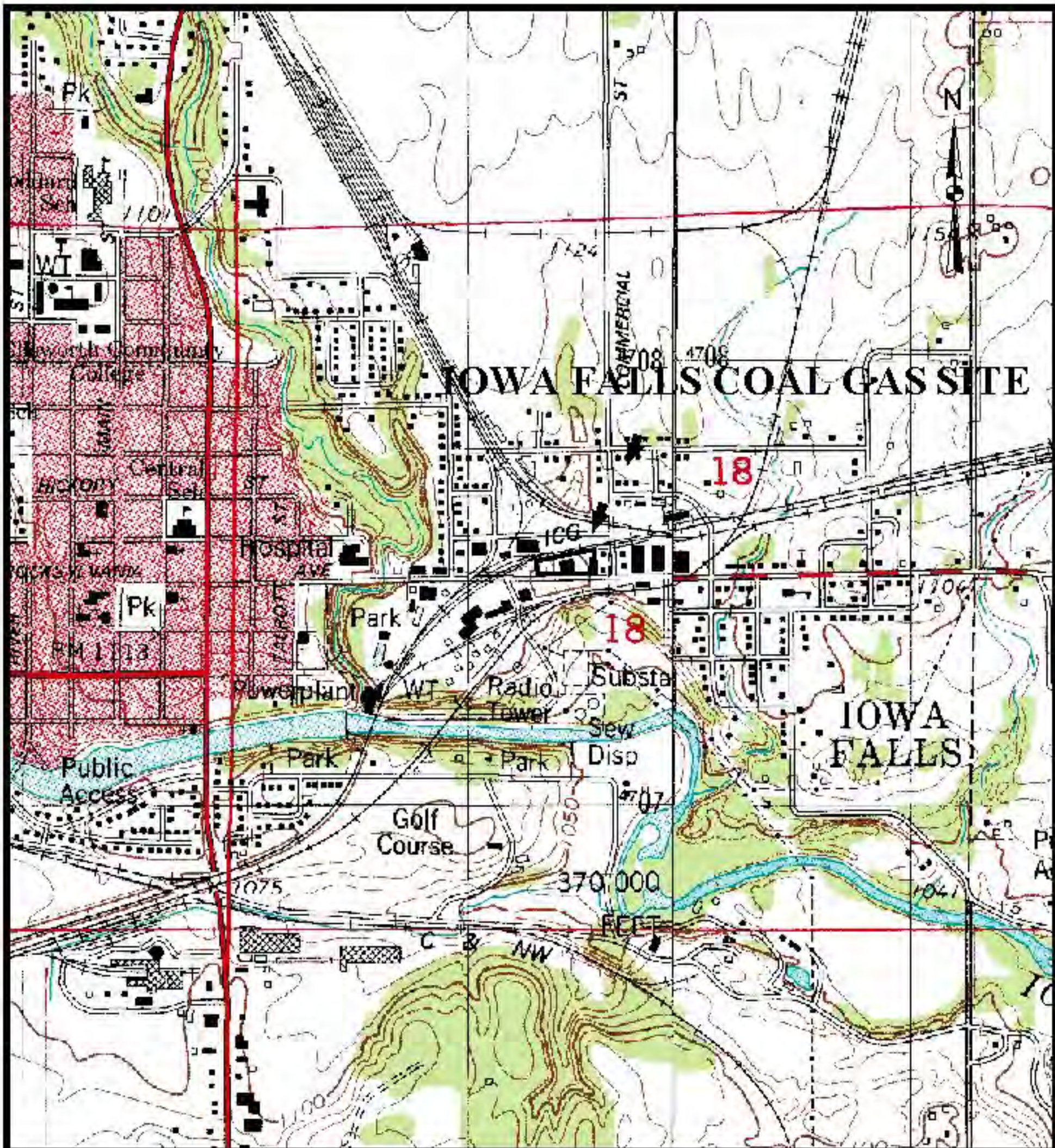
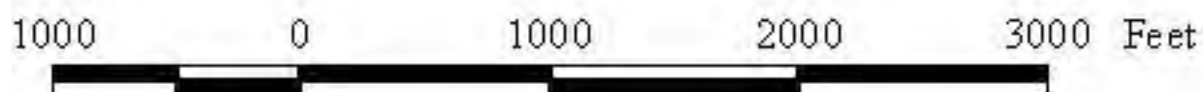


FIGURE 4-1
BTEX AND PAH
CONCENTRATIONS IN SOIL
IOWA FALLS MGP SITE
ADDENDUM NO. 1 TO RI REPORT
40492-1000-GEN/MP-A0000231

(Iowa Falls Coal Gas Site)



Contour Interval 10 Feet



JOHN DEERE OTTUMWA WORKS

(Ottumwa, Iowa)

GENERAL DESCRIPTION

The site is located on this property next to the Des Moines River. The 25-acre site lies in the corners of four sections in Wapello County, Iowa. This includes parts of the SE 1/4, Section 25 and the NE 1/4, Section 36, T72N, R14W; and parts of the SW 1/4, Section 30 and the NW 1/4, Section 30, T72N, R13W; all in Wapello County, Iowa. The site was entered on the Registry in August 1989. The EPA placed the site on the National Priorities List (NPL) in August 1990 and it was removed in 2000. September 1989 the EPA and Deere signed an Administrative Order on Consent for a Remedial Investigation/Feasibility Study (RI/FS). The RI/FS report was submitted to the EPA in July 1991. A Record of Decision (ROD) was signed in September 1991. In 1992 Deere signed a Consent Order with EPA to implement the selected remedy from the ROD.

SITE CLASSIFICATION

In 2001 the site was reclassified as “d” Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

This has been the site of a farm machinery manufacturing facility since 1900 and by Deere & Company since 1911. The site includes three unlined landfills, which were used for waste disposal from 1938 to 1977. Hazardous material disposal included paint sludge, solvents, heat-treating cyanides, and possibly the oils used in foundry sands. It is estimated approximately 850 tons of paint wastes were placed in the landfill area over the thirty-year period. These paint wastes probably contained pigment residues with zinc, lead, arsenic, mercury and chromium.

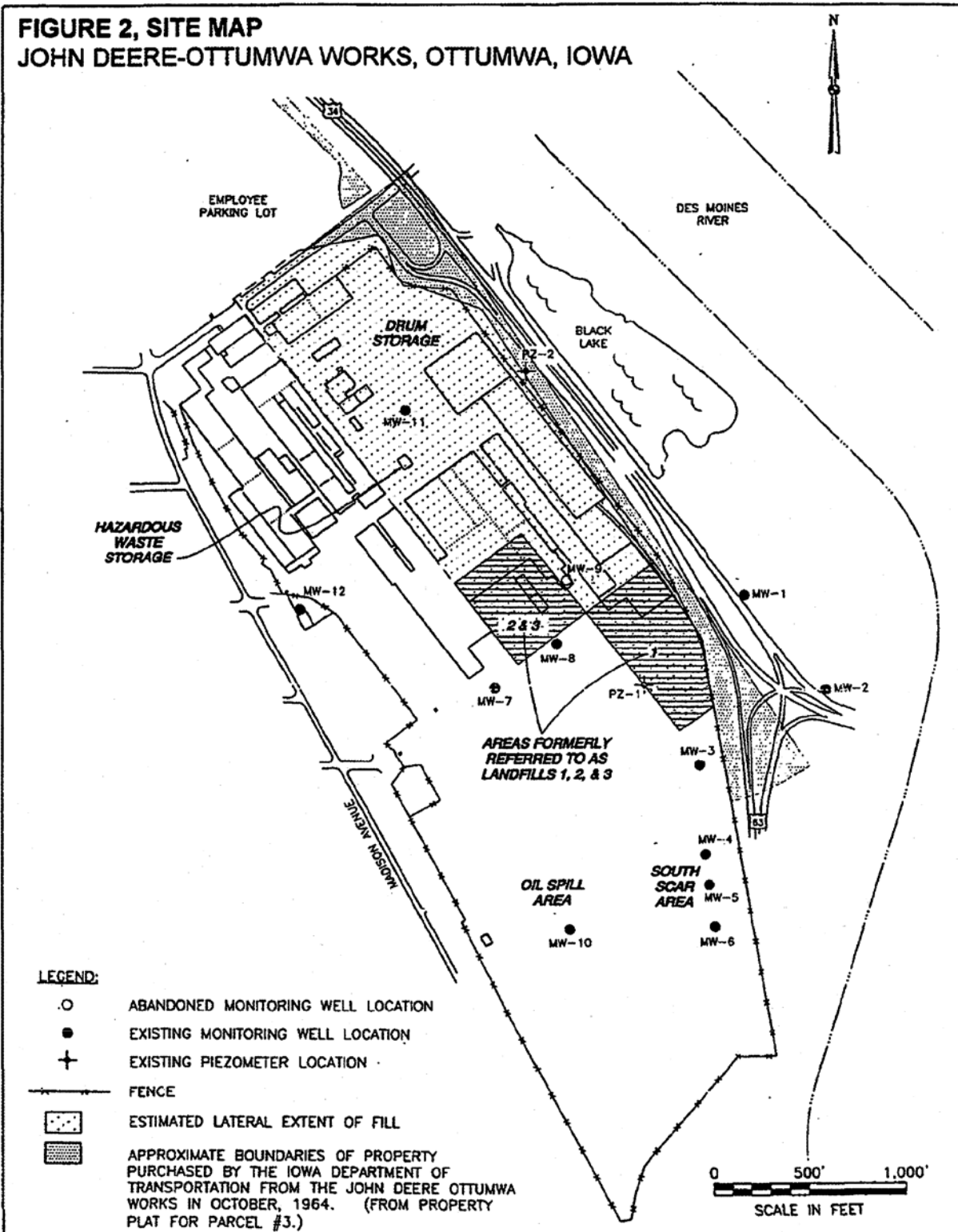
SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

Low levels of heavy metals from site disposal activities were detected in soil, surface water and sediment at the site. Potential risks may have existed for individuals who accidentally ingested or came in direct contact with contaminated soil and surface water.

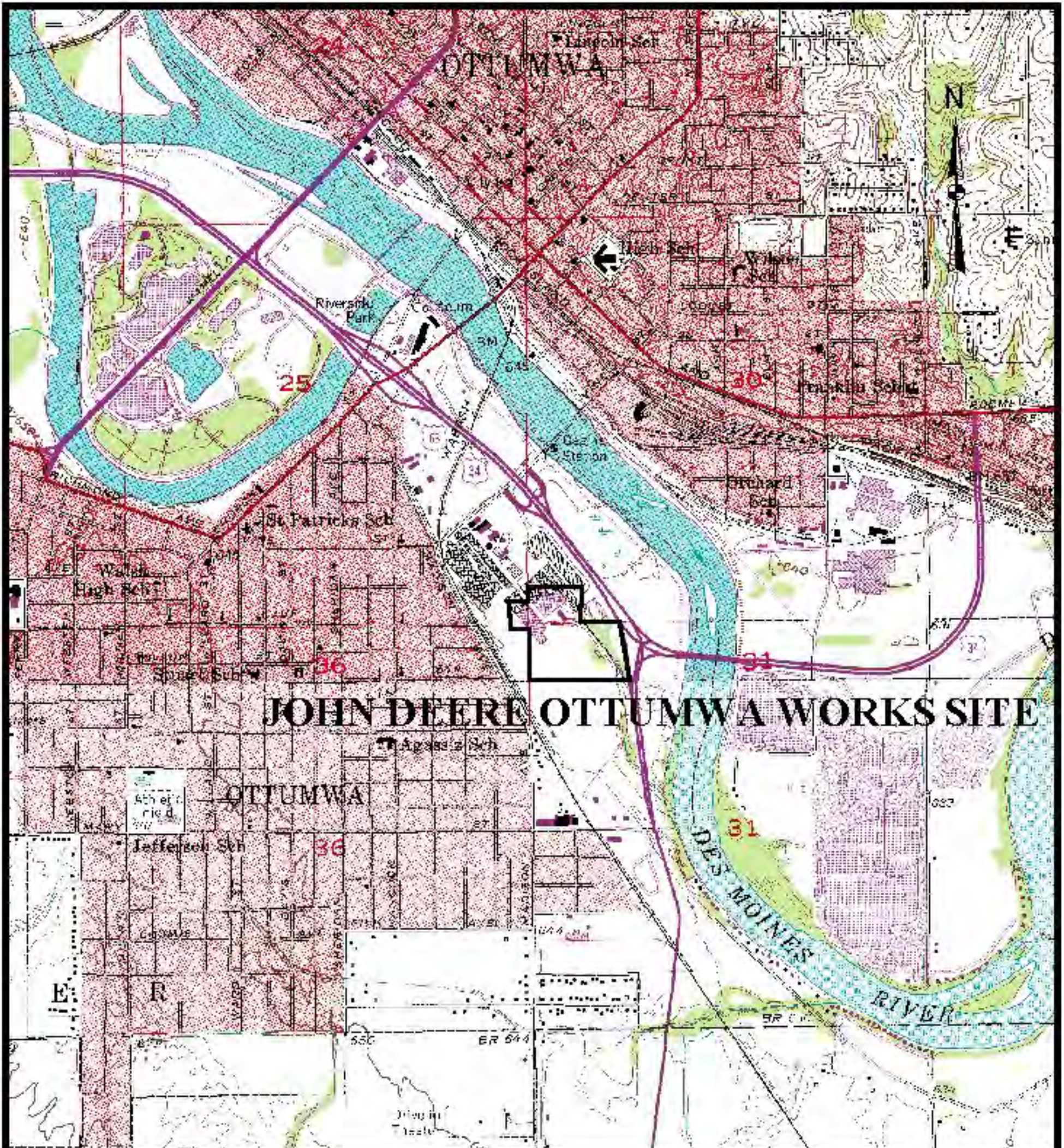
SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTION

The EPA is the lead agency for the site. The Record of Decision (ROD) required continued groundwater monitoring, site perimeter fence maintenance, and deed restrictions have been put in place. Superfund five-year reviews were conducted in 1998, 2003, 2008, and 2013. The 2013 five-year review found no areas of non-compliance. However, a protectiveness statement was withheld pending sampling of Black Lake for potential ecological impacts. The only ongoing actions are maintaining the site perimeter fence, deed restrictions, and groundwater monitoring. An environmental covenant was recommended as a preferred form of institutional control in lieu of deed restrictions. Groundwater sampling will be conducted prior to the 2018 Superfund five-year review.

The IDNR will continue to coordinate with the EPA to insure proper management of the site.



(John Deere Ottumwa Works)



JOHN DEERE OTTUMWA WORKS SITE



Contour Interval 10 Feet



JOHN DEERE SANITARY LANDFILL

(Dubuque, Iowa)

GENERAL DESCRIPTION

The Deere & Company landfill site is located about two miles north of the city of Dubuque. The 90-acre site, which includes a permitted sanitary landfill, lies in the northeast part of the SW 1/4 of Section 27, T90N, R2E, Dubuque County, Iowa. The site was entered on the Registry in June 1991.

SITE CLASSIFICATION

In 2013 this site is re-classified "d" in accordance with 455B.427.3. The site does not pose a significant threat to the environment but will require continued monitoring.

TYPE AND QUANTITY OF HAZARDOUS WASTE

John Deere has operated a permitted landfill at the site since 1975. The landfill is used almost exclusively for wastes from the John Deere Dubuque Works. The landfill has a synthetic liner, a leachate collection system, and a liner failure detection system. Control of run-off is provided by bermed waterways on both sides of the landfill and by a down gradient siltation basin. The site was used for the disposal of 4,323 tons of hazardous wastewater treatment sludge from 1980 to 1986. The sludge was a hazardous waste because of its leachable concentrations of lead, cadmium, selenium, arsenic, and chromium. Chromium electroplating waste stream was the primary source of these toxic metals.

Prior to the effective date for the new hazardous waste regulations (RCRA), Deere disposed of 1,101 tons of sludge in accordance with a Special Waste Authorization issued by the department. After November 1980 Deere was prohibited from disposing of this sludge which was designated a F006 hazardous waste.

In accordance with the RCRA regulations, Deere filed a petition with the EPA to delist the treatment sludge. The EPA granted a temporary delisting of the treatment sludge in 1981. As a result, Deere was again able to request authorization for disposal of the sludge at its landfill. From 1981 to 1986 Deere disposed of another 3,222 tons of the treatment sludge at the landfill. The department issued a Special Waste Authorization for this disposal.

During further review of the delisting petition, the EPA used an improved test for leachable heavy metals. This test showed levels of lead, cadmium, selenium, arsenic, and chromium that would require denial of the delisting petition. As a result of this review, Deere withdrew its delisting petition and the IDNR required Deere to cease disposal of the treatment sludge at the landfill.

From July 1986 through 1987 the sludge was sent to a hazardous waste facility in Illinois. Prior to 1988 Deere constructed a separate facility for the chromium electroplating waste. Without the electroplating waste stream, the industrial wastewater treatment sludge is not a hazardous waste. Therefore, starting in 1988, the department renewed the authorization for disposal of the industrial wastewater treatment sludge at the landfill.

The majority of waste disposed of at the landfill is powerhouse ash. Other non-hazardous industrial wastes include incinerator ash, floor sweepings, broken yard parts, coolant filter media, domestic wastewater treatment sludge, slag, and waste paint sludge, filters, and liners. From 1975 through June 1991 approximately 440,000 tons of non-hazardous waste was disposed of at the landfill. After disposal of foundry sand stopped in 1987, the landfill disposal rate dropped from about 30,000 tons to 17,000 tons per year.

SUMMARY OF HEALTH AND ENVIRONMENTAL IMPACTS

The northern part of Dubuque, several small communities, and numerous other dwellings are located within three miles of the site. Local communities use the groundwater. However, the landfill liner and leachate collection systems appear to have prevented any significant migration of contaminants to the groundwater.

Surface drainage from the site is to the southwest towards Bloody Run Creek. This small creek intercepts the Little Maquoketa River about 1½ miles to the south and the river flows into the impoundment of the Mississippi River about two miles to the east. However, all surface water that comes in contact with the waste is directed to the leachate collection system through the use of perimeter berms. Except during landfill start-up, the containment system appears to have been constructed and operated properly.

SUMMARY OF ASSESSMENT, MONITORING AND REMEDIAL ACTION

The IDNR Solid Waste Section is the lead agency for this site

- The site has three ground water monitoring wells that are sampled according to a June 1990 Groundwater Sampling Plan.
- Active landfill for disposal of Powerhouse Coal Ash, Paint Booth Sludge, Flood Sheet Sludge, Paint Booth Cleanout, Industrial Wastewater Treatment Sludge, Flame Cut Slag, Shot Blast Dust, and Laser Dust. Regular reporting as required for Industrial landfills. Permit renewed August 14, 2009 and will expire August 14, 2012.

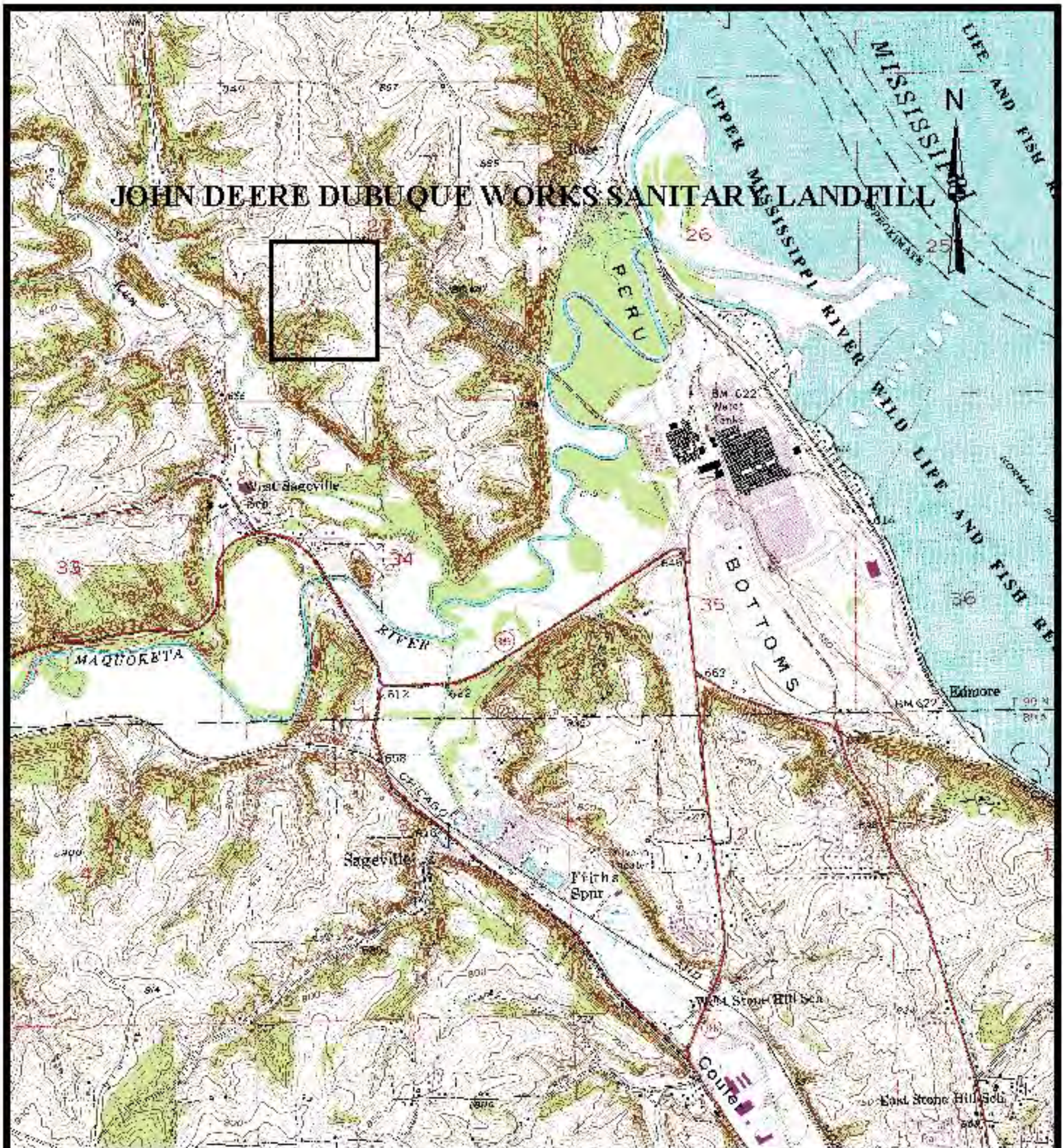
In 2012 The Landfill was granted a closure permit by the IDNR Solid Waste Section that requires continued monitoring.

As of 2013, the site has been re-classified to “d” closed requires continued management in the form of monitoring.

A Superfund five-year review was released in July 2013. The five-year review withheld a protectiveness determination pending evaluation of an ecological exposure pathway. Vapor intrusion was found not to be a threat at the site. An annual report will include monthly water-level monitoring data from paired monitoring wells to insure an inward gradient, i.e., groundwater moving towards site production wells and not off-site. Groundwater monitoring will be done at five-year intervals concurrent with five-year reviews.

The EPA serves as the lead oversight agency with the DNR in the support role.

(John Deere Dubuque Works Sanitary Landfill)



IOWA

Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet



1-1

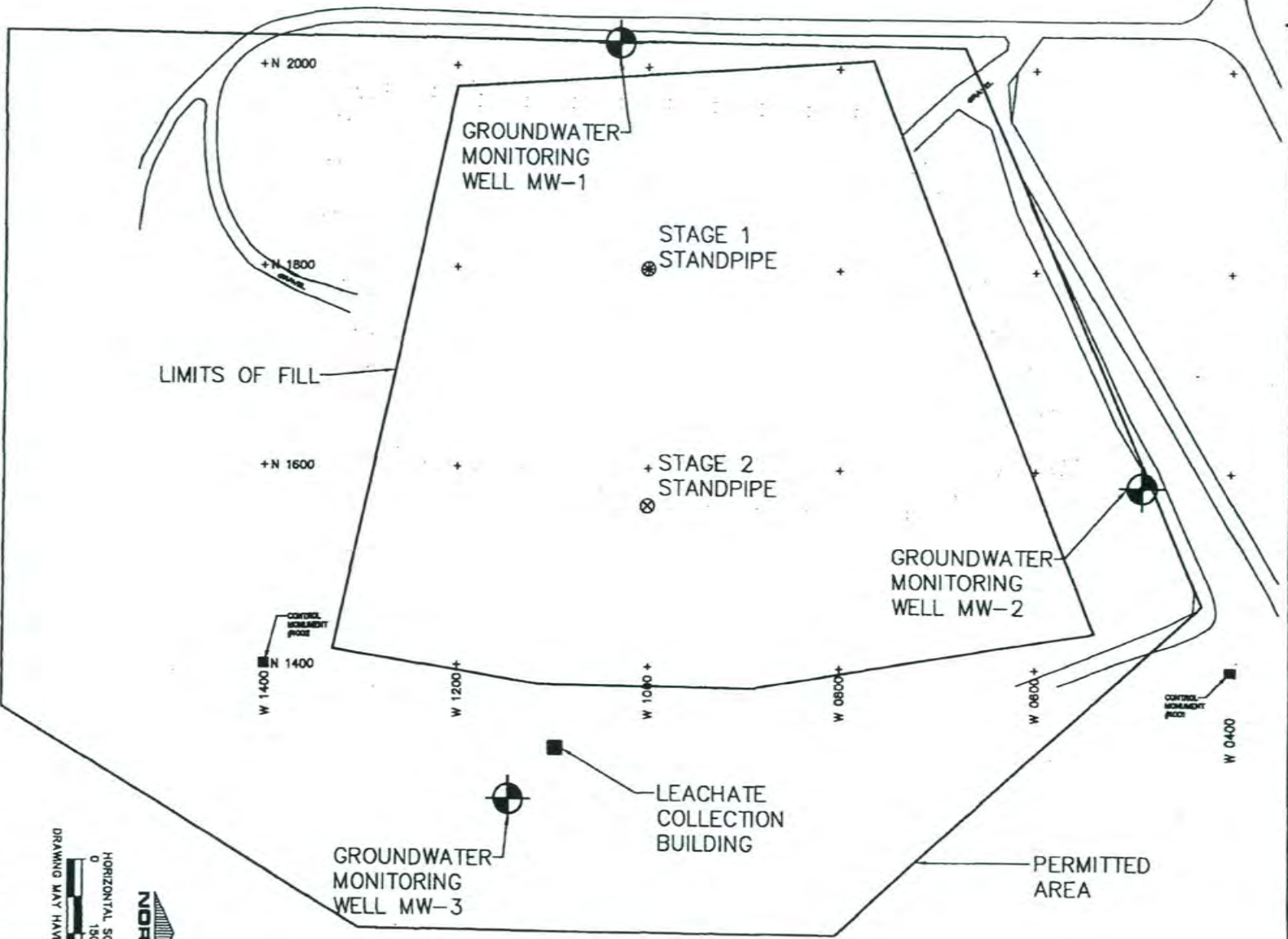


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Project Description:
JOHN DEERE DUBUQUE WORKS
 LANDFILL
 GROUND WATER MONITORING
 WELL LOCATION MAP

| Rev | Issued For | Issued Date | Rev By |
|-----|------------|-------------|--------|
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BLOODY RUN CREEK



JOHN DEERE WATERLOO

(Waterloo, Iowa)

GENERAL DESCRIPTION

The 290-acre site is located in Sections 22 and 23, T89N, R13W, Black Hawk County, Iowa, near the center of Waterloo, Iowa. Black Hawk Creek bisects the site. The site is owned by Deere & Company and was entered on the Registry in November 1990.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. Hazardous substances have been disposed of at the site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Manufacturing and disposal operations have been conducted on site since 1909. On-site waste disposal has occurred through landfilling, land treatment processes, drum burial. The amount of waste disposal is unknown. The types of hazardous wastes include paint sludge, electroplating wastes, baghouse dust, caustic paint stripper, solvents, cyanide and chromium plating sludge wastes, and petroleum products.

In July 1991, the EPA issued the facility a RCRA hazardous waste operating permit for the treatment and storage of hazardous wastes on the east side of the facility. As a condition of the permit, John Deere was required to conduct a RCRA Facility Investigation (RFI) of the potential impact of past and present solid waste management areas.

Groundwater monitoring has shown contamination in areas on both sides of Black Hawk Creek. The contaminants included several chlorinated solvents, petroleum hydrocarbon, PCBs, and dioxin. The PCBs (660 ug/L) and dioxin (0.036 ug/L) were found in one well on the east side of Black Hawk Creek near the Cedar River. This well also had floating free product, as motor oil that contained 670 ppm of PCBs. The highest concentrations of chlorinated solvents were found on the west side of the site. This included chloroethane (900 ug/L), 1,1-dichloroethane (840 ug/L), 1,2-dichloroethylene (420 ug/L), 1,1,1-trichloroethane (190 ug/L), and lesser amounts of trichloroethylene and tetrachloroethylene.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern for this site is potential contamination of surface water and public drinking water.**

The John Deere Waterloo site is located near the center of Waterloo, Iowa. The site is bordered on the north by the Cedar River and is bisected by Black Hawk Creek. Both of these surface water bodies are used for fishing and recreational purposes. There are two city parks located just north and south of the site. The city of Waterloo has five municipal well fields located within two miles of the site. The Cedar Bend wells are located in the alluvial aquifer. The other four well fields are completed in bedrock.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for this site, which is being regulated under the federal RCRA program. As a condition of the hazardous waste operating permit issued in 1991, the facility was required to conduct a RCRA Facility Assessment (RFA). The purpose of the RFA was to identify past disposal activities that may require corrective action. As a result of the RFA a RCRA Facility Investigation (RFI) was initiated in June 1992 and completed in June 1994. A supplemental Corrective Measures Study (CMS) was completed in 1998 and the environmental measures identified in the study are being implemented. A Supplemental RCRA Facility Investigation (RFI) report was submitted in 2001.

2003: The U.S. Environmental Protection Agency (USEPA) is currently finalizing its review of all on site environmental data collected by the facility to date, relative to the RCRA solid waste management units (SWMUs) that have been identified at the facility. The purpose of this review is to determine whether the environmental assessments performed at the facility have characterized the nature and extent of contamination in soil and groundwater sufficiently to provide adequate information for the assessment of both human and ecological risk, and to determine the need for corrective action.

2004: The EPA completed review of all available on-site environmental data and then submitted written comments summarizing this review to John Deere representatives. Currently, John Deere is drafting a comprehensive response summary to EPA's comments. Once this response summary has been completed and submitted to the EPA, the EPA and John Deere will begin working to develop a work plan to guide data collection to complete the environmental assessment at the facility. A corrective action remedy for the facility will be determined from this assessment.

2005: John Deere - Waterloo Works (Deere) responded to the comprehensive review of existing environmental data performed by the EPA by submitting a written response summary to the EPA. While the EPA was in the process of reviewing these responses, Deere elected to proceed with redevelopment of portions of the site for Deere's own use, and also with an environmental assessment for a portion of the site for which Deere plans to transfer ownership. The EPA has been working with Deere to ensure that adequate environmental assessment has been achieved in these areas of the site slated for reuse and redevelopment. Once this has been completed, Deere and the EPA will develop a work plan to fully complete environmental contamination assessment across the remainder of the site property.

2007: Approximately 40 acres of the John Deere Waterloo site was transferred to Cedar Valley Tech Works, Inc. for redevelopment as a biotechnology education and research center.

2008: A joint EPA site visit conducted in October. An easement request was approved by IDNR and EPA for construction of service roads that did not affect the solid waste management units.

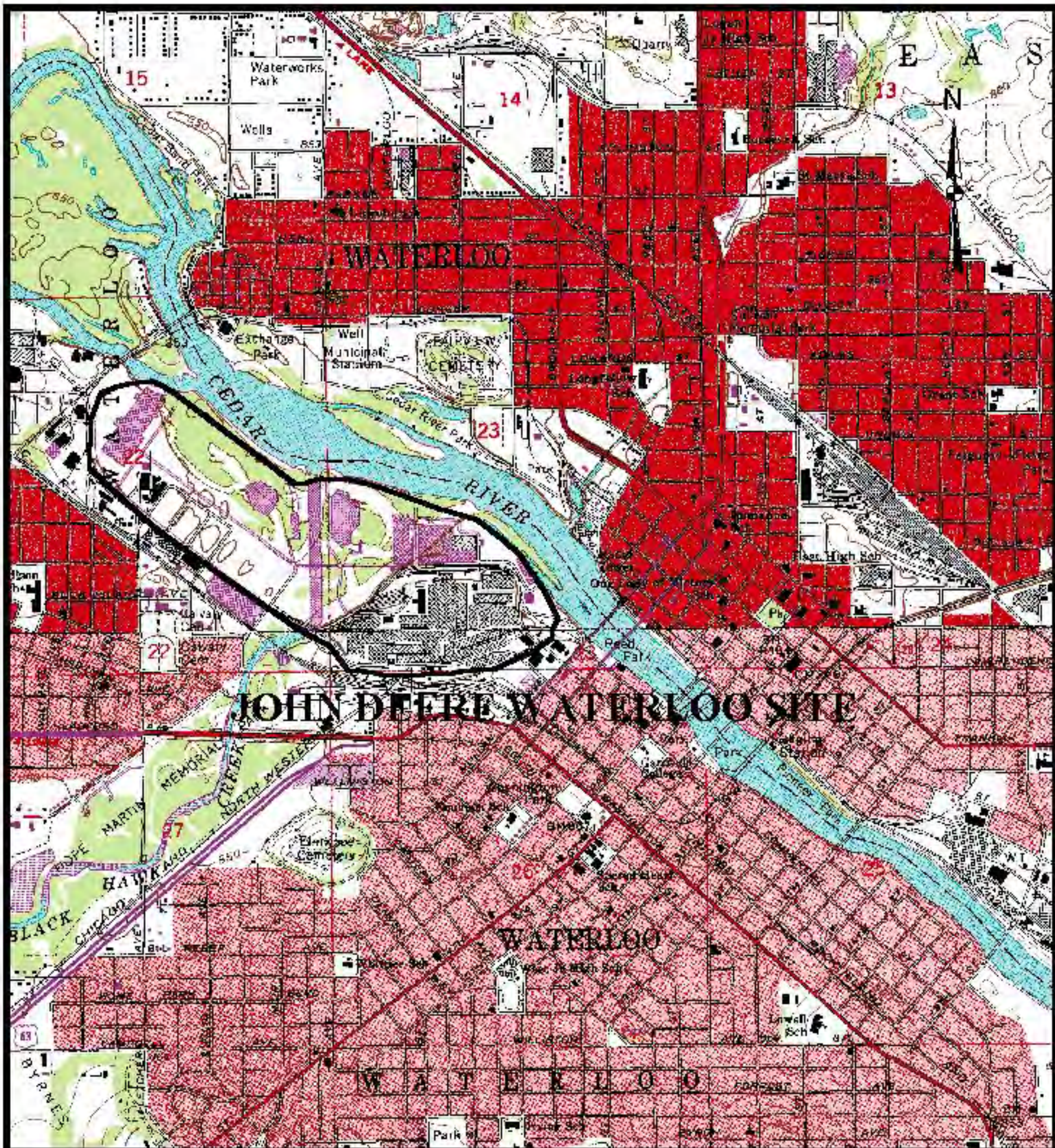
2010: John Deere and the EPA continue to work toward attaining a final remedy decision for the entire John Deere Waterloo Works site. Environmental fieldwork remaining to be done in support of a remedy decision includes John Deere will soon be performing comprehensive, facility-wide groundwater sampling and analysis in order to provide current information regarding groundwater quality.

2012: EPA/RCRA program has reviewed and commented on the Addendum to Corrective Measures Work Plan for SWMU 19A and AOC#1 for property being transferred to Tech-Works

2013: John Deere, performed extensive soil sampling in an effort to complete site-wide soil assessment to support corrective action decisions. Representatives from John Deere and the U.S. Environmental Protection Agency held meeting 2013 to discuss remaining site issues, and to develop a possible final remedy in 2014. During 2014, John Deere will be developing proposals to address remaining data gaps, perform a human health baseline risk assessment, and complete a corrective measures study in order to support a final remedy decision.

2014: Data Gaps Investigation Report for Soil and Buried Waste Materials approved by EPA. Groundwater Contamination and Hydraulic Containment Assessment Work Plan" and "Quality Assurance Project Plan" were submitted in August 15, 2014 and approved with modifications by EPA.

(John Deere Waterloo)



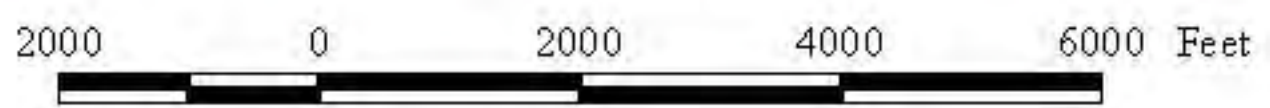
JOHN DEERE WATERLOO SITE

WATERLOO

WATERLOO



Contour Interval 10 Feet



LaBOUNTY SITE

(Charles City, Iowa)

GENERAL DESCRIPTION

The site covers 12-acres within the corporate limits of Charles City, Iowa. It is located on the Cedar River and is generally described as the NE 1/4 of the SW 1/4 of Section 7, T95N, R15W, Floyd County, Iowa. The site was entered on the Registry in 1984. The site was put on the National Priorities List in 1983 and removed in 1993.

SITE CLASSIFICATION

In 1996 the site was re-classified to "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Between 1953 and 1977 Salsbury Laboratories disposed of about 240,000 cubic yards of waste at the site. The waste is estimated to have included 3,000 tons of arsenic, 140 tons of nitrobenzene, 35 tons of 1,1,2-trichloroethane, and 13.5 tons of phenols. Twenty-three hazardous substances have been identified from groundwater monitoring.

SUMMARY OF HEALTH AND ENVIRONMENTAL CONCERNS

Leaching of chemicals from the site has caused contamination of the Upper Cedar Valley Aquifer in the immediate area of the site. The contaminated part of the aquifer is not used as a source of drinking water. After flowing through the site, the groundwater discharges to the Cedar River. The diversion wall has reduced the amount of groundwater flow through the site in the Upper Cedar Valley Aquifer.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is responsible for oversight. Initial investigations by the EPA and the department showed that the site was releasing arsenic, 1,1,2-trichloroethane, and other contaminants to the Cedar River. As a result of these investigations, the EPA required Salsbury to complete a two-phase remedial action and monitoring program.

Phase I of the remedial action plan (completed in 1979) initiated monitoring the Cedar River and ground water. Salsbury implemented Phase II in 1980, which included capping the site with clay and diverting surface water around the site.

A 1982 National Enforcement Investigation Center report determined additional remedial measures were necessary. The report concluded capping had not effectively reduced the leaching of contaminants during groundwater flow through the site. In 1985 a feasibility study determined a groundwater control structure would be the most appropriate remedial measure. This "wall" was designed to reduce the amount of groundwater flow through the site.

A 1985 EPA consent order required the construction of this wall, and water withdrawal from the upgradient side of the wall. The wall was completed in January 1986. Three Cedar Valley Aquifer monitoring wells and six cutoff monitoring wells also were completed in January 1986. Arsenic concentrations in the Cedar River are higher downstream of the LaBounty site than they are upstream of the site. However, downstream concentrations of arsenic have averaged less than 10 ug/L in recent years compared to the Iowa Stream Water Quality Standard of 50 ug/L. The site continues to be monitored quarterly for groundwater and monthly for surface water. Inspections are conducted quarterly to insure the integrity of monitoring wells and other site features.

The EPA conducts an in-depth review of the site every 5 years. The most recent 5-year review was completed in July of 2010. This fourth 5-year review concluded that the remedy implemented at the site remains protective of human health and the environment. Minor maintenance items identified in the 2010 five-year review were completed in 2011. Groundwater and surface water monitoring continued in 2013. Compliance sampling continued for 2014. The 2015 5 year reviewed was initiated with a completion date expected in July 2015.

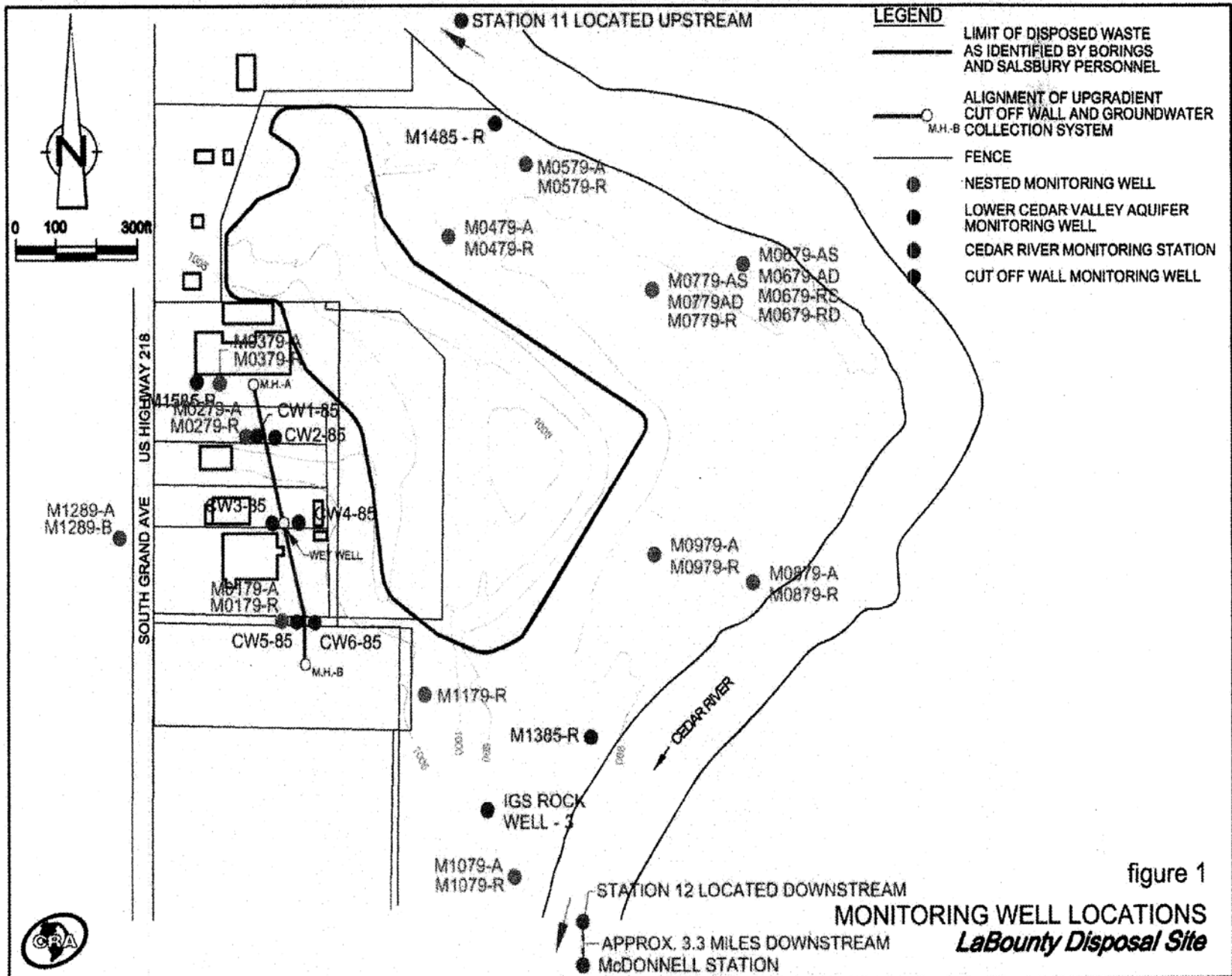
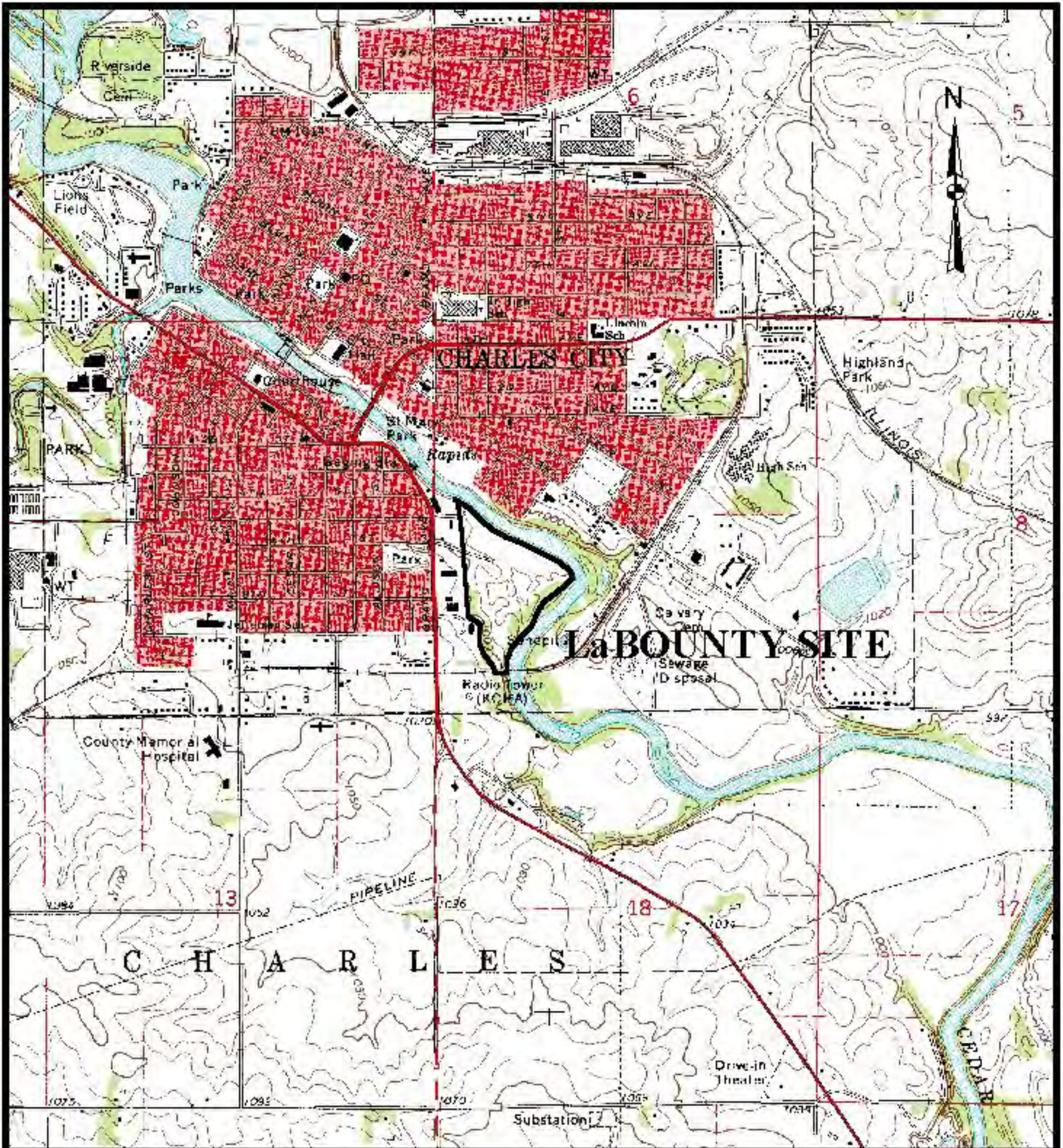


figure 1

(LaBounty Site)



IOWA

Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet



MASON CITY COAL GAS

(Mason City, Iowa)

GENERAL DESCRIPTION

The Mason City Coal Gas site is 1.2 acres situated adjacent to Willow Creek in the NW 1/4 of the SW 1/4 of Section 10, T96N, R20W, Mason City, Iowa and is owned by Interstate Power Company and the city of Mason City. The site was entered on the Registry in February 1990. The EPA proposed the site for the National Priorities List in 1992.

SITE CLASSIFICATION

In 2001, the priority classification for this site has been revised to “d”, Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Prior to 1951, a coal gasification plant was operated on the site. During plant operations, coal tar sludges and other wastes were generated as part of the coal gasification process. When plant operations were discontinued and the plant was dismantled, coal tar wastes were left in place or deposited in underground structures.

In 1984, three subsurface structures containing oily sludges were found during construction of a sanitary sewer for the city of Mason City. The structures have been excavated and all visible oily sludges removed and stored on-site. Significant quantities of wastes are still present at the site, contaminating the soil and groundwater.

Interstate Power Company contracted a field investigation of the site from 1986 to 1988. Groundwater samples collected from monitoring wells at the site showed the presence of several hazardous substances. Contaminants found at elevated concentrations include benzene (4300 ug/l), toluene (1100 ug/l), xylenes (1400 ug/l), ethylbenzene (3000 ug/l), and 1,2-dichloroethane (55 ug/l). Cyanide and 10 polynuclear aromatic hydrocarbons (PAHs) typically associated with coal tar wastes were identified in both the soil and groundwater at the site. The PAHs exhibiting the highest concentrations in the groundwater are naphthalene (9400 ug/l), acenaphthylene (2040 ug/l), pyrene (1100 ug/l) and fluoranthene (620 ug/l).

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is within the city limits of Mason City, Iowa. The city obtains its water from deep municipal wells located north and southeast of the site. Willow Creek acts as the northern boundary of the site and flows in an easterly direction. It discharges into the Winnebago River approximately 1 1/4 miles downstream of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency at the site. On January 29, 1992, the EPA approved an Administrative Order on Consent for a Remedial Investigation/Feasibility Study (RI/FS) at the site. In 1993, the EPA approved the RI report. The Interim Baseline Risk Assessment was presented by EPA in September 1993. EPA approved a source removal plan in 1995. The removal action was completed in September 1996.

The contaminated soils at the site and under the adjacent Delaware Avenue were excavated to the bedrock. The soils were treated by Thermal De-sorption and replaced as fill. EPA has issued a Record of Decision (ROD) for remedial action, which entails the initiation of a natural attenuation program for ground water. Groundwater monitoring is ongoing.

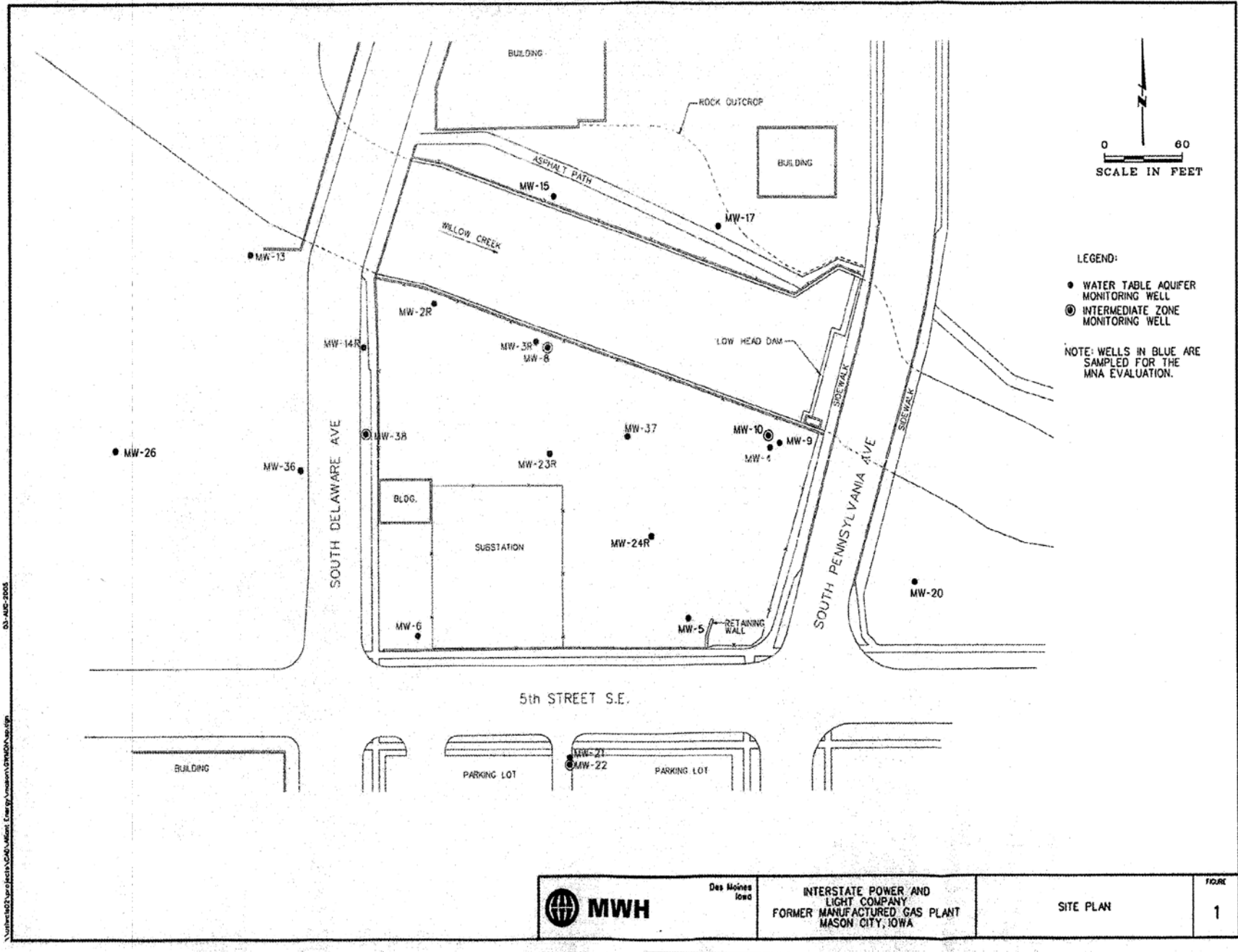
2008: EPA has completed the first ‘Five Year Review’ for the site and found no significant deficiencies. The responsible party (RP) will continue to monitor natural attenuation groundwater parameters.

2010: No concerns were found during the EPA CERCLA Five Year Review. The RP will continue to monitor natural attenuation groundwater parameters

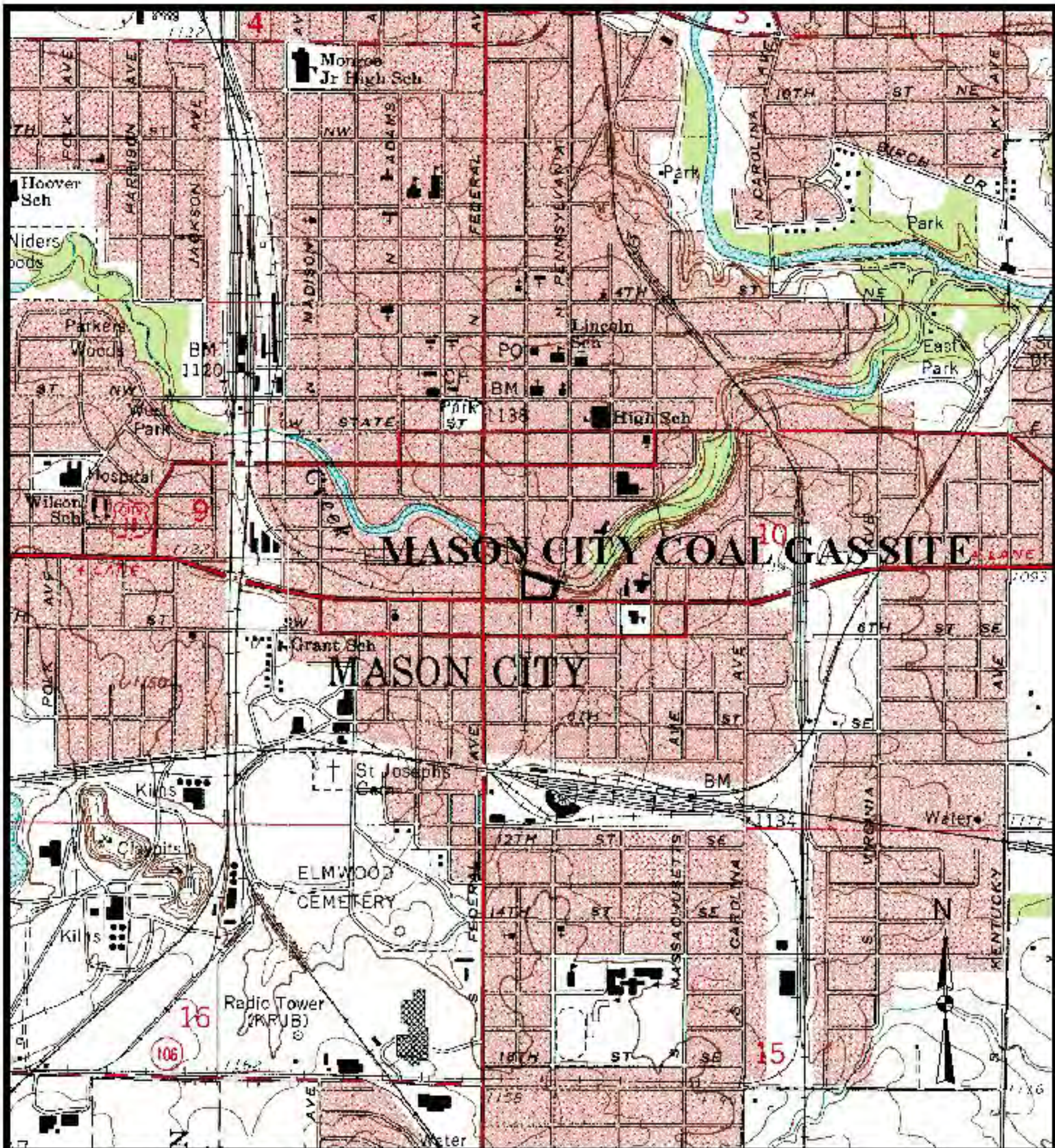
2012: EPA approved the 2011 annual monitoring report and O&M report. O&M activities continue in association with the groundwater remedy described in the September 2000 Record of Decision (ROD), the July 2002 Remedial Design and Remedial Action Consent Decree (Consent Decree) and Statement of Work (SOW), the March 2008 Superfund Five-Year Review Report, and the September 2008 Explanation of Significant Differences (ESD). Monitoring natural attenuation continues as prescribed by the ROD that specified MNA with institutional controls as the selected remedy for groundwater impacts at the site.

2013: Request made again by site owner to revise site Operation and Maintenance Plan and approved by EPA. Changes from the previous O&M Work Plans include 1) conditionally deleting monitoring well MW-4 from the annual monitoring network, 2) changing the analytical method for polynuclear aromatic hydrocarbon compounds, 3) eliminating laboratory analysis for 'monitoring natural attenuation' parameters, and 4) no longer running the Bioscreen@ model. Procedures and frequency for the water level gauging, groundwater sampling, and quality assurance/quality control (*QNQC*) remain the same.

2014: IDNR and EPA approved the May 2014 Monitor Natural Attenuation Enhancement Work Plan which includes injection of an oxygen release compound. The injection was planned for late 2014.



(Mason City Coal Gas)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 Feet

McGRAW-EDISON
(Centerville, Iowa)

GENERAL DESCRIPTION

The site is about 14.2 acres located in the SW 1/4 of the SW 1/4, Section 6, T68N, R17W south of State Highway 5 near Centerville, Iowa. Cooper Industries, Inc. is the owner of record. The site was entered on the Registry in April 1990. The facility was constructed in 1965 for the Appanoose County Industrial Development Agency, which leased the facility to the McGraw-Edison Company from 1966 to 1978. McGraw-Edison manufactured toasters and toaster ovens, which included metal plating and a wastewater treatment system. Hazardous wastes were left in the plating area and throughout the wastewater treatment system when operations ceased in 1978. Peabody International Corporation occupied the site from 1978 until 1986. During this time, the buildings were used for the storage of grains or finished goods. Cooper Industries acquired McGraw-Edison in 1985 from Peabody in September 1990.

SITE CLASSIFICATION

This site is classified "b" in accordance with 455B.427.3. Hazardous wastes have been disposed of at the site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Metals and VOCs are the primary types of hazardous waste:**

The quantity of hazardous waste is undetermined. Soil is contaminated with heavy metals at several locations on the site. The elevated metals included chromium (11,300 mg/kg), nickel (47,100 mg/kg), copper (51,000 mg/kg), zinc (28,000 mg/kg), and lead (2,600 mg/kg). Contaminated soil was removed during the 1989 Phase I Removal and Phase II Removal actions. Trichloroethylene (TCE) was used as a degreasing solvent and stored in a 5,000 gallon above ground storage tank on the south side of the building. Groundwater is contaminated with TCE and one of its degradation products, 1,2-dichloroethylene. Observed concentrations of TCE are 810,000 ug/L (on-site) and 370 ug/L (off-site)

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is for exposure to contaminated drinking water**

Three till units and four sand units have been identified in the glacial deposits beneath the site. Two of the sand units (Intermediate Sand and Channel Sand) are potential drinking water aquifers. The site is surrounded by residential, agricultural, and commercial properties. A well survey identified 216 wells within a one-mile radius of the site, two of which were contaminated with TCE from the site.

Surface drainage from the site flows into the Centerville Reservoir about one mile west of the site. The Centerville water supply is drawn from this reservoir. Surface water in the drainage ditch next to Highway 5 on the southwest corner of the site, has shown TCE contamination.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is lead agency for the site. An EPA Consent Agreement and Consent Order were issued in 1988 for site cleanup and investigation.

Soil:

From May 1989 to July 1990, Cooper Industries' conducted a Phase I removal action. This included the stabilization and removal of lagoon sludges, the removal of contaminated equipment and soil, the decontamination of concrete floors, and the back filling of excavated areas with clean soils. During the Phase I Removal action, additional areas of sludge contamination were discovered. In July 1990 the EPA conditionally approved a Phase II Soil Removal

Action work plan. In September 1990, there was a second EPA Consent Order for the Phase II Removal and the Groundwater Operable Unit Remedial Investigation/Feasibility Study (RI/FS). The Phase II removal included the removal of the additional sludge, further cleaning of concrete floors, de-commissioning of tanks and the removal of soils contaminated with TCE and other volatile organic compounds.

Ground water:

The company performed a RI/FS for the TCE in groundwater and remediation of the site is now focused on the TCE groundwater contamination on the south side of the site. The field activities for the RI/FS were conducted between October 1991 and May 1992. The RI/FS was approved by EPA in July 1993.

The Record of Decision (ROD) for remediation of the groundwater contamination was issued on September 24, 1993. The ROD required groundwater monitoring, on-site drainage controls, extraction and treatment of contaminated groundwater using filtration and ultra-violet oxidation. On March 30, 1994, the EPA issued a Unilateral Administrative Order (UAO) for Remedial Design and Remedial Action. This order directed Cooper Industries to design and implement the remedy described in the ROD. Cooper Industries agreed to comply with the terms of the UAO and has been acting accordingly. The EPA issued an Explanation of Significant Difference (ESD) in the ROD in June 1994 and June 1996. The 1994 ESD presented vacuum groundwater removal as an alternative to conventional pumping. Soil vapor extraction would be used to extract VOCs from the soils in the source area. The 1996 ESD increased the action level of TCE in soils from 200 to 750 part per billion (ppb). The EPA issued a ROD Amendment in July 1999 to change the preferred remedy for the Groundwater Operable Unit. The revised alternative is to remediate the groundwater with an Iron Reactive Permeable Barrier and Natural Attenuation. The Groundwater Operable Unit Post ROD Supplemental, Feasibility Study was approved by EPA in April 1999.

The Treatability Study Report, Remedial Design Work Plan, and 30% Design Report were submitted to the EPA in January 1995. The draft Performance Standard Verification Plan (PSVP) was submitted in April 1996. Additional field investigation was completed in 1998. The 100% Design for the Enhanced Soil Vapor Extraction was completed in January 1999 and approved by EPA in May 1999. The system construction began with the installation of 80 extraction points into till unit 3 (upper 25') in the two SVE areas, then pre-frac air stress testing, installation of horizontal fractures, and post-frac air stress testing. Construction was started in August 1999. The 100% Design for the Iron Reactive Permeable Barrier (IRPB) was completed in May 1999 and accepted by EPA in August 1999. Construction of the IRPB was started in September 1999.

2002: The EPA has been monitoring sampling results to verify the performance of the Iron Reactive Permeable Barrier. Indications are that both the barrier and the soil vapor extraction system are working as planned.

2003: Iron Reaction Permeable Barrier Annual report was submitted and indicated the barrier was performing within it design parameters. McGraw Edison requested and received approval to operate the Dual Phase Soil Vapor Extraction System in a pulse mode, the system was operated continuously until this time. McGraw Edison has agreed to donate the facility to the City of Centerville. The City requested Department approval as required by 567-IAC-148. McGraw Edison is retaining all responsibility for the contamination at the site.

2005: The Iron Reactive Barrier continues to work as designed preventing the majority of dissolved phase contamination from migrating off site. McGraw Edison recently requested the Soil Vapor Extraction System be shut down because it was no longer effective. However, after further review it was demonstrated that the system was not ready to be shut down and on December 7, 2005 the EPA required McGraw Edison to restart the system as quickly as possible.

2007: In 2007 the City of Centerville sold the Former McGraw Edison facility to Lyle Cowen. The city failed to notify IDNR as required in the Registry of Hazardous Waste or Hazardous Substance Disposal Sites, IAC-567-148.6(5)b. IDNR is currently working with the city's attorney to resolve this issue. The Iron Reactive Barrier and Soil Vapor Extraction System continue to remove the trichloroethylene as designed.

2008: All issues concerning the sale of the property were resolved to IDNR satisfaction. The current property owner is now aware of the special requirements of a site on the Registry. The current property owner petitioned IDNR to approve a 'significant change in use' request. The legal section of IDNR determined that the new proposed use was

not a significant change (one form of manufacturing and storage to another form of manufacturing and storage) and no IDNR approval was required (IAC-567-148.6(5)a). The Iron Reactive Barrier and Soil Vapor Extraction System continue to remove the trichloroethylene as designed, however, additional iron slurry may be required in the near future.

2009: A small portion of the former McGraw Edison property was subdivided, sold, and then developed into a car wash facility. The property transfer was correctly and timely managed for this transaction. The first EPA 'Five Year Review' is in progress and should be completed early 2010. Currently the EPA does not have a project manager assigned to former McGraw Edison site.

2010: The EPA CERCLA Five Year Review is complete and EPA believes the TCE remediation remedy is failing. McGraw Edison will be required to perform further groundwater testing to determine the status of the two remedial systems, the soil vapor extraction system and iron reaction curtain. The additional assessment activities will be carried out early 2011.

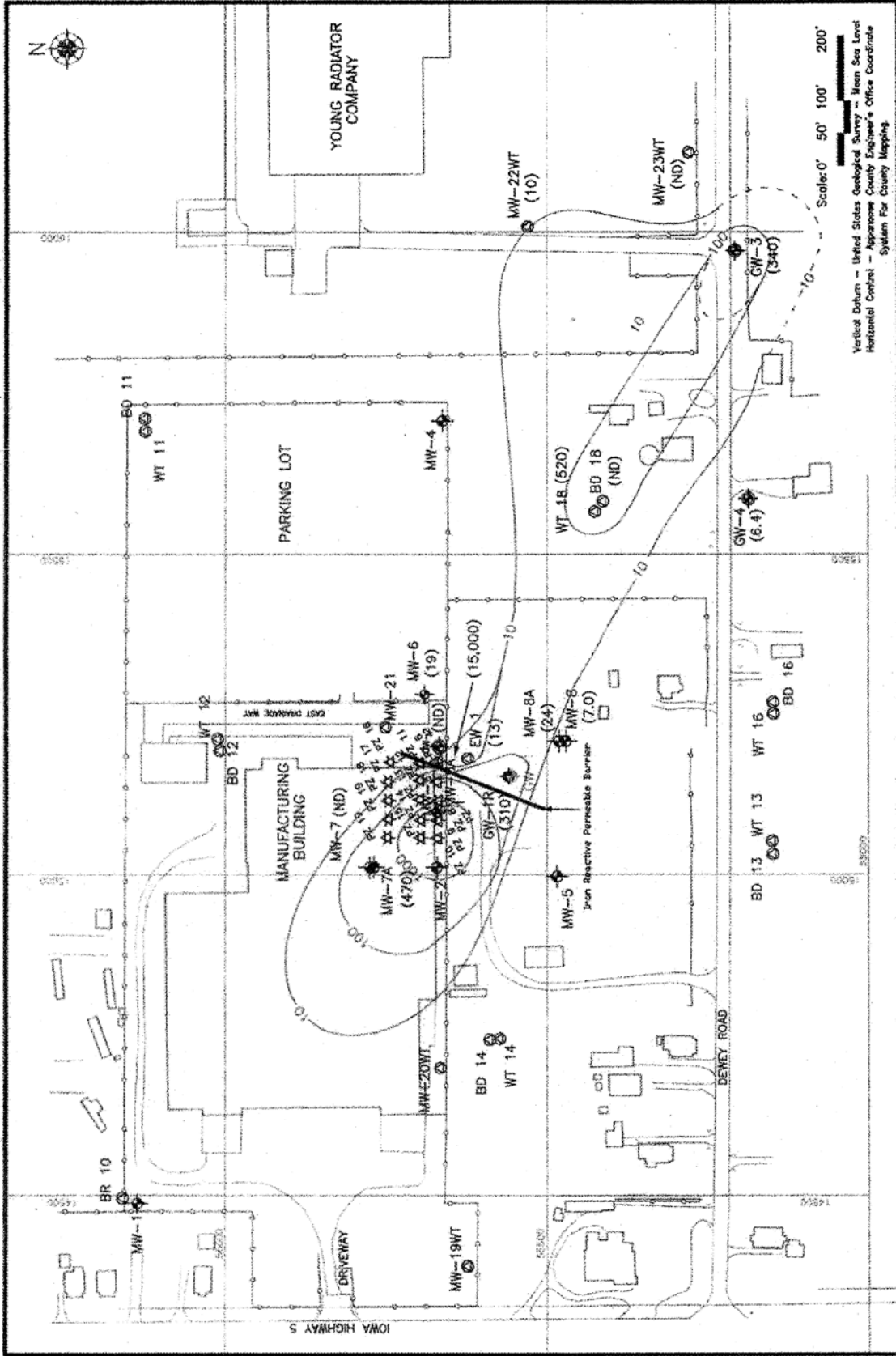
2012: The U.S. Environmental Protection Agency (EPA) is issuing a *Proposed Plan* to recommend a change to the soil and groundwater remedies at the former McGraw-Edison Toastmaster site developed from the 1993 *Record of Decision* (ROD) for soil and in the 1999 *Amended Record of Decision* for groundwater. This Proposed Plan considers additional information developed since the 1993 ROD implemented the *Remedial Action* for soil and the 1999 ROD Amendment implemented the *Remedial Action* for groundwater at the former McGraw-Edison Toastmaster site. The Proposed Plan presents the EPA's *Preferred Alternative* under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) to address the remaining residual contamination at the former McGraw-Edison site in Centerville, Iowa. The preferred alternative is intended to be a final remedy under CERCLA. The proposed change alters the selected remedy for soil in the 1993 ROD and for groundwater in the 1999 ROD Amendment with respect to scope, performance and cost.

This Proposed Plan includes a summary of the following remedial action alternatives that were considered: Alternative N-1: No Action; Alternative S-1: Soil Vapor Extraction; Alternative S-2: Soil Excavation and On-Site Treatment with Indirect Heat Volatilization; Alternative S-3: In-Situ Mechanical Mixing with Chemical Agent; Alternative GW-1: Groundwater Recovery and Treatment; Alternative GW-2: In-Situ Bioremediation; and Alternative GW-3: In-Situ Chemical Oxidation and monitored natural attenuation (MNA).

The preferred alternative is: Alternative S-3: In-Situ Mechanical Mixing with Chemical Agent and contingent Alternative GW-1: Groundwater Recovery and Treatment, if required based on the performance evaluation of Alternative S-3. These alternatives were chosen because they best address the residual source materials and the down gradient contaminant plume. The soil alternative will reduce contaminant concentrations within the source materials and prevent further migration of contaminants from the source materials to groundwater. The soil alternative will be implemented first and groundwater will be monitored periodically for several years to determine the effectiveness of the soil remedy at reducing contaminant concentrations in the down gradient plume. The groundwater alternative will only be considered if monitoring indicates the need for an active groundwater remedy to further reduce contaminant concentrations in the down gradient plume and control off-site migration.

2013: Record of Decision (ROD) modification still in progress. Annual monitoring reports indicate iron reaction curtain is no longer containing the chlorinated solvent plume.

2014: As of December 2014 McGraw Edison is still reviewing comments received from IDNR and EPA for the proposed ROD modification and has not submitted any updates yet. EPA has started work on the second five year review report noting deficiencies in the current remedial efforts and a concern for future protectiveness.



Vertical Datum - United States Geological Survey - Mean Sea Level
 Horizontal Control - Appraiser County Engineer's Office Coordinate System For County Mapping.

VATC ASSOCIATES INC.
 3712 SOUTH 132ND STREET
 OMAHA, NE 68144
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 FAX (402) 697-9170

DRAINING TITLE
 TCE
 Concentration Plume Map
 Groundwater

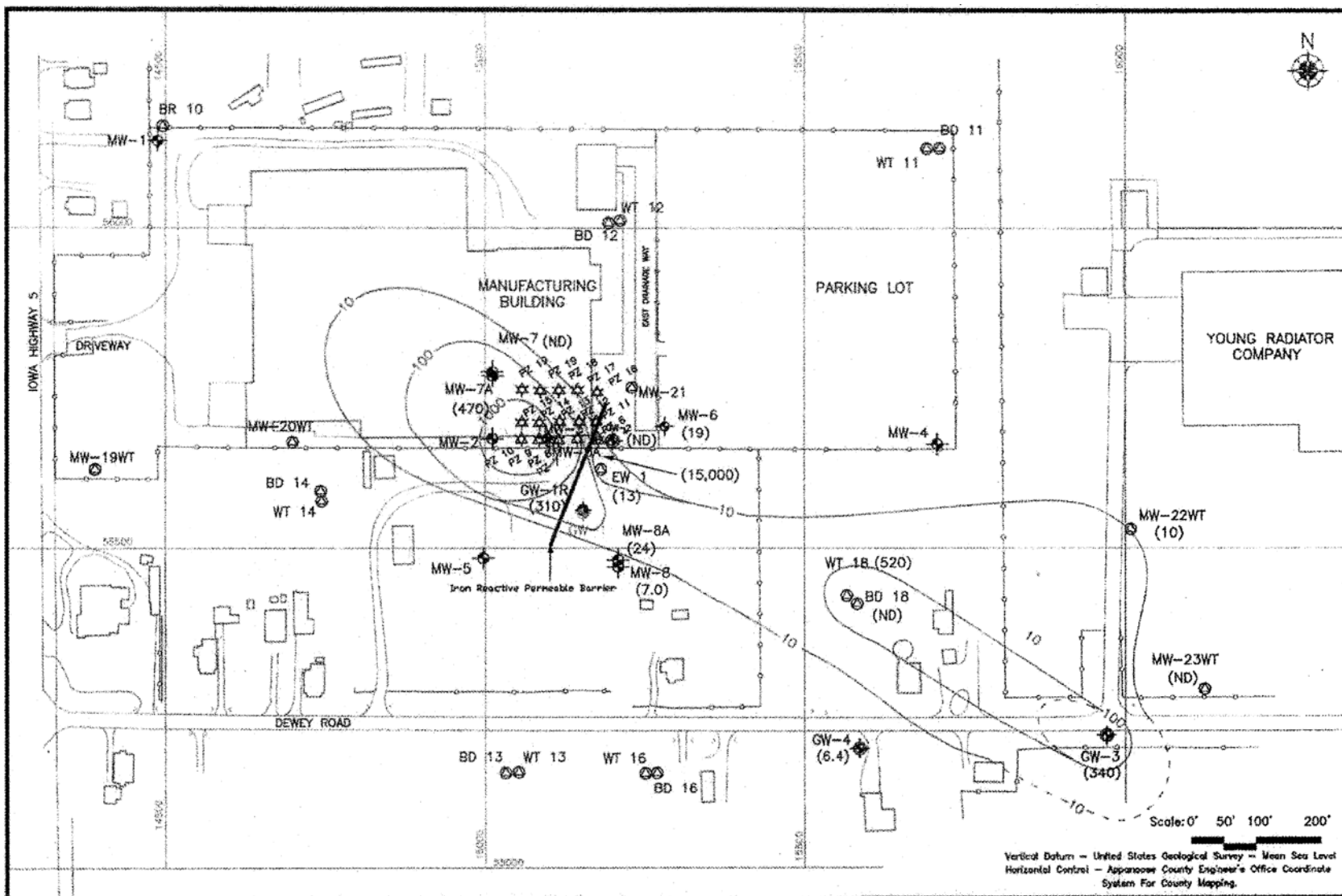
SCALE 1"=200'

JOB NUMBER 9715080001
 DATE MAY2005
 DWN BY TJS
 CAD FILE 9715080001
 SHEET Figure 2

- LEGEND**
- Well Top of Water Table Boring
 - Well Base of Gravel Boring
 - Backup Boring
 - Detection Well
 - Abandoned Monitoring Well
 - Level Not Measured
 - Ditch-dike Fence

EXPLANATION

- 887.20 Groundwater Level Data - May 2005 (Feet Above MSL)
- 888 Groundwater Contour (Feet Above MSL) Contour Where Inferred
- Monitoring Well Installed in 2003
- Monitoring Well Installed in 1999
- Monitoring and Pump Wells Installed Prior to 1999



EXPLANATION

- 987.50 Groundwater Level Data -- May 2005 (Feet Above MSL)
- 985 Groundwater Contour (Feet Above MSL) Dashed Where Inferred
- ◆ Monitoring Well Installed in 2003
- ◆ Monitoring Wells Installed in 1999
- ◆ Monitoring and Pump Wells Installed Prior to 1999

NOTES CONVERTED TO MONITORING WELLS

- WT Top of Water Table Boring
- BD Base of Glacial Drift Boring
- BR Bedrock Boring
- EW Extraction Well
- ◆ Abandoned Monitoring Well
- NM Level Not Measured
- Chain-Link Fence

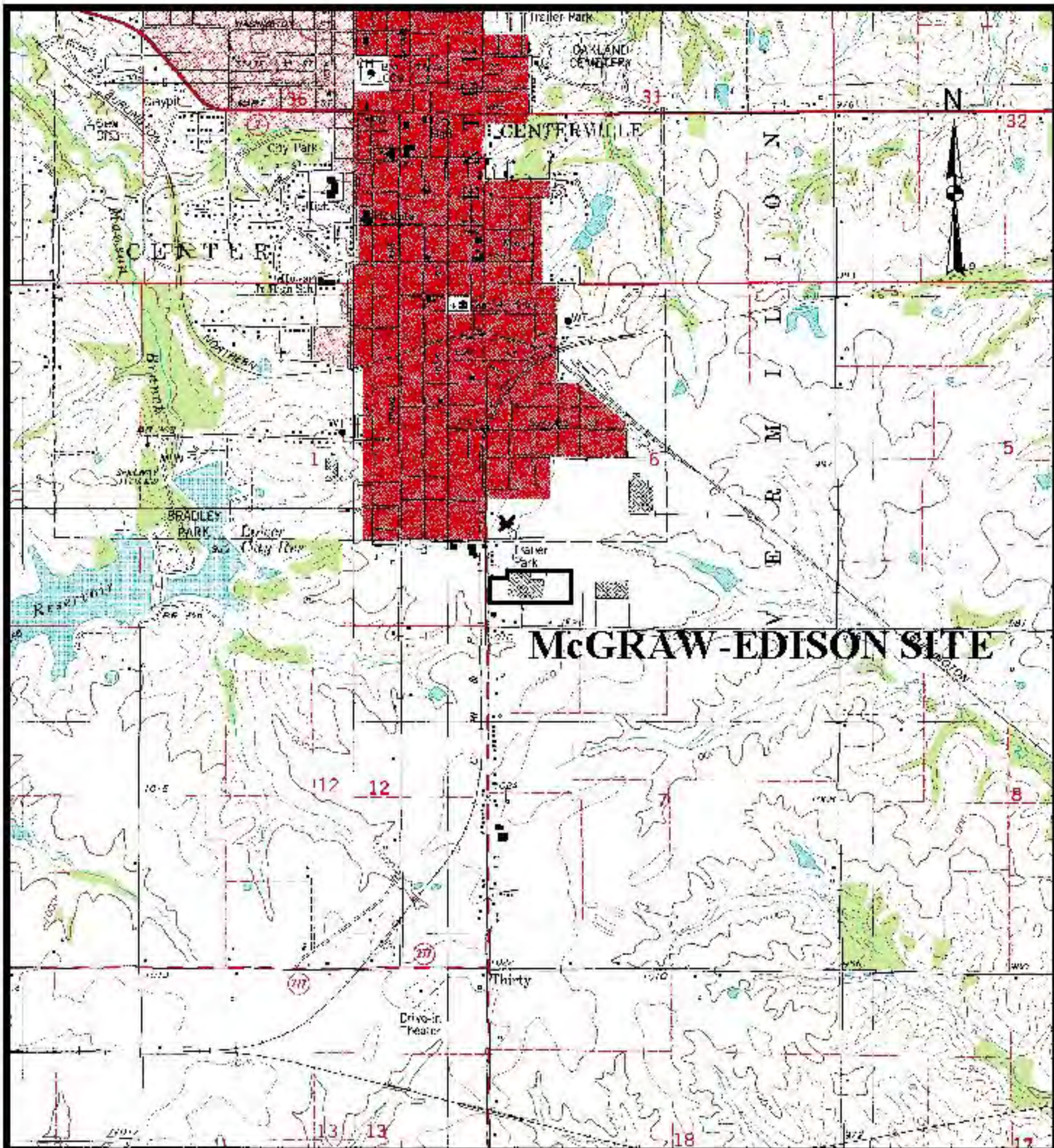
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 FAX (402) 697-9170

DRAWING TITLE
 TCE
 Concentration Plume Map
 Groundwater

SCALE 1"=200'

| | | | | |
|-----------------------------------|----------------------|------------------------|---------------------------------|-----------------------|
| JOB NUMBER 0778098.0001 | DWN BY TJS | DATE MAY2005 | CAD FILE 0775098.0001 | SHEET Figure 2 |
|-----------------------------------|----------------------|------------------------|---------------------------------|-----------------------|

(McGraw-Edison)



McGraw-Edison Site



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet



MID AMERICA TANNING

(Sergeant Bluff, Iowa)

GENERAL DESCRIPTION

The Mid America Tanning site is located in a rural industrial area about 5 miles south of Sergeant Bluff, Iowa. The site is located on about 99 acres in the S 1/2 of the NE 1/4 of Section 19, T87N, R47W, Woodbury County, Iowa. The main channel of the Missouri River is 1.5 to 2.0 miles west and southwest of the site. An unnamed oxbow lake is located on the site approximately 175 feet north of the disposal trench. Browns Lake State Park is located about two miles southeast of the site. The site was owned by Mid America Tanning Company, who was last doing business as U.S. Tanning Co. Mid America Tanning was active from 1969 until it was abandoned in 1990. The plant used a chrome process for tanning hides and generated chromium sludge as a by-product of the tanning process. The site was entered on the Registry in August 1989. The EPA placed the site on the National Priorities List (NPL) in August 1989.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Metals: Chromium

In 1979 approximately 900 cubic yards of chromium sludge were disposed of in an unlined trench on the property. Sludge was also land-applied on two cornfields north and south of the tanning building impacting approximately 12,000 cubic yards of soil. Former onsite wastewater treatment facilities included two sludge aeration basins containing approximately 45,000 cubic yards of sludge and a polishing basin contained approximately 40,500 cubic yards of contaminated sediments.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The principal health threat is due to chromium contamination of soil, impoundment sediment, and impoundment water. The EPA set the primary action level at 2,000 mg/kg of total chromium for soil. The highest levels of chromium contamination in these three areas are 43,000 mg/kg, 11,000 mg/kg, and 22,000 mg/kg respectively. The primary concerns were the potential threats to site workers from exposure to chromium by falling into the aeration basins and/or inhaling dust in the north cornfield.

Remedial actions completed in 2000 severed the potential exposure pathways by consolidating and capping all soils and waste materials containing chromium in excess of 2,000 mg/kg. A plastic cover was placed over the two aerated sludge lagoons. In the summer of 2005 a release occurred from the east aeration lagoon from a previously unidentified pipe. The pipe was plugged. No significant adverse impact resulted from the release. In 2006 the Superfund Remedial program solidified the contents of both aerated lagoons to prevent any such future release. The only residual risk exists at the site is the potential long-term exposure to the consolidated and capped wastes, which will not occur unless excavation occurs in the capped areas. Excavation in the capped areas is prohibited under this Registry authority.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

In 1980, the IDNR identified the site as a potential problem because of the onsite burial of filter press sludge. The EPA conducted a Preliminary Assessment/Site Investigation (PA/SI) of the site in 1985. Chromium concentrations of the sediment within the disposal trench and from an oxbow lake located on the site were 47,000 mg/kg and 5,400 mg/kg, respectively. Chromium was detected in two onsite monitoring wells above the drinking water standard. Total metals concentrations of arsenic, barium, chromium, iron, lead, and manganese were detected in surface water and groundwater at the site above background levels.

In 1990 the EPA initiated a removal assessment and a Remedial Investigation/Feasibility Study (RI/FS). In 1990 the removal assessment for the trench burial area was initiated. The extent of chromium soil contamination was determined, five monitoring wells were installed, and 1290 cubic yards of sludge were removed from the trench and placed on a liner at the site. The final disposal of the excavated material was addressed as part of the later remedial action for the entire site.

The EPA was the lead agency for the site during the assessment and remediation phases. The EPA completed the RI/FS in 1991, which included the installation of shallow, intermediate, and deep groundwater monitoring wells along with the collection of surface water and sediment samples. The EPA signed a Record of Decision (ROD) in September 1991. A potentially responsible party conducted removal actions at the site in 1995. This included removal of drums and debris, cleaning out and sealing off the building, and welding manhole covers closed.

In 1996 an amended ROD called for the following actions:

- Consolidation and capping soils from the north and south cornfields, the previously excavated burial trench material (after stabilization), and possibly sediments from the polishing basin.
- De-watering and capping in-place sediments in the two aeration lagoons.
- Onsite treatment and discharge of impoundment water to the nearby oxbow lake.
- Removal of sediments from other former wastewater treatment basins and consolidating with sediments in the aeration lagoons before capping.
- Cleaning of site buildings.
- Land use restrictions to limit future use of the site.
- Annual long-term monitoring of groundwater, which was subsequently determined not to be necessary.

The EPA, in cooperation with the DNR, completed implementation of remedial actions prescribed in the amended ROD in 2000. In lieu of dewatering and capping the aeration lagoons, a floating cover was placed over the aeration lagoons. The polishing basin was drained and sediments consolidated at the southern end and capped.

Later in 2000 another Superfund Record of Decision was issued by EPA which concluded that groundwater contamination was no longer a concern at the site. A Superfund five-year review was conducted in 2003 which concluded that the remedy was protective.

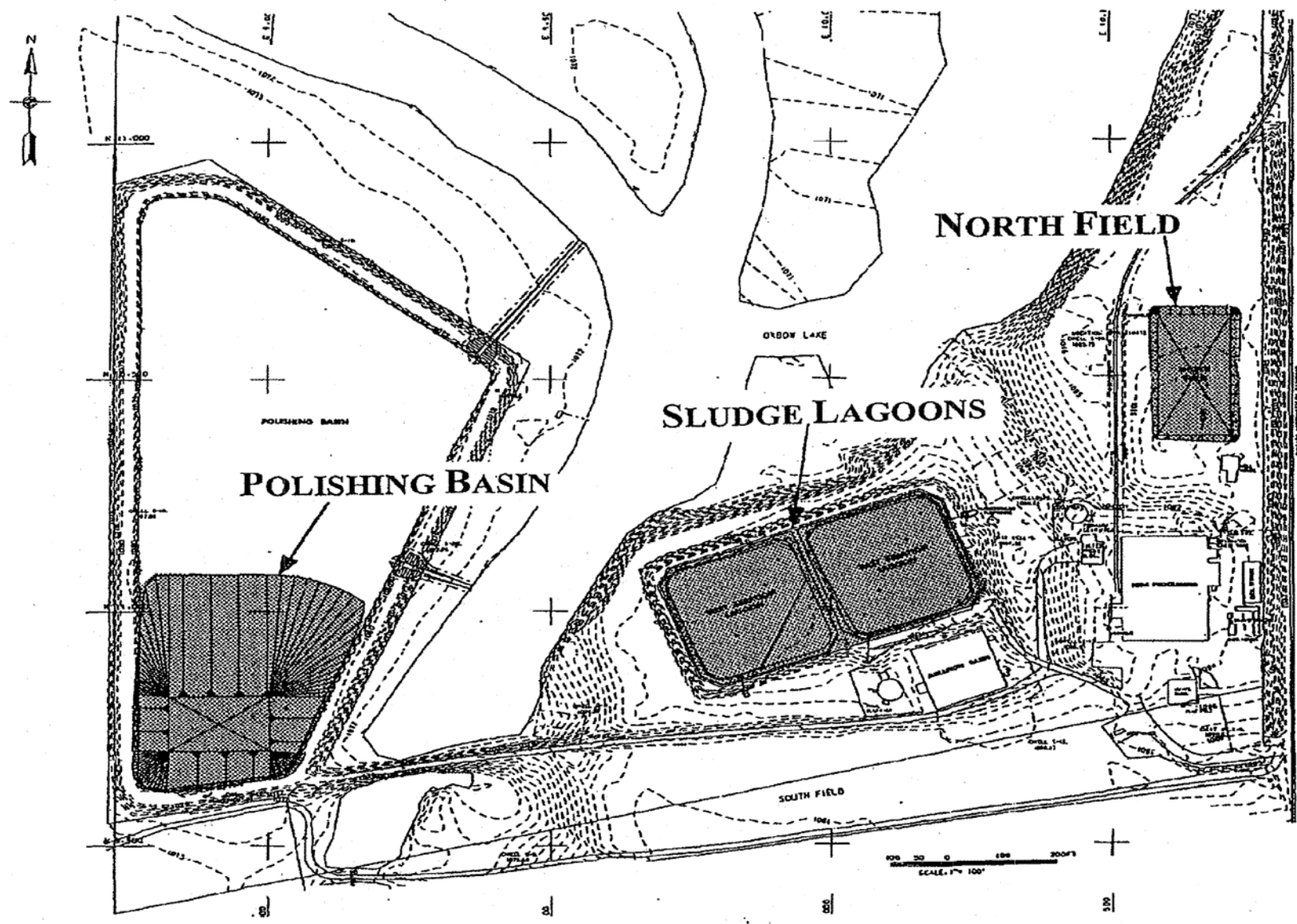
In July of 2005 a release from the closed east aeration lagoon occurred from a previously unidentified buried pipe connected to the lagoon. The EPA and DNR responded to the release and plugged the leaking pipe.

In 2007 the EPA Removal program, in cooperation with the DNR conducted a permanent closure of the 2 aeration lagoons using fly ash to solidify the lagoon contents.

A second Superfund five-year review for the site was initiated in February 2008. The state participated in a site inspection for the next five-year review in conjunction with EPA in November 2012.

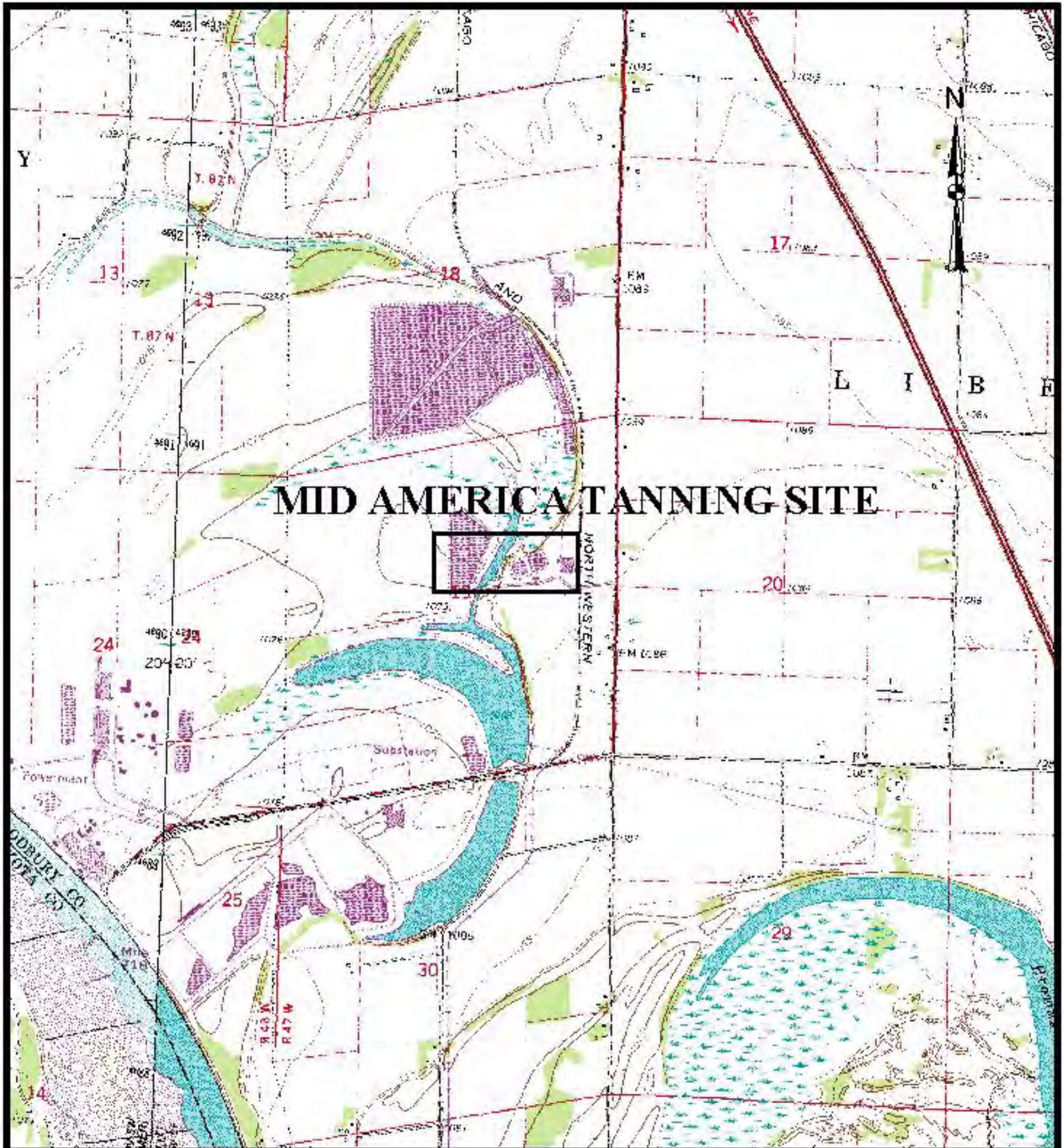
In December 2012 the state gave Registry approval to construct a rail line and road along the southern and southeastern boundary of the site. Demolition of the main plant building and well abandonment were conducted at the end of 2013 to accommodate the road and rail line.

The state is responsible for oversight of the site, which involves annual inspections. The state conducted the latest annual inspection of the site in September 2014 and found the three disposal areas in good condition.

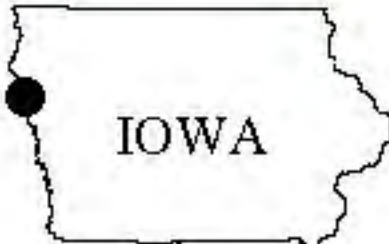


MID-AMERICA TANNING SITE MAP

(Mid America Tanning)



MID AMERICA TANNING SITE



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet



MITRISIN DISPOSAL SITE
(Clow Corporation)
(Oskaloosa, Iowa)

GENERAL DESCRIPTION

The site is located in Section 9, T75N, R15W, Mahaska County, Iowa about two miles east of Oskaloosa, Iowa. The owner of record was Edward Mitrisin. Clow Corporation of Oskaloosa purchased the property from Mr. Mitrisin. The site was entered on the Registry in 1984.

SITE CLASSIFICATION

This site is classified "d" Site Properly Closed, Required Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Clow Corporation leased the site for disposal of wastes from their foundry operations. Disposal occurred in an abandoned strip coal mine which had several water-filled depressions. The disposal area is estimated to be less than one acre. Wastes was first placed in the site in 1978 and stopped in January 1982. Wastes included melt baghouse dust, spray booth wastes, foundry sand, wood, and other materials. It is estimated that about 27,800 cubic yards of waste were disposed of at the site.

The arc melt baghouse dust is a characteristic hazardous waste by E.P. toxicity for lead and cadmium. The company estimates about 875 cubic yards of this waste were disposed of at the site. The arc melt baghouse dust is estimated to have included 54 tons of lead and a little less than one ton of cadmium.

The Clow Corporation closed and capped the landfill under a state-approved plan in 1986. The cap was about one foot thick. Six ground water monitoring wells are located around the perimeter of the former landfill.

The EPA conducted RCRA compliance monitoring inspections at the site in 1987, 1989, 1990, 1991 and 1995. In December 1988 the EPA issued a Compliant, Compliance Order, and Notice of Opportunity for Hearing to Clow Corporation and Edward Mitrisin. The order included the assessment of a \$39,000 civil penalty for violations of RCRA with respect to groundwater monitoring requirements at the site.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

Surface waters at the site have shown cadmium contamination levels as high as 0.2 mg/L. Groundwater monitoring wells near the site have shown concentrations of 0.7 mg/L of lead and 0.2 mg/L of cadmium. These values are above the Primary Drinking Water Standards for lead (0.05 mg/L) and cadmium (0.01 mg/L). The extent of this contamination has not been determined.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency and will continue to investigate and regulate this site under the RCRA program. The EPA is working with Clow Corporation to correct deficiencies in the site closure and groundwater monitoring actions. The company submitted a revised ground water monitoring plan in March 1990 and was required to develop a cap remediation plan attached to a Consent Order for post-closure activities at the site. The first annual groundwater monitoring report was submitted to the EPA in February 1992. The Maintenance Plan for the site requires quarterly site inspections and immediate repair of any eroded areas.

2007: The EPA is working with Clow Corp. on the completion of a Modified Ground water Monitoring plan

2008: EPA commented on and approved an extension request for the groundwater monitoring plan. The department will continue to coordinate with the EPA to assure proper continued maintenance.

2009 EPA approved (w/amendments) Clow Valve's proposal to modify monitoring well installation/monitoring plan. Clow Valve will continue quarterly groundwater monitoring of all wells (including new wells MW-3B & MW-4B).

2010

EPA approved post-closure cost estimate 4/7/1020

2011

EPA reviewed and asked for modifications to Clow Valves sampling plan on 1/27/2011

EPA issues Letter of Warning regarding financial assurance on 4/8/2011

EPA approves new up gradient wells on 9/12/2011

2012

EPA (in 4/3/2012 letter) requires continued monitoring

2013

No actions

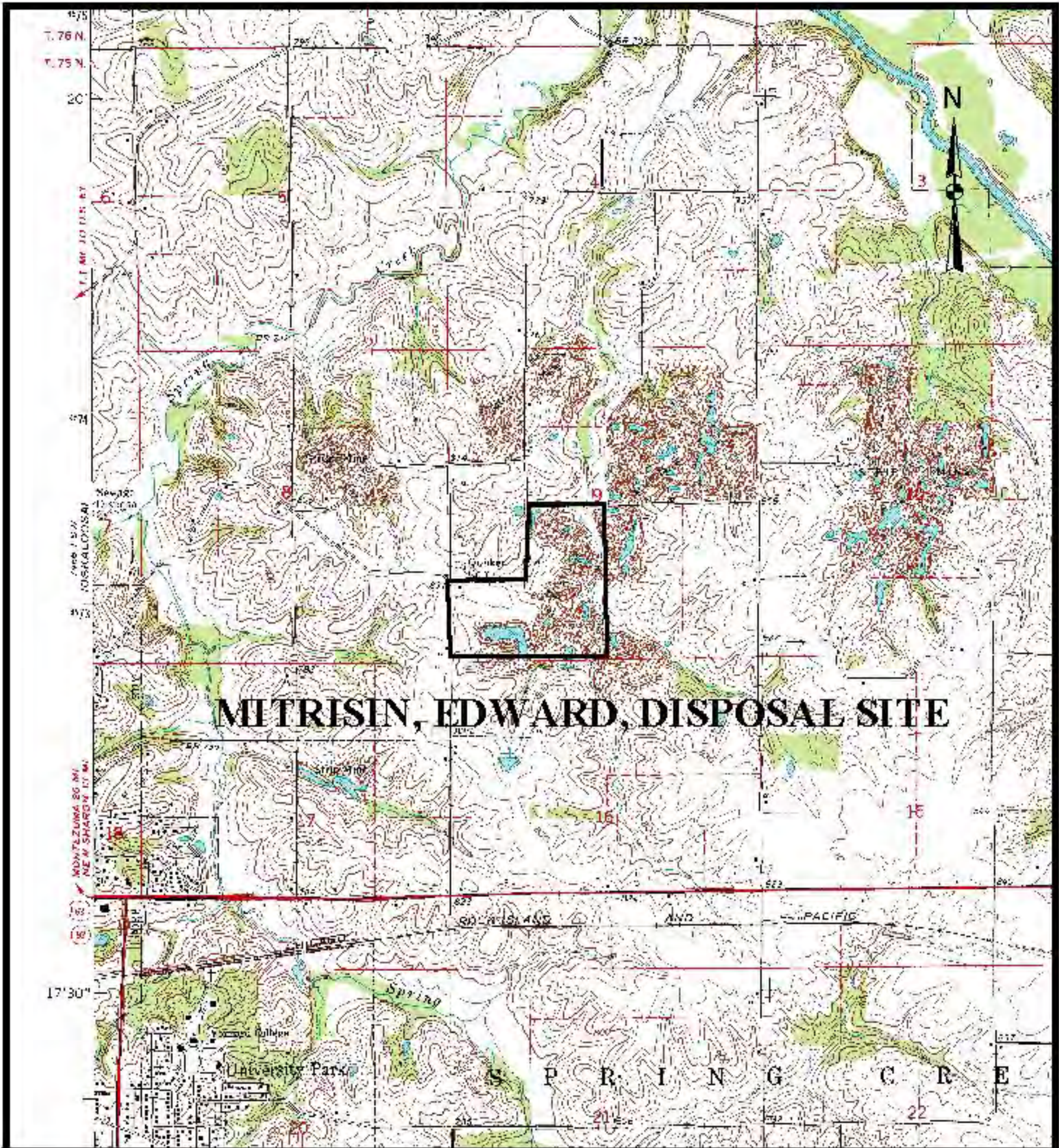
2014

EPA approval of post closure sampling modification – from quarterly to semi-annually and dropping 2 monitoring wells (2/11/2014)

EPA comments on post-closure Financial Assurance Financial Assessment (6/18/2014)

EPA approval of post-closure QAPP (8/15/2014)

(Mitrisin, Edward, Disposal Site)



MITRISIN, EDWARD, DISPOSAL SITE



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet



MONSANTO COMPANY
(Muscatine, Iowa)

GENERAL DESCRIPTION

The 454-acre site is located in the SW 1/4 of Section 27, the S 1/2 of Section 28, the N 1/2 of Section 33, and the NW 1/4 of Section 34, T76N, R2W approximately four miles south of the city of Muscatine, Iowa. Monsanto Chemical Company is the owner of record. The site was entered on the Registry in June 1990. A chemical manufacturing plant has been operated at the site since 1961. Originally a manufacturer of ammonia, the plant now manufactures several agricultural herbicides and acrylonitrile/butadiene/styrene (ABS) plastics.

SITE CLASSIFICATION

This site is classified "b" in accordance with 455B.427.3. Hazardous wastes have been disposed of at this site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

• **Pesticides and Chlorinated Hydrocarbons**

Contaminated groundwater was first detected at the site in 1975. The quantity of hazardous waste released is undetermined. Elevated concentrations of the herbicide Diallylate and monochlorobenzene (MCB) have been detected in ground water. The soil and groundwater contamination is attributed to several factors. Spills in unpaved areas are believed to be the most significant source of contamination. For many of the early years of plant operation, wastewater was conveyed from production units through unlined ditches at the site. The company has installed an extensive groundwater monitoring system at the site. In addition, two wells have been installed beneath the plant site near the center of the contaminant plume. These wells have been used since 1983 to pump contaminated water for on-site treatment. There have also been four separate investigative studies done at the site.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

• **The Primary public health concern from this site is potential exposure to contaminated drinking water**

Public Health:

The Muscatine Island Aquifer provides the major source of groundwater in the area. The city of Muscatine operates two well fields in the aquifer. The nearest is the Progress Well Field, located about two miles northeast of the site. Numerous irrigation wells are located in the area.

Environmental:

The site is located in a part of the Mississippi River flood plain known as Muscatine Island. In the vicinity of the plant, the alluvial sand and gravel deposits are generally about 140 feet thick. The Mississippi River is immediately east of the site and Spring Lake and Beatty's Pond are directly to the south. Other small lakes, sloughs, and wetlands are found nearby.

The groundwater beneath the site is highly contaminated with several herbicides and other chemicals. However, the pumping of purge wells has helped reduce the levels of contamination. Monochlorobenzene has decreased from a high of 50,000 ug/l to 5,000 ug/l in the center of the plume in the herbicide production area. The most significant herbicide contaminants are alachlor (Lasso), atrazine, butachlor (Machete), diallate (Avadex), and propochlor (Ramrod). This includes alachlor up to 27,200 ug/l. Significant contamination has reached a depth of 95 feet at the site.

On-site soil contaminants are the same ones observed in the groundwater. Alachlor is the most widespread and, in general, is found in the highest concentrations (up to 7,157 mg/kg). The highest level for dillate is 8,859 mg/kg. Soil contamination has been found to increase with depth to ten feet in many locations.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for the site. Oversight of site investigations and remedial actions are conducted under the authority of the RCRA program.

The EPA and the company signed a Consent Order in June 1989 to complete a RCRA Facility Investigation/Corrective Measures Study (RFI/CMS) under RCRA authority. The RFI was completed in February 1990 and approved by the EPA in January 1991. The report of the Investigation analysis and the CMS was submitted to the EPA in the second quarter of 1991.

Interim remedial activities required under the June 1989 Consent Agreement included groundwater monitoring, groundwater pumping to keep the contaminant plumes within the facility boundary, and treating contaminated groundwater.

The EPA approved the Corrective Measure Design and Operations and Maintenance Plan in July 1995. The required remedial action includes the following:

- Site restrictions to control site access (fencing) and current and future land use (deed restrictions).
- Pumping groundwater from the facility's production wells to create a cone of depression on the ground water to maintain contaminant plume on the facility property.
- Extracting and treatment of contaminated groundwater with a liquid phase activated carbon adsorption system.
- Using treated groundwater as cooling water and discharging to the Mississippi River under an NPDES permit.

In 2005, Monsanto completed the closure of their fifth and final regulated unit under the RCRA hazardous waste permit. They also are working towards updating their corrective measures program, including installing a new monitoring well. The RCRA hazardous waste permit has been continued since 1999 to allow Monsanto to close their regulated units and will be renewed in 2006 for corrective action only, no regulated units.

2007: One new monitoring well installed in spring of 2007. Annual ground water monitoring reports are submitted to EPA to track performance of Corrective Measures. Monitoring indicates complete on-site containment of mono-chloro-benzene ground water plume.

2008

2007 report received. Annual ground water monitoring reports are submitted to EPA to track performance of Corrective Measures (CM). Indications are that chlorobenzene groundwater plume is being contained by active pumping. 3/3/2008

2009

2008 report received 2/24/2009. Annual ground water monitoring reports are submitted to EPA to track performance of CM and monitoring of dillate and monochlorobenzene (MCB). EPA indicates that the site is complying with EPA's requirements. Groundwater purging and monitoring will continue.

2010

2009 report received 2/25/2010. Annual ground water monitoring reports are submitted to EPA to track performance of CM and monitoring of dillate and monochlorobenzene (MCB). Report indicates 55.7 million gallons of groundwater purged in 2009 – 46 million required in permit. Groundwater purging and monitoring will continue.

2011

EPA reviewed Sediment and Surface water investigation work plan , 8/31/2011

2012

EPA approves sediment and surface water monitoring plan

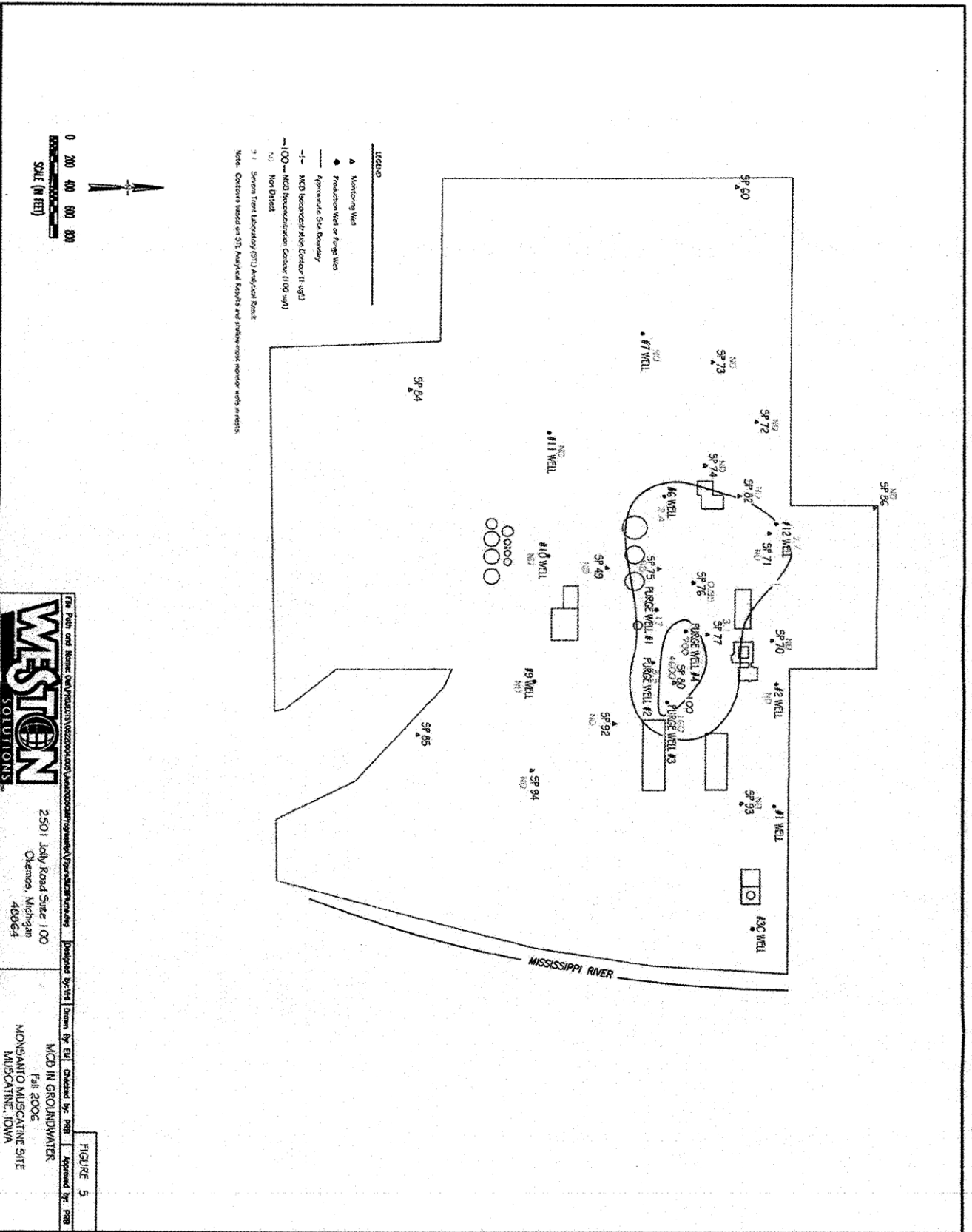
2013

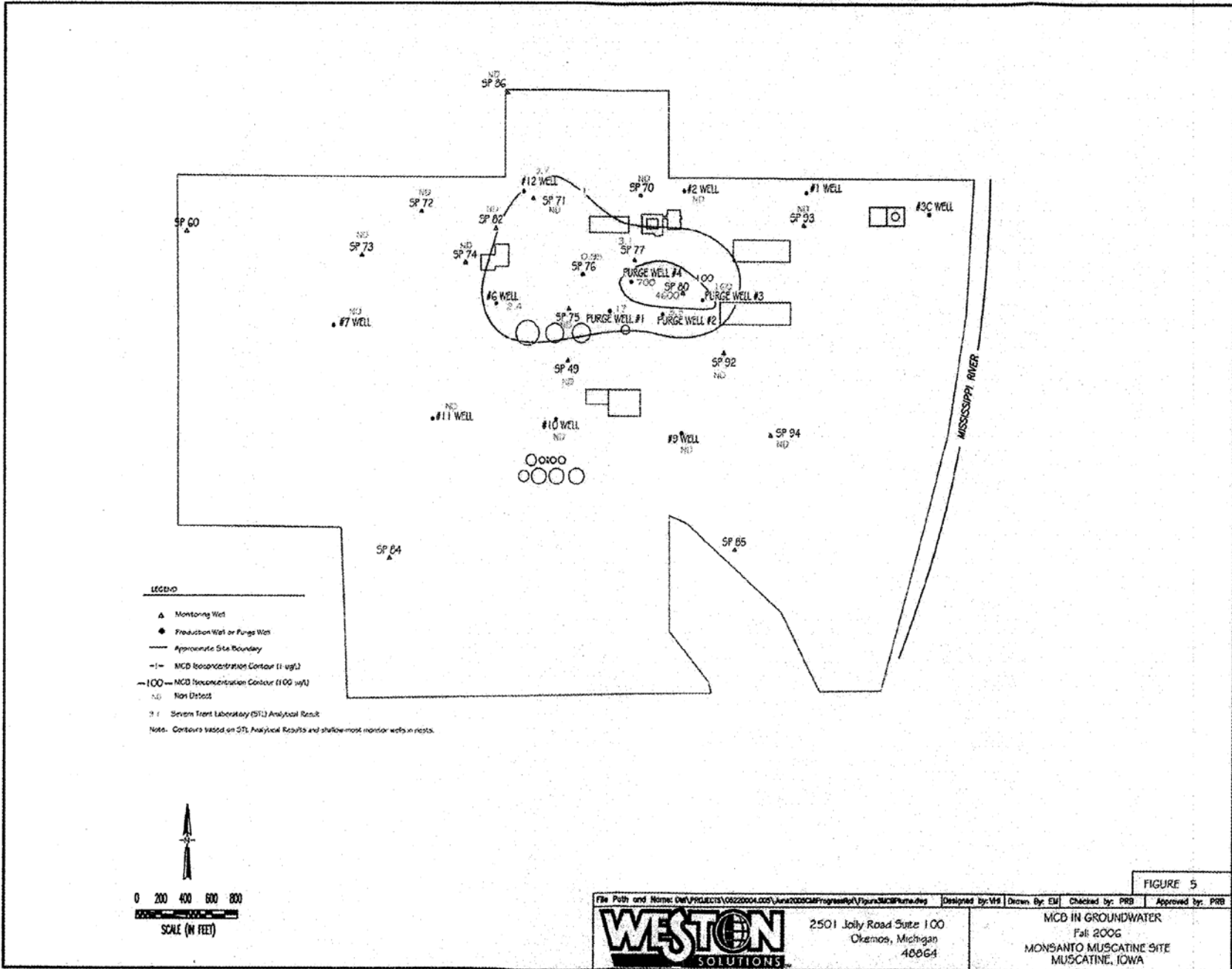
2012 annual report to EPA on 2/27/2013

2014

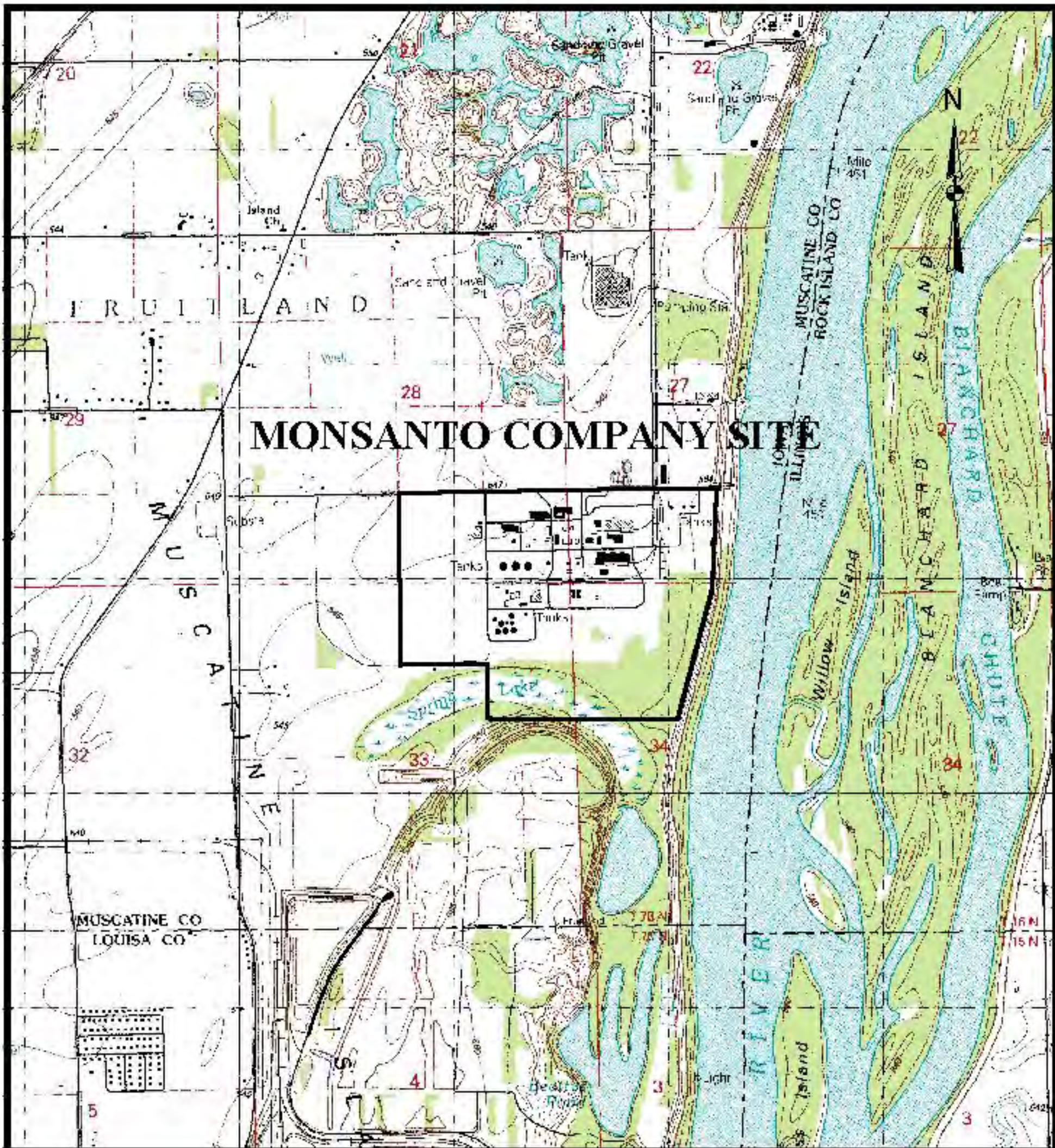
2013 annual report to EPA on 2/28/2014

DRN letter to facility RE amendment to 455B on 9/26/2014





(Monsanto Company)



MONSANTO COMPANY SITE



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet



NEWTON, CITY OF, DUMP SITE

(Newton, Iowa)

GENERAL DESCRIPTION

The site is within the corporate limits of the city of Newton, Iowa. It is on land generally described as Lot A (3.09 acres) of the SW 1/4 of the SE 1/4 of Section 28, T80N, R19W and Lot C (8.12 acres) of the NW 1/4 of the SE 1/4 of Section 28, T80N, R19W, Jasper County, Iowa. The owner of record is the city of Newton. The site was entered on the Registry in 1984. The Maytag Company owned the site from 1934 until they sold the property to J.D. O'Roake in 1960. The city of Newton purchased the property from J.D. O'Roake in 1971.

SITE CLASSIFICATION

In 2001, the classification of this site was revised from "c" to "d" Site Properly Closed, Requires Continued Management in the form periodic inspection.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The site was used for about 25 years as a dump for the Maytag Company and the city of Newton. The quantity and type of wastes at the site are not fully known. The Maytag Company wastes may have included halogenated solvents, quenching bath sludges, spent plating bath solutions and sludges, corrosives, ignitable wastes, and spent non-halogenated solvents. All hazardous wastes may have been placed in 55-gallon drums before disposal.

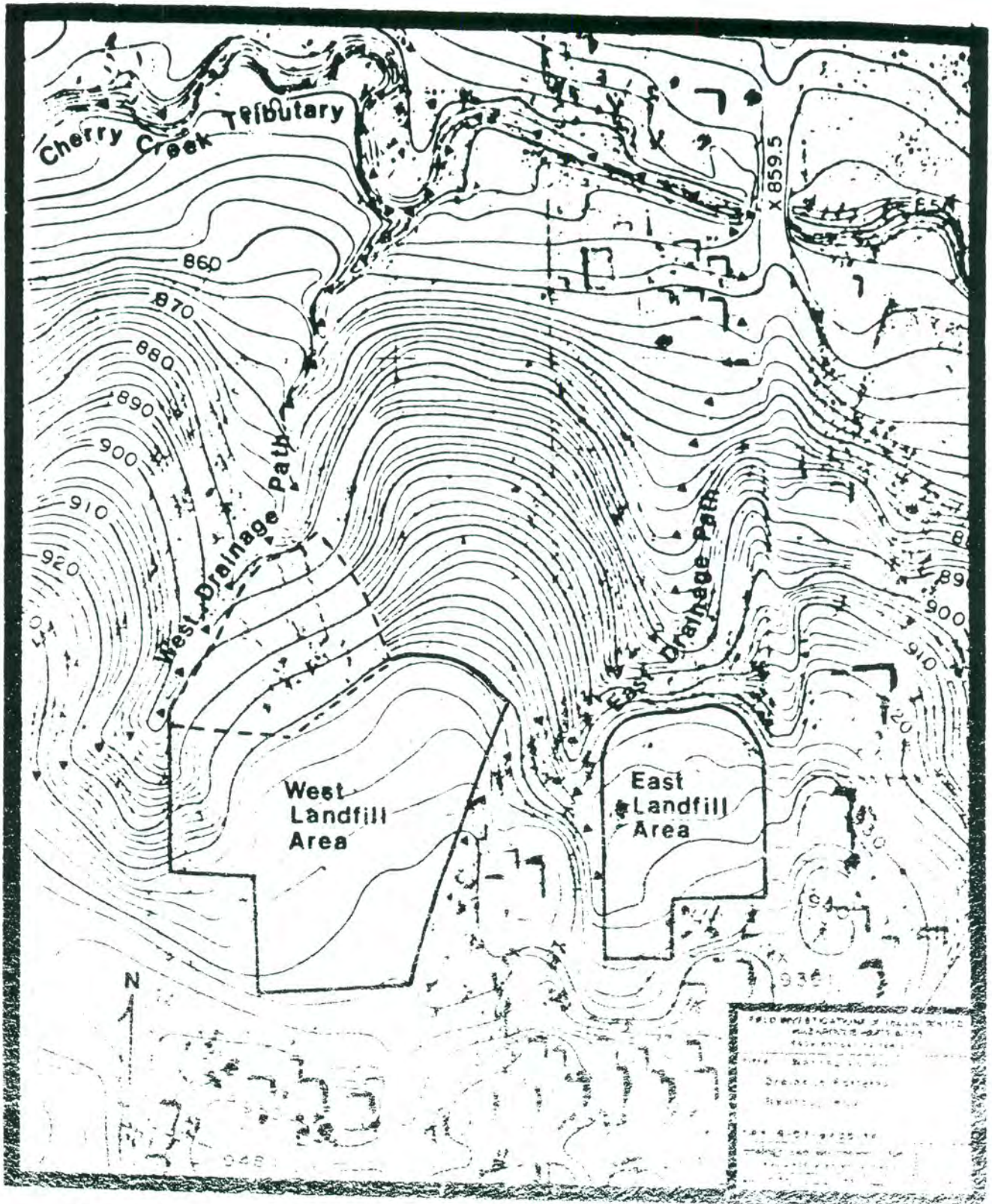
SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

Heavy metals appear to be leaching from the site. Cadmium, chromium, and lead were found above background levels in some of the samples. However, the sampling indicates the current surface water migration is contained in a localized area. The contaminated surface waters are fairly isolated and are not used for drinking water. Therefore, the threat from this contamination to the environment appears to be low. The effect of this site on groundwater has not been fully evaluated. However, the site does not appear to be affecting the city of Newton's wells located about five miles from the site.

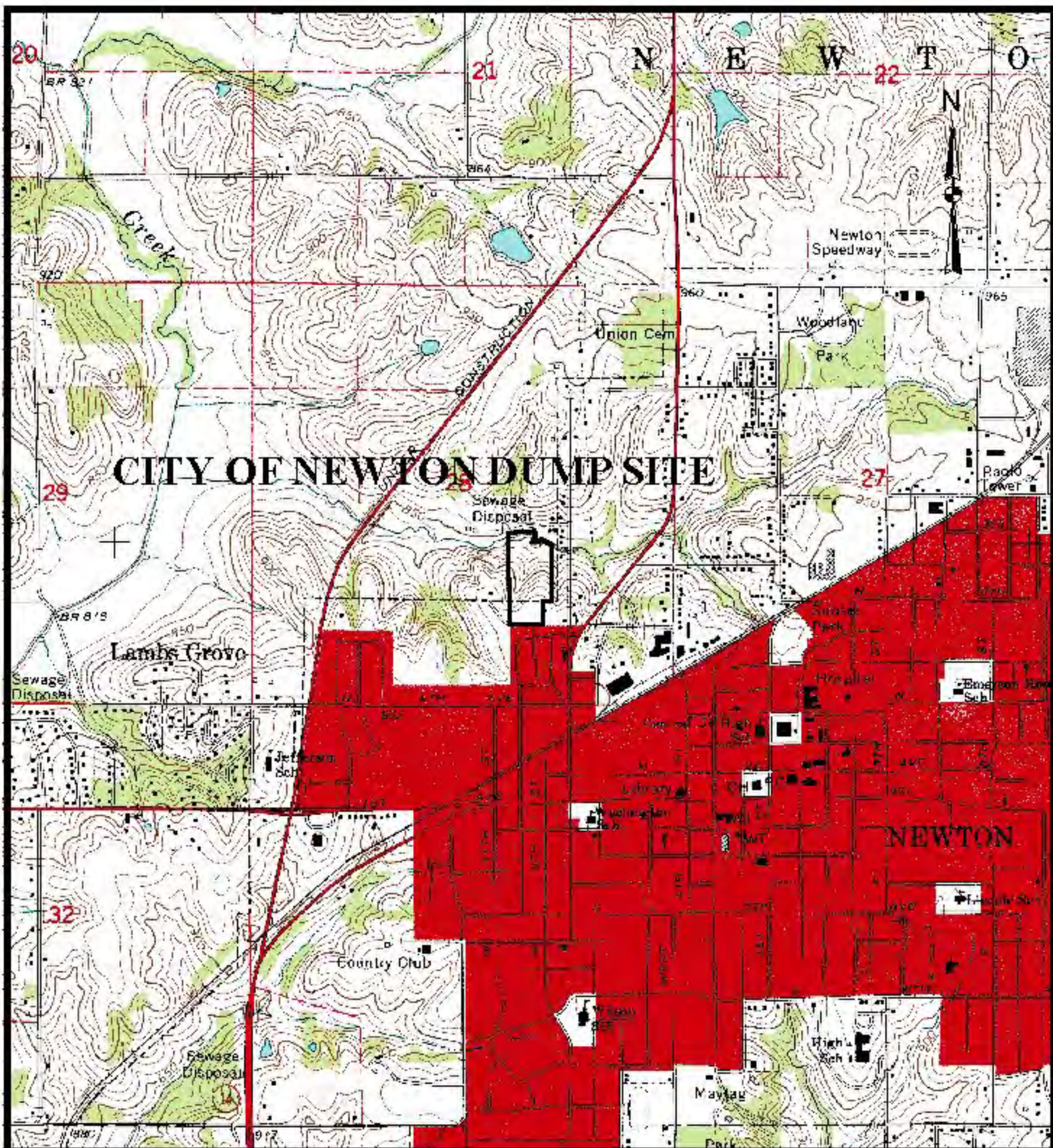
SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA was the lead agency for the 1985 investigation and evaluation of this site. The EPA has referred the site back to state authority for any further action. The IDNR will provide periodic inspection.

In December 1985 the EPA completed an evaluation of samples taken at the site. Soil samples from the landfill surface indicate the site is covered with moderate to low permeability soils. Geophysical surveys of the site show the majority of the waste may be buried on the northern edge of the landfill. Unfortunately, this portion of the landfill has an inadequate soil cover and a large slope. Therefore, landfill material from this area is subject to both leaching and erosion. Surface water and sediment samples show metal contaminants are leaching from the landfill to drainage ways near the site and to a tributary of Cherry Creek.



(Newton, City of, Dump Site)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 Feet

NORTHWESTERN STATES PORTLAND CEMENT COMPANY

(Mason City, Iowa)

GENERAL DESCRIPTION

The Northwestern States Portland Cement Company (NWSPCC) site is located in the S 1/2 of Section 33, T97N, R20W and in the N 1/2 of the NW 1/4 of Section 4, T96N, R20W, Cerro Gordo County, Iowa. The approximately 250-acre site is located near a north side Mason City residential area. Calmus Creek flows by the site to the Winnebago River, which is less than a mile east. The owner of record is NWSPCC, which has become Holnam Inc. and the Holcim (US) Inc. The plant is no longer operational. The site was entered on the Registry in April 1992. The EPA placed the site on the National Priorities List (NPL) in August 1990 and was subsequently de-listed from the NPL in August 1995.

SITE CLASSIFICATION

The site was classified "d" with the completion of closure activities in 1993.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The NWSPCC facility manufactured cement since 1908 in an area referred to as the West Quarry site, which was mined for limestone until 1950. From 1969 to 1985, NWSPCC used the quarry for the disposal of approximately 2,000,000 tons of waste kiln dust. When disposal activities ceased the quarry's unfilled area had been reduced to 40 acres and contained about 420 million gallons of water.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

NWSPCC began to monitor the pH in the quarry water in 1974 after noticing a change in color of the quarry water. From April 1974 to January 1976 the pH increased gradually (from 8.0 to 8.7) followed by a rapid increase to a pH of 11.8 by April and then leveling off at about 12.5 in 1980. In response to quarry de-watering initiated in 1987, pH levels have declined.

In 1979, two seeps emerged from the northeastern portion of the filled part of the quarry and flowed overland to Calmus Creek. During a 1984 study by the IDNR, Calmus Creek was found to have elevated pH downstream from the seeps and in April 1985, ordered NWSPCC to cease discharge from the seep area to Calmus Creek. After a September 1986 fish kill in Calmus Creek, the IDNR conducted additional stream sampling and found pH downstream from the seep area ranged 10.2 to 10.5. Elevated potassium and white residue on the streambed were also noted. In October 1986, the IDNR again ordered NWSPCC to cease discharge from the seep area.

The major health and environmental concern at NWSPCC is contaminated surface water and groundwater resulting from contact with waste cement kiln dust in the West Quarry. The kiln dust includes calcium oxide (CaO), which reacts with water and releases hydroxide ions (OH⁻) into solution. The hydroxide ion concentration directly controls the pH level in a liquid. The site has caused local groundwater and surface water to be impacted by high pH values, an increase in total dissolved solids, and elevated concentrations of potassium, sulfate, and sodium.

Impacted groundwater has been found to exist within the kiln dust fill and in the bedrock underlying and adjacent to the quarry. The degree of impact has been shown to decrease with depth and no off-site groundwater contamination has been found. However, potential pathways of groundwater migration exist via the Devonian bedrock aquifer. Nearby wells which draw from this aquifer include ten private wells about a mile north of the site and three wells in the Lime Creek Nature Preserve about a mile and a half northeast of the site. The Mason City water supply wells and other high capacity wells are completed in the deeper Cambrian Jordan Sandstone at depths greater than 1,200 feet. These deep wells are typically uncased through the Devonian aquifer.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

In 1987, the EPA conducted a Site Inspection (SI) and based on the findings of the SI, the site was proposed for the NPL in June 1988. In June 1987, NWSPCC installed an acid treatment system adjacent to Calmus Creek. In addition to treating the seep water, the system was used to treat water being removed from the West Quarry pond. The treated water was discharged to Calmus Creek in accordance with an NPDES permit issued by the department. The discharge of water from the acid-neutralization continued to pose potential water quality problems in Calmus Creek due to its elevated levels of dissolved solids and phenols.

NWSPCC initiated a Remedial Investigation/Feasibility Study (RI/FS) in 1988. The department issued an Administrative Order to NWSPCC in September 1989 for the completion of the RI/FS. This order was replaced in December 1989 with a consent order for the same. NWSPCC completed the RI/FS in March 1990. A Record of Decision (ROD) was completed in June 1990 under state lead. The EPA then negotiated an agreement with NWSPCC for the design and construction of the remedial action prescribed in the ROD. Remedial action was initiated in 1992 and construction was completed in 1993.

The Record of Decision (ROD) for the selected remedy of waste isolation was completed in June 1990. The implementation of these remedial activities continues to be performed under the terms of the EPA Consent Decree 90-11-2-618. Isolation of the kiln dust was accomplished by the sequential implementation of the following remedial technologies:

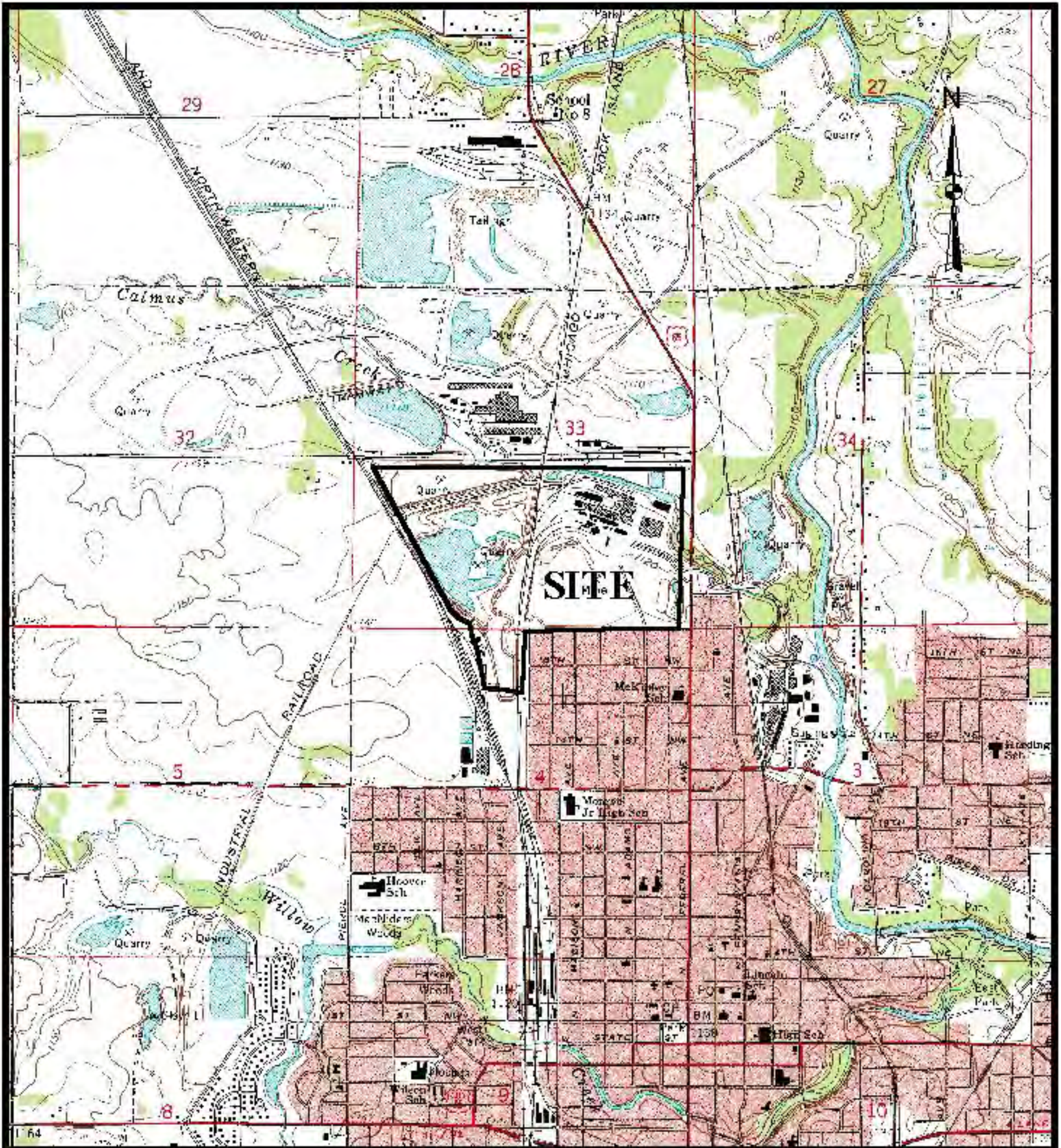
- The West Quarry was drained in September 1989.
- Construct a permanent drain system in the floor of the de-watered quarry was completed prior to the ROD. The system is inspected on an annual basis and repaired as necessary.
- Bedrock de-watering wells were completed in 1992.
- Kiln dust monitoring wells were installed in 1992.
- An engineered cap was placed over the kiln dust in 1993. The cap is inspected on an annual basis and repaired as necessary.
- Treatment in compliance with the state NPDES permit of extracted waters prior discharge to Calmus Creek. A new treatment facility was completed in 1993.
- Quarterly groundwater monitoring for two years was required after the completion of remedial construction in October 1993. Sampling is now conducted on an annual basis.

The study of Calmus Creek was completed in August 1995. Based on the results, the water quality of the creek complies with the state requirements for a Class B warm-water stream.

The plant ceased operation in of 2009; however, operation and maintenance of the remedial system and annual reports continue. The EPA completed a five-year review of the site in 2012. The EPA concluded the remedial action continues to be protective and had no recommendation for any follow-up action.

Ongoing activities at the site include annual cap inspection and groundwater monitoring and continued operation and maintenance of the hydraulic isolation system.

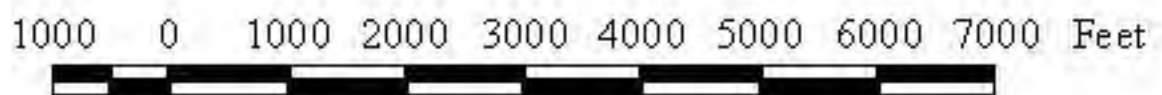
(Northwestern States Portland Cement Company)



SITE



Contour Interval 10 Feet



PEOPLES NATURAL GAS
(Dubuque, Iowa)

GENERAL DESCRIPTION

The 10-acre site is located in downtown Dubuque, in the W 1/2 of the SE 1/4 of Section 19, T89N, R3E, Dubuque County, Iowa, and is bordered by East Eleventh Street, Kerper Boulevard, and the Soo Line Railroad. The site is co-owned by the city of Dubuque and the state of Iowa. The previous site owner was Peoples Natural Gas. Midwest Gas is the responsible party for the cleanup of the site. The site was entered on the Registry in August 1989. The EPA placed the site on the National Priorities List (NPL) in August 1990.

SITE CLASSIFICATION

In 2010 the site is re-classified "d" in accordance with 455B.427.3.

TYPE AND QUANTITY OF HAZARDOUS WASTE

A manufactured gas plant operated at the site from the early 1900s until 1954. During its operation, coal tar sludges, cyanide-bearing iron oxide waste, and other associated gasification wastes were generated. Some of these wastes were disposed of at the site. The city of Dubuque operates a Public Works Garage (with leaking underground storage tanks) on the eastern part of the site. The disposed wastes at the site are in contact with groundwater.

| TABLE 1 Groundwater Contamination | | | |
|--|---------------------------------|----------------------|---------------------------------|
| Compound | Highest Value (ug/L) | Compound | Highest Value (ug/L) |
| Benzene | 4,400 | Anthracene | 180 |
| Toluene | 2,000 | Fluoranthene | 220 |
| Styrene | 1,300 | Pyrene | 170 |
| Phenol | 9,800 | Benzo(a)anthracene | 100 |
| Cresols | 30,000 | Chrysene | 78 |
| 2,4-Dimethylphenol | 25,000 | Benzo(a)fluoranthene | 92 |
| Naphthalene | 5,800 | Benzo(a)pyrene | 75 |
| 2-Methylnaphthalene | 830 | | |
| Acenaphthylene | 630 | Cyanide | 4,700 |
| Acenaphthene | 220 | Arsenic | 57 |
| Fluorene | 300 | Lead | 670 |
| Penanthrene | 520 | Iron | 120,000 |

Values in Bold exceed Iowa Land Recycling Program standards for protected ground water

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL COMNCERNS

- **The Primary public health concern at this site is the protection of public drinking water. The primary environmental concern is for protection of surface water of the Mississippi and associated fish and wildlife.**

The city's municipal water wells are located about 1.6 miles north of the site. The Mississippi River is about 2000 feet east and Dove Harbor is about 500 feet east of the site. The Upper Mississippi River Wildlife and Fish Refuge is located 1.5 miles downstream of the site.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for the site.

Following discovery of coal tar residues at the site, the EPA began investigating the site in 1986. The results from samples collected from monitoring wells in 1987 showed groundwater contamination with several hazardous substances above state action levels. The highest concentrations found for these substances appear in Table 1. These substances also were found in high concentrations in on-site soil samples.

The EPA issued a CERCLA 106 Consent Order in 1989 calling for further evaluation of the site. The evaluation led to the selection and implementation of a removal action in September 1990 requiring both a removal action and a Remedial Investigation/Feasibility Study (RI/FS). The removal action included the excavation of contaminated soils. In November 1990 the excavation from the upper 22 feet of the site was completed. During the removal action, additional contamination was discovered 22 feet below grade beneath tar and ammonia tanks. A supplemental work plan was submitted for review in January 1991. This plan included soil removal, groundwater collection and treatment, and bioremediation to address contaminants not affected by the soil removal.

A Record of Decision (ROD) was completed in September 1991 for Remedial Action at the eastern portion of the site that included soil excavation, incineration and groundwater remediation. The final Remedial Design work plan was submitted for EPA approval in October 1992. The EPA approved a revised work plan, which was submitted in December 1992. Total Site excavation started after a 1992 Consent Order between EPA and Mid West Gas.

Field activities including monitoring well replacement, well sampling and a six-month bio-treatability study were conducted in 1993. The Preliminary Remedial Design was submitted to EPA in July 1993. The Interim Remedial Design was submitted for comments in October 1993. The draft "Aquifer Report" was submitted to EPA in August 1993. The Final Remedial Design was submitted in 1994. The Remedial Action Work plan was submitted in 1994 and approved by EPA. The in situ bioremediation field pilot study was ongoing in 1994.

Installation of a ground water extraction and treatment system was completed in 1996. A deep-aquifer monitoring program was approved. Phase II soil removal activities consisting of additional excavation were completed in 1998. An enhanced bio-treatment system began operation in 2000.

2004: In 2004 the remediation of contaminated groundwater was reevaluated. Additional assessment activities are planned related to defining the extent of free-phase coal tars and additional groundwater monitoring.

2005: EPA has completed the second five-year review for the site during the fall of 2005. During the review it was noted the current remedial efforts were not performing as desired and MidAmerican Energy Company needed to address the shortcomings. In November 2005 MidAmerican Energy submitted a Technical Impracticability Evaluation Report showing it was not practicable to recover the remaining contamination. As of December 2005 the report is under review by EPA and the IDNR.

2006: In December 2006 Mid American Energy has requested a Petition for Technical Impracticability Waiver for the site. Mid American Energy states that it is technically impracticable from an engineering perspective to comply with performance standards for the groundwater within the TI zone. The EPA is currently reviewing the waiver request.

2007: The RP continues to monitor natural attenuation parameters in the groundwater.

2008: The 5 year review was completed with no major discrepancies found. The RP will continue to monitor natural attenuation parameters in the groundwater.

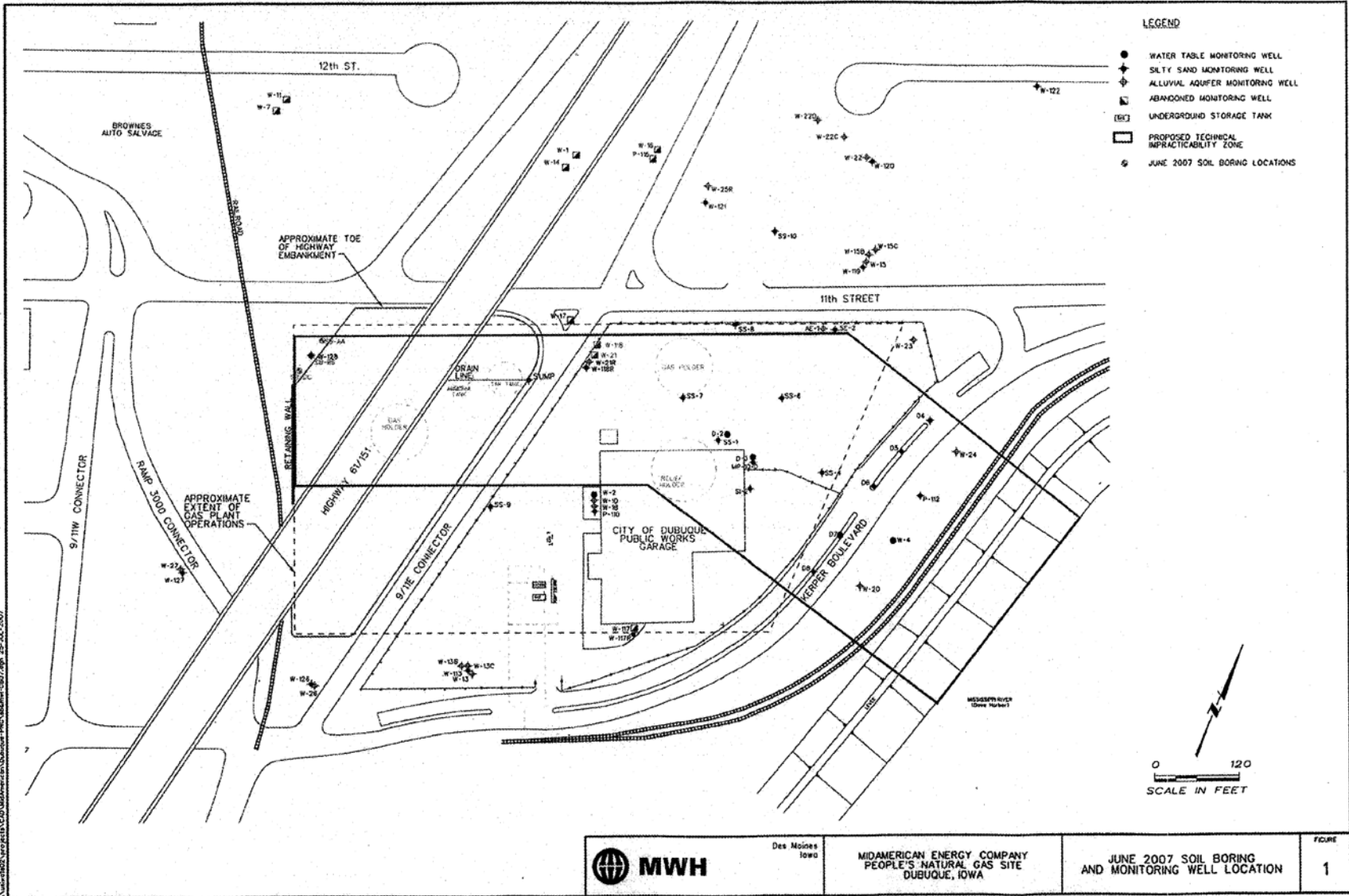
2009: The RP continues to monitor natural attenuation parameters in the groundwater.

2010: The RP continues to monitor natural attenuation parameters in the groundwater. A facility adjacent to the former Peoples Manufactured Gas Plant (MPG) facility applied for a permit to install geothermal pump and dump wells just a few hundred feet of the MPG site contaminated groundwater plume. At this time the permit was on hold until further research could determine if the MPG contaminants could be drawn to the proposed geothermal wells.

2012: EPA cleared the way for the submittal of a Technical Impracticability (TI) Evaluation Report (Amended TI Evaluation Report) that was submitted to the United States Environmental Protection Agency (USEPA) May 15, 2012. On December 1, 2006, MidAmerican Energy Company (MidAmerican) submitted a petition to the USEPA to modify the groundwater component of the remedial action by waiving compliance with performance standards for groundwater on a portion of the Site, identified as the TI Zone. In the Amended TI Evaluation Report, MidAmerican proposed a technically practicable alternative remedial strategy that is protective of human health and the environment. The alternative remedial strategy incorporates access restrictions, previous soil removal actions and site geology, hydraulic containment of the down gradient silty sand aquifer plume, and monitored natural attenuation (MNA) to achieve the Site groundwater chemical-specific Applicable or Relevant, and Appropriate Requirements (ARARs)/remediation goals outside the proposed TI Zone. IDNR approved the plan with the inclusion of an environmental covenant to help clarify any responsible party concerns in the future.

2013: Due to the Technical Impracticability (TI) waiver approval in 2012 the ROD was amended in 2013. The TI waiver will be implemented for ground water within the TI zone; ground water cleanup levels must be met outside of the TI zone, however institutional controls will prevent exposure to contaminated ground water in the TI zone, as well as exposure to contamination in subsurface soils and vapor intrusion. The selected remedy for the amended ROD includes institutional controls along with extraction wells to prevent movement of the contaminants in the ground water and monitoring natural degradation of the contaminants.

2014: Additional monitoring wells and the new extraction wells were installed according to the 2013 ROD amendment. IDNR Water Quality Bureau approved the water extraction request for the upgraded mitigation system. As part of the technical impracticability waiver approval and the ROD amendment a new groundwater monitoring plan and quality assurance project plan was submitted to and approved by EPA in October 2014.



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Des Moines
Iowa

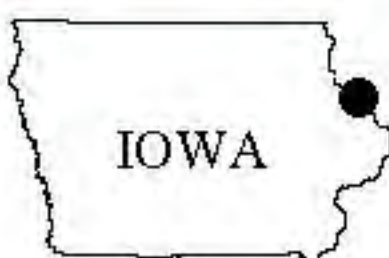
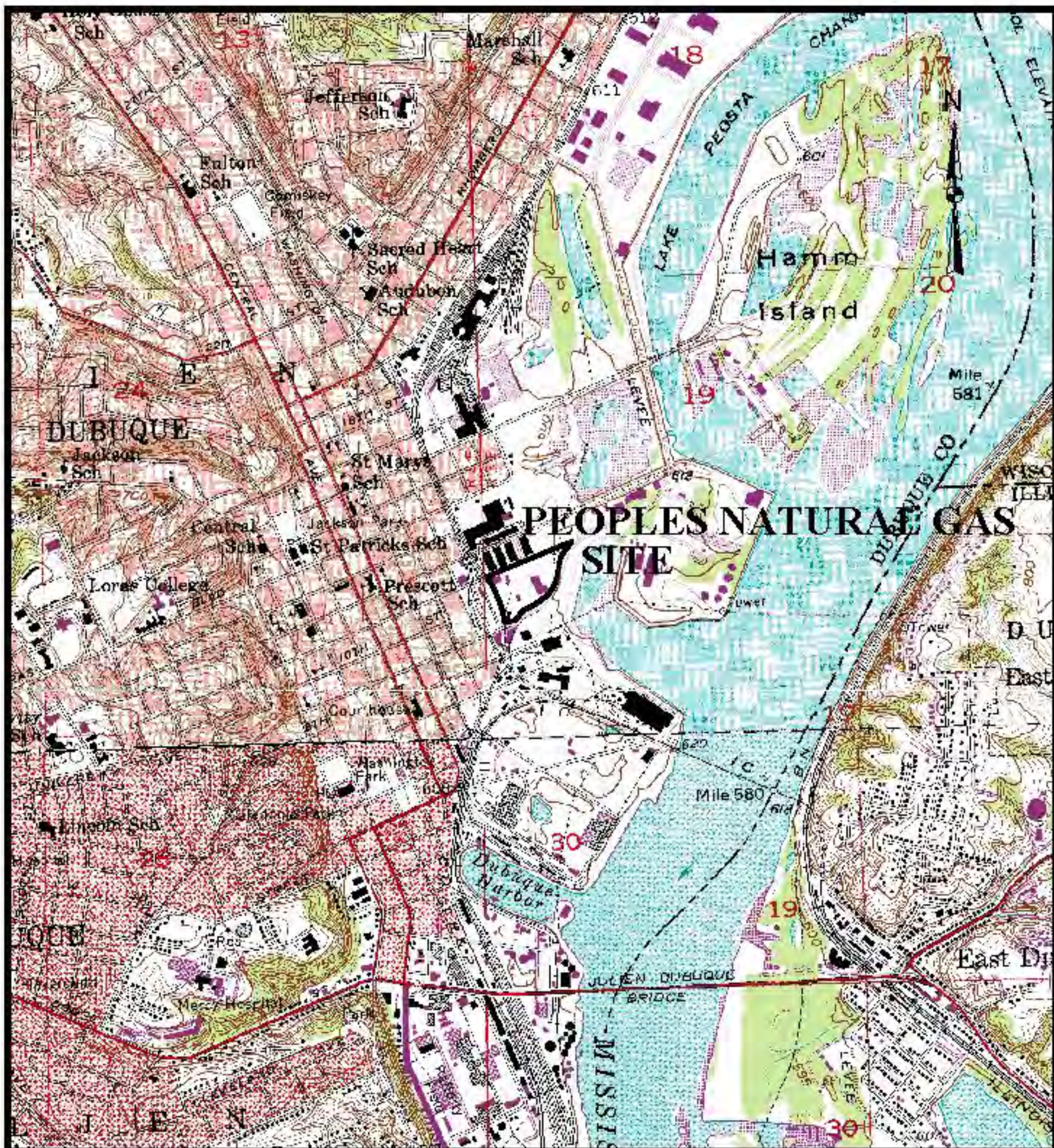
MIDAMERICAN ENERGY COMPANY
PEOPLE'S NATURAL GAS SITE
DUBUQUE, IOWA

JUNE 2007 SOIL BORING
AND MONITORING WELL LOCATION

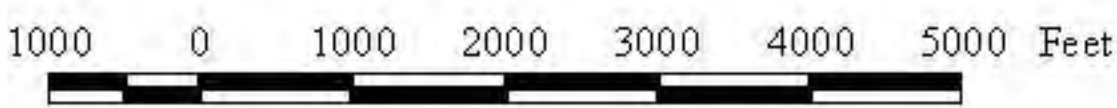
FIGURE

1

(Peoples Natural Gas)



Contour Interval 10 Feet



PROGRESSIVE FOUNDRY (FORMER WASTE DISPOSAL SITE)

(Perry, Iowa)

GENERAL DESCRIPTION

The 3.7-acre site is located in the SE 1/4 of the SW 1/4 of Section 5, T81N, R28W, Dallas County, Iowa adjacent to the east side of the North Raccoon River. The owner of record is Beverly Devilbiss. The site was entered on the Registry in February 1991. Progressive Foundry ceased disposal at the site after the IDNR discovered the site during a routine air inspection of the manufacturing facility in September 1982. Wastes were then shipped to the Black Hawk County Landfill from 1983 to 1985. Since 1986 waste is shipped to Peoria Disposal County Landfill in Illinois. **This site is now being used as an auto salvage yard.**

SITE CLASSIFICATION

In 2002, this site was re-classified to "d" Site Properly Closed, requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The site was used for the disposal of foundry wastes from 1974 until 1982. The open dumping is estimated to have included 8,636 tons of sand, clay, and sea coal, and 443 tons of scrubber sludge. The scrubber sludge was been identified as a hazardous waste because of high lead levels. On-site soils are contaminated with lead and mercury. Semi-volatile organic compounds (SVOC's) specifically, butyl benzyl phthalate and the poly-aromatic hydrocarbons (PAH's), benzo(a)anthracene, chrysene, benzo(b)fluoranthene, and pyrene) were detected in on-site soil and soil/waste piles. Fifty-five gallon drums of hardened cupola wastes containing heavy metals, cyanides, and phenols are also buried on-site.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary health concern is the potential exposure to heavy metal, and PAH's in soil.**
- **The primary environmental concern is for the water quality of the North Raccoon River.**

The site is in the floodplain of, and immediately adjacent to, the North Raccoon River. Two intermittent creeks flow into a pond on the site and subsequently discharge into the North Raccoon River. Flooding could result in contaminant movement into the North Raccoon River as well as dispersal. The city of Perry draws a portion of its drinking water from alluvial aquifer wells located 1.5 to 2.5 miles southeast and down gradient of the site.

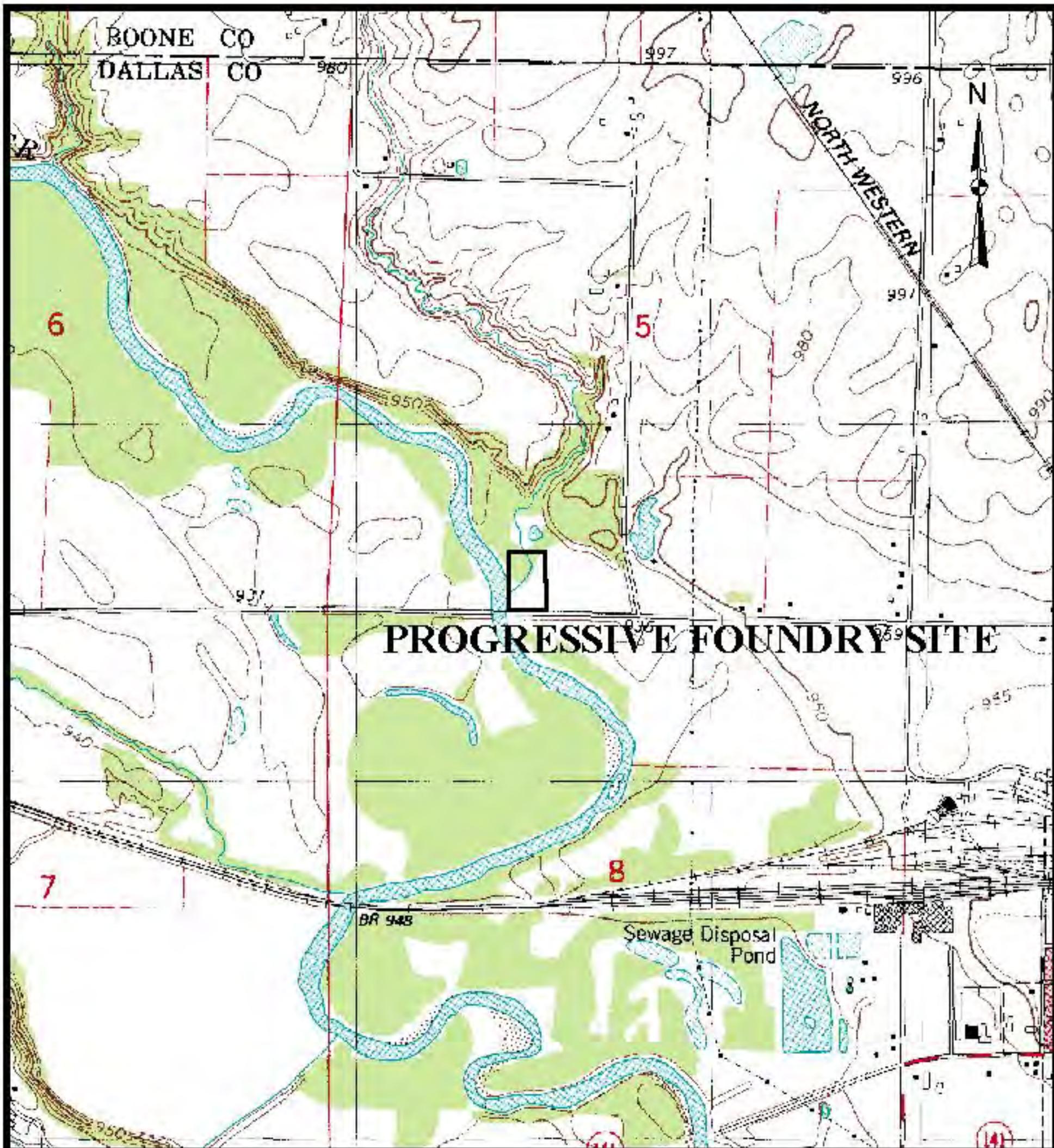
SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

In June 1984 the IDNR referred the Progressive Foundry facility to the EPA for violations of the Resource Conservation and Recovery Act (RCRA). Since then, the production, storage, and disposal of wastes at the manufacturing facility have been regulated under the RCRA program.

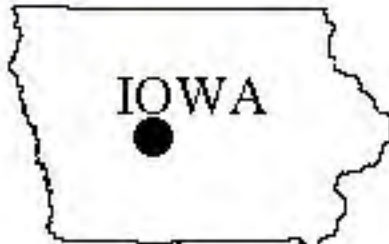
The EPA, under the Superfund program, conducted a site investigation of the disposal area in May 1985. Soil samples showed elevated levels of lead and mercury. No significant heavy metal contamination was found in nearby residential or city water supply wells. Upon completion of the site investigation in 1986, the Superfund program referred the site to the RCRA program, however, RCRA is regulating the manufacturing site and that determined the disposal site does not fall under its jurisdiction.

The EPA has referred the site back to state authority. The IDNR conducts periodic inspection of the site. The last inspection was conducted in 2003.

(Progressive Foundry)



PROGRESSIVE FOUNDRY SITE



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 Feet



RALSTON SITE

(Cedar Rapids, Iowa)

GENERAL DESCRIPTION

The Ralston site occupies two acres in the NE 1/4 of the NW 1/4 of Section 2, Township 83N, Range 7W, Cedar Rapids, Linn County, Iowa and is now owned by Rockwell Collins. The site was entered on the Registry in May 1990.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

From 1956 to 1958 the Ralston site was operated by Rockwell International as a disposal area for wastes from a gold plating facility and other industrial sources. A surface disposal area at the site was used to burn wastes produced by the plant. An adjacent area was used as a burial site for drummed cyanide plating waste.

High concentrations of heavy metals and volatile organic's have been detected in soil over most of the site including lead, nickel, and cadmium. Trichloroethylene (TCE) and tetrachloroethylene (PCE) were also detected in soil.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located in northern Cedar Rapids, Iowa. The nearest single family residence is located 700 feet southeast of the site and the site is surrounded by residential areas. A fence limits access to the site.

During the 1992 Phase I Remedial Investigation, contamination was found in a shallow bedrock well downgradient of the disposal area. This included TCE, 1,2-DCE, and VC at 2,200 ug/L, 4,600 ug/L, 2,100 ug/L respectively. Several private wells are located in the vicinity of the site, including 2 within 1,000 feet of the site that have been impacted, one above drinking-water levels. Dry Creek is located 100 to 150 feet north of the site. The flooding potential at the site is high, with portions of the site being inundated by a 10-year frequency flood and the disposal site being within the 500-year frequency flood. The site experienced significant flooding during the summer of 1993.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for further investigation and remediation of the site.

A site investigation was performed in November 1988. Soil samples were collected from the site, but no groundwater or surface water samples were collected. The site investigation found high concentrations of barium, copper, and zinc. Lead was identified at levels as high as 1,900 mg/kg. Also found were low levels of cyanide and three volatile organic compounds: trichloroethene, tetrachloroethene, and toluene. Several deteriorated drums filled with concrete were observed exposed on the surface at the site. Two of the concrete-filled drums were found in Dry Creek. The condition of the exposed drums was reported to be very poor. In 1990 Rockwell International had these drums removed from the site.

During November 1990 Rockwell International conducted a site investigation. Soil sample results showed high concentrations of heavy metals and volatile organics over most of the site. Lead, nickel, and cadmium were detected at concentrations of 4,500 mg/kg, 2,400 mg/kg, and 130 mg/kg respectively. Trichloroethylene (TCE) and tetrachloroethylene (PCE) were detected in soil at concentrations of 56 mg/kg and 14 mg/kg respectively.

Phase I of the Remedial Investigation (RI) was conducted at the site in June 1992. TCE, 1,2-dichloroethylene (1,2-DCE), and vinyl chloride (VC) were found in groundwater samples from monitoring wells in the surficial and bedrock aquifers. TCE at 950,000 ug/L was found in the shallow groundwater at the disposal area.

In December 1991, Rockwell International and the EPA entered into an Administrative Order on Consent for conducting a Remedial Investigation/Feasibility Study (RI/FS). In September 1992, Rockwell International agreed to participate in the Superfund Accelerated Cleanup Model (SACM) to expedite source control measures at the site. In November 1992, the Phase II RI was initiated to determine the extent of groundwater contamination. Several bedrock monitoring wells were installed in 1993 as part of this effort. Quarterly monitoring well sampling for the RI was completed in September 1996.

An Engineering Evaluation/Cost Assessment (EA/CA) was prepared by Rockwell in 1993. Four actions were called for in the EA/CA, as listed below. The first two actions listed below were completed in 1994. The remaining two actions were initiated in February 1995. By September 1996 approximately 4,515 pounds of VOCs had been removed from the soil and groundwater at the site.

- 1) Cap the disposal area with clay.
- 2) Stabilize the creek banks.
- 3) Remove contaminants in the disposal area by soil vapor extraction.
- 4) Pump and treat contaminated groundwater in the disposal area and the shallow contaminant plume north of the creek.

In September 1996, the state designated by Chapter 53 rule all groundwater within a one-mile radius of the site a "protected resource." Subsequent to this designation, drilling for groundwater is prohibited within this area without state approval.

A Remedial Investigation of the site was completed and approved by EPA in 1997. The Feasibility Study to evaluate final remedial alternatives was completed in 1999. A Record of Decision was completed September 1999 calling for continued monitoring and institutional control including registry listing and protected water source designation.

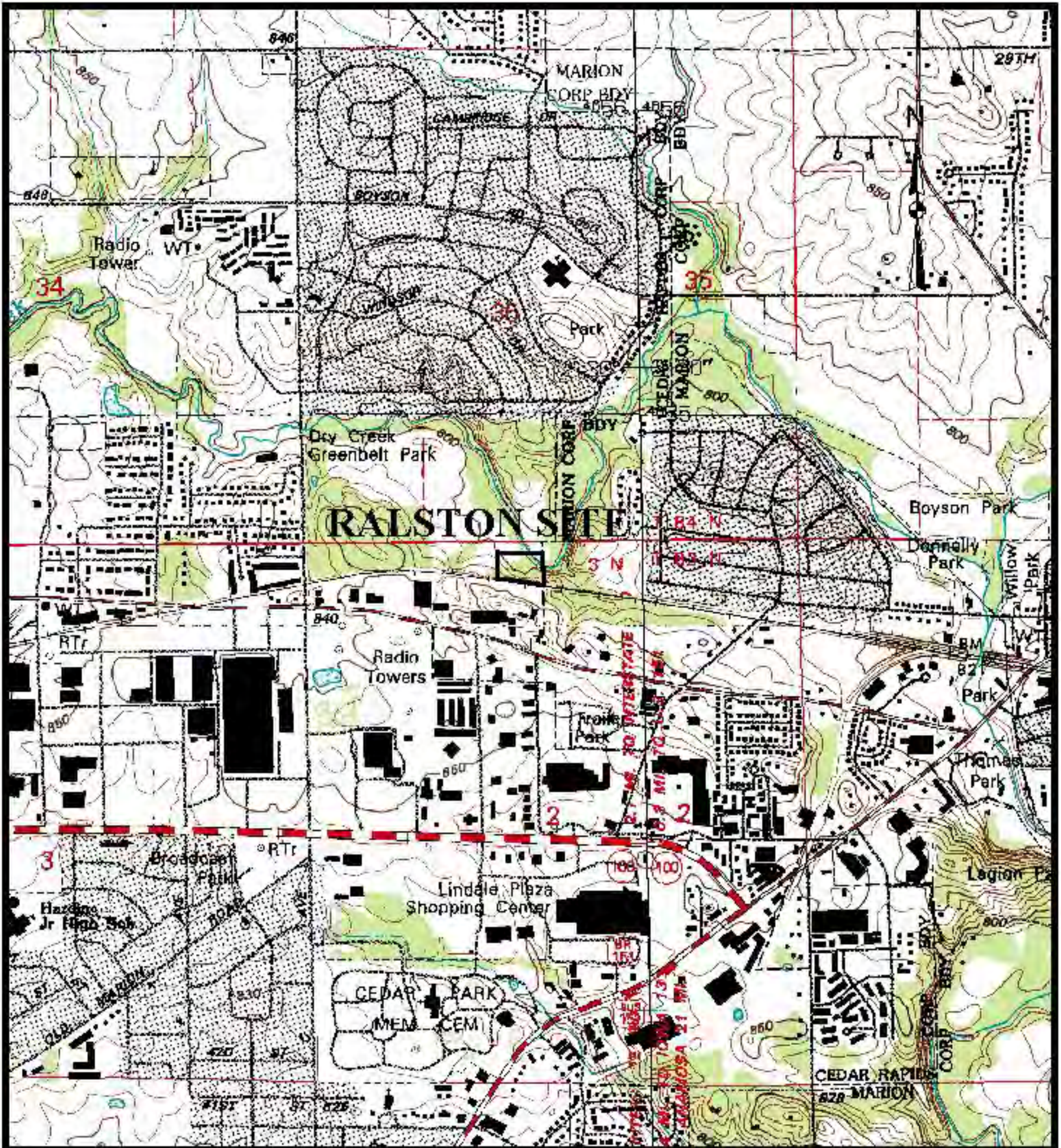
In July 2000 Rockwell entered into a consent order with IDNR for continued oversight by the state.

A superfund five-year review was completed in 2006, which identified no major issues. The five-year review recommended continued groundwater monitoring reduced to an annual frequency and concluded that the remedy at Ralston Site currently protects human health and the environment because there is no exposure to site-related contaminants.

The second five-year review was released in June 2011. It deferred making a protectiveness statement until a vapor intrusion assessment is conducted and evaluation of sediments in Dry Run Creek is done. In September 2013 Rockwell submitted a report of the additional work to address these concerns. In November 2013, the EPA released a five-year review addendum with a protectiveness statement for the entire site.

Rockwell continues to inspect the site twice a year, sample groundwater annually, and submit an annual report to the department.

(Ralston Site)



IOWA

Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 Feet



RED OAK LANDFILL
(Red Oak, Iowa)

GENERAL DESCRIPTION

The site was owned and operated by the city of Red Oak as a landfill from 1962 to 1974. It includes about 40 acres generally described as the NW 1/4 of the SW 1/4 of Section 17, T72N, R38W, Montgomery County, Iowa. The site is located near the East Nishnabotna River, about 1.5 miles northwest of Red Oak, Iowa. The site was operated as a limestone quarry from 1947 to 1953-54 and was subsequently purchased by the city of Red Oak for use as a landfill. It was entered on the State Registry in December 1986 and the EPA placed it on the National Priorities List (NPL) in March 1989.

SITE CLASSIFICATION

In 2001 the site was reclassified as "d" Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZADROUS WASTE

About 20 to 30 loads of refuse were brought to the site daily while it was being operated by the city. This included municipal refuse and waste from several industries. Union Carbide-Battery Production Division, Uniroyal Hose Company, and Art Calender Company are considered the major contributors of industrial waste at the site. Wastes containing lead, mercury, tetrachloroethylene (PCE), toluene, diacetone alcohol, and methyl isobutyl ketone (MIK) were disposed at this site. Union Carbide disposed at least 1,144 drums of solvents at the site. The solvents included toluene, MIK, PCE, mineral spirits, and diacetone alcohol. Their disposal also included laminated paper with high mercury levels. Uniroyal disposed of filter paper material with high lead levels. Art Calender Company disposed of ink wastes.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCENRS

During the RI, elevated levels of volatile organic compounds (VOCs) were detected in subsurface soil and seeps in the southeast corner of the landfill near the river. Samples were collected from two seeps along the bank of the river. About 80 residences and 10 small businesses get their drinking water from shallow wells within three miles of the site. The closest residential well (1,800 feet south of the landfill) has been sampled. No organic contaminants were detected and metal concentrations were not considered abnormally high.

STATUS OF ASSESSMENT, MONITORING OR REMEDICAL ACTIONS

The EPA is the lead agency and conducted the initial site investigation in 1983. The site was listed on the NPL in April 1985. In August 1987 the EPA conducted a site reconnaissance and completed a Remedial Investigation (RI) and Feasibility Study (FS) Work Plan. In December 1989 the EPA and the responsible parties signed a Consent Order for an RI/FS. The RI was conducted with a Phase I part in 1990 and a Phase II part in 1991. The Remedial Investigation (RI) was completed in May 1991. A river-bank slope stability study was completed in 1992 and the Feasibility Study (FS) was completed in August 1992.

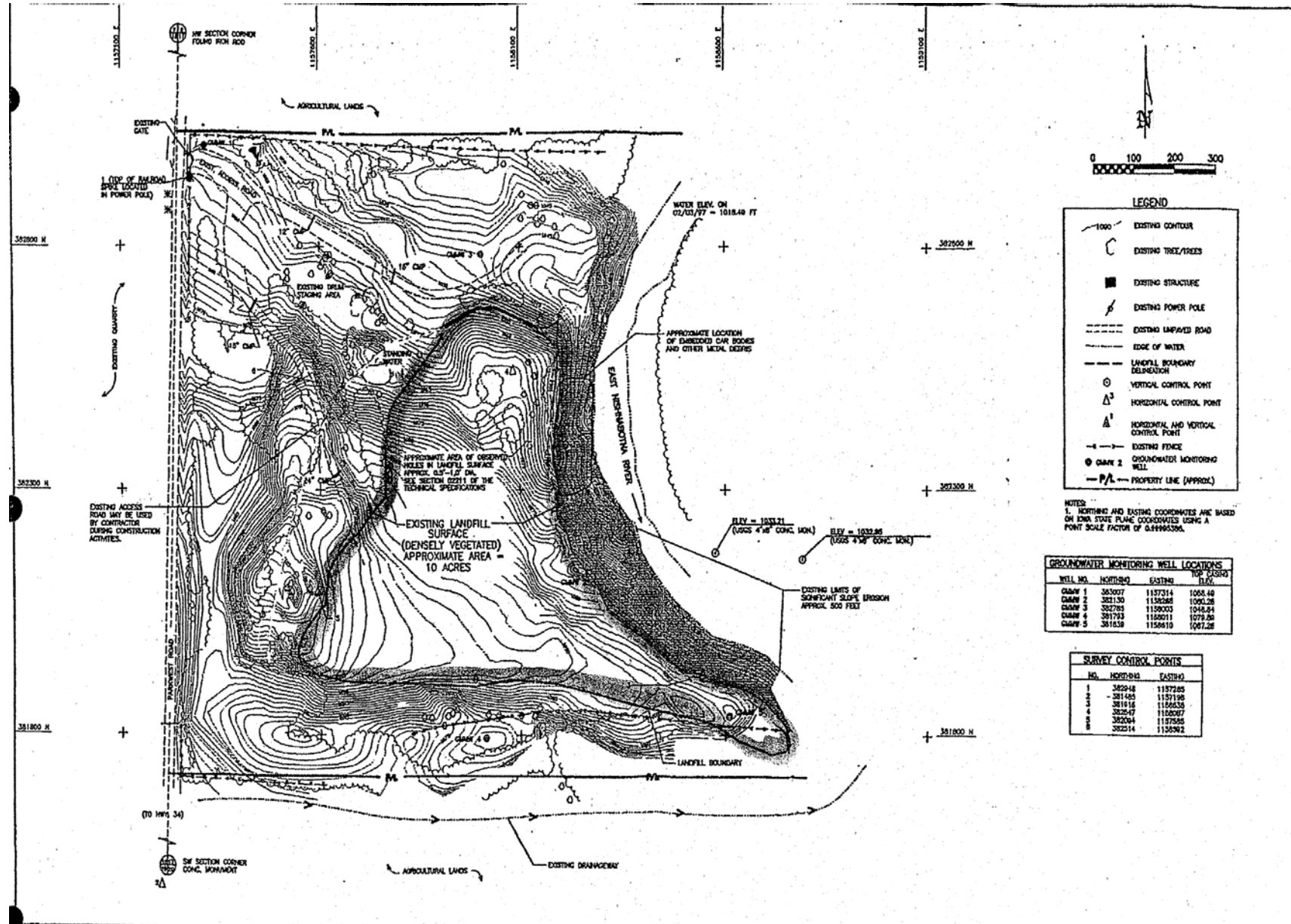
The EPA completed the Record of Decision (ROD) for the site in March 1993. The selected remedial alternative included the following:

- Installation of a sanitary landfill cap in accordance with the state's solid waste regulations.
- Contouring and revegetation to stabilize the river bank slope.
- Construction of a perimeter fence and placement of deed restrictions to prevent inappropriate uses of the site.
- Implementation of a groundwater monitoring program.

In early 1996, the EPA issued an Explanation of Significant Differences (ESD) for a cleanup action. These changes included a reduction in the area and the depth of soil materials required for the landfill cap. The ESD also limited riverbank control measures to vegetation and shaping to prevent erosion at the top of the landfill. The EPA entered a consent decree with the PRPs to perform the Remedial Design/ Remedial action for the site. The remedial measures were commenced in August 1997 and completed in November 1997. The city of Red Oak and an industrial party are responsible for ongoing groundwater monitoring and maintenance of the landfill. The Superfund five-year review conducted in 2007 concluded that the remedy remained protective.

In the summer of 2008 EPA prepared a draft re-use assessment report for the site. Slumping of the riverbank slope resulted from heavy rains in June of 2008. EPA and the responsible parties continue to address the riverbank slumping and the responsible parties continue to conduct annual groundwater sampling. A Superfund five-year review was completed July 2013. The five-year review found that the site continue to be protective.

The DNR assists EPA on oversight of the Red Oak Landfill site. Ongoing actions at the site include annual groundwater monitoring, inspection & maintenance of the landfill cap and drainage structures, and monitoring of the stability of the riverbank slope.



LEGEND

- 1000 — EXISTING CONTOUR
- C EXISTING TREE/TREES
- EXISTING STRUCTURE
- ⚡ EXISTING POWER POLE
- - - EXISTING UNPAVED ROAD
- EDGE OF WATER
- - - LANDFILL BOUNDARY DELINEATION
- VERTICAL CONTROL POINT
- △ HORIZONTAL CONTROL POINT
- △^h HORIZONTAL AND VERTICAL CONTROL POINT
- - - EXISTING FENCE
- GAWE 2 GROUNDWATER MONITORING WELL
- P.L. — PROPERTY LINE (APPROX.)

NOTES:
 1. HORIZONTAL AND EXISTING COORDINATES ARE BASED ON IOWA STATE PLANE COORDINATES USING A POINT SCALE FACTOR OF 0.999995396.

GROUNDWATER MONITORING WELL LOCATIONS

| WELL NO. | NORTHING | EASTING | TOP ELEVATION |
|----------|----------|---------|---------------|
| GAWF 1 | 383007 | 1137314 | 1058.40 |
| GAWF 2 | 382130 | 1138268 | 1090.28 |
| GAWF 3 | 382795 | 1139003 | 1049.84 |
| GAWF 4 | 381733 | 1138011 | 1079.25 |
| GAWF 5 | 381838 | 1158610 | 1087.28 |

SURVEY CONTROL POINTS

| NO. | NORTHING | EASTING |
|-----|----------|---------|
| 1 | 382948 | 1137285 |
| 2 | 381485 | 1137198 |
| 3 | 381816 | 1138535 |
| 4 | 382847 | 1138067 |
| 5 | 382084 | 1137585 |
| 6 | 382514 | 1158962 |

RSV ENGINEERING, INC.
 ENGINEERS, PLANNERS, SURVEYORS,
 CONSTRUCTION MANAGERS,
 ENVIRONMENTAL SCIENTISTS
 110 N. WOOD DR., SUITE C, JEFFERSON, IA 53548 (414) 874-3411

| REV | DATE | BY | CHKD |
|-----|--------|-----|------|
| 1 | 8/7/97 | JKS | JKS |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |

RED OAK LANDFILL SITE
 REMEDIAL ACTION
 RED OAK, IOWA

| NO. | REVISIONS | BY | DATE |
|-----|-----------|----|------|
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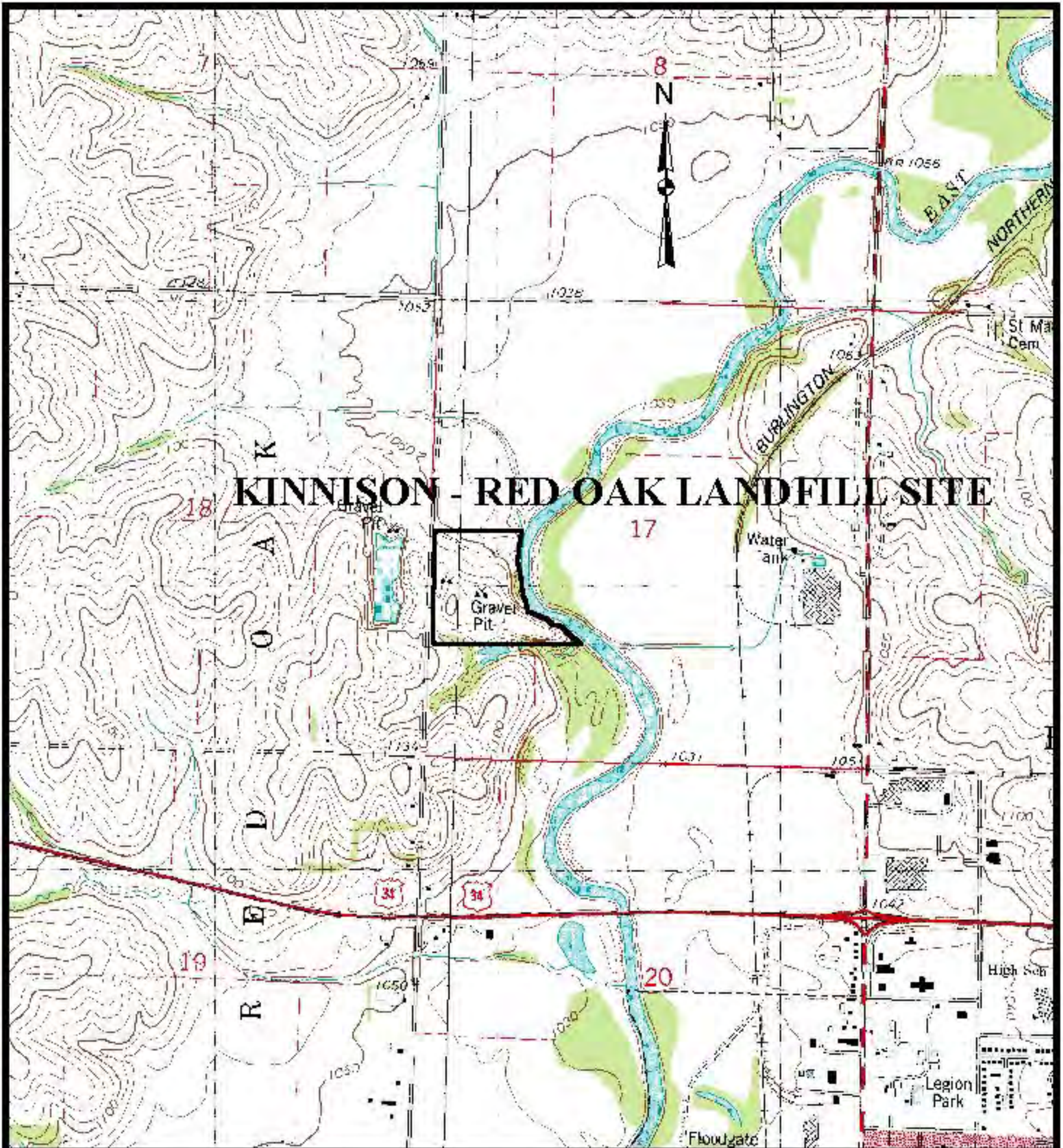
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**SITE PLAN
 EXISTING CONDITIONS**

| SHEET NO. |
|-----------|
| 1 |

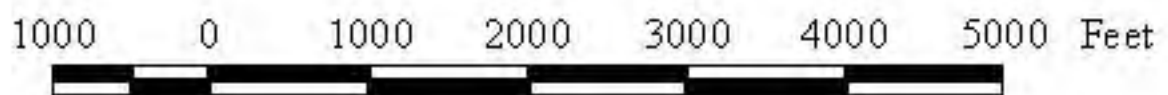
REV. PROJ. NO. 87006

(Kinnison, Lowell & Blanche - Red Oak Landfill)



KINNISON - RED OAK LANDFILL SITE

Contour Interval 10 Feet



ROLSCREEN

(Pella, Iowa)

GENERAL DESCRIPTION

The Rolscreen site is located in the NW 1/4 of the SE 1/4 of Section 10, Township 76N, Range 18W in Pella, Iowa Marion County and is owned by the Rolscreen Company. The site was entered on the Registry in January 1990.

SITE CLASSIFICATION

In 2001 the site was reclassified as “d” Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The quantity of hazardous waste released from this site is undetermined. Initially, three underground tanks were identified on this site as having released a compound known as “Miltreat”. This wood preservative compound consisted of 95% mineral spirits and 5% pentachlorophenol (PCP). A subsequent groundwater investigation identified PCP, benzene, toluene, and xylenes in monitoring wells located on-site.

STATUS OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern has been the potential exposure to contaminated groundwater**

The Rolscreen Company is located within Pella, Iowa. The city obtains its water supply from a set of collection wells located below the Red Rock Dam, which is approximately 3.7 miles southwest of the site. The closest well is located at a farmhouse approximately one-half mile south of the site. Sent Creek is located approximately one mile southwest of the site. The creek flows south into the Des Moines River below Red Rock Dam. The river is approximately 3.7 miles south of the site.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

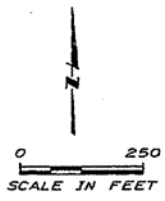
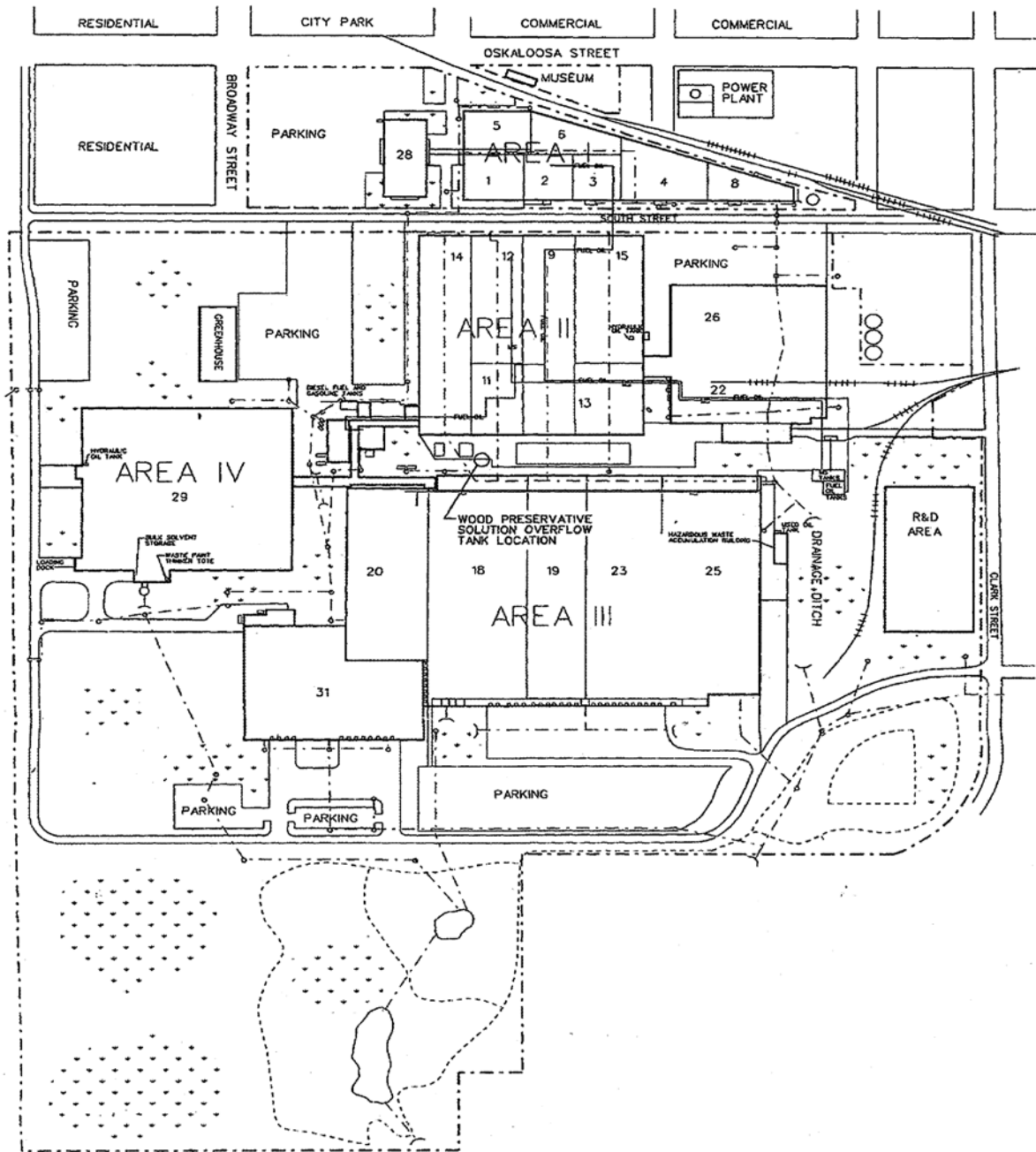
The state is the lead agency for the site.

In September 1988, Rolscreen removed 11 other underground tanks. Soil samples collected from the tank area showed a release had occurred. The original three Miltreat tanks were removed in January 1989. In the process of removing the tanks, an in-situ biological treatment system was installed. The system became fully operational in October 1989 and had five major elements. These included water collection, nutrient feed, water distribution, air distribution, and a secondary bio-reactor.

Remedial actions at the site were conducted in accordance with Administrative Consent Order 88-HC-05. Under the terms of the order, groundwater cleanup was to continue until the PCP level is reduced to 0.22 mg/L. The Order has since been rescinded and despite remedial efforts, groundwater contamination has remained in the immediate vicinity of the site at levels an order of magnitude above the cleanup goal and more than three orders of magnitude above the safe drinking water standard for PCP. The in-situ bio-remediation system in operation since late 1989 had only a marginal effect in reducing PCP contamination levels and was shut down in 1999.

In 2002 the IDNR closed the Consent Order as the site completed all remedial actions identified in the order. Although groundwater monitoring has been terminated, due to the determination of stable or improving conditions, the site remains listed to prevent installation of drinking water wells in the area.

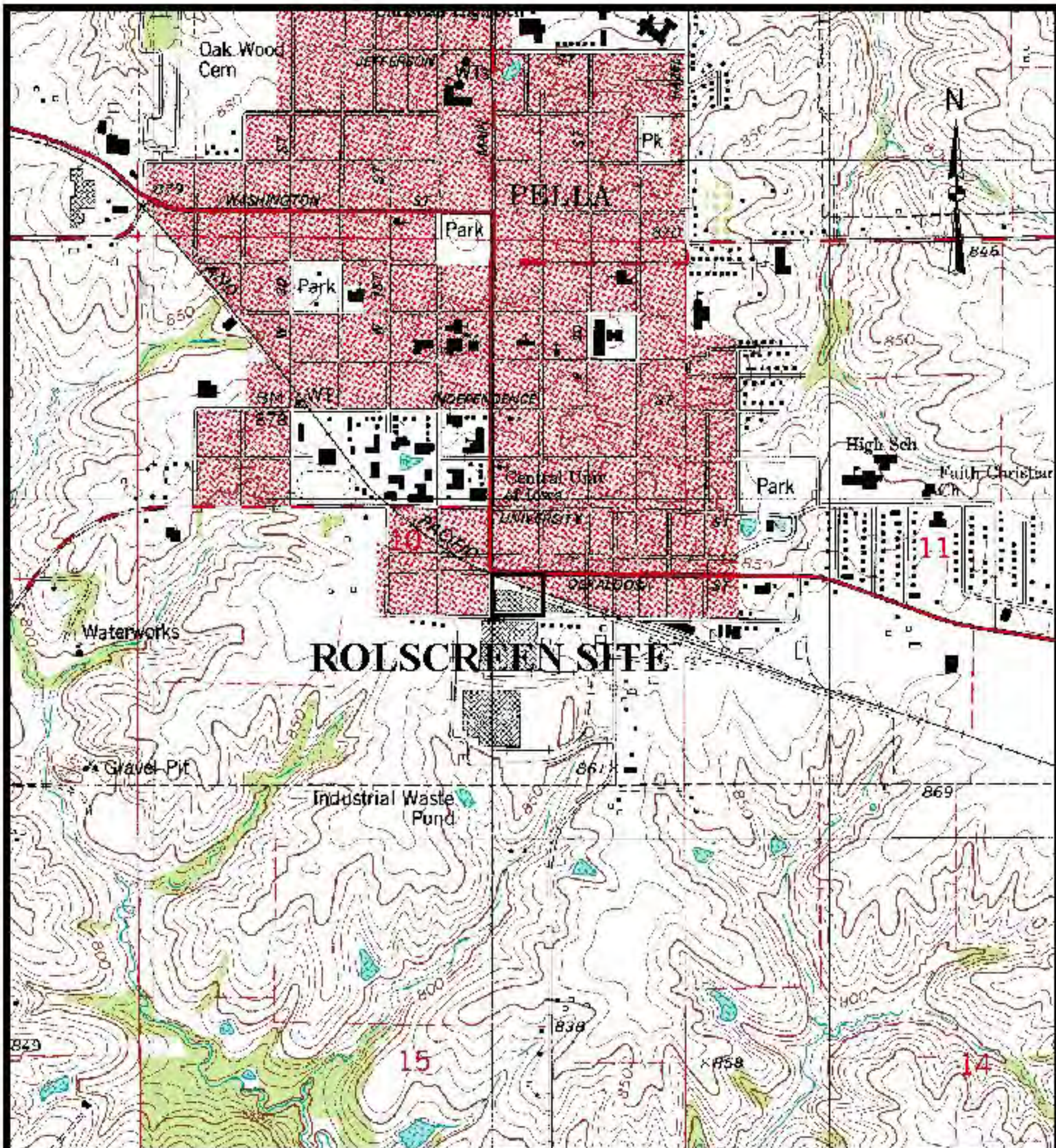
In 2010 the EPA RCRA program issued an administrative order on consent to Rolscreen for additional corrective action at the site. Since then, Rolscreen has taken actions to comply with the order.



LEGEND

| | |
|-------|--------------------|
| --- | STORM SEWER |
| --- | PROPERTY LINE |
| --- | PAVEMENT |
| --- | RECREATION PATH |
| --- | MINERAL SPRINGS |
| --- | FUEL OIL |
| | RAILROAD TRACKS |
| ○ | STORM SEWER INLET |
| ○ | STORM SEWER OUTLET |
| · · · | GRASS |

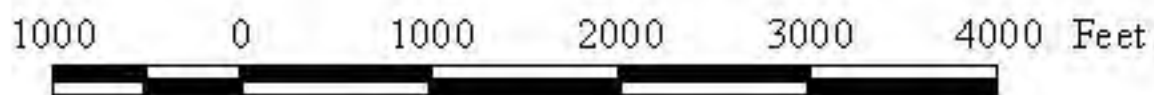
(Rolscreen)



ROLSCREEN SITE



Contour Interval 10 Feet



SHAW AVENUE DUMP SITE

(Charles City, Iowa)

GENERAL DESCRIPTION

The Shaw Avenue Dump is located in the NW 1/4 of the SW 1/4 of Section 7 of Township 35N, Range 15W, Floyd County, Iowa. The site is located approximately 600 feet east of the Cedar River, and is directly across the river from the LaBounty Landfill site. The site is owned by the city of Charles City, Iowa. The site was entered on the Registry in February 1990. The EPA placed the site on the National Priorities List (NPL) in July 1987.

SITE CLASSIFICATION

In 2001 the site was reclassified as “d” Site Properly Closed Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **Types of hazardous waste at this site include metals and VOC’s**

The quantity of hazardous waste disposed of at the Shaw Avenue Dump is undetermined. It was the initial waste disposal site of Salsbury Laboratories, an animal pharmaceutical manufacturer. The disposal of solid waste produced by Salsbury began at the Shaw Avenue dump in 1949 and continued until 1953 when the company began disposal at the LaBounty landfill site.

The municipal wastewater treatment plant received liquid waste discharges from the Salsbury Laboratories. The sewage sludges accumulated contaminants from these discharges. Sludges from the Charles City Wastewater Treatment Plant were disposed of at the site from 1949 until 1964.

The groundwater and soil at the site were found to contain elevated levels of arsenic.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is the potential exposure to contaminated drinking water.**

The Shaw Avenue Dump is located on the southeastern edge of Charles City, a city of about 8,800 residents. The Charles City municipal wells are located two miles north of the site. Several private wells are located within 2000 feet of the site, the nearest well being approximately 600 feet southeast of the site. The dump is located on the floodplain of the Cedar River. The river is located approximately 600 feet west of the site and flows generally to the southeast.

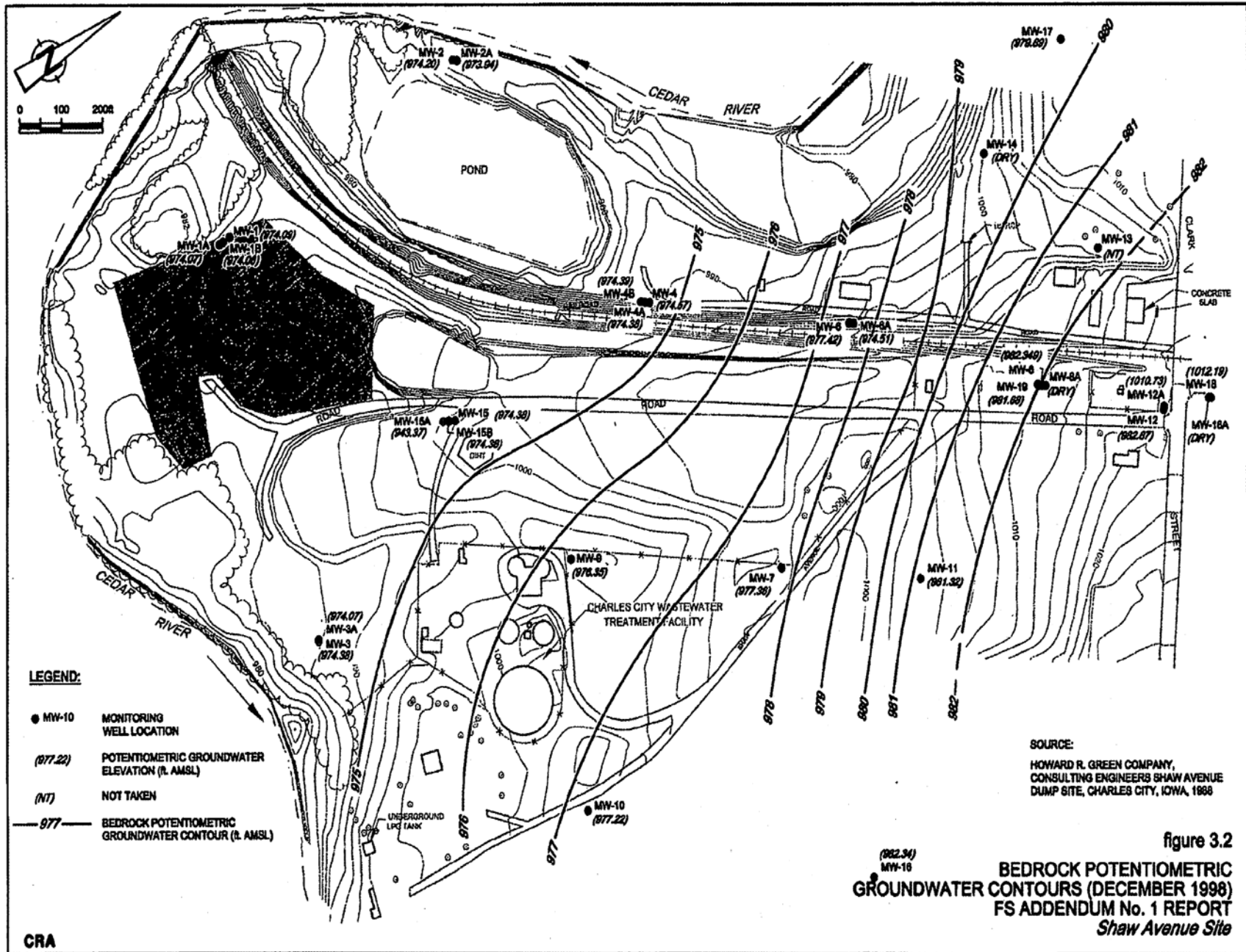
SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency and will continue to investigate the site. In 1988 an Administrative Order of Consent was issued to Salsbury Laboratories and Charles City by the EPA. A Remedial Investigation and Feasibility Study (RI/FS) was completed in June 1991 and a Record of Decision (ROD) was issued in September 1991. The remedial action required by the ROD included removal of waste cells and groundwater monitoring to evaluate the effectiveness of the removal action. The waste removal was completed in the spring of 1993.

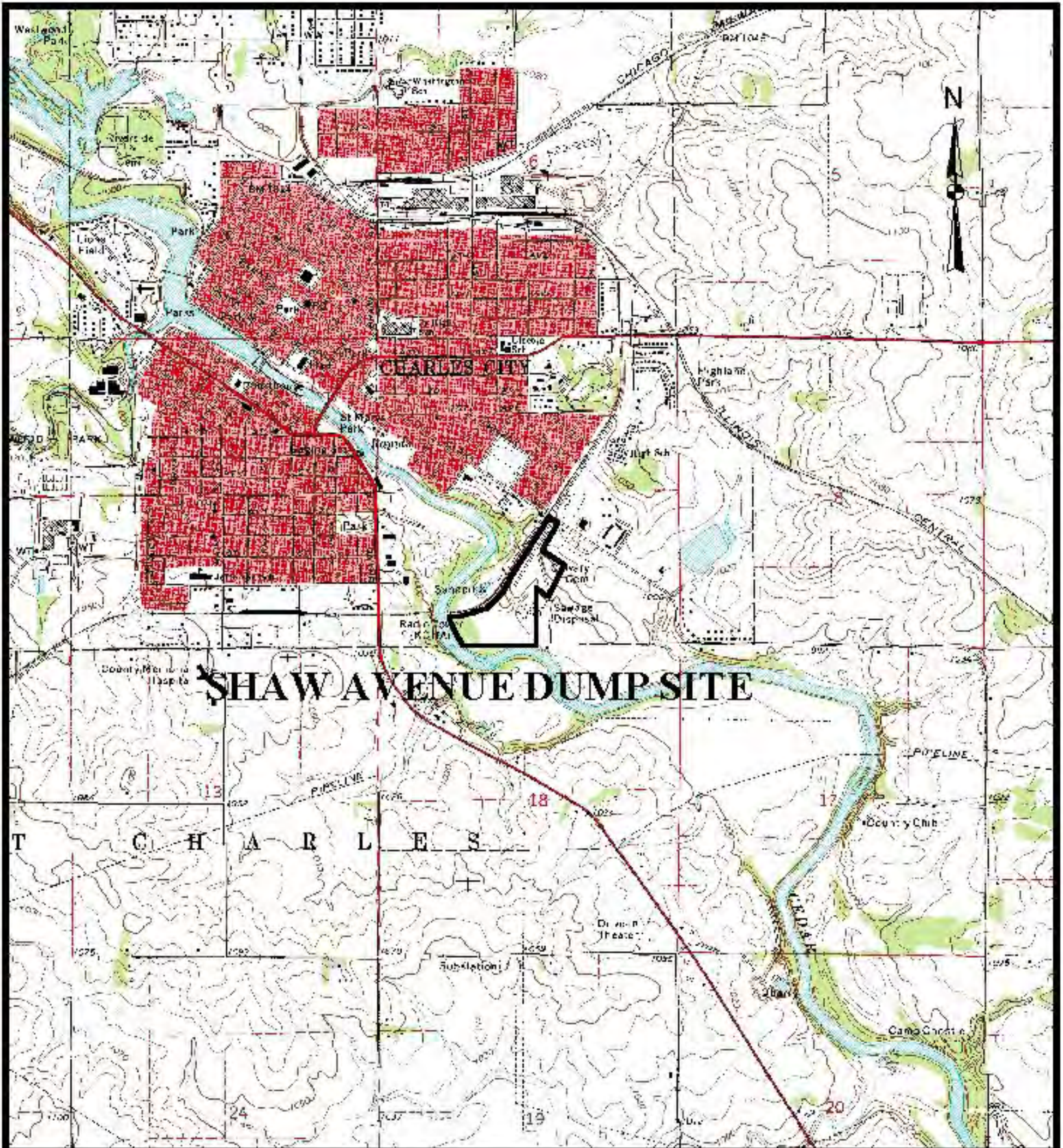
In September of 2000 a ROD was issued for the site groundwater that called for no further action other than continued groundwater monitoring.

A Superfund 5-year review was completed for the site in September of 2010. The 5-year review concluded that the site remedy continues to be protective of human health and the environment.

Compliance sampling continued for 2014. The 2015 5 year reviewed was initiated with a completion date expected in July 2015.



(Shaw Avenue Dump Site)



SHAW AVENUE DUMP SITE



IOWA

Contour Interval 10 Feet



SQUARE D COMPANY
(Cedar Rapids, Iowa)

GENERAL DESCRIPTION

The Square D Company occupies 25 acres in the NE 1/4 of the SE 1/4 of Section 5, T82N, R7W, at 3700 Sixth Street S.W. Cedar Rapids, Linn County, Iowa and is owned by the Square D Company. The site was entered on the Registry in March 1992. The Square D Company has occupied the site since 1954. The company manufactures electrical breakers. The manufacturing processes include metal plating operations and degreasing activities.

SITE CLASSIFICATION

In 2001 classification of this site is revised to "d" Site Properly Closed, Requires Continued Management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Groundwater sampling conducted at the site indicated several organic contaminants are present. 1,1,1-Trichloroethane at 40 mg/l was initially identified at the site. Later sampling found tetrachloroethylene in all monitoring wells ranging from 2.1 mg/l to 85 mg/l. The groundwater contaminant plume appears to be localized beneath the Square D facility. TCE in shallow ground water peaked in 1993 and in deep ground water in 2000 and has been gradually declining.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is located within the city limits of Cedar Rapids. The city obtains its water from wells located in three different well fields. The closest city well field is approximately five miles north of the site. Prairie Creek is located approximately 2,500 feet southeast of the site. The creek flows northeast to the Cedar River.

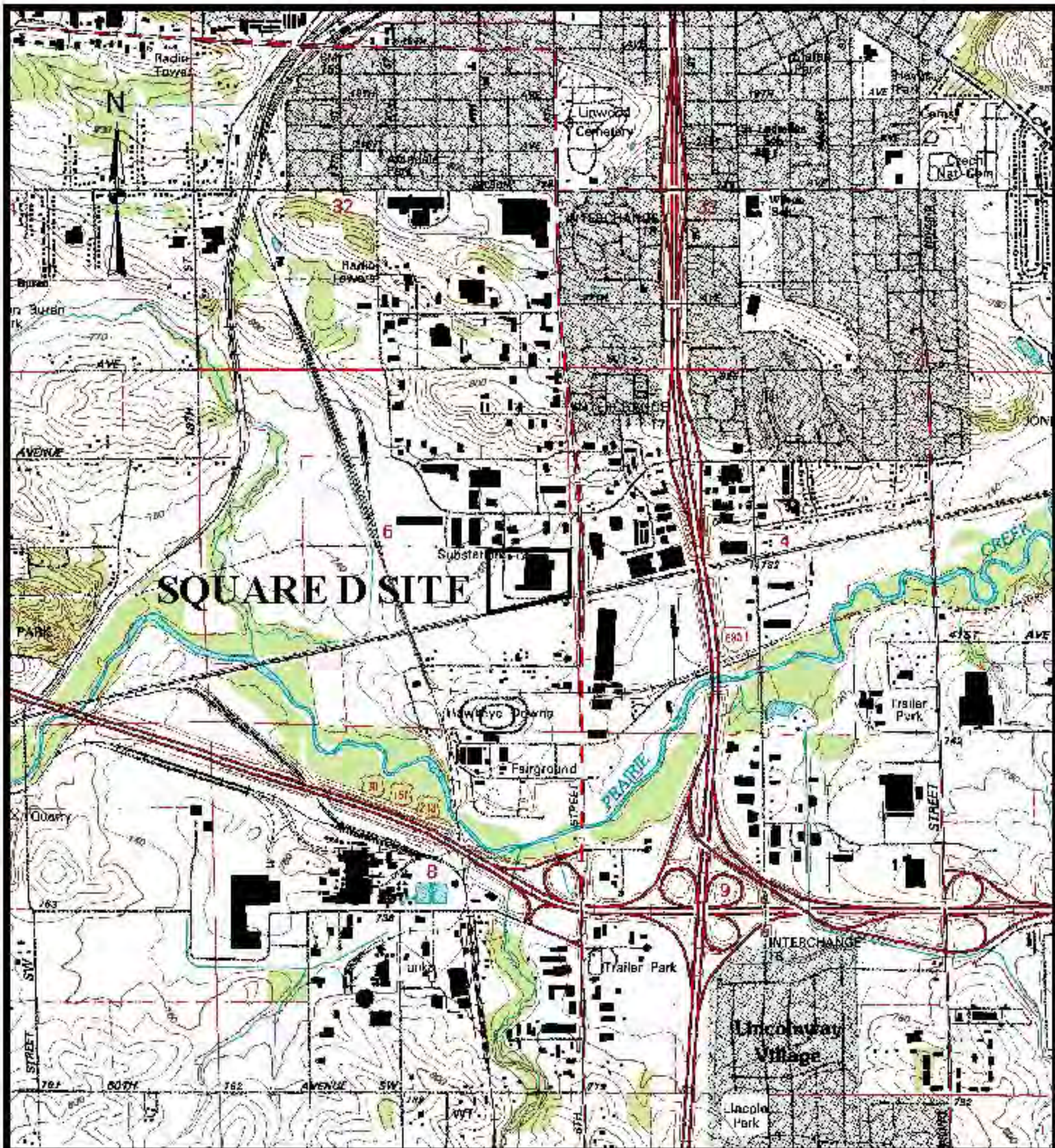
SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The IDNR is the lead agency of the site. Groundwater monitoring has been conducted since 1992. A five-year monitoring plan began in 2005 to determine if natural attenuation remedy would be acceptable.

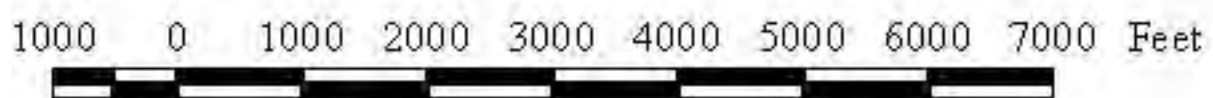
The 2005 monitoring report indicated ground water contamination as TCE and breakdown products are stable and limited in lateral and vertical extent.

Long term monitored natural attenuation is being conducted with five-year review conducted and approved in 2010. Next monitoring report is required in 2015.

(Square D Company)



Contour Interval 10 Feet



STATE OF IOWA – DUBUQUE

(A. Y. McDonald)

(Dubuque, Iowa)

GENERAL DESCRIPTION

The site is located in Section 19, T89N, R3E and Section 24, T89N, R2E; in the city of Dubuque. It is generally described as part of Lot 1 of "A.Y. McDonald Manufacturing Place." The 8.9-acre site is owned by the state of Iowa and was entered on the Registry in February 1988. The A. Y. McDonald Manufacturing Company operated a gray iron foundry and a brass manufacturing and machining operation on the site from 1896 to 1983. During that time, the company generated over 40 million pounds of sand wastes and dusts from air pollution control operations. Most of the wastes were dumped on site, increasing its elevation by an estimated 11-14 feet. The site was purchased by the state of Iowa for a highway project.

SITE CLASSIFICATION

The site was reclassified to "d" in 1989. The site is properly closed and requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- **The primary type of hazardous waste are heavy metals**

Over 40 million pounds of sand wastes and dust were disposed on site containing metals from air pollution control operations from an iron foundry. The EPA has determined two wastes dumped at the site are hazardous wastes with the characteristic of EP toxicity. The sand system waste and the pangborn dust both failed the test for lead. The pangborn dust also has high levels of zinc and copper. The sand system wastes and core sand waste were found to contain phenol and cyanide. Soil samples taken on-site had high concentrations of lead, copper, and zinc. Cyanide, cadmium, and polynuclear aromatic hydrocarbons were also found in the soil samples at lower concentrations.

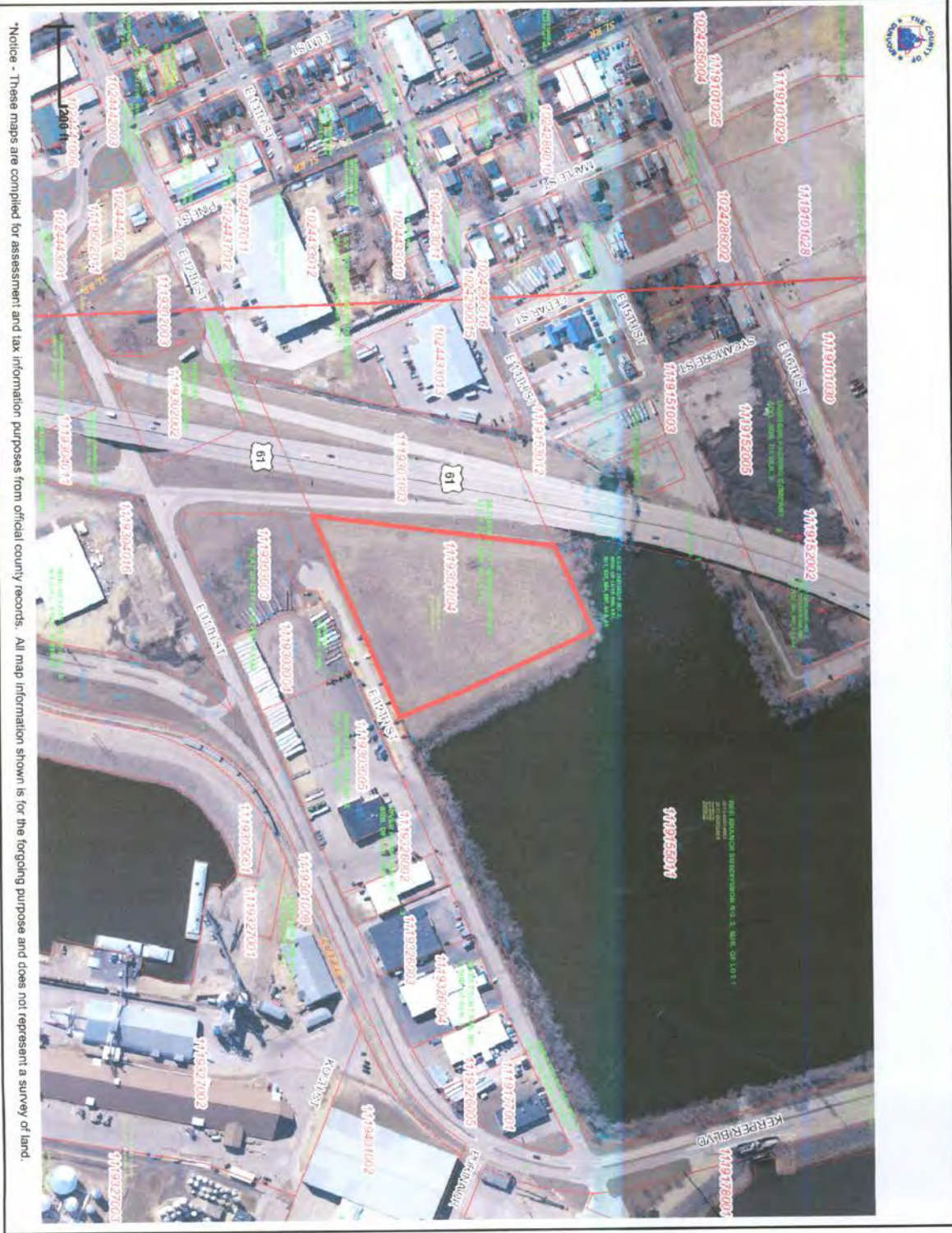
SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is potential exposure to contaminated drinking water**

The site is located on the floodplain of the Mississippi River. The alluvial aquifer begins a few feet below the surface and extends 175-250 feet to the bottom of the alluvium. The city of Dubuque has five of its nine municipal wells finished in the alluvial groundwater about one mile north of the site. The lower portion of the on-site waste is in contact with the aquifer. There is no evidence, however, that the aquifer has been contaminated by the waste. Surface water samples showed low concentrations of lead. Soil samples contain elevated concentrations of lead, cadmium, copper, and zinc, which may have migrated from the site as windblown particles or as surface water runoff.

SUMMARY ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

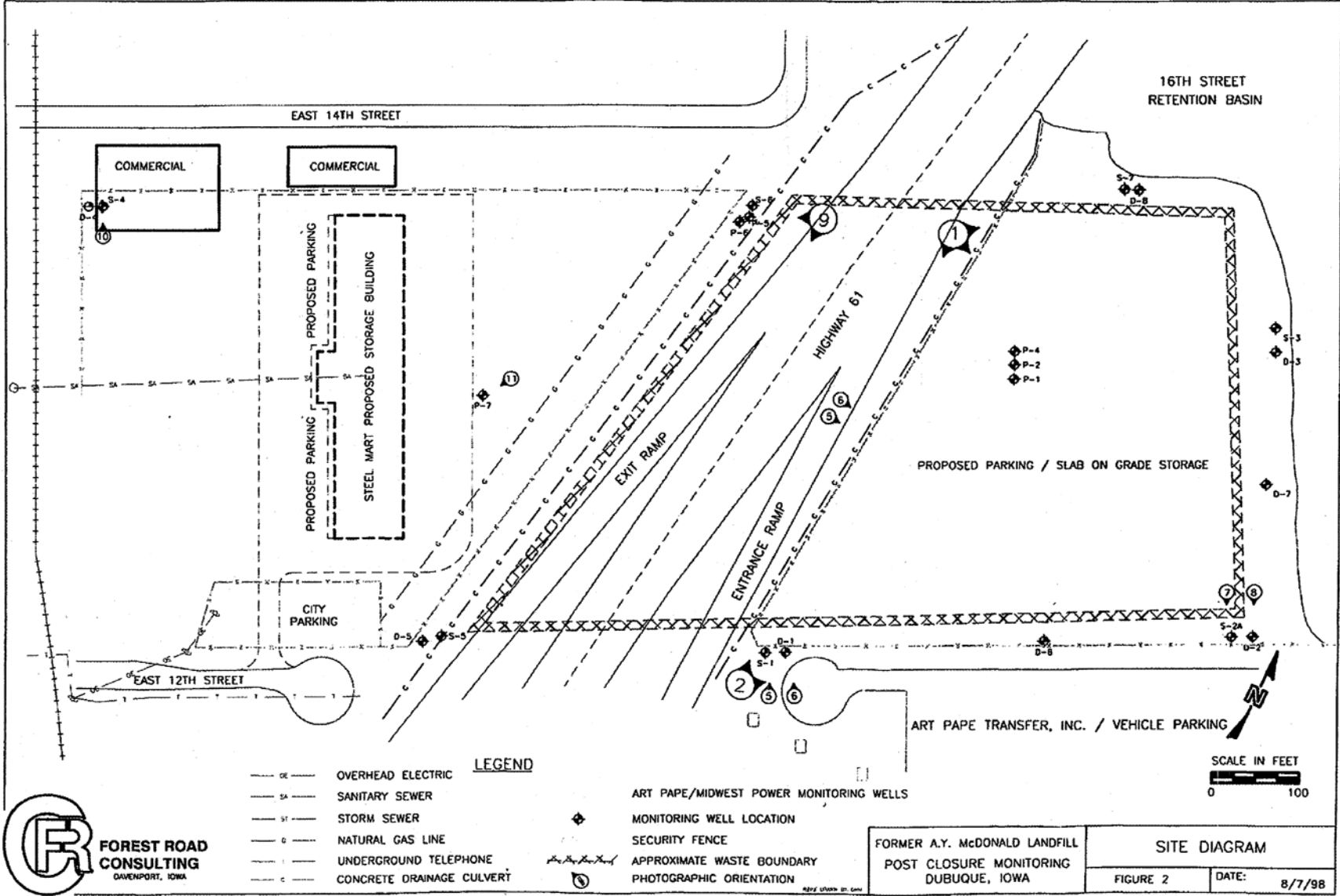
The EPA RCRA program is the lead agency on the site. A Consent Order, effective August 19, 1987, required A. Y. McDonald and the state of Iowa DOT to excavate soil "hot spots," construct a cap over the site, and expand groundwater monitoring, which were completed in June 1988. The Post-Closure Monitoring Plan was initiated in July 1988. The Iowa DNR has not been actively involved with the site since 1999.



*Notice - These maps are compiled for assessment and tax information purposes from official county records. All map information shown is for the foregoing purpose and does not represent a survey of land.

North

AY McDonald Site Air Photo

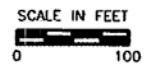


- LEGEND**
- OE — OVERHEAD ELECTRIC
 - SA — SANITARY SEWER
 - ST — STORM SEWER
 - G — NATURAL GAS LINE
 - T — UNDERGROUND TELEPHONE
 - C — CONCRETE DRAINAGE CULVERT

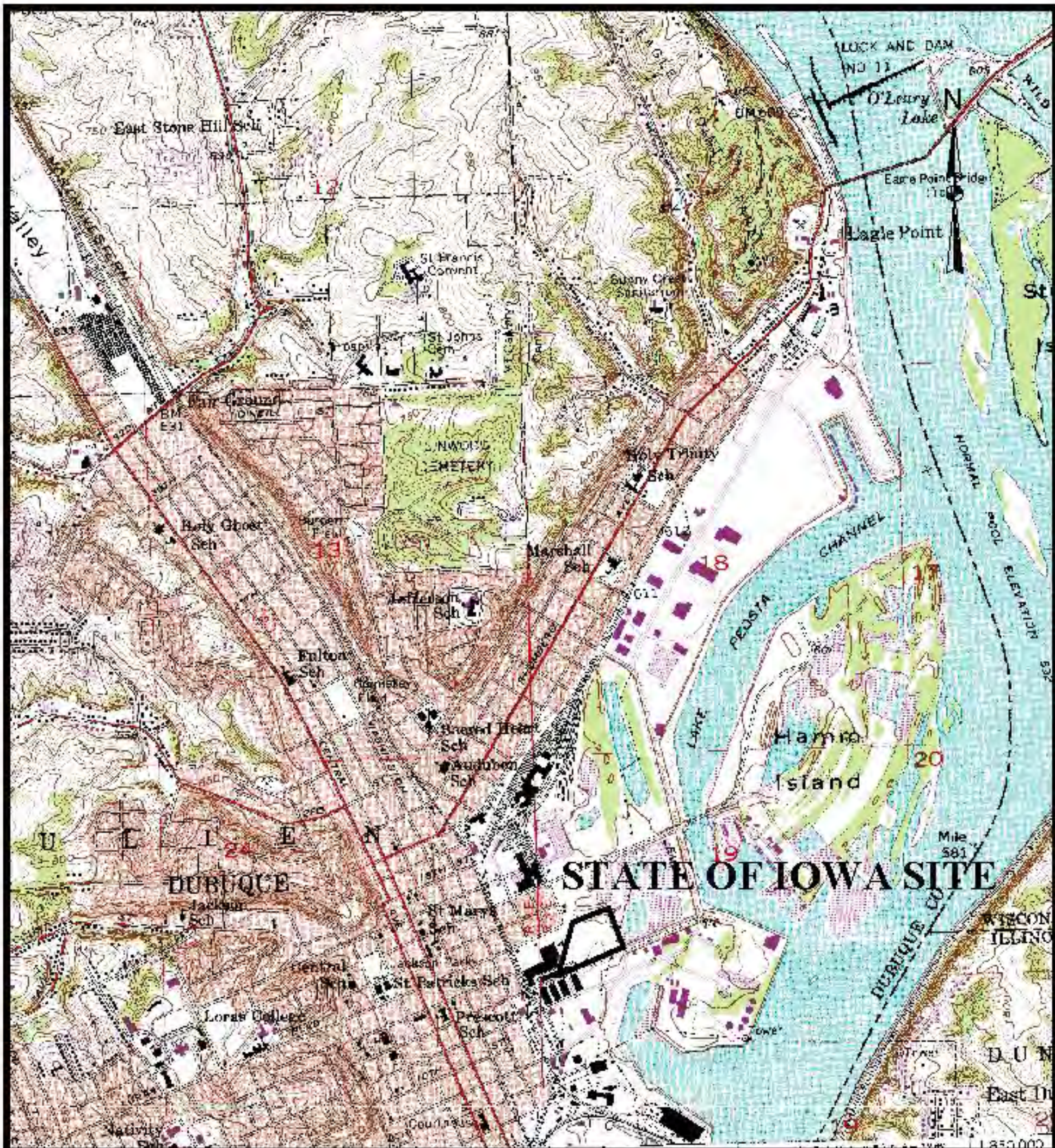
- ◆ ART PAQE/MIDWEST POWER MONITORING WELLS
- ◆ MONITORING WELL LOCATION
- SECURITY FENCE
- APPROXIMATE WASTE BOUNDARY
- ① PHOTOGRAPHIC ORIENTATION

FORMER A.Y. McDONALD LANDFILL
 POST CLOSURE MONITORING
 DUBUQUE, IOWA

| | |
|--------------|--------------|
| SITE DIAGRAM | |
| FIGURE 2 | DATE: 8/7/98 |



(State of Iowa - Dubuque)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet

TODTZ FARM (Camanche Landfill)
(Camanche, Iowa)

GENERAL DESCRIPTION

The site is located approximately 1.5 miles west of Camanche, Iowa. It occupies a gravel pit located in the SW 1/4 of the SW 1/4 of Section 29, T81N, R6E in Clinton County. The 12-acre site is owned by Lewis L. and Lynn R. Todtz, they acquired the site in 1988. The site was entered on the Registry in February 1989. The EPA placed the site on the National Priorities List (NPL) in June 1986. Lawrence Todtz purchased the land in 1958. From 1959 to 1969, he leased the 12-acre site for sand and gravel mining. When mining ceased, the pit was operated by McManus Brothers as a municipal landfill for the city of Camanche from 1971 to 1975.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. Hazardous wastes containing arsenic, lead, nickel, sodium hydroxide, acetone, carbon disulfide, cresols, methylene chloride, tetrahydrofuran, and toluene have been disposed at the site, posing a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

In 1971 McManus Brothers sublet a 2.5-acre part of the gravel pit to E. I. DuPont de Nemours and Company for the construction and operation of an industrial waste impoundment. DuPont disposed of 4,300 tons of process wastes from their cellophane plant in Clinton, Iowa. The impoundment cell was closed in 1975. Hazardous wastes containing arsenic, lead, nickel, sodium hydroxide, acetone, carbon disulfide, cresols, methylene chloride, tetrahydrofuran, and toluene have been disposed at the site.

| TABLE 1 Groundwater Contamination | | |
|--|---------------------------------|---|
| Compound | Highest Value (ug/L) | Statewide Standard for Protected Ground water (ug/L) |
| Carbon Disulfide | 3,600 | 700 |
| Acetone | 2,000 | 700 |
| Toluene | 8,800 | 1000 |
| Methylene Chloride | 2,500 | 5.0 |
| Tetrahydrofuran | 97,000 | NA |
| Cresol | 1,200 | NA |
| Arsenic | 1,400 | 50 |
| Lead | 400 | 15 |
| Nickel | 4,000 | 100 (soluble salts) |
| Sodium | 5,800,000 | NA |

NA means no applicable standard

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is the potential exposure to contaminated drinking water**

The site is located on the floodplain of the Mississippi River and is about 1.5 miles northwest of the river. Two lakes are located next to the site on the east and south sides. An alluvial aquifer is present at the site, flowing to the southeast toward the river. This groundwater is the source of drinking water for nearby residential wells and for the municipal wells at the city of Camanche.

The disposed wastes at the site are in direct contact with the alluvial aquifer. Samples from the monitoring wells demonstrate the on-site groundwater is contaminated with hazardous substances originally disposed at the site. Several of the concentrations listed in Table 1 exceed the regulatory or advisory limits for these chemicals in drinking water. Sampling suggests contaminants may be migrating from the site. The local lakes, streams, and the Mississippi River are used for recreational activities and commercial shipping. Marshes adjacent to the river and about 1.5 miles southeast of the site form part of the Upper Mississippi River Wildlife and Fish Refuge.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTION

The EPA is the lead agency on the site.

The EPA began investigating the site in 1980. A Consent Order, effective April 4, 1988, required DuPont to conduct a Remedial Investigation/Feasibility Study (RI/FS) for their impoundment cell. The draft RI/FS report was submitted in July 1988. The EPA issued a Record of Decision (ROD) on November 4, 1988, selecting the preferred remedial action. In November 1990, the EPA and DuPont entered a Consent Decree on the ROD.

In August 1989 the James Bark well was replaced with a deeper well. A second well also was installed at the adjacent Steven Bark residence. The replaced (James Bark) residential well was completed in the shallow alluvial groundwater. It is located near the southeast corner of the site and is down gradient of it. Elevated sodium concentrations (200,000 ug/l) have been detected at the well.

The Record of Decision (ROD) Required DuPont to cap the impoundment cell with soil, fence the area and install up-gradient groundwater monitoring system. These Remedial actions were completed in the summer of 1991. The ROD also required a long-term ground water monitoring program (at least 30 year). The Long-term ground water monitoring strategy included the establishment of the lower target level (80% of the action level) would mandate the evaluation of additional remedial options by DuPont. A detection of the higher levels would require implementation of the selected remedy.

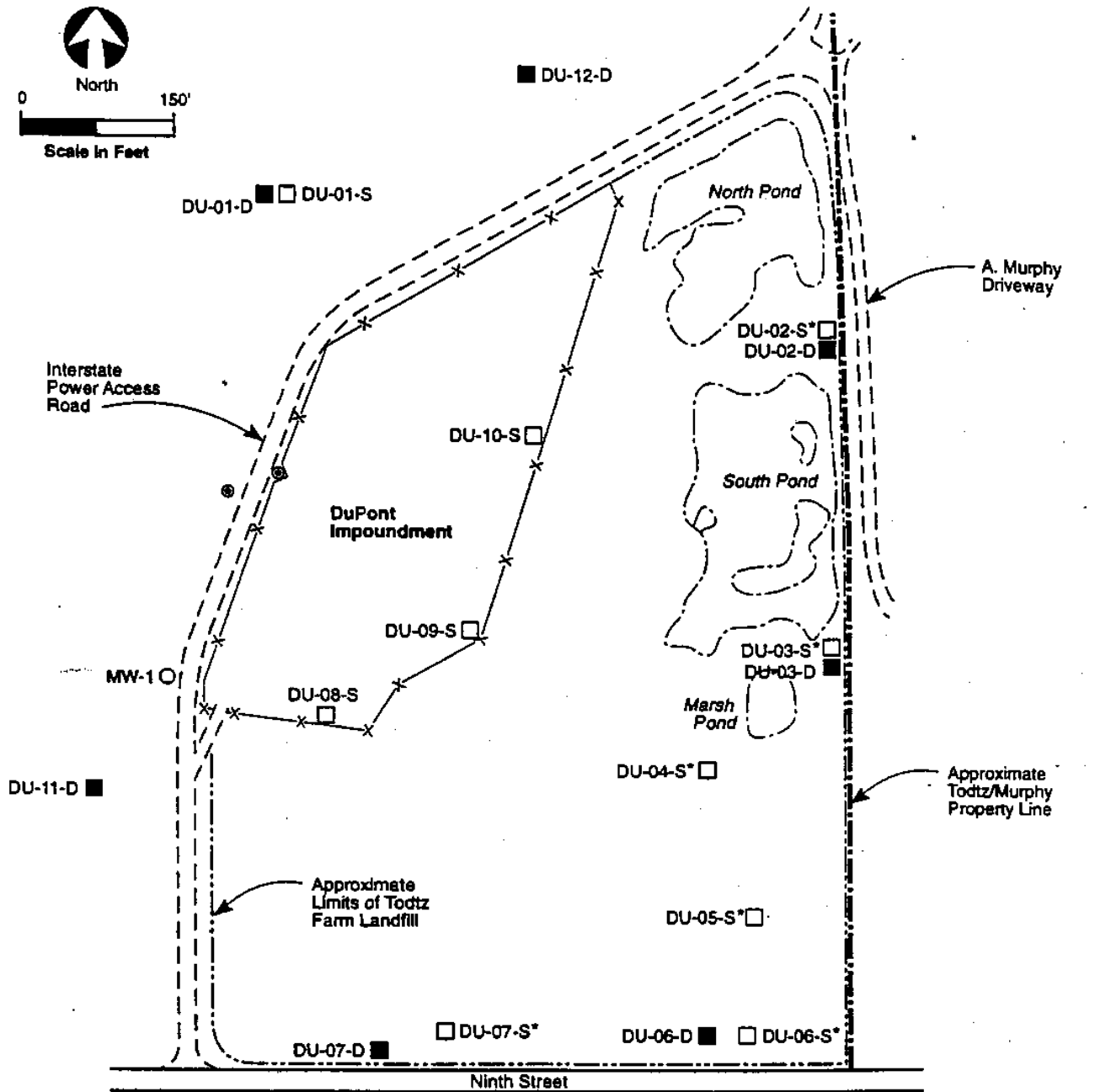
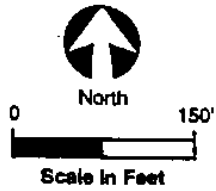
In 1993, the lower action level was exceeded for tetrahydrofuran. During prescribed verification sampling the higher trigger level was also exceeded, however, levels have not consistently remained above the higher level. Evaluation of remedial options has resulted in the selection of a slurry wall as the preferred remedy should monitoring levels consistently exceed the higher trigger level.

The EPA conducted a five-year review in late 1995 and 2000. No changes have been recommended from the reviews, although the monitoring frequency has been reduced in accordance with the ROD.

2002: Annual Long-term Monitoring for DuPont Impoundment Operable Unit-2001 submitted to IDNR. Results indicate contamination concentrations did not exceed established "trigger levels" for this period of monitoring.

2005: Another Five-year review completed this year identified the following item to be addressed through anticipated work plans. Additional evaluation for arsenic due to lowering of the MCL that has resulted in increased concern for this contaminant, though no unsafe exposures identified.

2010 – A Five-Year Review was completed. No significant changes were noted from the previous Five-Year Review. A report titled “A Review of Remedial Options for Arsenic in Groundwater – Todtz Farm Site – Camanche, Iowa” was completed. This was done in the event that arsenic levels become problematic, they are not currently.



LEGEND

- X—X Chain Link Fence
- DU-01-S Shallow Monitoring Well
- DU-02-S* Remedial Action Trigger Well
- DU-01-D Deep Monitoring Well
- MW-1 Existing EPA Monitoring Well
- Power Transmission Line Pedestal
- ▲ JB-01-D Deep Residential Drinking Water Level

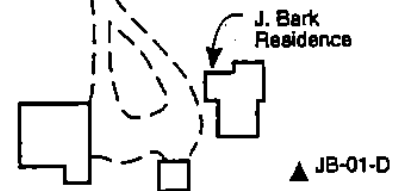
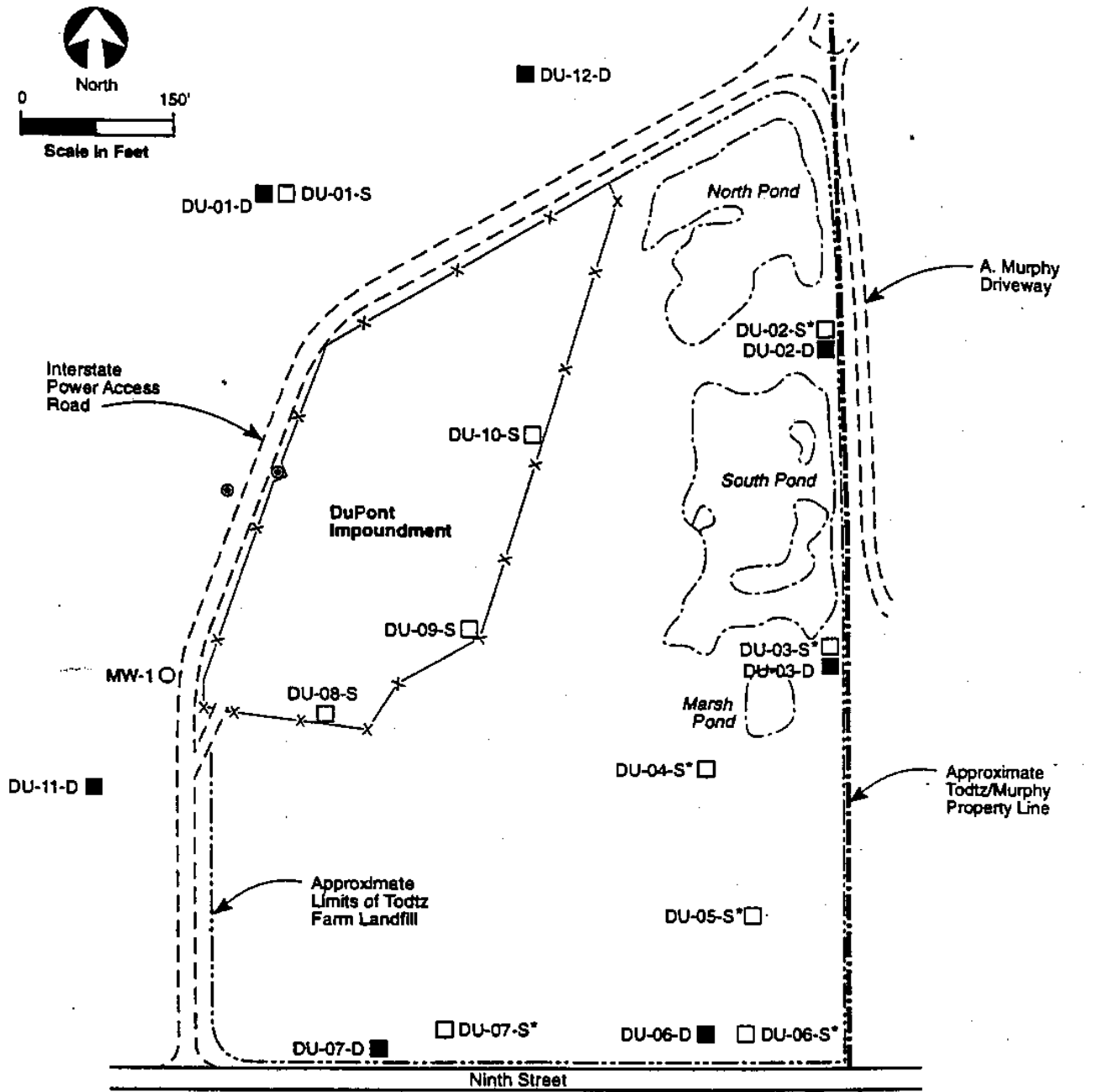
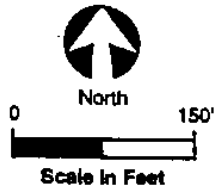


FIGURE 1
Site Map
 DuPont Impoundment RA
 Lawrence Todtz Farm Landfill Site



LEGEND

- X—X Chain Link Fence
- DU-01-S Shallow Monitoring Well
- DU-02-S* Remedial Action Trigger Well
- DU-01-D Deep Monitoring Well
- MW-1 Existing EPA Monitoring Well
- Power Transmission Line Pedestal
- ▲ JB-01-D Deep Residential Drinking Water Level

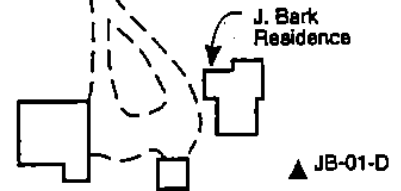
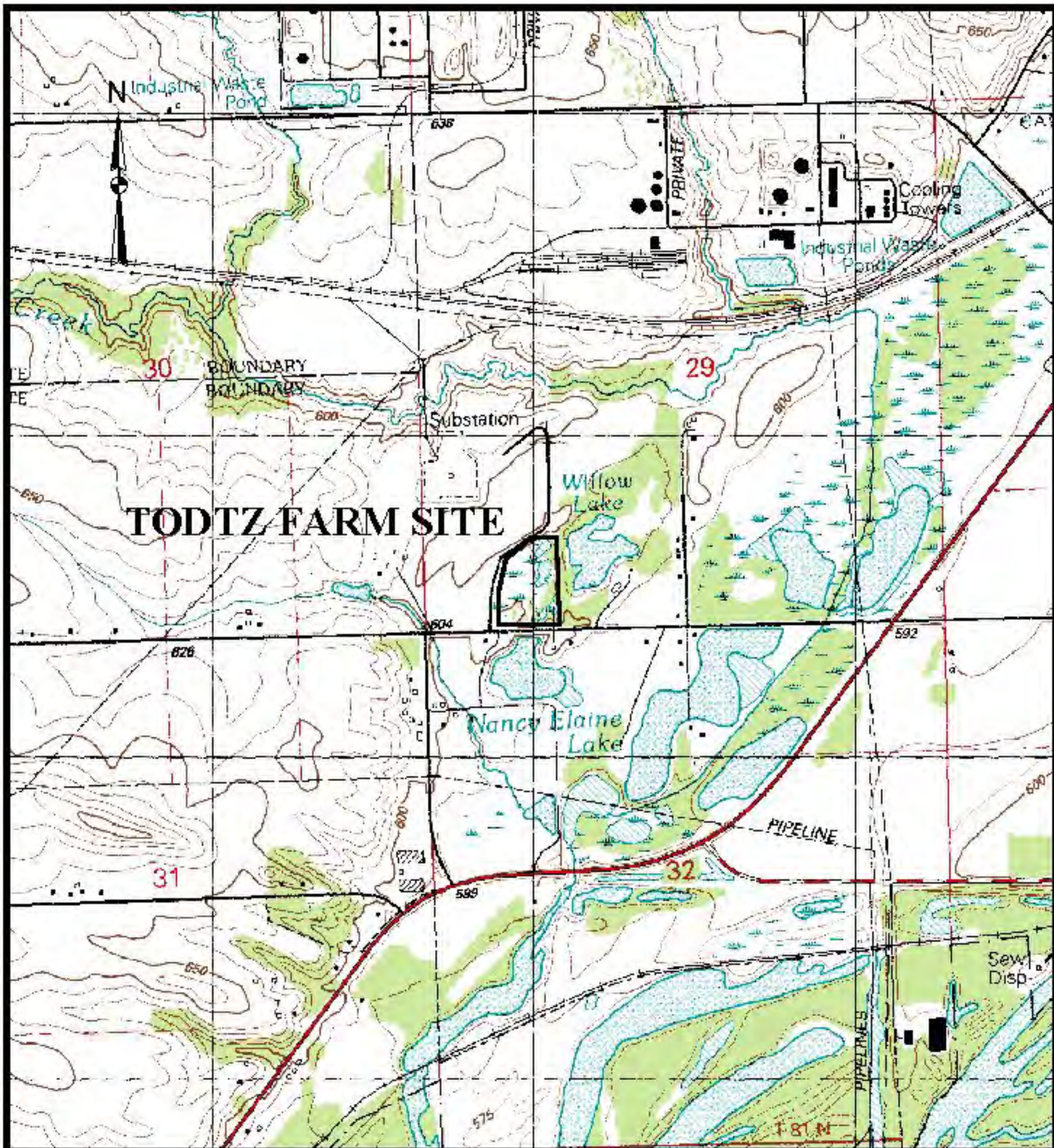


FIGURE 1
Site Map
 DuPont Impoundment RA
 Lawrence Todtz Farm Landfill Site

(Todtz Farm)



Contour Interval 10 Feet



U.S. NAMEPLATE

(Mt. Vernon, Iowa)

GENERAL DESCRIPTION

The site is 4.83 acres in the NW 1/4 of the NW 1/4 of Section 16, T82N, R5W, Linn County, Iowa about one mile west of Mt. Vernon, Iowa. U.S. Nameplate Company, Inc. is located on the property. Since the mid-50s the company has manufactured nameplates and other engraved and embossed items. Until approximately 1984, the company engaged in metal etching of aluminum, brass, and stainless steel. The site was entered on the Registry in 1984.

SITE CLASSIFICATION

The site is classified "b" in accordance with 455B.427.3. The hazardous wastes disposed of at the site pose a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

From the mid-1950s to 1979, a sequence of three septic systems was used to dispose of the plant's wastewater. In March 1979 the department found a continuous discharge from the facility which flowed off-site and into a small creek. The discharge had a pH of 2.2 and a fluoride concentration of 390 mg/L, values consistent with the etching process wastes. In 1984 soil and groundwater samples showed high concentrations of trichloroethene (640 to 95,000 mg/kg) and ethylbenzene (120 to 2500 mg/kg) in the lagoon sludge. All the lagoon wastewater samples showed trichloroethene at 140 mg/L. One groundwater sample had a trichloroethene concentration of 4 mg/L.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern is for potential exposure to contaminated drinking water.**

The uppermost aquifer beneath the site (till aquifer) contains sufficient water to supply farms and individual residences in the area. Four residences are located 50 feet north of the facility. These residences are within 300 feet of the monitoring well which shows TCE contamination of 2,000 ug/L. The bedrock aquifer is composed of Silurian age dolostone/limestone deposits, which are encountered at the facility at approximately 55 feet below the surface. The Silurian aquifer is used by the city of Mt. Vernon for its drinking water supply. These wells are located within three miles of the site and serve a population of about 3,650 people.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

U.S. Nameplate obtained a permit and built the treatment lagoon in response to enforcement actions from the department in 1979. By 1981 because of inadequate operation of the system, the wastewater discharged into the lagoon had a pH below 2. The resulting sludge in the lagoon was a hazardous waste for corrosivity and EP toxicity for chromium.

In 1982 the IDNR determined the wastewater lagoon was leaking. A down gradient monitoring well showed fluoride as high as 137 mg/L. Bentonite was applied as a remedial measure to certain areas of the lagoon dike. In 1983 there were still elevated fluoride levels in one of two monitoring wells. Fluoride was used as an indicator of the leaking lagoon.

A RCRA compliance order was issued to U.S. Nameplate ordering them to immediately stop hazardous waste disposal to the lagoon and to submit a complete closure plan for the lagoon and a groundwater assessment plan. The compliance order was appealed to EPA Headquarters and was decided in favor of the company and the order was dismissed in March 1986.

In December 1984 the company submitted a petition to de-list their lagoon sludge as a hazardous waste. In order to evaluate the petition, the EPA obtained samples from the site in August 1985. The sample results showed high concentrations of trichloroethene (640 to 95,000 mg/kg) and ethylbenzene (120 to 2500 mg/kg) in the lagoon sludge. All the lagoon wastewater samples showed trichloroethene at 140 mg/L. One groundwater sample had a trichloroethene concentration of 4 mg/L. The EPA proposed to deny the petition because of the excessive total concentrations of trichloroethene (TCE) in the sludge. The company responded to the denial by reducing the TCE concentrations in the sludge with mechanical aeration and requested the EPA to re-evaluate the retreated waste.

In 1988 the EPA determined the retreated sludge was not hazardous and granted the de-listing petition for a one-time exclusion of the retreated wastewater treatment sludge. However, the EPA also determined the unlined surface impoundment appeared to have caused groundwater contamination. In addition, the surface impoundment will continue to be defined as a hazardous waste management unit because of residues from the retreated sludge that remain hazardous.

In August and September 1989 the EPA conducted a site investigation. This included the installation and sampling of four ground water monitoring wells. The results showed TCE groundwater contamination as high as 2,000 ug/L.

The EPA issued an Administrative Order to the company in June 1990. This order requires the company to conduct a Removal Action, a RCRA Facility Investigation (RFI), and a Corrective Measures Study (CMS) at the Facility. Some investigation and removal activities have been conducted, but these activities have not been in compliance with the order.

In September 1993, the EPA conducted a level D multimedia inspection of the facility. This included full compliance inspections for the RCRA, CWA/NPDES, EPCRA, and UIC programs. Screening inspections were conducted for the Drinking Water and Wetlands programs.

A groundwater remediation work plan with serious deficiencies was submitted in March 1993. A summary proposal for a more acceptable work plan was submitted in October 1995. The EPA requested the company to convert the summary outline to a more detailed plan and submit it for review and approval. As of October 1998, U.S Nameplate has failed to submit the requested work plan.

EPA is planning on initiating a Monitored Natural Attenuation (MNA) with deed restrictions program for this site. MNA actions planned include the installation of additional monitoring wells and annual groundwater monitoring along with stream sampling. Also being considered is a deed restriction to alert future owners of the environmental conditions to include to a prohibition on installing drinking water wells.

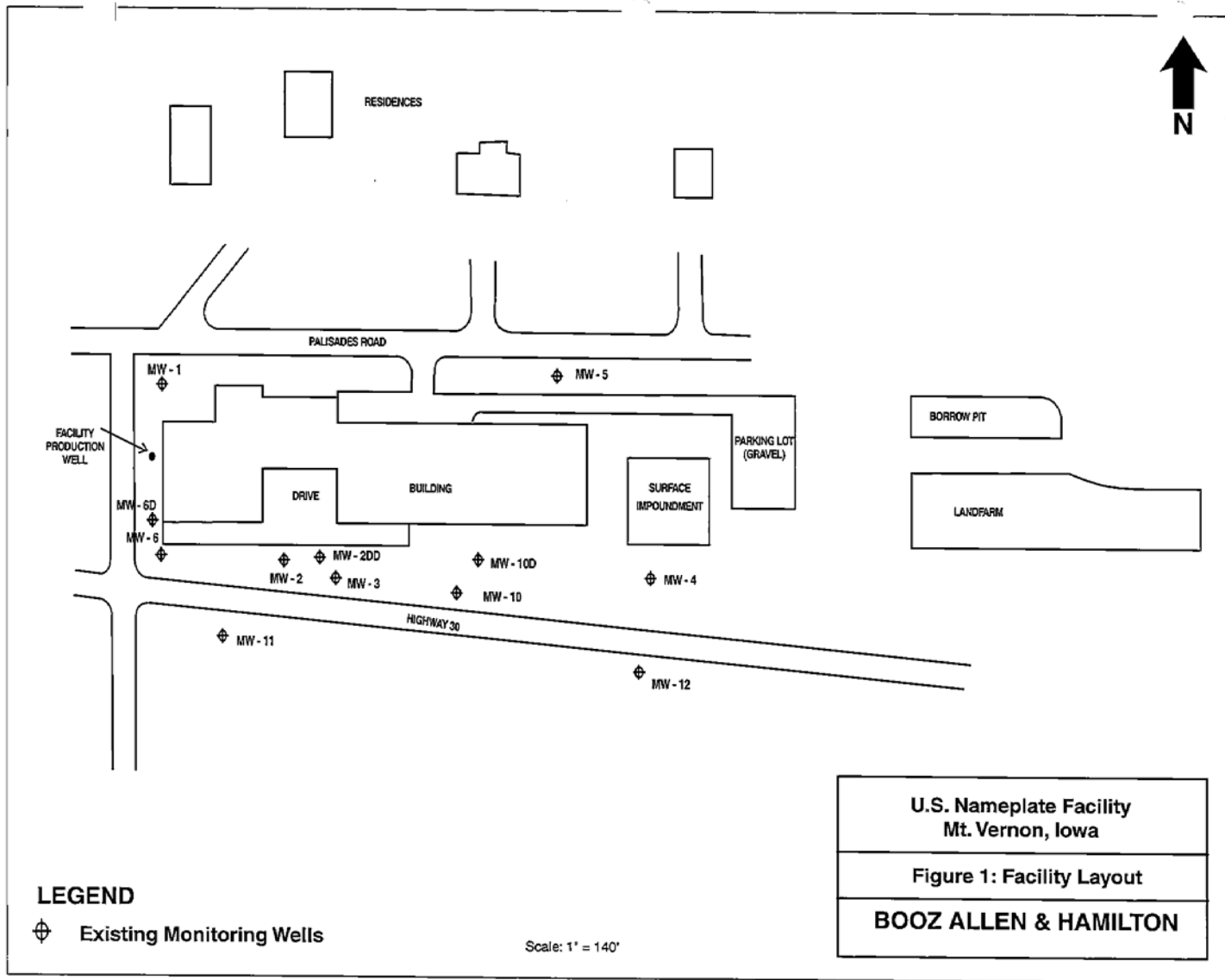
An investigation by EPA has determined that groundwater contamination (TCE) has migrated south from the facility across Highway 30 to the southern edge of the property to an intermittent stream where low levels of TCE have been detected. An Environmental Risk Assessment was performed by EPA and it was determined that no risk existed.

The primary source of groundwater contamination has been removed through a soil removal. Adjacent down gradient monitoring wells (two) at various depths show low TCE contamination. There are indications of biological and physical natural attenuation.

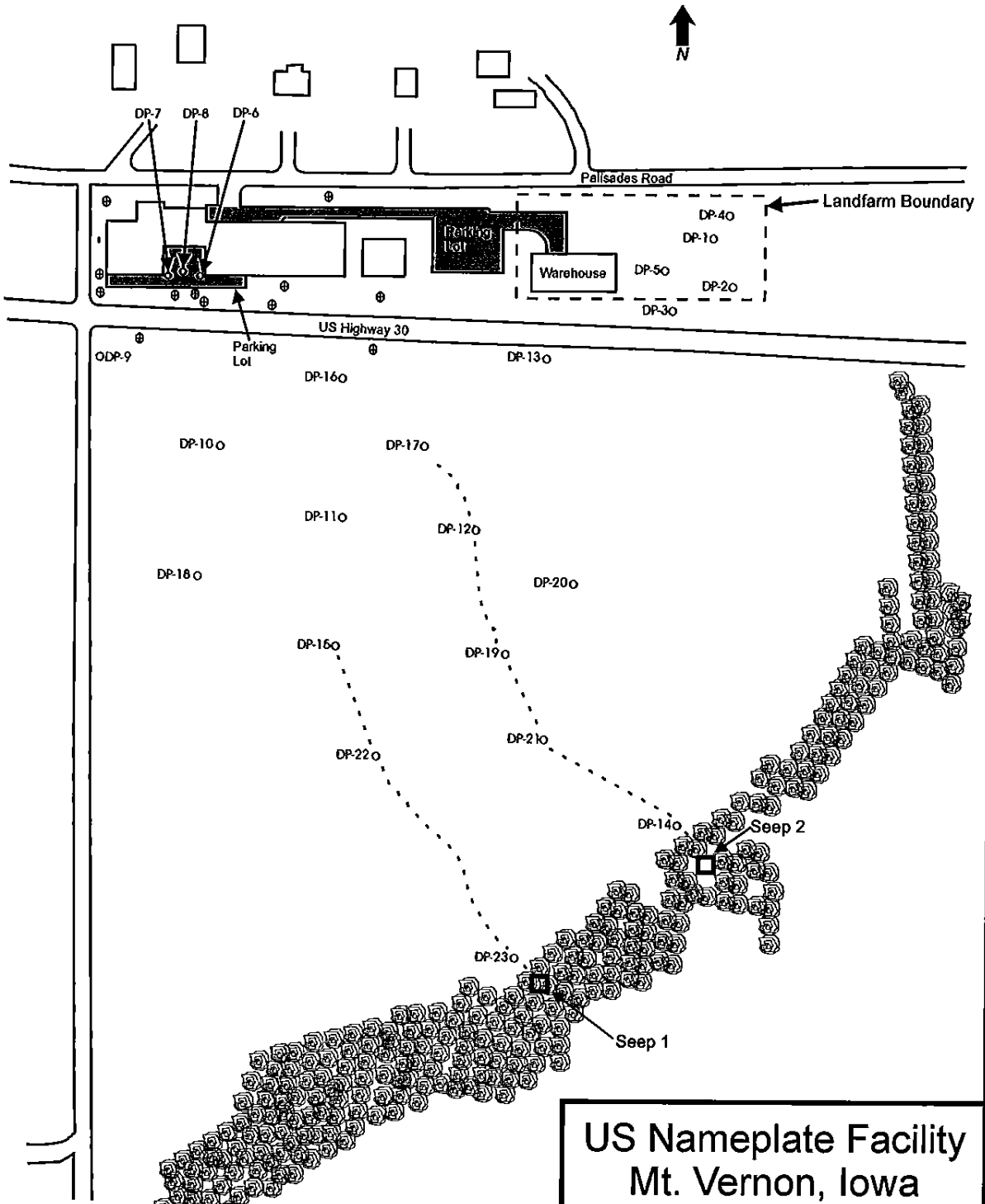
2008: Ongoing monitoring of ground water with collection of ground water samples from surrounding domestic supply wells for analysis for metals (arsenic, chromium), and volatile organic compounds. No contaminants were detected at levels of concern.

2013: The EPA conducted a site-wide monitoring event in December 2013 to evaluate groundwater conditions both on and off-site at the U.S. Nameplate facility. All facility monitoring and water supply wells were sampled as well as domestic wells in the vicinity of the facility. Surface water samples were collected from the drainage to the south of the facility. The results will be used to evaluate current conditions in groundwater at and around the facility and will be evaluated relative to the proposed realignment of US Highway 30.

2014: A comprehensive groundwater monitoring report summarizing monitoring data conducted in December 2013 was issued in 2014. The intent of the monitoring was to obtain adequate data to evaluate whether historical or current facility practices have resulted in environmental contamination. The EPA is the lead agency and will continue to investigate and evaluate this site under the RCRA program. The IDNR will continue to coordinate with the EPA to insure proper assessment and cleanup if warranted.



Not to Scale



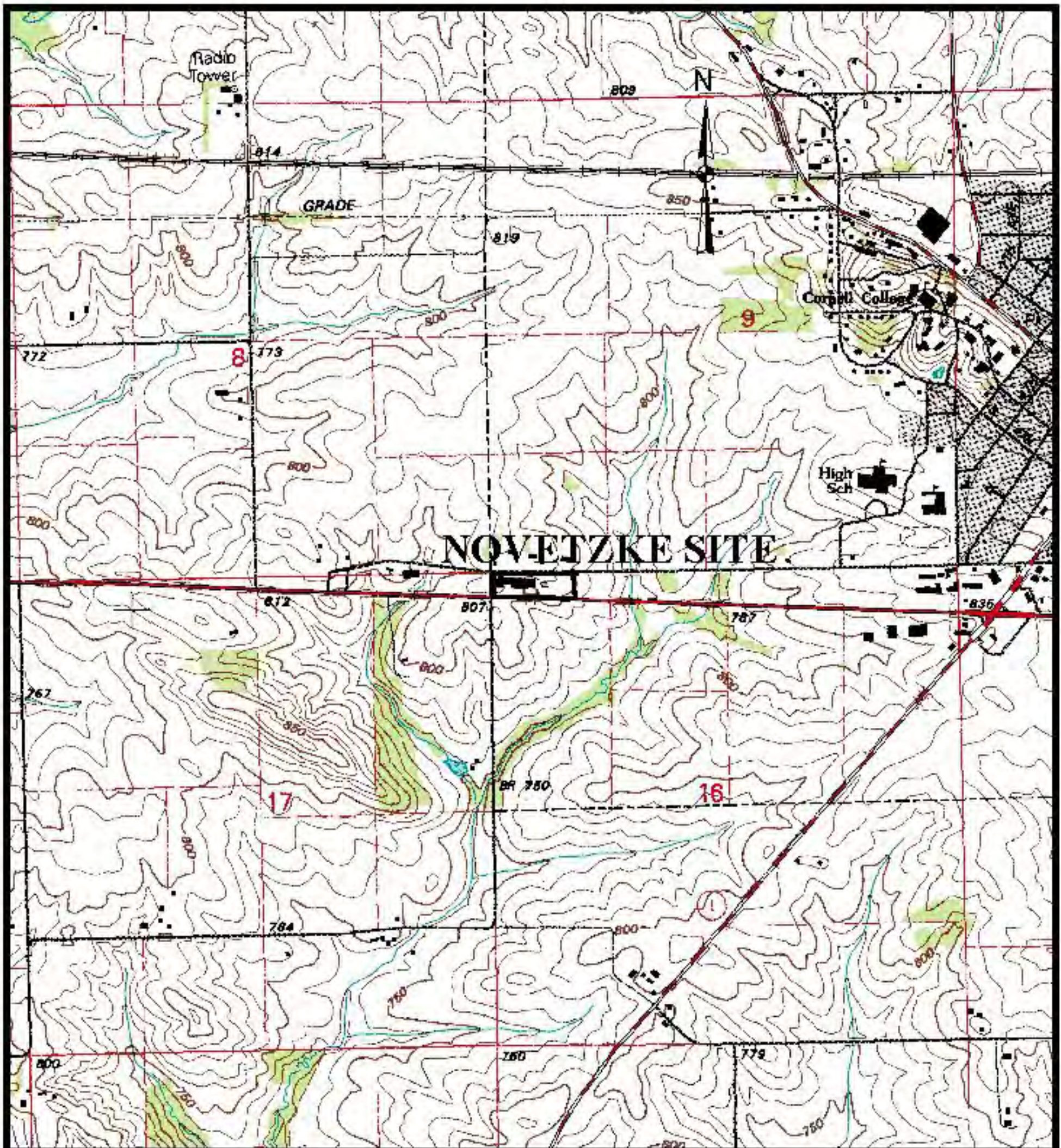
LEGEND

- ⊕ Existing Monitoring Wells
- Sampling Locations

**US Nameplate Facility
Mt. Vernon, Iowa**

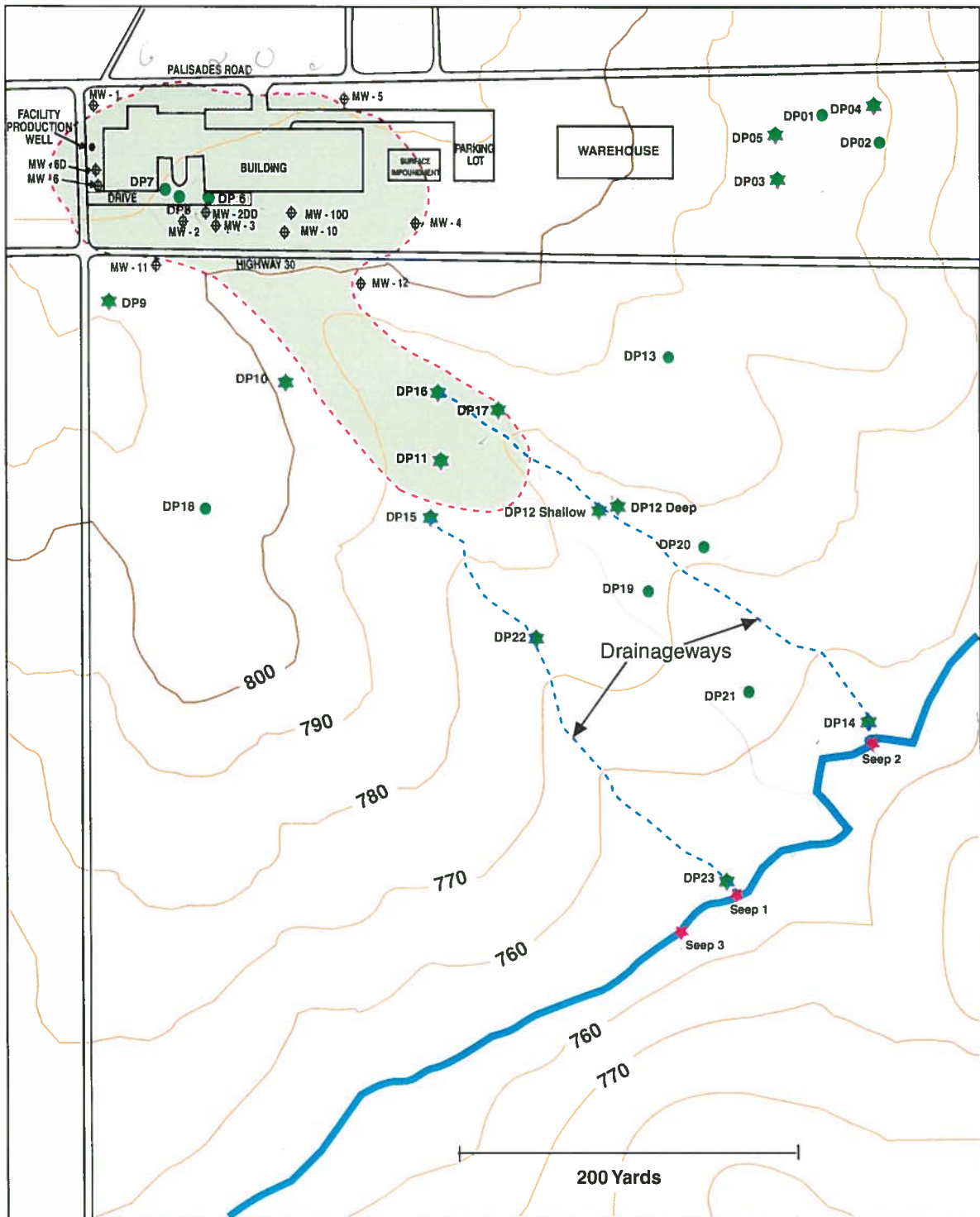
Figure 3: Sampling Locations

Booz | Allen | Hamilton



Contour Interval 10 Feet





LEGEND

- Existing Monitoring Wells
- Direct Push Locations
- Seeps
- Piezometers



U.S. Nameplate Facility
Mt. Vernon, Iowa

Figure 12: Extent of TCE
in Shallow Aquifer

BOOZ | ALLEN | HAMILTON

UNITED HYDRAULICS
(Hampton, Iowa)

GENERAL DESCRIPTION

The 22.4-acre site is located in the southeast corner of Section 33, T92N, R20W, on the south side of the city of Hampton, Iowa in Franklin County. The United Hydraulics Corporation manufactured hydraulic cylinders at the site from 1971 until early 1987. Activities at the facility included the machining of metal stock, chromium electroplating, and painting. The site is currently owned by Tower, LLC and is used for general warehousing and office space. Requests to divide and sell two parcels in the southwest corner of the property were approved by the Department in 2004 and 2010. The site was entered on the Registry in September 1989.

SITE CLASSIFICATION

In 2007 this site was re-classified "d" in accordance with 455B.427.3. The site is properly closed but requires continued management.

TYPE AND QUANTITY OF HAZARDOUS WASTE

- The types of hazardous waste were identified as Metals and VOCs

| TABLE 1 Groundwater Contamination | | | |
|--|---------------------------------|-------------------------------|---------------------------------|
| Compound | Highest Value (ug/L) | Compound | Highest Value (ug/L) |
| Chromium | 390,000 | Ethylbenzene | 930 |
| 1,1-Dichloroethane | 81 | 1,2-Dichloroethylene (Cis-) | 300 |
| 1,1-Dichloroethylene | 25 | 1,2-Dichloroethylene (Trans-) | 1,700 |
| 1,1,1-Trichloroethane | 280 | Tetrachloroethylene (PCE) | 32 |
| 1,2-Dichlorobenzene | 170 | Trichloroethylene (TCE) | 29 |
| 1,2-Dichloroethane | 700 | Toluene | 140 |
| 1,4-Dichlorobenzene | 140 | Xylenes | 1,900 |
| 1,2-Dichloropropane | 20 | Naphthalene | 10,000 |
| Benzene | 95 | Cyanide | 7 |

* Data in shaded /**Bold** exceed statewide standards for protected ground water

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- The primary public health concern is for exposure to contaminated drinking water

The site is located on the south side of Hampton, Iowa. Four residences located near the site had water supply wells in a shallow aquifer. Because these wells were threatened with contamination by chromium in the shallow groundwater they have been connected to the Hampton municipal water system. The city of Hampton has four water supply wells. Three of the wells are 55 feet deep or less and draw water from the same aquifer. They are located from 1.6 to 2.1 miles southwest of the site. The fourth well is 1,763 feet deep and draws water from the

Jordan aquifer. The deep well is located 0.6 miles from of the site. None of the Municipal wells appear to be threatened by the contamination from the site.

STATUS OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency at the site.

The quantity of hazardous waste released from this site is undetermined. The site's owner began conducting investigations of potential soil and groundwater contamination in 1987. A combination of monitoring wells and soil borings revealed an area of chromium contamination in the groundwater at the southeast corner of the facility and an area of hydrocarbon contamination at other locations near the main building.

Further investigations in 1988 and 1989 found the chromium contamination in the shallow groundwater extends at least 1300 feet east-southeast of the site. Another investigation was conducted in 1991 in conjunction with the development of a remedial action plan. A total of 34 monitoring wells have been installed and sampled during these investigations. The maximum groundwater contamination levels for chromium and volatile organic compounds (VOCs) appear in Table 1.

1992 Remedial Actions

Numerous permanent and temporary wells or borings were used to continue the investigation of the nature and extent of chromium and VOC contamination. This activity includes attempting to identify the means of horizontal dispersion, specifically the role of sand layers or lenses in contaminant transport. This activity was also focused on attempting to identify the vertical extent of contamination. In addition, work was begun on the initial phases of the groundwater extraction system to remove chromium contaminated groundwater southeast of the plant. Test trenches are being installed to determine hydrologic properties that in turn will be used to design and install the full-scale interception (extraction) system.

1993 Remedial Actions

Investigation phases related to defining the extent of contamination are essentially complete and a long-term monitoring plan is in place. Further evaluation of the existing test trenches, coupled with additional monitoring results, have resulted in proposed alterations to the trench recovery system for the chrome plume. The implementation of the system has been delayed by the extremely wet conditions prevalent in 1993.

1994 & 1995 Remedial Actions

Monitoring of existing wells continued as per agreement. The department approved a pilot study to evaluate the possibility of using in situ biological treatment to reduce chromium in the groundwater from the hexavalent to the trivalent state. The pilot study is underway.

1996 Remedial Actions

The evaluation of the pilot biological treatment for the reduction of chrome VI to chrome III was completed and determined to be ineffective. The operation of the interception system for the chromium plume continues. A sump was installed on the west end of the building for the removal of floating hydrocarbon product on the water table.

1998/1999 Remedial Actions

Efforts were undertaken to clarify the activities required at the site, in order to ease the transfer of ownership of the site. Monitoring will continue per earlier agreements and no change is proposed for recovering the limited amount of floating organic contamination west of the plant. The interceptor trench was "closed down" in 1999, as it seems to have little impact on constituent migration.

Through 1998, remedial actions were aimed at interception of chromium contaminated groundwater, and the removal of free product organic contaminants. An environmental easement was placed on the plant property and the area of chromium contamination to the southeast, which will prevent well installations in both areas and control some activity / uses in the immediate vicinity of the plant. The purpose of the easements is to prevent exposure of persons to levels of contamination deemed unsafe.

2006 to Present Groundwater Monitoring

Annual ground water monitoring through June 2006 for total volatile organic compounds (TVOC) and chromium indicated generally declining concentration trends; however, chromium concentrations in MW-7A started to increase in the 2007 sampling event. In 2008, the groundwater monitoring program was reduced by limiting the groundwater analysis to chromium and collecting samples from 13 monitoring wells and two private wells. Chromium concentrations in MW-7A have continued to increase to the all time high in June of 2013. Based on the elevated concentrations of chromium in MW-7A, groundwater monitoring is continuing.

2013 Sale

Golden Triangle sold the site to Tower, LLC in November 2013. Tower, LLC will continue to use the property for storage and office rental. The sale was approved by the DNR on November 26, 2013.

2014: Chromium contamination in groundwater decreased in MW-7, reversing a trend for the past several years. Sampling will continue for 2015.

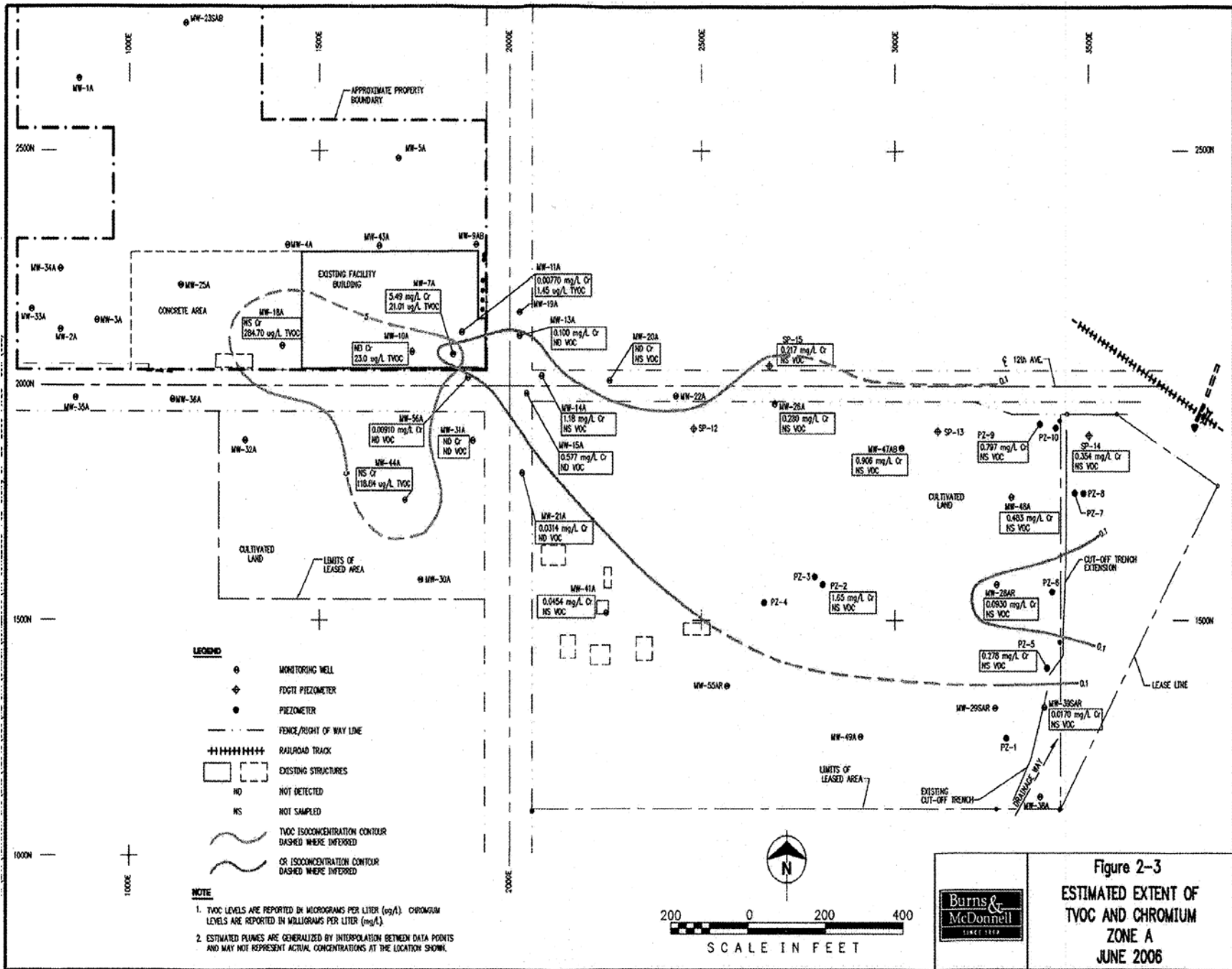
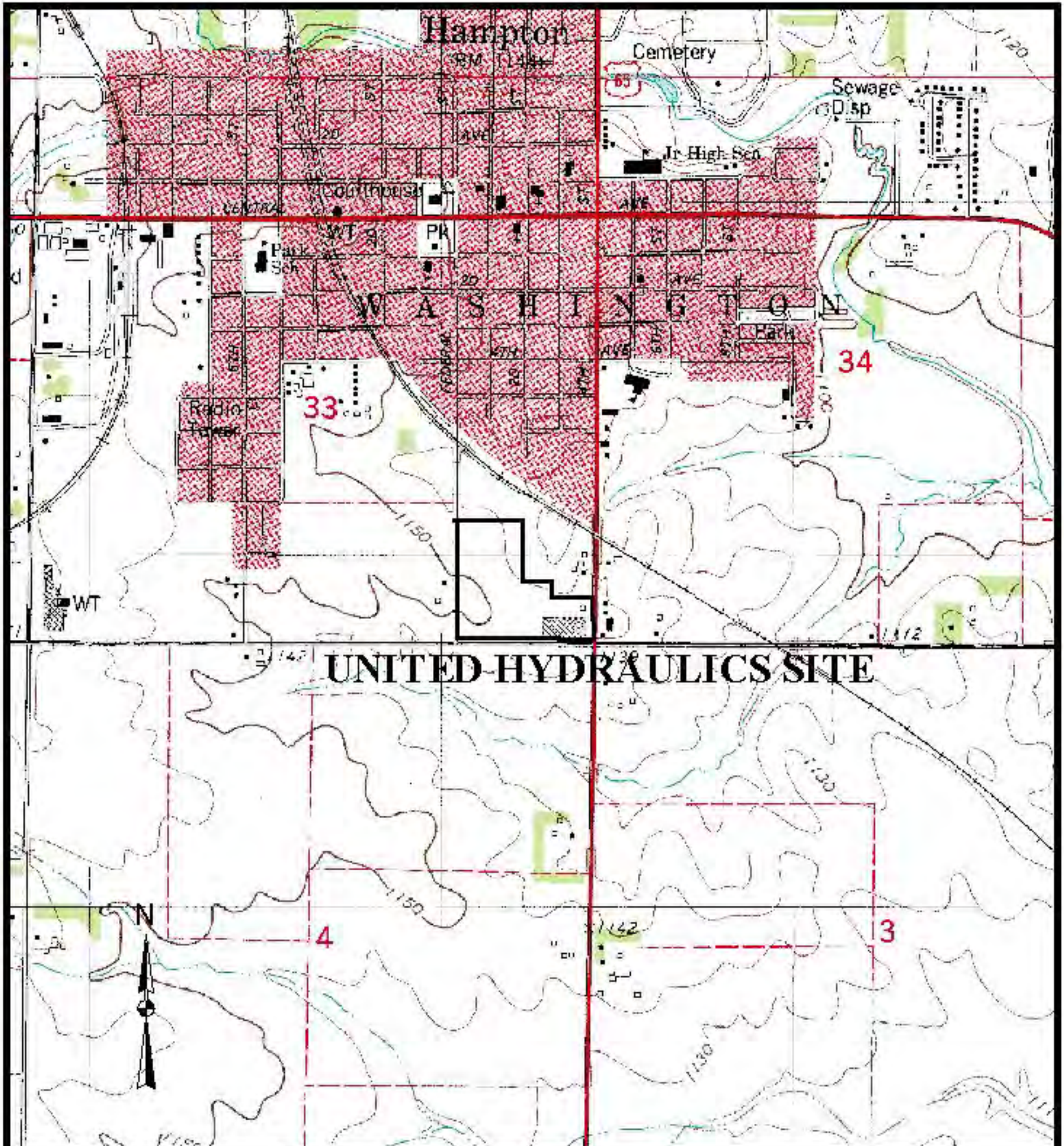


Figure 2-3
 ESTIMATED EXTENT OF
 TVOC AND CHROMIUM
 ZONE A
 JUNE 2006



UNITED-HYDRAULICS SITE



IOWA

Contour Interval 10 Feet



UNITED STATES OF AMERICA (IAAP)

(Middletown, Iowa)

GENERAL DESCRIPTION

The Iowa Army Ammunition Plant (IAAP) is owned by the United States Army and operated by a private contractor. The 19,127-acre secured facility (30 square miles) is in a rural setting. The facility is located in Sections 34, 35, 36, T70N, R4W; Sections 31, 32, 33, 34, T70N, R3W; Sections 1, 2, 3, 10, 11, 12, 13, 14, 15, 23, 24, T69N, R4W; Sections 3, 4, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18, 19, 20, 21, 22, T69N, R3W, in Des Moines County, Iowa. The IAAP was included on the National Priority List (NPL) in August 1990.

Production of war supplies for World War II began in September 1941 and ended in August 1945. Production of munitions was resumed in 1949 and has continued to the present. From 1947 to 1973, the former Atomic Energy Commission operated facilities at the site, which reverted to Army control in 1973. Line 8 was used from 1946 until 1950 to produce nitrogen fertilizer in support of the Marshall Plan.

Only a few of the IAAP production lines are currently operating to load, assemble, and pack (LAP) various ammunition items. These include projectiles, mortar rounds, warheads, demolition charges, anti-tank mines, anti-personnel mines, and the components of these munitions such as primers, detonators, fuses, and boosters. The LAP operations use explosive material and lead-based initiating compounds.

Registry Sites: Three areas within the army facility were listed on the Registry. The names and locations of each of the four sites on the Registry are generally described as follows:

- **Pink Water Lagoon (Line 800)**: It is located in the S ½ of Section 8, T69N, R3W, Des Moines County, Iowa.
- **RDX Brush Creek Site (Former Line #1 Impoundment)**: It is located in the N ½ of Section 5, T69N, R3W, Des Moines County, Iowa and is on the Brush Creek channel.
- **Herbicide/Pesticide Pit**: It was located in the SW ¼ of Section 8, T69N, R3W, Des Moines County, Iowa.

SITE CLASSIFICATION

Classifications assigned for the three individual operable units or OU's:

Pink Water Lagoon: It is classified “**d**” in accordance with 455B.427.3. The site is properly closed, but requires continued groundwater monitoring.

RDX Brush Creek Site: It is classified “**b**” in accordance with 455B.427.3. The contamination of surface water and groundwater poses a significant threat to the environment. Further action is required.

Herbicide/Pesticide Pit: It is classified “**d**” in accordance with 455B.427.3. The site is properly closed, but requires continued groundwater monitoring.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The IAAP facility has many areas with soil, surface water, or groundwater contamination. Most of these areas were not identified or evaluated by investigation activities until 1991. The site was used by IAAP as a landfill from 1941 until 1991. The landfill consists of six trenches, which were used for the disposal of approximately 3,000 tons of sanitary waste a year. From November 1980 to October 1983, a portion of Trench 5 also received ash from open burning explosives and waste from a “contaminated” waste processor and from an explosive waste incinerator. This cell was capped and closed in accordance with RCRA guidelines in 1988. This area also included a sludge drying bed

and a clay lined holding area (Blue Sludge Lagoon) formerly used to store sludge generated from metal cleaning operations. This blue sludge (600 cubic yards) was removed from the drying bed and placed in Trench 6 in 1997.

The contaminants of concern include TNT, lead azide, barium nitrate, fulminate of mercury, PBX, RDX, and antimony sulfate, explosives and metal wastes associated with past and current munition production. In addition, the contaminants of concern include PCBs, radionuclides, and pesticides that are associated with other base activities.

HEALTH AND ENVIRONMENTAL IMPACTS

There are several recreation areas both on-site and in the immediate area surrounding the site. Mathes Lake (also called Long Lake) is on the south central part of the site. The lake had small Boy Scouts of America campsite and was used by local fisherman. The Skunk River runs along the southwest side of the site. The river has two boat access areas and a small park located along its banks.

The IAAP facility has 43 on-site residences used by contract employees and their families. Middletown, Iowa is on the northwest side of the facility. Augusta is an unincorporated town on the south side of the facility with a population of approximately 50. West Burlington, Iowa and Burlington, Iowa are east of the site.

The draft RI report includes an assessment of the threats to human health and the environment posed by the various areas of soil, surface water, and groundwater contamination at site. Exposure to RDX and 2,4,6-T contributed most of the estimated risk to off-site residents and on-site workers. This includes the estimated risks from both the carcinogenic and non-carcinogenic effects of these chemicals.

Contamination was most widespread at six of the 30 sites. These sites were four of the production lines (Line 1, Line 2, Line 3 & Line 3A), the explosive disposal area and the fire training pit. RDX was the most common groundwater contaminant, with the highest value of 1,600 ug/L from a monitoring well at Line 2. Chlorinated solvent compounds and other volatile organic compounds (VOCs) were found in the groundwater at the fire training pit. These VOCs included 1,1-dichloroethene (3,040 ug/L), 1,1,1-trichloroethane (5,000 ug/L), toluene (15,800 ug/L), and benzene 520 ug/L).

• Surface Water

Surface water samples taken from Brush Creek have shown RDX contamination as high as 82 ug/L. An RDX value of 29 ug/L was found in Brush Creek at the southern border of the plant. A groundwater sample near the site had RDX contamination at 330 ug/L. A well at the plant's southern border showed an RDX contamination level of 41 ug/L. The plant has an NPDES permit for discharging RDX from several outfalls into Brush Creek. Therefore, some of the RDX in the creek may come from the permitted outfalls.

• Ground Water

Contamination of off-site private wells on the south side of the facility has recently been documented and has occurred previously. Five private wells were contaminated with TNT. Activated carbon filters were installed on these wells and maintained by the plant until 1973 when the installation of the industrial wastewater treatment equipment decreased TNT concentrations in Brush Creek. Sampling in 1992 and 1993 at 53 residences showed RDX contamination above the HAL in three wells in the Brush Creek watershed and two wells near the town of Augusta. The highest RDX contamination level was 27.5 ug/L.

The Department of Public Health performed a health survey for a family who lives down gradient of the plant. The family had experienced many illnesses and was concerned the plant had affected their drinking water. The Department of Public Health concluded the plant did not cause the illnesses of the family, but they will continue to observe and periodically re-evaluate the situation.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The EPA is the lead agency for the IAAP facility, including the four sites on the Registry. The first comprehensive facility-wide investigation, (Site Investigation) was completed in 1991. In addition to the evaluation of new information, the SI incorporated findings and recommendations from previous studies.

A Remedial Investigation/Feasibility Study (RI/FS) was initiated in July 1992 for 30 of 43 identified solid waste management units at the IAAP facility. The draft Remedial Investigation (RI) report was submitted for review in October 1993. Additional field work for the RI was planned for April through June 1995. A draft Revised RI report was submitted for review in November 1995. A draft Final Revised RI report was submitted for review in May 1996.

The sites at IAAP have been divided into Operable Units.

Operable Unit #1: The Soil OU#1 addresses contamination in soils. The Remedial Investigation for the Soils OU is complete. The Final FS report was submitted in November 1997. EPA signed the Record of Decision (ROD) for Operable Unit #1 on September 29, 1998. The selected remedy includes:

1. Remove soils from the CAMU (Trench 7).
2. Transport SVOC-contaminated soils to an off-site treatment/disposal facility.
3. Transport explosives-contaminated and explosives plus metals contaminated soils to a temporary on-site treatment facility.
4. Process the explosive contaminated soils through a low temperature thermal desorption unit or a temporary Biological Treatment unit.
5. Process the explosives plus metals contaminated soils through a solidification/stabilization unit.
6. Dispose of the treated soils in the Soil Repository (Trench 6), under another synthetic landfill cap, or elsewhere on-site as appropriate.

Operable Unit #2: In 1994, the Army proposed more immediate removal actions for several of the contaminated areas at the facility. Nine removal actions have been started or completed by the end of 1998. This included removal actions for all the registry sites, which began in 1995 at the herbicide pit and in 1996 at the other three sites. Removal actions were completed at two other non-registry sites prior to the ROD. EPA signed the Record of Decision (ROD) for Operable Unit #2 on March 4, 1998. The selected interim remedy includes:

1. Excavation of contaminated soils from 15 remediation areas and restoration of the excavated areas. Removal actions were completed at three of these areas in 1998.
2. Segregation of excavated soils according to contaminant type and concentration.
3. Temporary storage of the most highly contaminated soils in the on-site CAMU (Trench 7).
4. Permanent disposal of soils contaminated at lesser levels in the on-site Soil Repository (Trench 6) or in the on-site Inert Landfill.
5. Permanent disposal of metals-contaminated soils that require Solidification/stabilization in Trench 6.

Operable Unit #3: The Groundwater OU#3 addresses contamination of groundwater within the IAAP boundaries and potentially off-site. The Final Supplemental Groundwater RI was submitted in December 1999. EPA has requested additional data to complete the RI/FS.

As an interim measure, the Army is providing bottled water to off-site residences with contaminated well water. The Army has offered to pay to connect the residents on the south side of the facility to the public water supply currently being constructed in the area.

Operable Unit #4: The Installation-Wide OU#4 addresses other unacceptable risks not addressed in OU#1 or OU#3. EPA has requested additional data to complete the RI/FS.

Registry Site Removal Actions:

Removal actions that have been conducted at the four registry sites include.

Installation Landfill (Inert Landfill): The removal action at the landfill was initiated in March 1996 will continue for several years. The remaining open part of Trench 6 was reconstructed in 1996 as a RCRA disposal cell. Approximately 38,000 cubic yards of material have been disposed in Trench 6 through 1998. A temporary stockpile (Trench 7) was constructed in 1996 just west of the Trench 6. Soils treated to reduce toxicity and disposed on-site after the interim soil removal activities are completed at the site. Approximately

8,000 cubic yards of material have been placed in Trench 7 through 1998. The used part of landfill (including the previously capped part of Trench 5) was capped in 1997 according to the requirements of RCRA. The random fill used to complete the surface included approximately 62,000 cubic yards of lightly contaminated soil and sediment excavated from the Line 800 Lagoon and former Line 1 Impoundment. This landfill cover includes geosynthetic layers together with a clay cap.

Pink Water Lagoon: The Line 800 Pink water Lagoon was an unlined five-acre impoundment, four feet deep, and surrounded by an earthen berm. A leaching field and evaporation furrows were originally constructed in 1943 and received wastes until 1955. In 1960, the leaching field was converted to a lagoon by construction of the berm. This site received explosive-contaminated wastewater from Line 800 and sludge from other IAAP operations until 1970. The red/pink wastewater from TNT operations is listed as K047. About 4.1 million gallons of water were contained in the five-acre lagoon prior to the removal action. An RI/FS was conducted at this site in 1989, but some additional investigation and assessment were required as part of the ongoing RI/FS. After dewatering the lagoon, approximately 74,730 cubic yards of contaminated soil were excavated from March to December 1997. Approximately 6,800 CY were placed in Trench 7 for further treatment. Trench 6 received 12,130 CY and the remaining 55,800 CY were used as random fill in the landfill. After the soil excavation the lagoon was developed as a wetland.

In 1998 a berm was constructed to separate the southwestern end from the main lagoon. The southwestern end was segregated from the main lagoon because hot spots of explosives were detected in both surface water and soil in this area. In 1999, RDX levels in the main part of the lagoon varied from 30 ug/l in the winter to 2 ug/l in the summer.

During the installation of monitoring wells downstream from lagoon, high levels of TNT were discovered in soil at depth at the location of former settling basin. Assessment of the extent of deep soil contamination in four downstream settling basins in October 1999. An estimated 1,000 CY will need to be excavated and taken for treatment in Trench 7 of the IDA.

RDX Brush Creek Site (Line 1 Impoundment): Line 1 generated the greatest volume of explosive waste and pink water at IAAP from 1948 through 1975. The impoundment was created by the construction of an earthen dam across Brush Creek in 1948. The impoundment extended from 1,300 to 2,400 feet upstream, depending on flow conditions. Explosive-contaminated water (K047) was routed to the containment area. Explosive material was settled out in the containment area. Fly ash and activated carbon were added to the effluent from the containment area to treat the remaining explosive material. In 1957 a treatment system was installed and the use of the impoundment was eliminated. The embankment was breached in 1975.

An RI/FS was conducted at this site in 1989, but some additional investigation and assessment were required as part of the ongoing RI/FS. Approximately 8,270 cubic yards of contaminated soil were excavated in February and March 1997. Approximately 620 CY were placed in Trench 7 for further treatment. Trench 6 received 1,230 CY and the remaining 6,420 CY were used as random fill in the landfill. After the soil excavation the area was developed as a wetland. Baseline monitoring of sediment, plant tissues, and water was conducted in October 1998.

Sedimentation ponds are thought to have existed above the Line I Impoundment. Further investigation in October 1999 to determine the location and extent of soil contamination in these areas.

Herbicide/Pesticide Pit: This site was constructed in 1968 by excavating a small six-by-six foot pit. Heavy polyethylene was used to line the three-foot deep pit. The pit was filled with coarse limestone and had an overhead rain shelter. The disposal of pesticides was discontinued in 1974 and the rain shelter was removed in 1976. A complete removal action was completed in the spring of 1995. Approximately 150 cubic yards of pesticide-contaminated soil were excavated in 1995 and transported to an off-site incinerator for proper disposal.

In 2000, the Department of Energy (DOE) and the Army conducted supplemental investigation concerning the potential release of radioactive compounds during operations by the Atomic Energy Commission.

2002: Department of Energy (DOE) and the Army performed a radiological fly-over of the entire 30 square miles using a helicopter equipped with gamma radiation detectors. Results will be published in June 2003.

2003: Received Supplemental Remedial Investigation Plan for the Incendiary Disposal Area, Fly Ash Waste Pile, Possible Demolition Area, and Line 3A Pond. Received the results for the Aerial Radiological Survey and they indicated no other areas of radiation contamination other than the coal pile and the depleted uranium storage area. Formerly Utilized Sites Remedial Action Program (FUSRAP) funding began for the Department of Energy (DoE) sites formerly known as the Atomic Energy Commission. The DoE has delegated the Army Corps of Engineers as the federal agency to administer the FUSRAP program. A new federal facility agreement will be negotiated to cover this new funding source. The Off-Site Feasibility Study was submitted. The Baseline Ecological Risk Assessment was submitted.

In 2004 the Iowa Army Ammunition Plant awarded Tetra Tech Inc. with a performance-based contract to complete the Superfund assessment and remedial efforts until the site is removed from the National Priorities List.

The process sites within the Iowa Army Ammunition Plant used by the Former Atomic Energy Commission have been removed from the responsibility of the U.S. Army and now are the responsibility of the U.S. Department of Energy. A new Superfund Federal Facility Agreement has been drafted for these specific sites and the Army Corps of Engineers have been tasked by the Department of Energy to assess and if needed remediate these specific locations.

2007: Soil remediation at the Pink Water Lagoon (Line 800), RDX Brush Creek Site (Former Line #1 Impoundment), and Herbicide/Pesticide Pit have been completed and groundwater monitoring results continue to show decreasing trends in the level of RDX. Both the Pink Water Lagoon and the Brush Creek operable units (OUs) will be soon be reclassified as a 'D Site'.

2009: Groundwater monitoring continues to indicate decreasing trends in the contaminated groundwater in and around the site.

2010: Groundwater monitoring continues to indicate decreasing trends in the contaminated groundwater in and around the site. The Brush Creek groundwater and surface water RDX/TNT contamination investigation is just getting started.

2012: Formerly Utilized Sites Remedial Action Program (FUSRAP) finalized the Proposed Plan and Feasibility Study for the areas of IAAAP used by former Atomic Energy Commission (AEC). The draft Remedial Design/Remedial Action plan was submitted in September 2012 for the remediation of the depleted uranium contaminated soil and structures at the IAAAP. FUSRAP also continues to remove soil contaminated with the explosives RDX and TNT at the process buildings used by the former AEC (now the U.S. Department of Energy).

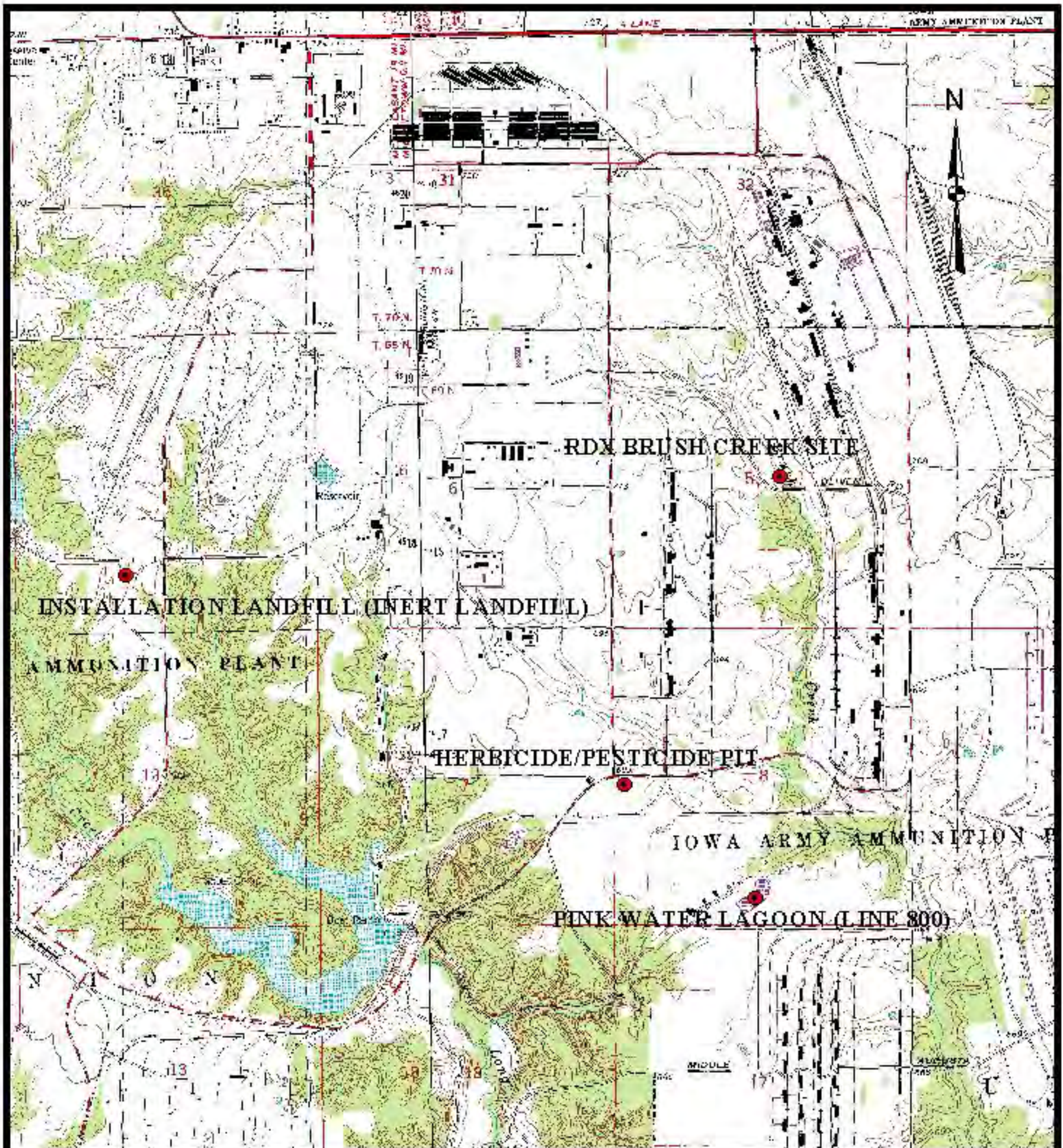
Military Munitions Response Program (MMRP) finalized the Engineering/Cost Analysis plan for the closed military ranges within the boundaries of the IAAAP. The draft Proposed Plan was submitted in November of 2012 describing possible remedial actions to clean up unexploded ordnance and fragments found at the IAAAP.

Installation Restoration (IR) completed the cap at the inert disposal area (IDA) which was used for the disposal of soil contaminated with low levels of explosive (Sub Title D waste only). The Army chose a more protective Sub Title C cap for the landfill. Now that the majority of the explosive contaminated soil has been removed the Army is now submitting plans to find the extent of the contaminated groundwater plume.

2013: Land use control negotiations continue for the off-site groundwater plume. IAAAP is pursuing rule making as the mechanism to prevent private wells from being placed in the area impacted with the explosive RDX.

2014: Groundwater monitoring continues for the three sites in the Registry, the Pink Water Lagoon, Line 1 Brush Creek Site, and the Herbicide/Pesticide Pit. The groundwater monitoring at the Herbicide/Pesticide Pit is post closure monitoring. The Pink Water Lagoon and Line 1 Brush Creek Site are currently in the feasibility study phase heading towards the groundwater remedial phase.

(United States of America - IAAP)



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 5000 6000 7000 Feet

VOGEL PAINT AND WAX COMPANY

(Orange City, Iowa)

GENERAL DESCRIPTION

The five-acre site is located in the W 1/2 of the NW 1/4 of Section 29, T94N, R45W, Sioux County, Iowa about two miles south and one mile west of Maurice, Iowa. The Vogel Paint and Wax Company is the owner of record. The site was placed on the Registry in 1984. The EPA placed the site on the National Priorities List (NPL) in June 1986. Disposal trenches (8-12 feet deep) were first operated in the area south of an abandoned gravel quarry in 1972.

SITE CLASSIFICATION

The site is classified as "d" in accordance with 455B.427.3. Active remedial measures have been completed and continued groundwater monitoring will be conducted to ensure that off-site migration of contaminants do not pose a significant threat to the environment.

TYPE AND QUANTITY OF HAZARDOUS WASTE

The Vogel plant in Orange City, Iowa used the site for disposal of paint sludge, resins, solvents and other solid wastes. These wastes contained zinc, lead, chromium, mercury, toluene, xylenes, naphtha, methyl ethyl ketone, and methyl isobutyl ketone. It is estimated 143,000 cubic feet of solid waste were disposed at the site, with 123,000 gallons being liquid waste. These wastes have leached from the disposal pits into the groundwater and have migrated from the disposal area. Waste liquids were poured into trenches from 55-gallon drums. Miscellaneous plant debris was used to top off the trenches. When the level of the waste approached the original ground surface, the trench was covered with one to two feet of cover.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

- **The primary public health concern was the potential exposure to contaminated groundwater**

The site is adjacent to an unnamed tributary to the West Branch of the Floyd River. About two river miles downstream from the site is the well field for a rural water system. In November 1980 the Department of Public Health initiated a review of cancer incidents in the area. No statistically significant elevation of cancer incidence was found. In 1988 the Department of Public Health performed a Health Assessment of the site. They concluded there does not appear to be an immediate public health threat, but the site was a concern because of the possibility of off-site migration of contaminants in the groundwater.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

The state is the lead agency for the site.

Remedial Investigation, Feasibility Study, (RI/FS) and Endangerment Assessment (EA) were completed in August 1989. The state and the EPA signed a Record of Decision (ROD) in September 1989 requiring remedial action including;

- On-site, aboveground bio-remediation of the contaminated soils from the original disposal area,
- Treatment of the contaminated groundwater by pumping, air stripping, and surface discharge, and

Remedial design activities began in November 1989 and construction began in September 1990. The soil remediation was begun in October 1991. Debris (mainly paint containers) was manually sorted from excavated material prior to placing the excavated soils in the soil treatment cells. Sorted containers were emptied prior to off-site disposal. About 65,000 cubic yards of contaminated soils were excavated, treated, and placed back into the

excavation. Soils containing elevated levels of metals were isolated, placed a minimum of five feet above the water table, stabilized with lime, and covered with a minimum of four feet of soil. The area of placement of soils with elevated levels of metals is not to be disturbed. Soil remediation was completed in 1998.

The groundwater remedial facilities were put into operation in early 1991 and operation was ceased in 2002. About 15,000 gallons of free product were removed in conjunction with the groundwater remediation.

In 2000 additional excavation was conducted of soils containing free product that had migrated off the original disposal area. The excavated soil was repositioned above the groundwater with venting pipe installed to facilitate soil vapor extraction and/or bioventing (i.e., enhanced natural bioremediation by increasing the subsurface air supply).

In 2002 studies were completed that evaluated methods for enhancing cleanup of the repositioned soils. It was concluded that natural processes were nearly as effective as processes involving introduction of forced air. Some manual free product recovery may continue.

In 2003, the IDNR entered into a Consent Order (CO) with Vogel, which called for discontinuation of active remediation and continued ground water monitoring. The CO called for reactivation of the remedial system if evidence of off site contamination was discovered. New monitoring wells required under the CO revealed off-site contaminant migration to the south. Therefore, the ground water remedial system was re-activated in August of 2003.

In 2004 a Superfund 5-year review was completed. The 5-year review concluded that the remedy at Vogel site was protective of human health and the environment because there was no exposure to site-related contaminants. However, a need for determining the potential for off-site migration of contamination, and controlling if necessary, was identified to ensure long-term protectiveness.

Operation of the ground water remedial system was again discontinued in 2005. Subsequent groundwater sampling has been conducted and will continue. In 2007 additional remedial measures were initiated in an attempt to reduce off-site migration of contamination in groundwater. Measures included pumping from 2 wells with the resulting water used for irrigation of poplar trees in the area of the 2000 excavation. In the summer of 2008 the irrigation area was expanded and pumping from an additional well was included.

In 2009 a third Superfund 5-year review was completed. The 5-year review concluded that the remedy at Vogel site was protective of human health and the environment in the short term because there was no exposure to site-related contaminants. Continued monitoring actions were recommended to confirm long-term protectiveness. No pumping has been conducted since the fall of 2010. Semi-Annual groundwater monitoring was begun in 2012.

In 2013 some southerly migration of the groundwater plume was observed. Additional sampling has been instituted to monitor this condition. No receptors are threatened. The fourth Superfund five-year review was initiated in December 2013 and is scheduled for completion in September 2014.

2014 The fourth Superfund five-year review was initiated in December 2013 and completed in September 2014. Comments included restarting remediation (discontinued in 2004). Discussion between IDNR and EPA ongoing.

The DNR continues to be the lead oversight agency for the Vogel site with the EPA in the support agency role.

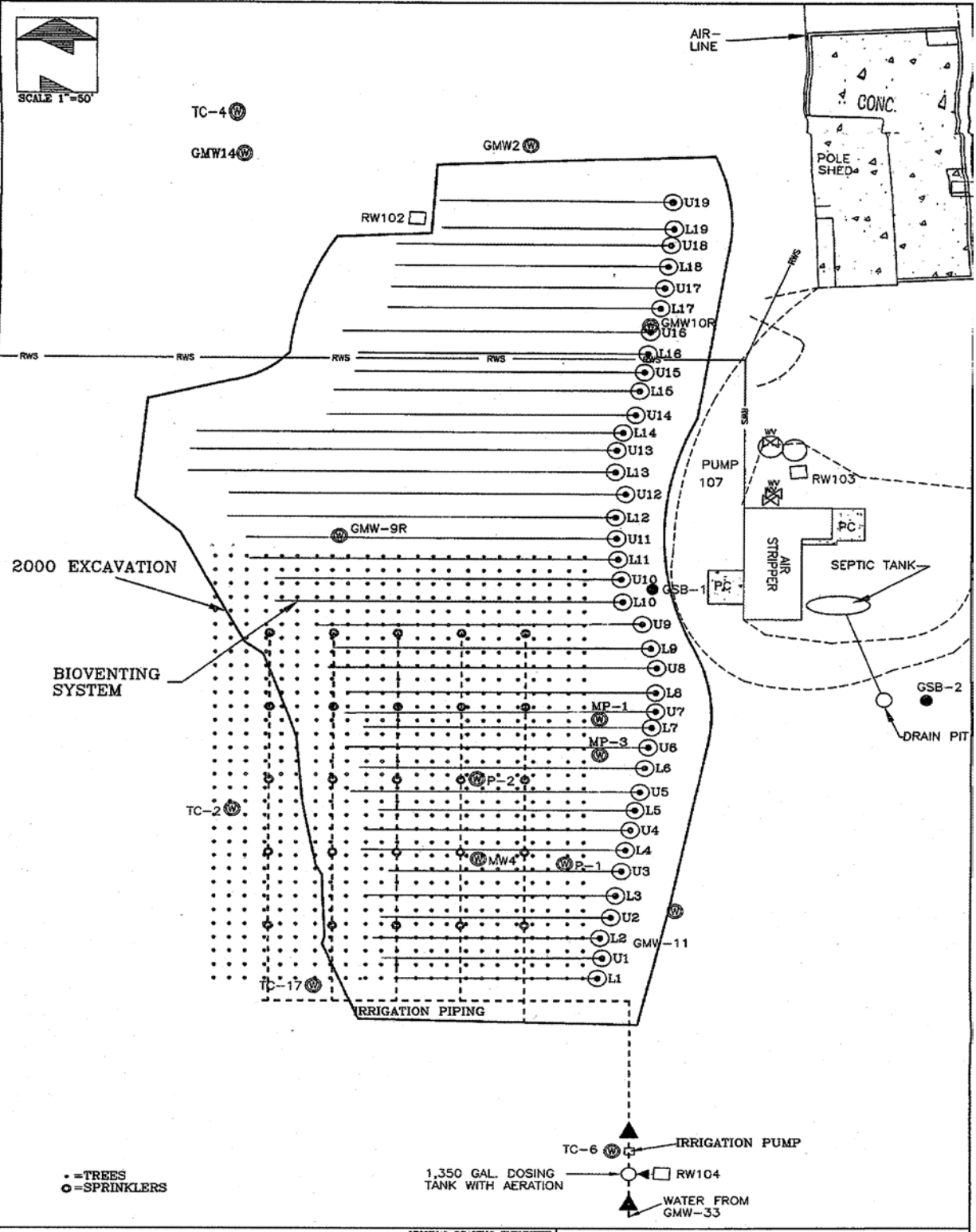


FIGURE 2
 BIOVENTING PIPING LAYOUT
 VOGEL PAINT WASTE SITE
 MAURICE, IOWA

ORIGINAL DRAWING FURNISHED
 BY DGR & ASSOCIATES CO.

PROJECT #: 91-400 DATE: 8/29/07
 DRAWN BY: BWE CHECKED BY:

GEOTEK ENGINEERING &
 TESTING SERVICES, INC.

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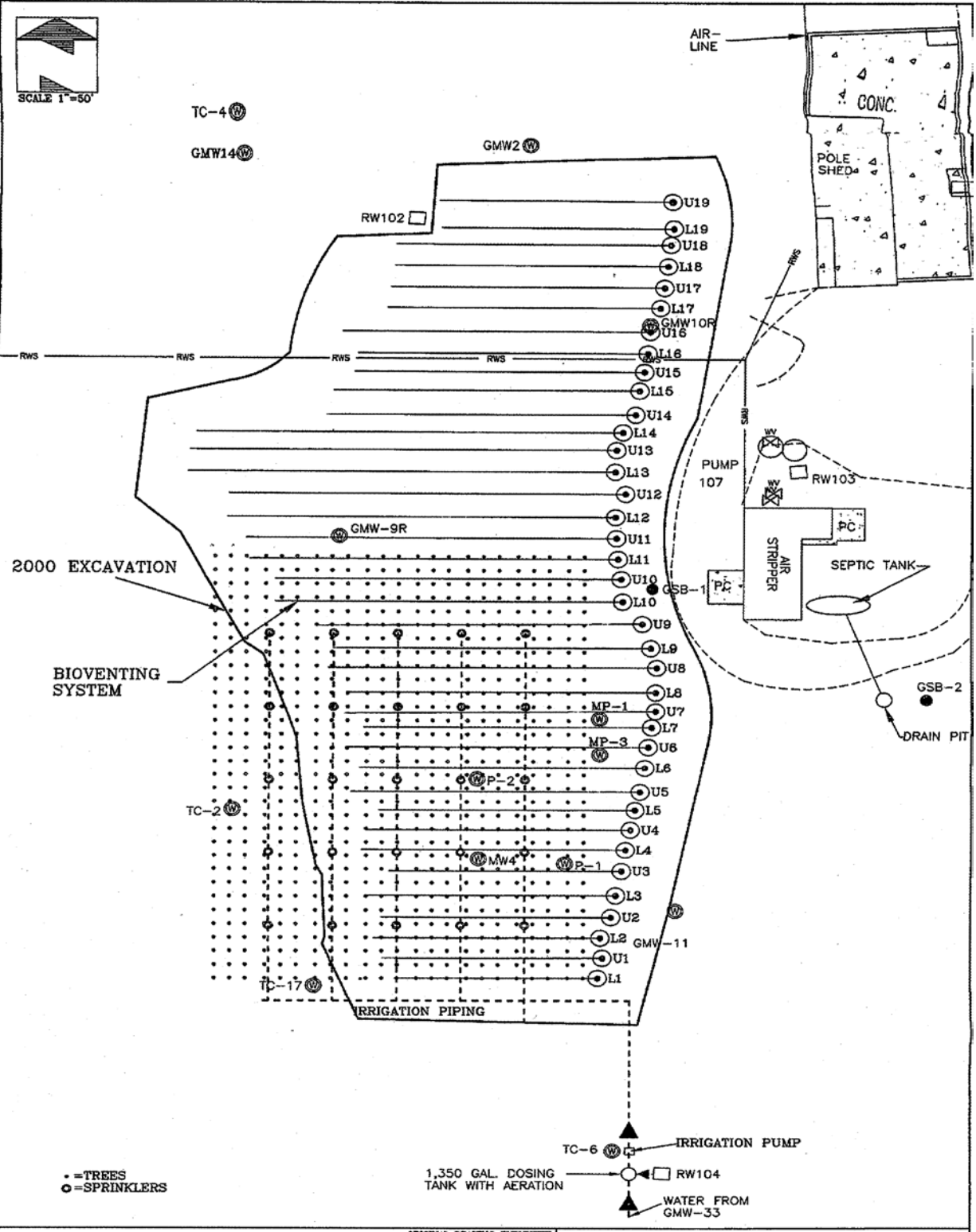


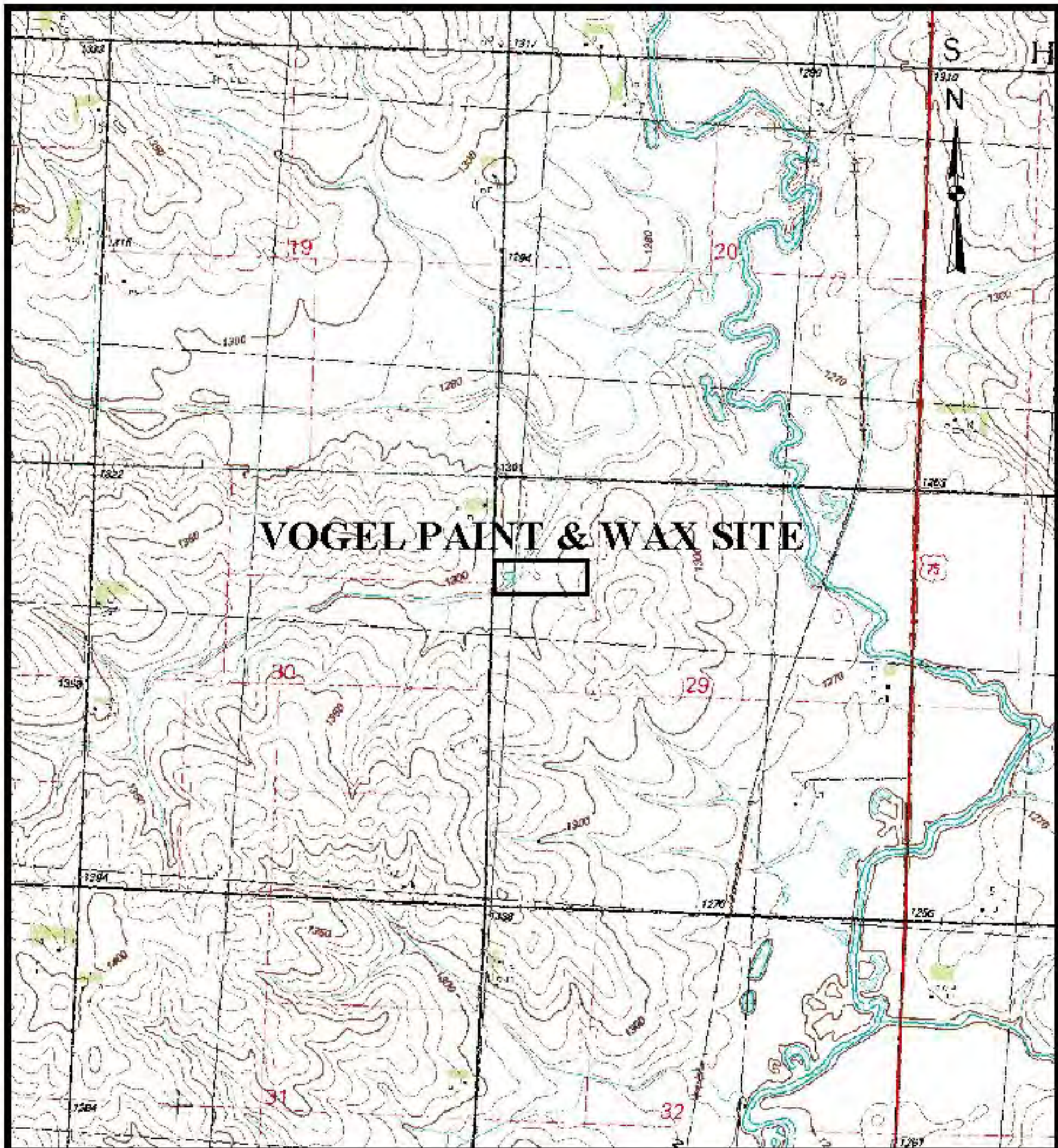
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ACAD\GEOTEK\TOM\91-400-SITEREND



Contour Interval 10 Feet

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WELLMAN/FANSTEEL CORPORATION
(Creston, Iowa)

GENERAL DESCRIPTION

The Wellman Dynamics (Fansteel) Corporation is a 15.3 acre site located in the SE 1/4 of the NE 1/4 of Section 7, T72N R 20W on the southeast side of the city of Creston in Union County, Iowa. The site was entered on the Registry of Hazardous Waste Sites in May 1992.

SITE CLASSIFICATION

In accordance with 455B.427.3 the site is classified "c" Not a significant threat to the Environment, Action May Be Deferred.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Wellman Dynamics Corporation manufactures light metal castings for the aerospace industry using a non-ferrous foundry. A predecessor to Wellman Dynamics Corporation owned and operated the facility from 1965 until 1991. During these years of operation, waste acids consisting of a mixture of hydrofluoric, nitric, sulfuric and chromic acids were disposed of in a waste dump pit on-site. When disposal in the pit stopped in 1971, the pit was filled with sand and capped with concrete. It is not known if the pit was lined.

Wellman Dynamics also has an on-site landfill, which has been in operation since 1965. The landfill is located directly east of the plant. The landfill was permitted (88-SDP-04-86P) in 1986 for the disposal of foundry castings and sand wastes, machine cuttings and baghouse/dust collector waste generated at the facility.

SUMMARY OF HEALTH AND ENVIRONMENTAL CONCERNS

Radiological Waste:

According to the Radiological Bureau of the Iowa Department of Public Health (DPH) to Wellman Dynamics, the site leachate does not pose a significant radiological threat to the public health or environment. Authorization was given to discharge leachate to the city of Creston sewer system, subject to batch discharge monitoring for radiological level compliance. The IDPH required the submittal of a Site De-commissioning plan. The Plan was completed and accepted by IDPH in 2008

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

In 1986, Oak Ridge Associated Universities, under contract with the NRC, conducted a detailed evaluation of thorium waste disposal conditions at the Wellman site. Also, intensified management of off-site NRC waste disposal by Wellman Dynamics was mandated. Site soil and water quality testing showed the presence of low gamma and gross beta contamination, but not enough to require remediation.

After completing the 1986 investigation the NRC referred the site to the State of Iowa authority for regulatory control. Since then, the Iowa Department of Public Health (IDPH) has been the lead agency for the radioactive waste and the Solid Waste Section of IDNR is the lead agency for the landfill.

In August 1998, the IDPH required Wellman to conduct a comprehensive groundwater quality site sampling and testing program to determine if thorium is migrating beyond the landfill. The report (October 28, 1998) concluded concentrations of U-238 and TH-230 were present in perimeter monitoring wells but below regulatory limits and immediate further remedial action was not required. The DPH accepted the report conclusion, but further off-site investigation is pending.

Landfill Leachate Treatment:

1993: RCRA Facility Assessment completed by Metcalf and Eddy, Inc. on behalf of EPA.

In 1998, the IDNR required leachate within the landfill be removed and disposed in the municipal wastewater treatment works. The city of Creston requires leachate evaluation for radionuclides before discharge to the wastewater treatment facility under a treatment agreement. The leachate evaluation tests in February 1999 indicated the radionuclide levels were within allowable limits if the leachate is filtered on-site to remove solids before discharge to the sewer. A treatment agreement was signed in March 1999, which included limits on metals, BOD, sulfides, sulfate, fluoride and suspended solids levels.

In January 1999, the DPH advised Wellman that state regulations under IAC Chapter 641-40 require “decommissioning” of the NRC disposal site after July 1, 1999 to allow release of the site for an “unrestricted use” designation. A decommissioning plan was required for approval by DPH by July 1, 1999, which includes an evaluation of radionuclide levels off-site via water and soil pathways.

The IDNR required Wellman to complete a groundwater assessment in 1999 to determine the sources and extent of fluoride and sulfate contamination above MCLs at perimeter monitoring wells and the extent of off-site migration. The USEPA has assumed the lead for the groundwater (fluoride and sulfate) assessment. The scope of remediation will be determined when off-site ground water contamination is defined.

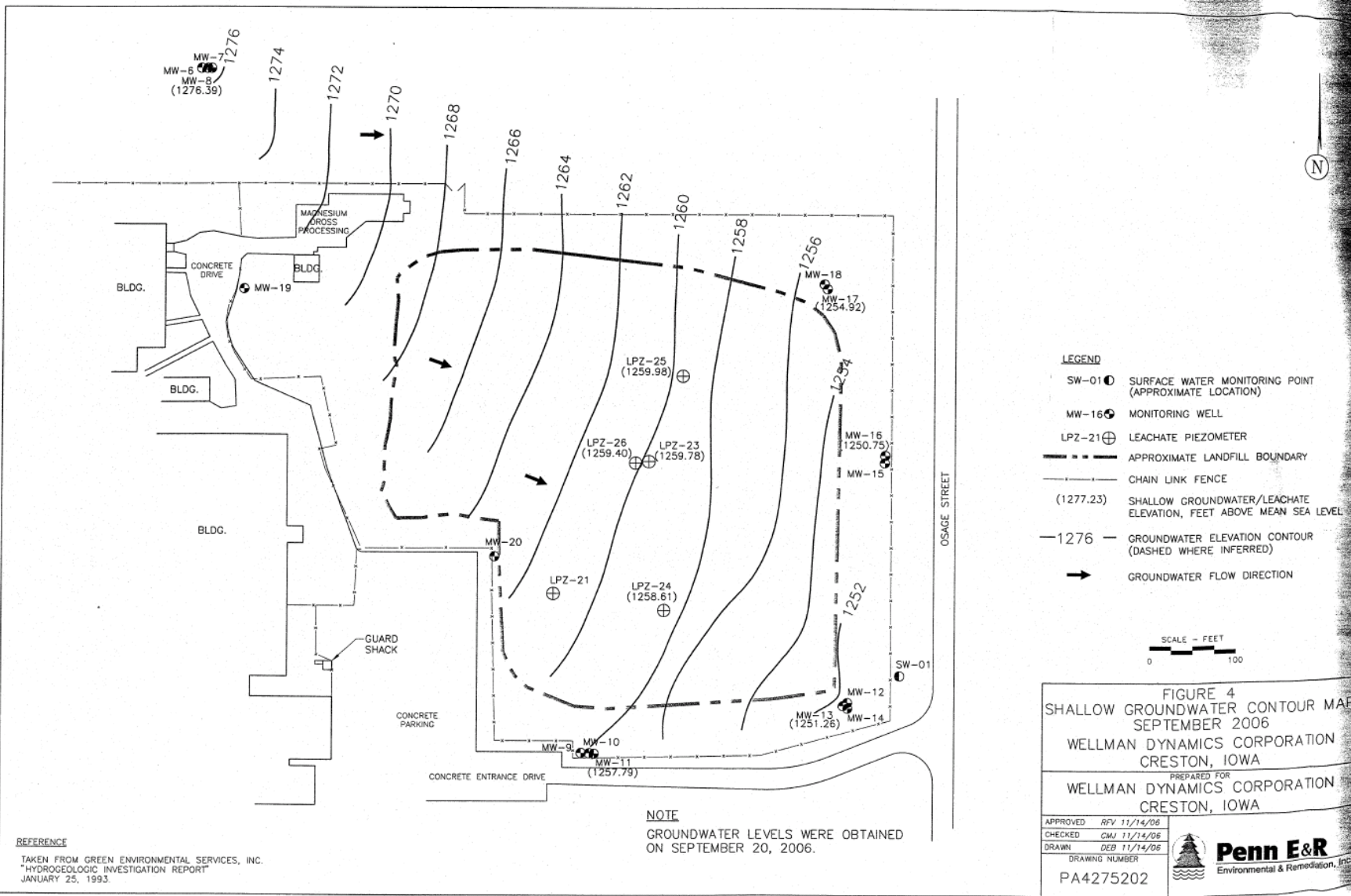
2006: EPA approval of the RCRA Facility Investigation Work Plan and an annual water quality report for the landfill was submitted to IDNR Solid Waste Section for approval.

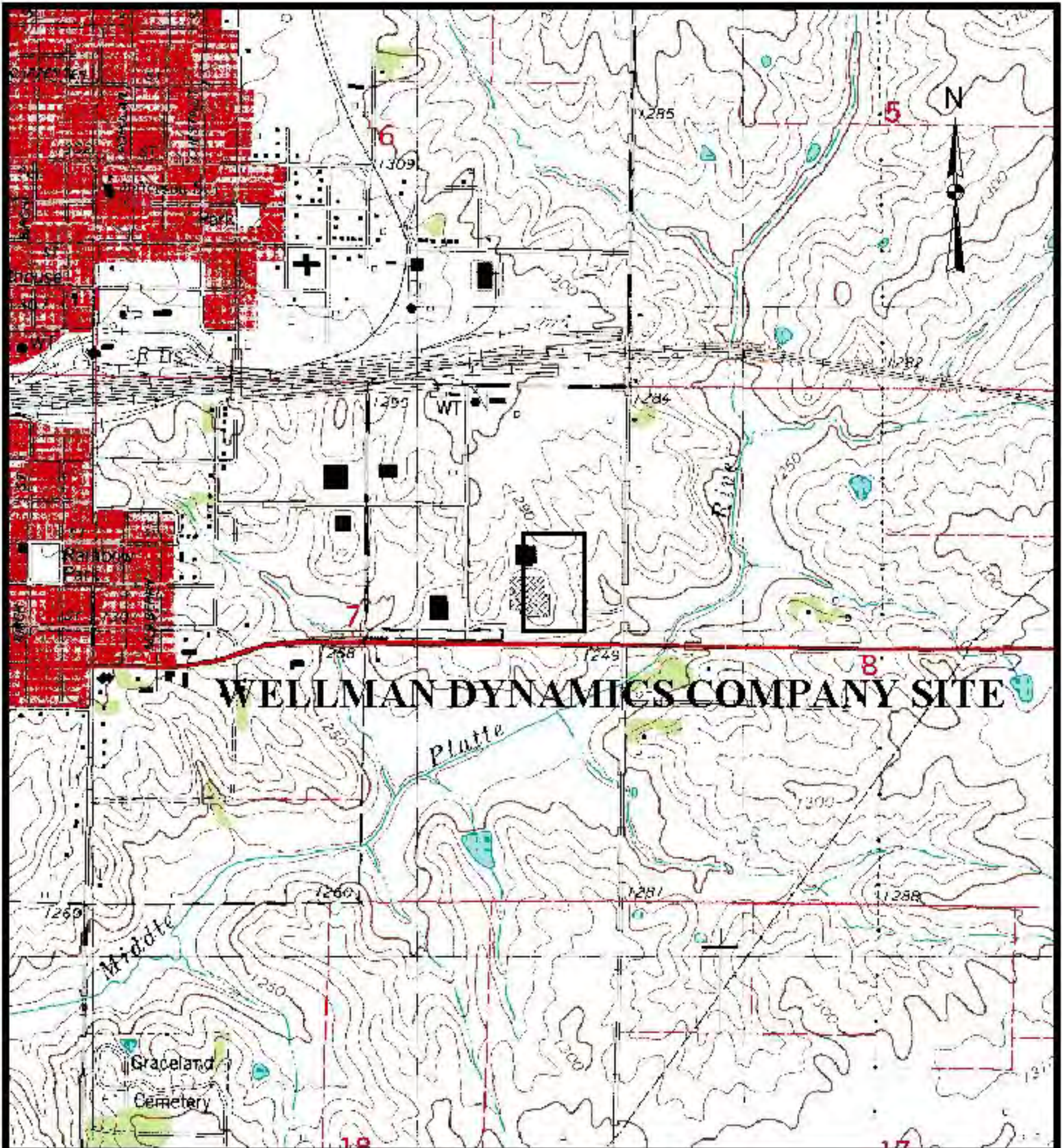
- 2003: EPA acknowledges closure certification for the former WWT sludge container hazardous waste storage unit.
- 2004: RCRA Corrective Action Administrative Order on Consent issued by EPA became effective.
- 2006: EPA approval of the RCRA Facility Investigation Work Plan and an annual water quality report for the landfill was submitted to IDNR Solid Waste Section for approval.

- 2008: RCRA Facility Inspection conducted May 2008
- 2009: RCRA Facility Investigation Phase II Addendum submitted to EPA for review and approval.
- 2010: Semi-annual engineering and water quality reports submitted for landfill.

- 2011: The facility has been placed under a Corrective Action Order by EPA.
- 2011: EPA conducted RCRA compliance evaluation on site.
- 2012: (landfill permit #88-sdp-043-86p) renewed for three years (2015); included a provision to construct a lined waste disposal unit with leachate collection by July 1, 2014.

2014: Wellman ceased disposal at their permitted industrial waste landfill. All newly-generated nonhazardous industrial wastes are now transported to a permitted sanitary landfill (South Central Iowa Sanitary Landfill, Winterset, Iowa). They are exhuming approximately 11,000 tons of non-hazardous waste per year for transport to the sanitary landfill. It is expected that all non-hazardous wastes will be removed from the permitted industrial landfill by 2024. They are required to submit remaining landfill life estimates biennially, with the next one due in 2016.





WELLMAN DYNAMICS COMPANY SITE



Contour Interval 10 Feet

1000 0 1000 2000 3000 4000 Feet

WILLIAMS/ (MAGELLAN) DES MOINES TERMINAL

(Pleasant Hill, Iowa)

GENERAL DESCRIPTION

The site is located on approximately 116 acres in the East 1/2 of Section 17, T78N, R23W, at 2503 SE 43rd Street, Pleasant Hill in Polk County, Iowa. The site was entered on the Registry in August 1990. The Complex handles and stores various petroleum products. The site has been in continuous operation since the early 1930s. Presently the site consists of 47 aboveground tanks and several tank car and truck loading racks. All the tanks are contained within berms. Additional steps have been taken since a 1997 spill to prevent future releases. This includes a tank trending program with regular static checks, the installation of fiberglass over all the metal tank bottoms, and providing cathodic protection to all tanks and lines.

The Des Moines terminal is under new ownership. On April 23, 2003 Williams Co announced the sale of Williams Energy Partners, LP. The Des Moines Terminal was included in this sale. The terminal is now owned by **Magellan Pipeline Company** and will be referred to as the **Magellan Des Moines Terminal**.

SITE CLASSIFICATION

The site is currently classified as "d": requires further management in the form of monitoring ground water.

TYPE AND QUANTITY OF HAZARDOUS WASTE

Spills of over 2,000,000 gallons of petroleum products at and near the site have caused widespread contamination both on-site and off-site of the Des Moines River alluvial aquifer. In January 1982, a pipeline break on the east side of the site released approximately 840,000 gallons of diesel fuel that flowed into the swamp that forms the southeast corner of the site. As part of the cleanup of this off-site spill the swamp was drained of water, which may have contributed to contamination of sediments in the swamp. Other on-site spills occurred in March 1986 and July 1990. During the 1986 spill, an estimated 11,760 gallons of diesel were released from a leak in Tank 620. During the 1990 spill, an estimated 3,000 gallons of diesel were released from Tank 618 (located on the eastside of Tank 620). The largest spill appears to have occurred in 1997 when 1,260,000 gallons of gasoline were released from piping associated with Tank 1310. This tank is located on the northeast part of the site and much of the free product of the release migrated offsite to the east.

Southwest Corner Area

The presence of free product and groundwater contamination on the southwest part of the site was initially discovered in August 1982. Two monitoring wells were installed as part of limited investigation of a suspected gasoline leak. The sample results indicated the presence of floating free product in the area. Subsequently, a three phase hydrogeologic investigation was performed in 1983. This included the installation of one, then another five, and finally an additional fifteen groundwater monitoring wells, to track the extent of free product and the contaminated groundwater plume. The results of monitoring in December 1989 and February 1990 indicated free product was moving off-site to the southwest. Another site investigation was conducted in September 1990 to determine the extent of this migration. The investigation included the installation of three more monitoring wells.

Other Sources

From 1935 to 1979, the Williams Pipe Line Company disposed of approximately 2,600 gallons of leaded petroleum tank bottom sludge at the site. During September 1989, the EPA conducted a Site Investigation (SI) which was limited to a consideration of the potential impact of the tank bottom sludge disposal. The EPA was unable to identify the suspected sludge disposal areas during their investigation.

SUMMARY OF PUBLIC HEALTH AND ENVIRONMENTAL CONCERNS

The site is situated in a rural-industrial setting adjacent to the eastside of Des Moines, Iowa. The site is located approximately 2,000 feet north of the Des Moines River and lies within its floodplain. The threat of off-site migration of contaminants by flooding is limited by a 100-year flood levee maintained by the U.S. Army Corps of Engineers. The Des Moines Municipal Water System intakes are approximately ten miles upstream of the site. The site overlies the alluvial sediments of the Des Moines River flood plain. These sediments are predominantly sand and gravel sediments of the unconfined alluvial aquifer

A wetland area referred to as the "swamp" is located within the southeast corner of the site. The swamp contains a shallow "burn" pond on its west end near Highway 46. Occasional overflow from the swamp discharges east to the Des Moines River. The swamp has been subjected to oil spills and other waste disposal activities. Sediment samples collected from the swamp in November 1990 and January 1991 showed total extractable hydrocarbon (TEH) levels as high as 17,000 ppm. Many of the sample results had chromatographic profiles similar to the laboratory diesel fuel standard.

SUMMARY OF ASSESSMENT, MONITORING OR REMEDIAL ACTIONS

There are two major remediation area at the Magellan Des Moines Terminal designated as the Northeast Area and the Southern Area. The following is a summary of the current status of the projects and changes that were implemented in 2007.

NORTHEAST AREA (Remediation terminated in 2010)

There are four systems that are operational in the northeast area, Systems 1, 2, and 3, and the Air Lift Circulation (ALC) Trench. Systems 1, 2, and 3 are a series of 93 wells that can operate in Soil Vapor Extraction (SVE) or sparging mode or a combination of both. There are three separate control systems for these 93 wells. Soil Vapor Extraction (SVE) remediates the unsaturated soil by recovering volatiles from the soil with airflow and by adding oxygen to the unsaturated zone to enhance bioremediation. Air Sparging (AS) remediates the dissolved phase impacts by adding oxygen to the groundwater to enhance bioremediation and strip VOCs from the groundwater. Due to a significant decline in the mass recovery of petroleum hydrocarbons, TRC Companies, Inc., and Apex Companies, LLC, proposed implementation of in-situ biosparging instead of continuing with soil vapor extraction (SVE). The proposed work plan (received at Iowa DNR Field Office 5 on July 18, 2007) stated that biosparging should enhance naturally occurring biodegradation processes through the addition of oxygen and nutrients. The new work plan will be to operate selected wells in sparging mode only. This change in operations was implemented on September 11, 2007.

The other operational system in the Northeast Area is the Air Lift Circulation (ALC) Trench which is a remediation system installed east (down gradient) of the main area of contamination and Systems 1, 2, and 3. The objective of this remediation system is to capture and remediate the groundwater that is migrating from the Northeast Area of the terminal toward the Des Moines River. The ALC Trench remediation system consists of 12 air-lift wells that extract groundwater and discharge to an open infiltration trench. The air-lift pumping process and the open trench add oxygen to the groundwater. The extraction/infiltration causes vertical circulation in the aquifer, which distributes the oxygen into the formation to stimulate aerobic biodegradation. Additionally, Volatile Organic Compounds (VOCs) are stripped from the groundwater by the air-lift pumping process. The ALC Trench continues to be operated without any modification; during April 2009 the ALC Trench wells were redeveloped to allow greater groundwater recovery.

There was a fifth remediation system in the Northeast Area called the Levee Air Sparge System. This was a series of Air Sparge wells installed east of the ALC Trench near the river levee to capture and remediate any contamination that had already gone beyond the ALC Trench. This system was shut down in March 2003.

System air emissions from the Northeast Area and Southern Area SVE systems were treated by a catalytic oxidation (CatOx) air treatment unit to meet Polk County Title V Air Emission Standards for the facility. Since the systems

are now operating in biosparge mode only they do not produce air emissions that require treatment by the CatOx. The CatOx system has also been shut down.

Site Monitoring

In the Semi-Annual Monitoring Report for the period October 2008 through March 2009 (Samples collected on December 22, 2008 and March 9 – 11, 2009) the results for the Northeast Area are as follows:

- In the northeast area free product was only detected in well MPE-11 – 0.08’ during the March 2009 sampling event. A sample of the free product was collected and analyzed for age dating and fuel type determination. Analytical results showed the sample to be 90% regular grade gasoline and 10% diesel/fuel oil. The gasoline was estimated to have been manufactured in approximately 1990; the diesel/fuel oil portion was determined to be relatively “fresh” or of recent manufacture.
- Of the monitoring wells sampled MW97-33, MW97-37, MW97-39, MW97-40, MW99-47A and MW00-55A exceeded at least one of the parameters of the agreed to groundwater clean up goals (benzene 3.88 mg/L, toluene 1.9 mg/L, ethylbenzene 1.3 mg/L, xylenes 1.65 mg/L, & MTBE 13.0 mg/L). Monitoring wells MW97-33 (8.89 mg/L) and MW97-37 (9.05 mg/L) exceeded the level for benzene, MW97-37 (2.88), MW97-39 (12.40 mg/L) and MW97-40 (2.47 mg/L) exceeded the level for toluene, MW 97-33 (2.44 mg/L), MW97-39 (2.12 mg/L), MW97-40 (1.55 mg/L) and MW99-47A (1.82 mg/L) exceeded the limit for ethylbenzene, and MW97-33 (11.30 mg/L), MW97-37 (5.45 mg/L), MW97-39 (11.70 mg/L), MW97-40 (8.14 mg/L), MW99-47A (10.50 mg/L), and MW00-55A (4.38 mg/L) exceeded the limit for xylenes. All of these were from the March sampling data.

In the Semi-Annual Monitoring Report for the period April 2009 through September 2009 (June 22 & 23, 2009 and September 21 – 23, 2009) the results for the Northeast Area are as follows:

- In the northeast area free product was not detected in any of the wells.
- None of the monitoring wells sampled showed contaminant levels that exceeded the parameters of the agreed to groundwater clean up goals (benzene 3.88 mg/L, toluene 1.9 mg/L, ethylbenzene 1.3 mg/L, xylenes 1.65 mg/L, & MTBE 13.0 mg/L).

Mass Recovered

There is no longer any type of mass recovery through remediation systems taking place since all systems are now (as of September 11, 2007) operating in bio-sparge mode. To date free product recovery in the Northeast Area is as follows, 576,828 gal. recovered in emergency response, Systems 1, 2, & 3 have recovered 222,390 gal in the liquid phase, and 627,832 gal. in the vapor phase.

SOUTHERN AREA (Remediation Terminated in 2009)

The southern area remediation system originally consisted of four operational areas that were installed in two phases. Phase 1 included the Manifold System with 24 Soil Vapor Extraction (SVE)/Density-Driven Convection (DDC) wells and the Train Rack System with 15 SVE/DDC wells. Additionally, SVE wells from the former perimeter SVE/AS remediation systems (units 2008, 2009, and 2010) were incorporated into the phase 1 system. The Phase 1 systems were constructed along the western border (train rack area) and southern border (manifold area) of the southern portion of the terminal. Phase 2 includes the Central System with 28 SVE/AS wells and the Western System with 16 SVE/AS wells. The Phase 2 systems are in the interior areas of the southern portion of the terminal bordered by the Phase 1 system wells. Soil Vapor Extraction (SVE) remediates the unsaturated soil by recovering volatiles from the soil with airflow and by adding oxygen to the unsaturated zone to enhance bioremediation. The DDC wells remediate groundwater by insitu stripping of Volatile Organic Compounds (VOCs) and enhanced bioremediation through addition of oxygen. Additionally the DDC system creates a zone of influence also called a circulation cell, which oxygenates and treats groundwater as it flows through the circulation cell area. Air Sparging (AS) remediates the dissolved phase impacts by adding oxygen to the groundwater to enhance bioremediation and strip VOCs from the groundwater. The manner of operation is dependent on groundwater elevations. Soil Vapor Extraction (SVE) systems are operated during low water table conditions to maximize vapor and VOC mass recovery. Dual Density Convection (DDC) systems are operated during high water table conditions to provide the subsurface with oxygen and to enhance biological degradation.

Due to a significant decline in the mass recovery of petroleum hydrocarbons, TRC Companies, Inc., and Apex Companies, LLC, proposed implementation of in-situ biosparging instead of continuing with soil vapor extraction (SVE). The proposed work plan (received at Iowa DNR Field Office 5 on July 18, 2007) stated that biosparging should enhance naturally occurring biodegradation processes through the addition of oxygen and nutrients. The new work plan was as follows; in the Phase 1 area the Manifold System will be shut down and the Train Rack System will be operated in DDC mode only. In the Phase 2 area the Western System will be shut down and the Central System will be operated in sparging mode only. This change in operations was implemented on September 11, 2007.

System air emissions from the Southern Area and Northeast Area SVE systems were treated by a catalytic oxidation (CatOx) air treatment unit to meet Polk County Title V Air Emission Standards for the facility. Since the systems were only operating in biosparge mode only they did not produce air emissions that require treatment by the CatOx. The CatOx system has been shut down.

In a letter from Apex Companies dated December 9, 2008 they proposed to remove remediation units 2008, 2009, and 2010 (originally referred to as the SVE/AS remediation system in the train rack area and later incorporated into the Phase 1 system) and plug and abandon 34 SVE wells associated with those units. This part of the Phase 1 system was inactive and they wanted to plug and abandon the wells to eliminate a permitted air emission source to make adjustments to their air quality permit. On December 31, 2008 Iowa DNR Field Office 5 sent a letter allowing the request for Magellan to remove remediation units 2008, 2009 and 2010 and to properly abandon and plug the 34 SVE wells that were part of those units. This approval was with the provision that any new releases or discovery of additional historic contamination in that area will have to be addressed and may require installation of new remediation systems.

On February 11, 2009 Iowa DNR Field Office 5 received a letter and attachments dated February 9, 2009 requesting closure of remedial activities in the Southern Remediation Area at the Magellan Des Moines Terminal. The letter outlined how the agreed to criteria for a Pathway to Closure have been met with respect to the Southern Remediation Area. The criteria for a pathway to closure was said to be acceptable to Iowa DNR Field Office 5 in a letter dated April 5, 2006 and includes the following:

1. Continued vapor recovery until free-phase product is no longer detected in monitoring or remediation wells.
2. Annual vapor recovery continues to decline through the next low water period (winter of 2006-2007).
3. Fate and transport modeling results show that by the time impacted groundwater migrates to the levee, VOC concentrations will be less than the risk-based cleanup goals.

For the first criteria the February 9, 2009 letter stated that the last detection of free product in the Southern Area was in monitoring well MW-27 on September 6, 2007. Free Product has not been detected in MW-27 or any other monitoring well since that time.

For the second criteria the February 9, 2009 letter stated: "As shown on Table 6 of the November 16, 2007 Semiannual Monitoring Report (Apex), between November 7, 2006 and April 9, 2007, 2,793 pounds of hydrocarbons were removed (approximately 18.25 pounds per day). During the same timeframe the previous year (October 28, 2005 through April 15, 2006) 6,212 pounds of hydrocarbons or 36.76 pounds per day, were removed. During the winter of 2006/2007 approximately half as many pounds of hydrocarbons were removed compared to the winter of 2005/2006, meeting IDNR's stated criteria."

For the third criteria Apex applied the Iowa DNR Tier II Risk Based Corrective Action model which is a fate and transport groundwater model to illustrate that concentrations of volatile organic compounds (VOCs) do not exceed the agreed to clean up goals at the Des Moines River levee. The agreed to clean up goals are as follows: benzene (3.88 mg/L), toluene (1.9 mg/L), ethylbenzene (1.3 mg/L), xylene (1.65 mg/L), and methyl tertiary butyl ether (13.0 mg/L). Groundwater data collected before February 9, 2009 was used to load the Tier II model and plumes were generated for ethylbenzene (MW-30, 1.53 mg/L on 6/25/2008) and xylenes (MW-30, 2.36 mg/L on 6/25/2008). The plumes generated by the Tier II model illustrated that the parameters that exceeded the agreed to groundwater clean up goals did not reach the Des Moines River levee. Sampling results for benzene and toluene did not exceed clean up goals and were not modeled.

On May 29, 2009 Iowa DNR Field Office 5 sent a letter agreeing to a shut down of all remediation systems in the Southern Remediation Area with the following conditions: monitoring of the area will have to be done to verify that contaminant levels do not exceed the agreed to clean up goals. We believe a two year monitoring program after total shut down of the system is needed to insure that contaminant levels do not rebound significantly to the level where additional remediation would be required. Assuming the remaining remediation systems would be shut down almost immediately the two year monitoring program would include the semi-annual monitoring cycles April 2009 through September 2009, October 2009 through March 2010, April 2010 through September 2010, and October 2010 through March 2011 using the current monitoring plan. All Semi-Annual Monitoring Reports must now include Plume Maps from the Iowa DNR Tier II Risk Based Corrective Action model (for the Southern Remediation Area only) for any parameter (benzene, toluene, ethylbenzene, and xylenes) that exceeds the agreed to clean up goals. At the conclusion of the final monitoring cycle (October 2010 through March 2011) the final data will be reviewed to see if additional remediation or monitoring is needed. In addition there is no recent monitoring data available for methyl tertiary butyl ether (MTBE) which is one of the parameters in the agreed to groundwater clean up goals. The agreed to groundwater clean up goal for MTBE is 13.0 mg/L and the site must meet this goal for clean up in either the Northeast Remediation Area or the Southern Remediation Area to be considered complete. Beginning with the next monitoring cycle (April 2009 through September 2009) all wells in the monitoring plan must be sampled and analyzed for MTBE as well as BTEX. It must be pointed out that the Iowa DNR Tier II Risk Based Corrective Action Model does not have the capability of modeling contaminant plumes for MTBE. If any of the wells in the Southern Remediation Area exceed the agreed to groundwater clean up goal for MTBE another modeling program will have to be used to illustrate that the plume does not extend to the Des Moines River Levee or remediation activities may have to be resumed.

On June 4, 2009 the remaining Southern Remediation Area systems were shut down.

To date (December 31, 2009) the 34 SVE/AS wells associated with remediation units 2008, 2009 and 2010 have not been abandoned and plugged (Per Dave Hruby with Apex Companies, LLC).

Site Monitoring

In the Semi-Annual Monitoring Report for the period October 2008 through March 2009 (Samples collected on December 22, 2008 and March 9 – 11, 2009) the results for the Southern Area are as follows:

- Free product was not found in any of the southern area monitoring wells.
- Of the monitoring wells sampled MW-30 exceeded two of the parameters of the agreed to groundwater clean up goals (benzene 3.88 mg/L, toluene 1.9 mg/L, ethylbenzene 1.3 mg/L, xylenes 1.65 mg/L, & MTBE 13.0 mg/L). Monitoring well MW-30 (1.62 mg/L – on 3/10/2009) exceeded the level for ethylbenzene and (1.75 mg/L – on 12/22/2008 and 2.68 mg/L – on 3/10/2009) exceeded the level for xylenes.

In the Semi-Annual Monitoring Report for the period April 2009 through September 2009 (June 22 & 23, 2009 and September 21 – 23, 2009) the results for the Southern Area are as follows:

- Free product was not found in any of the southern area monitoring wells.
- Of the monitoring wells sampled MW-26 and MW-30 exceeded one of the parameters of the agreed to groundwater clean up goals (benzene 3.88 mg/L, toluene 1.9 mg/L, ethylbenzene 1.3 mg/L, xylenes 1.65 mg/L, & MTBE 13.0 mg/L). Monitoring Well MW-26 (4.98 mg/L – on 9/22/2009) exceeded the level for benzene. Monitoring well MW-30 (1.98 mg/L – on 9/23/2009) exceeded the level for xylenes.

During both sampling events for the period April 2009 through September 2009 (June 22 & 23, 2009 and September 21 – 23, 2009) all samples collected were analyzed for BTEX and MTBE and Plume Maps from the Iowa DNR Tier II Risk Based Corrective Action model (for the Southern Remediation Area only) for any parameter (benzene, toluene, ethylbenzene, and xylenes) that exceeded the agreed to clean up goals were included in the monitoring report; in this case the parameters of benzene and xylenes were exceeded during the September 21 – 23 2009 monitoring event. Analyzing samples for MTBE and the Tier II Plume Maps were part of the conditions outlined in the approval letter dated May 29, 2009 to shut down the remaining remediation systems in the Southern Area.

Mass Recovered

There is no longer any type of mass recovery through remediation systems taking place since all systems are now (as of September 11, 2007) operating in biosparge mode. The total mass of petroleum hydrocarbons recovered in the Southern Area since the start up of the Phase 1 recovery systems (Feb. 2003) is 39,401 gallons.

2010 Summary:

The monitoring results obtained from the Northeast Area for the current sampling year (October 2009 through September 2010) are similar to those from the previous year (October 2008 through September 2009). TRC/Apex (consultant in charge of remediation at the Magellan Des Moines Terminal) has proposed in the April 2010 through September 2010 Semi-Annual Monitoring Report that remediation in the Northeast Area has progressed to a point at which a trial termination of active remediation (shut down of bio-sparging in the MPE wells and shut down of the Air Lift Circulation (ALC) Trench) and post-remediation monitoring should be implemented (see attached report for details of shut down proposal). This proposal is currently under consideration by Field Office 5 and a response letter will be sent out in January 2011.

All of the remaining remediation systems in the Southern Area were shut down on June 4, 2009 (no remediation systems operating in the Southern Area). The sampling events since that time for the period April 2009 through September 2010 (June 22 & 23, 2009, September 21 – 23, 2009, December 1, 2009, March 15 – 18, 2010, June 21 – 23, 2010, and September 15 – 18, 2010) do not indicate a significant change in the contaminant levels of the parameters sampled (BTEX & MTBE). Monitoring in the Southern Area will continue through March 2011 when the final data will be reviewed to see if additional remediation or monitoring is needed.

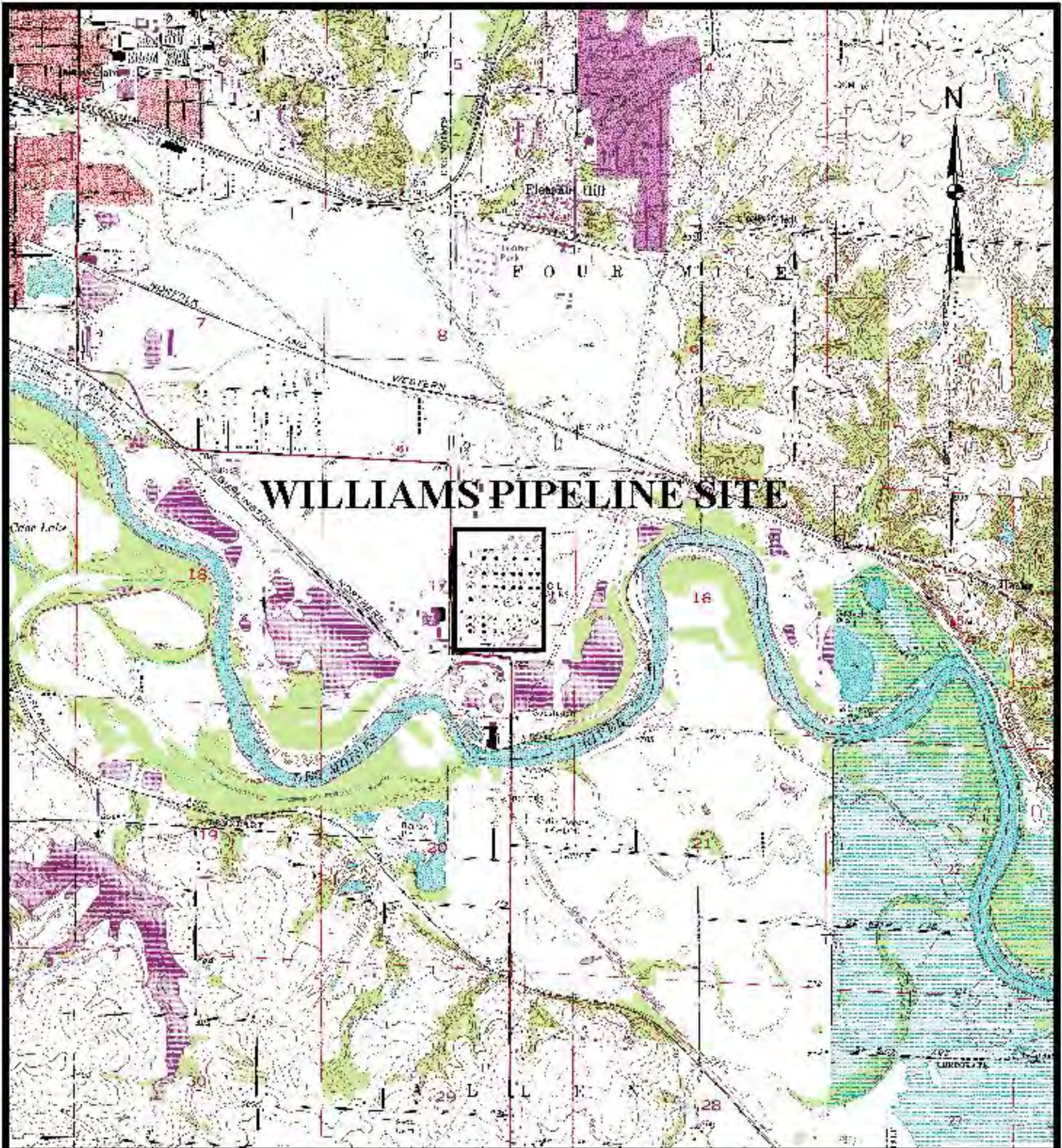
2012 Summary:

All remediation systems are shut down in the Northeast Area and quarterly site monitoring will continue through 2013 to determine if the system can be permanently closed. Free product recovery in well MPE-11 is ongoing in the Northeast Area. There are no further remediation requirements for the Southern Area.

2013: Quarterly ground water monitoring was conducted through 2013 to determine contamination concentration trends and the stability of the residual plume. If conditions show no further need for monitoring or remediation the site will receive a no further action letter.

2014: Summary

IDNR has required Magellan to conduct another year (4 quarters) of monitoring. Sentinel wells and trigger wells showed a downward trend in concentrations for contaminants of concern from those observed in December 2013. IDNR will review the monitoring data for the 4th quarter 2014. If the sampling results for the 4th quarter 2014 show a stable or continued downward trend Magellan will receive permission to shut down of the remediation systems in the Northeast Remediation Area and discontinuation of post-remediation monitoring. IDNR will then send a no further action required letter approving the permanent shut down of the remediation systems in the Northeast Remediation Area and discontinuation of monitoring.



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