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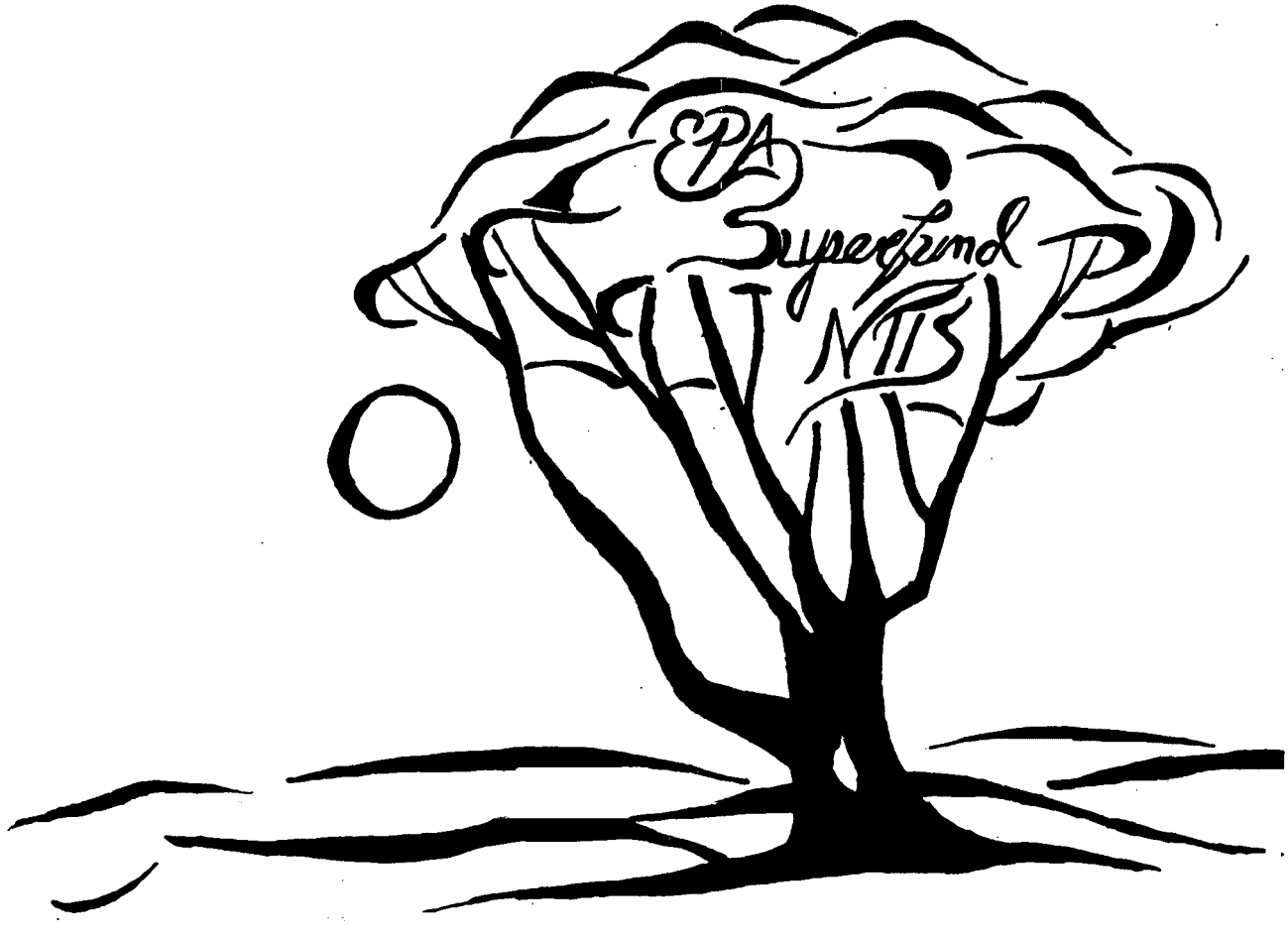
EPA Superfund Record of Decision:

Electro-Coatings, Inc. Site, Cedar Rapids, IA, 9/29/1994



RECORD OF DECISION

FOR

ELECTRO-COATINGS, INC. SITE

CEDAR RAPIDS, IOWA

PREPARED BY:

IOWA DEPARTMENT OF NATURAL RESOURCES

RECORD OF DECISION

ELECTRO-COATINGS, INC. SITE

CEDAR RAPIDS, IOWA

I. DECLARATION

1.0 Site Name and Location

Electro-Coatings, Inc. Site
911 Shaver Road NE
Cedar Rapids, Iowa

1.1 Statement of Basis and Purpose

This decision document presents the selected remedial action for the Electro-Coatings, Inc. site located in Cedar Rapids, Iowa. The remedial action was chosen in accordance with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) 42 U.S.C. Section 9601 et seq., and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) 40 C.F.R. Part 300.

This decision is based on the documents and information contained in the Administrative Record for the site. A copy of the Administrative Record is available for review at the Iowa Department of Natural Resources (DNR) Records Center in Des Moines, Iowa and in the Cedar Rapids Public Library at 500 1st Street SE in Cedar Rapids, Iowa.

The State of Iowa concurs with the selected remedy for this site.

1.2 Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Record of Decision, may present a current or potential threat to public health, welfare or the environment.

1.3 Description of the Remedy

In consultation with the U.S. Environmental Protection Agency (EPA), DNR has determined that monitoring with a contingency for groundwater pump-and-discharge to the publicly owned treatment works (POTW) is the selected remedy for the Electro-Coatings site. This remedy acknowledges the containment of contaminated groundwater which has been and continues to be provided by the nearby production well (PW-1) operated by the Hawkeye Rubber Company.

Because this remedy will result in hazardous substances remaining on-site above health-based levels, a review will be conducted five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

DENNIS GRAMS, P.E., REGIONAL ADMINISTRATOR
ENVIRONMENTAL PROTECTION AGENCY, REGION VII

9/29/94
DATE

Concurred on by:

ALLAN STOKES, ADMINISTRATOR
IOWA DNR, ENVIRONMENTAL PROTECTION DIVISION

9/16/94
DATE

Historically, the Hawkeye Rubber well PW-1 has removed contamination in the soil and groundwater by inducing groundwater flow which has drawn the contamination toward the well. This in turn decreases the volume and area of contamination in the groundwater. If this pumping ceased or became ineffective, the contingency component of this remedy would achieve the same result. This remedy contains no requirements for continued operation of PW-1. Instead, provisions for a contingency action are provided in the event PW-1 ceases pumping or is found not to effectively prevent off-site migration of contaminants, other than to PW-1. If water quality monitoring reveals off-site migration of contaminants from the Electro-Coatings site above drinking water standards, contingency actions will be required. The contingency action would involve installation of a new recovery well or wells as needed to provide adequate containment of groundwater contamination. Treatment of this water would be provided, if necessary, prior to discharge to the sanitary sewer under a pretreatment agreement with the POTW. Treatment would likely involve reduction of the hexavalent chromium to trivalent chromium by chemical addition.

The selected remedy will include initial groundwater testing to determine the effectiveness of pumping from Hawkeye Rubber PW-1 for containment of contamination from Electro-Coatings. Minimum pumping conditions from PW-1 and the need for any additional pumping wells would be determined based on the results of this testing. In addition, the adequacy of the existing monitoring well network to identify potential off-site migration of contaminants (other than to PW-1) will be assessed. Additional monitoring wells will be installed, if the monitoring network is found to be inadequate.

A monitoring plan will be developed and implemented which will include: monitoring procedures, locations of monitoring wells, frequency of sampling, sampling parameters, criteria for termination, and provisions for modification of the plan. Monitoring will continue as long as contaminants associated with the site exceed Federal Maximum Contaminant Levels (MCLs) for drinking water (e.g., 0.1 mg/l for chromium). Other criteria for termination of monitoring may be established in the monitoring plan. If water quality monitoring reveals off-site migration (other than to PW-1) of contaminants from the Electro-Coatings site above the MCL for that contaminant, then a monthly water quality monitoring frequency will be instituted, at least until contaminant levels no longer exceed MCLs. If MCLs are exceeded in designated site perimeter wells for three consecutive months, then the contingency action will be required unless it can be demonstrated that contaminant levels are decreasing. Monthly (or more frequent) monitoring will continue until MCLs are no longer exceeded or until contingency action is taken.

The objective of contingency action will be to prevent off-site migration of groundwater contaminants, other than to PW-1 or any new recovery well. Contingency measures may include, but are not limited to increasing pumping from PW-1 or installing and operating a new recovery well or wells. In either event, water withdrawn can be used as process water by Electro-Coatings or Hawkeye Rubber and/or treated, if necessary, and discharged to the POTW.

The selected response action constitutes final action for this site.

1.4 Statutory Determinations

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable for this site. Treatment of the principal threats of the site will continue to be provided through containment of contaminated groundwater by Hawkeye Rubber well PW-1 and/or any new recovery wells, discharge of this extracted water to the sanitary sewer, and treatment by the POTW. Therefore, this remedy satisfies the statutory preference for treatment as a principal element of the remedy.

II. DECISION SUMMARY

2.0 Site Name, Location, and Description

The Electro-Coatings, Inc. site is located at 911 Shaver Road NE in the Southeast 1/4 of the Southwest 1/4 of Section 16, Township 83 North, Range 7 West, Linn County, in the City of Cedar Rapids in east-central Iowa (Figure 1). The site is located on the north shore of Cedar Lake, a 150-acre impoundment owned by a utility company. The Cedar River is located just west of Cedar Lake. The immediate area surrounding the site is zoned industrial. The nearest residential area is about a quarter mile east of the site across Interstate Highway 380. The City of Cedar Rapids had a 1990 population of 108,751.

The City of Cedar Rapids obtains water from three well fields in alluvial sand and gravel deposits along the Cedar River upstream of the site. The East Well Field is closest to the site. It consists of twenty wells spread out for nearly a mile along the Cedar River. Wells in the East Well Field are all about 70 feet deep. The closest city well is about 2,000 feet west of the site.

2.1 Site History and Enforcement Activities

The Electro-Coatings plant has been in operation since 1947. The plant currently performs chromium, cadmium, nickel, and zinc plating.

In March of 1976 a yellow tinge was noted in the cooling water being discharged to Cedar Lake from the Hawkeye Rubber Company, a manufacturing facility, which is located immediately west of the Electro-Coatings, Inc. plant. This water was found to contain high levels of chromium which was tracked to a leaking concrete tank containing chromic acid at the Electro-Coatings plant. Soon after the discovery of the release, Electro-Coatings took actions to prevent further releases in response to requirements by the State. Electro-Coatings installed five monitoring wells which were monitored periodically along with the contaminated Hawkeye Rubber production well, PW-1.

Shortly after the chromium contamination was discovered, the Hawkeye Rubber PW-1 discharge was moved to the sanitary sewer. The Hawkeye Rubber Company continues to use the PW-1 for process water. The chromium contamination has not posed a problem for the Hawkeye Rubber facility since the use of the water does not involve human contact.

Over the years, contamination has been found to persist in the Hawkeye Rubber well, albeit at decreasing concentrations. Significant levels of chromium have been found in only one of the five monitoring wells. That well is a monitoring well adjacent to the plant.

The main concern has been the potential for chromium contamination to affect municipal wells of the City of Cedar Rapids, the closest of which is about 2,000 ft. west of the site. Very low levels of chromium (less than 10% of the drinking water Maximum Contaminant Level (MCL)) have reportedly been found in some city wells. It is not known whether these low level detections in the city wells are attributable to the Electro-Coatings site.

In June of 1988, the Electro-Coatings site was proposed for inclusion on the Superfund National Priorities List (NPL) and that listing became final in October of 1989. In October 1990, Electro-Coatings, Inc. entered into a consent order with the Iowa Department of Natural Resources (DNR) to conduct a remedial investigation/feasibility study (RI/FS) at the site. The remedial investigation included installation and sampling of ten monitoring wells and twelve soil borings which were completed in 1993. The RI/FS report and an addendum were completed in 1992 and 1993, respectively. As part of the RI/FS process, the DNR has prepared supplemental RI and FS documents.

2.2 Highlights of Community Participation

This Proposed Plan and supporting information were made available to the public in the administrative record, a copy of which was maintained at the Cedar Rapids Public Library and the DNR Records Center in Des Moines, Iowa. The notice of availability of these documents and time and location for the public meeting were published in the Cedar Rapids Journal on July 20 and 25, 1994. Fact sheets which summarized site activities, indicated the proposed remedy, gave the location of the Administrative Record, and indicated the public meeting time and location were mailed to 40 parties, including 11 media companies. A public meeting was held on July 26, 1994, at Kirkwood College in Cedar Rapids which 14 people attended. At this meeting representatives from the DNR, the EPA, and the Iowa Department of Health described the site and the proposed remedy, addressed comments, and responded to questions. A response to the comments received at the public meetings (no other comments were received during the public comment period) are included in the Responsiveness Summary, which is part of this Record of Decision. This decision document presents the selected remedy for the Electro-Coatings Site chosen in accordance with CERCLA, as amended by SARA and, to the extent practicable, the National Contingency Plan. The decision for this site is based on the Administrative Record.

2.3 Scope and Role of Response Actions

The selected response action addresses the principal threat of groundwater contamination. The contaminated groundwater is the principal threat at this site because of potential direct ingestion of water containing contaminants above health-based levels. The purpose of this response action is to contain contaminated ground water to ensure that ground water not meeting health-based criteria is not ingested. Contaminant levels decline as a result of contaminants being flushed out of the subsurface by pumping from PW-1 and in response to past preventative and source control measures, as shown in Figure 2. Should Hawkeye Rubber Well PW-1 become ineffective in containing the contaminated groundwater, additional groundwater recovery wells would be installed to provide adequate containment. The response actions selected in this ROD address all principal threats posed by this site and are intended to constitute final remedial action for the site.

2.4 Summary of Site Characteristics

The following is a summary of site characteristics based on the results from the remedial investigations:

1) The site geology consists generally of variable thicknesses of sand and silty clay over Devonian dolomite bedrock. The bedrock and alluvial sand are both aquifers used locally for water supply. The silty clay forms a confining layer between the sand and bedrock aquifers. The depth to bedrock is about 30 feet. Towards the lake to the south the silty clay layer becomes predominantly silt and the depth to bedrock increases. The City wells are located in alluvial sand and gravel deposits close to the Cedar River and are generally 60 to 70 feet deep.

2) Hexavalent chromium is the predominant groundwater contaminant associated with the Electro-Coatings facility. The chromic acid used by Electro-Coatings for plating contains hexavalent chromium. Concentrations of hexavalent chromium as high as 25 mg/l have been found in groundwater at the site compared to the drinking water standard of 0.1 mg/l. Other inorganic compounds have been found in groundwater at the site, including cadmium, cyanide, nickel and lead. Unlike chromium, these compounds have been detected at concentrations which are below or only slightly above drinking water standards.

3) Chromium contamination of groundwater has been found primarily in the area between the Electro-Coatings plant and the Hawkeye Rubber well PW-1. Figure 3 shows the location and magnitude of chromium contamination in the sand aquifer and the bedrock aquifer. Chromium contamination originates in the sand aquifer beneath the Electro-Coatings plant and appears to be drawn down to the bedrock aquifer by PW-1. It appears that movement of chromium contaminated groundwater from the sand aquifer to the bedrock aquifer is facilitated by the absence of the silty clay confining layer between the two aquifers near the Hawkeye Rubber plant. Elevated levels of chromium have been detected in the sand aquifer west of PW-1, but at much lower concentrations than found east of PW-1 and in PW-1. Therefore, it appears that the majority of the chromium contamination from the Electro-Coatings site is contained by the Hawkeye Rubber well PW-1.

4) Volatile organic compounds (VOCs) have also been found in groundwater at and near the site, including: tetrachloroethene; trichloroethene; 1,1-dichloroethene; cis 1,2-dichloroethene; and 1,1,1-trichloroethane. Tetrachloroethene, trichloroethene, 1,1-dichloroethene, and cis 1,2-dichloroethene have been detected at levels substantially above drinking water standards. Most VOC contamination has been attributed to the adjacent Hawkeye Rubber Company which utilized tetrachloroethene for vapor degreasing until recently. Trichloroethene and cis 1,2-dichloroethene are breakdown products of tetrachloroethene, thus accounting for their occurrence. Electro-Coatings has reportedly utilized trichloroethene and 1,1,1-trichloroethane. A small portion of the overall VOC contamination found appears to be attributed to the Electro-Coatings facility. Figure 4 shows the trichloroethene plume in the shallow sand aquifer which appears to originate from Electro-Coatings.

5) Soil sampling conducted as part of the remedial investigation has not revealed significant chromium contamination. However, in 1992, chromium contaminated soil was found at the Electro-Coatings plant as a chromium dipping tank was being removed. The contaminated soil was excavated to the extent practical and disposed of in a hazardous waste landfill. Some residual soil contamination was left in place under the building.

6) Soil sampling has revealed significant VOC contamination in the vicinity of the Hawkeye Rubber Company plant. Only very low concentrations of VOCs were identified in soils adjacent to the Electro-Coatings plant.

7) Sampling of water and sediments from Cedar Lake has not revealed any significant impact from the site.

2.5 Summary of Site Risks

A Baseline Risk Assessment was prepared by the DNR. This risk assessment consisted of four steps as follows:

1) Identification of chemicals of potential concern;
2) Assessment of the potential exposure to the chemicals of potential concern;
3) Assessment of the toxicity of the chemicals of potential concern; and
4) Characterization of the risks from potential exposure to the chemicals of potential concern.

Identification of Chemicals of Potential Concern:
Chemicals of potential concern fall into two general categories; metals associated with plating operations and VOCs used for solvents. The VOCs attributed only to Hawkeye Rubber are not included as chemicals of concern for the Electro-Coatings site. Specific chemicals of concern are as follows:

Volatile Organic Compounds (VOCs)	Metals
1,1-Dichloroethene (1,1-DCE)	Chromium VI
Cis 1,2-Dichloroethene (C1,2-DCE)	Cadmium
1,1,1-Trichloroethane (1,1,1-TCA)	Nickel
Trichloroethene (TCE)	

Assessment of Potential Exposure to Chemicals of Potential Concern:
No significant current exposure to site contaminants was identified. For the purpose of the Risk Assessment, the following three future exposure scenarios were evaluated:

1) Domestic use (drinking and showering) of water from a single city well (assuming all site contaminants are being drawn in by the well);

2) Domestic use (drinking and showering) of the entire city water supply which has been assumed to draw in all site contaminants; and

3) Industrial worker use (drinking and showering) from the Hawkeye Rubber well PW-1. This exposure scenario has been determined to represent the *reasonable maximum exposure* to site contaminants.

Exposure to all of the chemicals of potential concern was considered for drinking water. Exposure to only the VOCs was considered for exposure via inhalation during showering because VOCs will readily volatilize during showering but metals won't.

Assessment of Toxicity of Chemicals of Potential Concern:
Of the chemicals of potential concern, chromium VI, cadmium, 1,1-DCE, and TCE are classified as human carcinogens. Chromium VI and cadmium are classified as *actual* and *probable* human carcinogens, respectively, from exposure by inhalation only. Therefore, cancer risks were not computed for these two metals. TCE and 1,1-DCE are classified as *probable* and *possible* human carcinogens, respectively and cancer risks were estimated for potential exposure to these compounds by inhalation during showering and ingestion.

Relative values of toxicity for carcinogenic and non-carcinogenic effects were obtained from EPA technical reference materials. Toxicity values were generally derived from animal studies with factors of safety added.

Characterization of Risks from Potential Exposure to Chemicals of Potential Concern:
Non-carcinogenic risks and carcinogenic risks, if applicable, were evaluated for each contaminant of potential concern in each exposure scenario. The following table summarizes the assessment of risks. Cancer risks are expressed as an upper-bound estimate of the additional cancers which could result from lifetime exposure to all contaminants of concern under the exposure scenario. For example, a cancer risk of 9×10^{-5} (nine in one hundred thousand) means that an exposed individual could have an additional risk of developing cancer of 9/100,000 over the normal risk of developing cancer which is about 25,000/100,000. Cancer risks greater than 1×10^{-4} (one in ten thousand) are considered to warrant remedial action, although cancer risks less than 1×10^{-6} (one in a million) are preferable.

Hazard indices are used to assess chronic (long-term) and sub-chronic (short-term) non-carcinogenic risks. Chronic and sub-chronic hazard quotients are determined for each contaminant of concern in each exposure scenario. A hazard quotient is the ratio of the exposure level to a reference dose. A reference dose is the exposure level considered to be safe with respect to non-carcinogenic effects. A hazard index is a summation of the hazard quotients for the exposure scenario. A hazard index greater than one may be a concern with respect to non-cancer health effects.

SUMMARY OF ASSESSED RISKS

Exposure Scenario	Cancer Risk	Chronic Hazard Index	Subchronic Hazard Index
1) Domestic use of water from one city well	3×10^{-6}	0.4	not evaluated
2) Domestic use of water from entire public water supply	1×10^{-7}	*0.01*	not evaluated
3) Industrial worker use of water from Hawkeye Rubber Well PW-1	9×10^{-5}	*2.1*	*2.7*

NOTE: Values in italics represent unacceptable risks.

In conclusion, the reasonable maximum exposure scenario (Scenario 3) has been found to pose unacceptable risks which warrant remedial action. Non-carcinogenic effects from potential exposure to chromium VI is the primary concern. Also, use of water from PW-1 for drinking would result in exposure to TCE in excess of the drinking water standard, posing a marginally increased cancer risk, although not exceeding the low end of the acceptable risk range (i.e., 1×10^{-4}.)

Contamination from the Electro-Coatings site does not pose a significant threat to the Cedar Rapids water supply. The contamination from the Electro-Coatings site does not have the potential to seriously impact even one city well (Scenario 1) much less the entire city water supply (Scenario 2).

It should be emphasized that currently there is no known exposure to the contaminated groundwater other than possible incidental contact with process water at the Hawkeye Rubber facility. Very low concentrations of chromium, which are of no health concern, have been detected in the city wells. The origin of the chromium in the city wells is not known and could even be naturally occurring. It appears that Hawkeye Rubber well PW-1 is largely containing groundwater contamination associated with the Electro-Coatings site by causing flow of contaminated groundwater toward this well rather than away from the site. If the Hawkeye Rubber well were to cease operation, groundwater contamination from Electro-Coatings might reach the city's East Well Field and/or could discharge to Cedar Lake. In either event the potential impact would be minor.

2.6 Description of Alternatives

Below is a description of the six remedial action alternatives (RAAs) which were considered for this site. The RAAs represent a range of effort from taking no additional action to a maximum level of effort.

RAA 1: No Action. This alternative involves no additional action to clean-up groundwater or soils at the site. Previous, pending, and ongoing actions taken to address site contamination which are common components of all six RAAs, include:

- Closure of a chromium dipping tank in 1976.
- Leak prevention/monitoring measures in all chrome plating tanks.
- Removal of chromium contaminated soil in 1992.
- Placement of the site on the state Registry of Hazardous Waste or Hazardous Substance Disposal Sites (final placement pending). This action will prevent sale or significant change in use of the property without approval by the DNR. Notice of this listing will be recorded on the property deed.

There is no cost associated with this alternative. It is roughly estimated that levels of contaminants in groundwater will meet Federal Maximum Contaminant Levels (MCLs) for drinking water in 8 to 20 years as a result of contaminants being flushed out of the subsurface by pumping from PW-1 and in response to past preventative and removal measures.

RAA 2: Long-Term Monitoring. This alternative involves semi-annual water quality monitoring of existing monitoring wells and the two nearest city wells. Samples would be analyzed for hexavalent chromium, total chromium, and VOCs. The objectives of monitoring would be to establish trends in water quality and to provide an early warning system if the site contaminants are no longer contained in the site vicinity. A monitoring plan would be developed and implemented which would include: procedures, locations, frequency, parameters, criteria for termination, and provisions for modification.

Monitoring would continue as long as contaminants associated with the site exceed Federal Maximum Contaminant Levels (MCLs) for drinking water (e.g., 0.1 mg/l for chromium) at designated site monitoring wells. Other criteria for termination of monitoring could be established in the monitoring plan. Contaminant levels are expected to decline as a result of contaminants being flushed out of the subsurface by pumping from PW-1 and in response to previous preventative and removal measures. It has been estimated that monitoring would continue for between 8 to 20 years; 15 years has been assumed for cost estimating purposes.

The present worth cost of RAA 2 is estimated to be $45,000. Initial development of a monitoring plan is estimated to cost $3,000. The monitoring associated with this alternative has been estimated to cost $4,000 per year.

The monitoring described in this alternative is a component of all four subsequent RAAs.

RAA 3: Soil Removal and Groundwater Pump-and-Discharge to the POTW. This alternative represents the maximum amount of remedial action proposed in any of the RAAs. The objectives of this RAA are to further reduce the source of groundwater contamination and to provide positive containment of groundwater contamination.

Contaminated soil remaining under the Electro-Coatings production building with total chromium in excess of 1,500 mg/kg would be removed. It has been estimated that this would involve up to 3,000 tons of soil. Demolition of parts of the Electro-Coatings plant would be necessary to facilitate the soil removal. The soil would be transported to an appropriate waste disposal facility and would be stabilized, if necessary, before final placement.

The groundwater containment system would be comprised of a combination of shallow and deep wells as needed to provide adequate control of groundwater contamination. Treatment of this water would be provided, if necessary, prior to discharge to the sanitary sewer under a pretreatment agreement with the city. If required, treatment would likely involve reduction of the hexavalent chromium to trivalent chromium by chemical addition.

Beyond the monitoring prescribed in RAA 2, this alternative includes monthly monitoring of water levels in all monitoring wells, recovery wells, and Cedar Lake; recovery well pumping volumes; and treatment system influent and effluent water quality. Groundwater level data would be used to make sure that groundwater flow to the recovery wells is maintained within the area of concern.

An operation and maintenance (O&M) plan would be required. The O&M plan would contain the same monitoring provisions as prescribed in RAA 2. In addition, the O&M plan would contain: information regarding the operation and maintenance of the groundwater pump-and-discharge system;

additional monitoring associated with the groundwater pump-and-discharge system; and criteria for suspending pump-and-discharge operations.

At a minimum, pumping would continue until the pumped water consistently remained below the MCLs for the contaminants associated with the site. The contaminant source removal provided by this RAA should hasten ultimate site cleanup. It is assumed that groundwater cleanup would be completed in 8 years.

The present worth cost of this alternative is estimated to be $1,500,000. Capital costs are estimated to be $1,400,000 and annual O&M costs are estimated to be $23,000. The estimated initial cost could vary significantly depending on the volume of soil found above the cleanup standard.

RAA 4: Groundwater Pump-and-Discharge to the POTW. This alternative is the same as RAA 3 but without the soil removal action. The objective of this alternative is to provide positive containment of groundwater contamination. Like alternatives 1 and 2, contaminant levels would decline primarily as a result of contaminants being flushed out of the subsurface by pumping from PW-1 and in response to past preventative and removal measures. Without additional source removal, operation of the pump-and-discharge system and monitoring are expected to go on for a longer duration, similar to RAAs 1 and 2 (i.e., 8 to 20 years; 15 years assumed for cost estimating purposes).

The estimated present worth cost of RAA 4 is $300,000. Capital costs are estimated to be $65,000. Annual O&M costs are estimated to be $23,000.

RAA 5: Monitoring and Continued Pumping of the Hawkeye Rubber Well. This alternative is similar to RAA 2 (monitoring only) except formal arrangements would be made to insure continued pumping of the Hawkeye Rubber production well PW-1 for providing positive containment of site contaminants. This alternative has the same objective as for RAA 4.

The historic monitoring associated with this site has shown the Hawkeye Rubber well PW-1 to effectively contain most of the groundwater contamination from Electro-Coatings. With this RAA, an agreement would be negotiated by the State and Electro-Coatings with the Hawkeye Rubber Company. This agreement would provide assurances that: PW-1 continues to operate such that containment of site contaminants is provided; pumping records for PW-1 would be provided to the State monthly; and additional testing involving PW-1 could be conducted. Additional testing would be conducted to determine the minimum pumping conditions necessary for effective containment of the contamination associated with the site.

A monitoring plan would be required which contains the components of the monitoring plan prescribed in RAA 2. In addition, monthly monitoring of water levels in all monitoring wells, PW-1, and Cedar Lake and pumping records from PW-1 would be required. Water level information would be used to assure that groundwater flow toward PW-1 is maintained within the area of contamination associated with the site.

Like RAAs 1, 2, and 4, it is estimated that it would take 8 to 20 years for attainment of MCLs in site groundwater (15 years assumed for cost estimating purposes). The estimated present worth cost of this alternative is $52,000. The capital and annual O&M costs are estimated to be $10,000 and $4,000, respectively.

RAA 6: Monitoring with a Contingency for Groundwater Pump-and Discharge to the POTW. This is the selected alternative. This RAA is basically RAA 5 with a contingency to implement RAA 4 if significant off-site migration of contamination is observed. Unlike RAA 5, a formal agreement with Hawkeye Rubber Company regarding continued operation of PW-1 would not be negotiated. Instead, if the Hawkeye Rubber well PW-1 ceases pumping or is found not to prevent off-site migration of contaminants, as demonstrated by monitoring, a contingency pump-and-discharge action (similar to RAA 4) would be implemented.

Historically, the Hawkeye Rubber well has removed contamination in the soil and groundwater by inducing groundwater flow which has resulted in flushing of contamination from the subsurface. If this pumping ceases or becomes ineffective, the contingency component of this remedy would achieve the same result.

As with RAA 5, this alternative would include initial groundwater testing to determine the effectiveness of pumping from Hawkeye Rubber PW-1 for containment of contamination from Electro-Coatings. Minimum pumping conditions from PW-1 and the need for any additional pumping wells would be determined based on this testing. In addition, the adequacy of the existing monitoring well network to identify potential off-site migration of contaminants would be assessed. Additional monitoring wells would be installed, if the monitoring network is found to be inadequate.

A monitoring plan would be required with the same provisions as prescribed for RAA 5. In addition, increased monitoring would be required as the initial response to evidence of significant off-site migration of contamination. If water quality monitoring reveals off-site migration of contaminants from the Electro-Coatings site above the MCL, then a monthly water quality monitoring frequency would be instituted, at least until contaminant levels no longer exceed the MCL. If MCLs are exceeded in designated site perimeter wells for three consecutive months, then the contingency action would be required unless it can be demonstrated that contaminant levels are decreasing. Monthly (or more frequent) monitoring would continue until MCLs are no longer exceeded or until contingency action is taken.

The objective of contingency action would be to prevent off-site migration of groundwater contaminants. Contingency measures may include, but are not limited to increasing pumping from PW-1 or installing and operating a new recovery well or wells (similar to RAA 4). In either event, water withdrawn could be used as process water by Electro-Coatings or Hawkeye Rubber and/or treated, if necessary, and discharged to the POTW as described in RAA 3.

The estimated present worth cost associated with the alternative is $47,000 or $310,000 with implementation of the contingency. The capital and annual O&M costs are $5,000 ($70,000 with contingency) and $4,000 ($23,000 with contingency), respectively.

2.7 Summary of Comparative Analysis of Alternatives

A comparative analysis of each alternative against the following nine criteria has been made. These nine criteria are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. The threshold criteria must be satisfied for an alternative to be eligible for selection. The primary balancing criteria are used to weigh major tradeoffs among alternatives. The modifying criteria take into account the public comment on the Proposed Plan and the support agency concurrence. A glossary of the nine criteria follows.

Glossary of Evaluation Criteria

Threshold Criteria:

Overall Protection of Human Health and Environment provides a final check to assess whether each alternative meets the requirement that it is protective of human health and the environment. The overall assessment of protection is based on a composite of factors assessed under the evaluation criteria, especially long-term effectiveness and permanence, short-term effectiveness, and compliance with ARARs.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) addresses whether or not a remedial action alternative will meet all of the ARARs of federal and state environmental statutes and/or provide grounds for invoking a waiver.

Primary Balancing Criteria:

Long-Term Effectiveness and Permanence refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once the response objectives have been met.

Reduction of Toxicity, Mobility, or Volume through Treatment addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce toxicity, mobility or volume of the contaminants.

Short-Term Effectiveness assesses the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

Implementability addresses the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen response action.

Cost includes capital and operation and maintenance costs. Present worth costs are based upon capital costs plus the present sum necessary for operation and maintenance over a given period and a discount rate of 5 percent. Cost estimates are made with an anticipated accuracy of +50 percent to -30 percent.

Modifying Criteria:

Support Agency Acceptance evaluates the technical and administrative issues and concerns the support agency (the U.S. Environmental Protection Agency in this instance) may have regarding each of the alternatives.

Community Acceptance addresses comments and concerns expressed by the public during the public comment period of the Proposed Plan.

Overall Protection of Human Health and the Environment

Potential exposure to contaminated groundwater is the only significant risk posed by the site which has been identified. Currently, Hawkeye Rubber Well PW-1 effectively captures contaminated groundwater from the Electro-Coatings Site, thereby preventing significant off-site-migration of contaminants. RAAs 1 and 2 are not considered to be protective in the long-term because there would be no assurance that pumping by Hawkeye Rubber would continue and are therefore not the preferred alternative. The remaining four alternatives all provide containment of contaminated groundwater to prevent exposure and are all considered to be protective. RAAs 4, 5, and 6 would rely on previous actions to prevent

further release of contaminants. These actions included removal of contaminated soil, leak elimination, and leak protection which have resulted in decreasing levels of contaminants in soil and groundwater. RAA 3 would provide additional removal of contaminated soil which should accelerate groundwater cleanup and prevent future exposure to contaminated soil. However, the amount of residual soil contamination appears to be small and is located under the Electro-Coatings building. Therefore, RAA 3 is not considered to be substantially better than RAAs 4, 5, and 6 with respect to this criterion.

Compliance with ARARs

The primary regulations which would be ARARs for this site are the Federal Safe Drinking Water Act which contains Maximum Contaminant Levels (MCLs) and proposed MCLs, state groundwater cleanup rules, and federal/state wastewater discharge requirements. Alternatives 3, 4, 5, and 6 would all achieve federal drinking water MCLs off-site and comply with state groundwater cleanup rules.

State groundwater cleanup rules require "use of best available technology and best management practices (BAT/BMP) as long as it is reasonable and practical to remove all contaminants, and in any event until water contamination remains below the action level for any contaminant ---." Groundwater flow induced by the Hawkeye Rubber pumping continues to remove residual contamination which is flushed from the soil to groundwater. The state has determined that this mechanism constitutes BAT/BMP. This conclusion was reached for the following reasons: reasonable efforts have already been taken to eliminate the source of contaminants and prevent future releases to the ground water; the extent of residual soil contamination appears to be relatively small; measures will be provided to insure containment of contaminants and prevention of unsafe exposure to contaminants; and residual contamination is expected to "flush out" over a reasonable time (i.e., 8 to 20 years). In the event the Hawkeye Rubber well, PW-1, ceases pumping or becomes ineffective, the contingency provided by RAA 6 will achieve the same goals.

All alternatives would comply with other ARARs including: state and federal wastewater discharge requirements; state water withdrawal permits; state treatment system construction and operation permits; state sludge disposal regulations; and federal hazardous waste storage, treatment, and disposal requirements.

Long-Term Effectiveness and Permanence

RAAs 3, 4, 5, and 6 would provide a similar degree of long-term effectiveness and permanence because of the removal of contaminants by the pumping of the Hawkeye Rubber well as the primary means of contaminant reduction which would operate essentially the same for each alternative. The soil removal in RAA 3 may accelerate groundwater cleanup by reducing the source of groundwater contamination. RAA 3 would also reduce potential for future exposure to contaminated soil. However, the potential for such exposure is low to begin with because the contaminated soil is beneath the building at the Electro-Coatings facility. Therefore, RAA 3 ranks only slightly better than the other alternatives under this criterion.

Short-Term Effectiveness

No significant current exposure to contamination exists. Therefore, this criterion is not critical. As noted previously, RAA 3 has the potential short-term benefit of accelerating groundwater cleanup. However, there are potential adverse impacts during building demolition and soil removal activities associated with RAA 3 including physical hazards, direct exposure to contaminants, and airborne release of contaminants which more than offset any advantage under this criterion.

Implementability

All alternatives involve common technologies which could be easily implemented. RAAs 2, 3, 4, 5, and 6 each include groundwater monitoring which would improve the ability to manage the site. RAA 3 would require off-site disposal of material and would result in major disruption of Electro-Coatings' business.

Cost

Estimated costs range from zero for RAA 1 to a present worth cost of $1,500,000 for RAA 3. Construction costs account for 90% of the cost of RAA 3. RAAs 2, 5, and 6 are all have estimated present worth costs in the $50,000 range; most of which is associated with annual operation expenses. RAAs 4 and 6 (if the contingency is implemented) both have estimated costs in the neighborhood of $300,000 with over 90% of the cost from annual operational expenses.

Support Agency Acceptance

This criterion addresses the concern and degree of support that the State government has expressed regarding the remedial action alternative. The Iowa Department of Natural Resources (DNR) has been the lead agency for this project under a cooperative agreement with EPA. The DNR reviewed the documents pertaining to this site and prepared the Proposed Plan and this ROD. The DNR has given its concurrence on the selected remedial actions.

Community Acceptance. The public comments are described in the Responsiveness Summary which is Part 3 of this Record of Decision.

2.8 The Selected Remedy

The preferred alternative is *RAA 6 - Monitoring with a Contingency to Pump-and-Discharge to the POTW.* This alternative represents the best alternative balancing the nine evaluation criteria used in the Superfund program. This remedy recognizes a substantial decline in the level of groundwater contamination has occurred and is expected to continue. This decline has resulted from previous soil removals, leak prevention, leak protection, and the groundwater flow induced by Hawkeye Rubber PW-1 which flushes contaminants from the soil and ground water.

2.9 Statutory Determinations

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that achieve adequate protection of human health and the environment. In addition, section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that, when complete, the selected remedial action for this site must comply with ARARs (environmental standards established under Federal and State environmental laws) unless a statutory waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practical. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes as their principal element. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment

The selected remedy protects human health and the environment by ensuring that drinking water supplies will not exceed MCLs for site contaminants and by containing ground water thereby preventing the contamination from spreading. Contaminant flushing induced by pumping from PW-1 and past preventative and removal measures will eventually result in a reduction of site contaminants below MCLs. In the meantime, containment will continue to be provided to ensure that MCLs are not exceeded in drinking water supplies due to site contaminants. The site not been shown to cause any significant adverse impact on the environment.

Compliance with Applicable or Relevant and Appropriate Requirements
The following ARARs apply to the selected remedy:

Groundwater which leaves the site and is not drawn into PW-1 must meet the following Maximum Contaminant Levels (MCLs) under the Federal Safe Drinking Water Act:

Chromium	0.1 mg/l
Cadmium	0.005 mg/l
Nickel	0.1 mg/l
1,1-Dichloroethene (1,1-DCE)	0.007 mg/l
cis 1,2-Dichloroethene (C1,2-DCE)	0.07 mg/l
1,1,1-Trichloroethane (1,1,1-TCA)	0.2 mg/l
Trichloroethene (TCE)	0.005 mg/l

The selected alternative would comply with state groundwater cleanup rules which require "use of best available technology and best management practices (BAT/BMP) as long as it is reasonable and practical to remove all contaminants, and in any event until water contamination remains below the action level for any contaminant". Action levels are Lifetime Health Advisory Levels for non-carcinogens and the one-in-a-million cancer risk for carcinogens. Continued containment provide by PW-1 is considered to be BAT/BMP for this site for the following reasons.

- Monitoring of water from PW-1 has shown a substantial reduction in the level of chromium, presumably as a result of contaminants being flushed out of the subsurface by pumping from PW-1 and in response to past preventative and removal measures.

- It has been determined that it is not reasonable or practical to remove the residual contaminated soil which exists beneath the Electro-Coatings plant. The Remedial Investigation did not identify other significant sources of contamination which could otherwise be remediated.

- Prevention of additional releases will be provided by Electro-Coating's leak prevention measures and monitoring.

- The size of the contaminant plume is relatively small and measures prescribed in the selected remedy will insure that it does not expand.

Wastewater discharge requirements in accordance with the National Pollutant Discharge Elimination System (NPDES) program as administered by the DNR, are applicable. The current discharge from the Hawkeye Rubber well PW-1 is to the sanitary sewer (without treatment) with the authorization of the Cedar Rapids Water Pollution Control Facility. Any future discharge from extraction wells installed by Electro-Coatings for contingency action will likely also discharge to the sanitary sewer. Pretreatment prior to discharge will be provided if required by the Cedar Rapids Water Pollution Control Facility.

Cost-Effectiveness
The selected remedy has been determined to be the most cost-effective alternative which provides overall protection of human health and the environment and complies with ARARs. The estimated present worth cost of the selected remedy is $47,000 without the contingency and $310,000 with the contingency.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The DNR and the EPA have determined that the selected remedy represents the maximum extent to which permanent solutions can be utilized in a cost-effective manner for the Electro-Coatings, Inc. Site. Further treatment of the collected groundwater beyond that provided by the POTW and any Pre-treatment requirements placed on the discharges to the POTW is not required to meet applicable discharge limitations.

Preference for Treatment as a Principal Element

The primary component of the selected remedy is containment of the contaminated groundwater. The selected remedy and contingency utilize treatment as provided by the POTW and any pretreatment required of the contingency as a principal element.

2.10 Documentation of Significant Changes

The Proposed Plan for the Electro-Coatings, Inc. site was released for public comment July 20, 1994. The Proposed Plan identified Remedial Action Alternative 6, Monitoring with a contingency for Groundwater Pump-and-Discharge to the POTW as the preferred alternative. The Iowa DNR reviewed all comments received during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was identified in the Proposed Plan, were necessary.

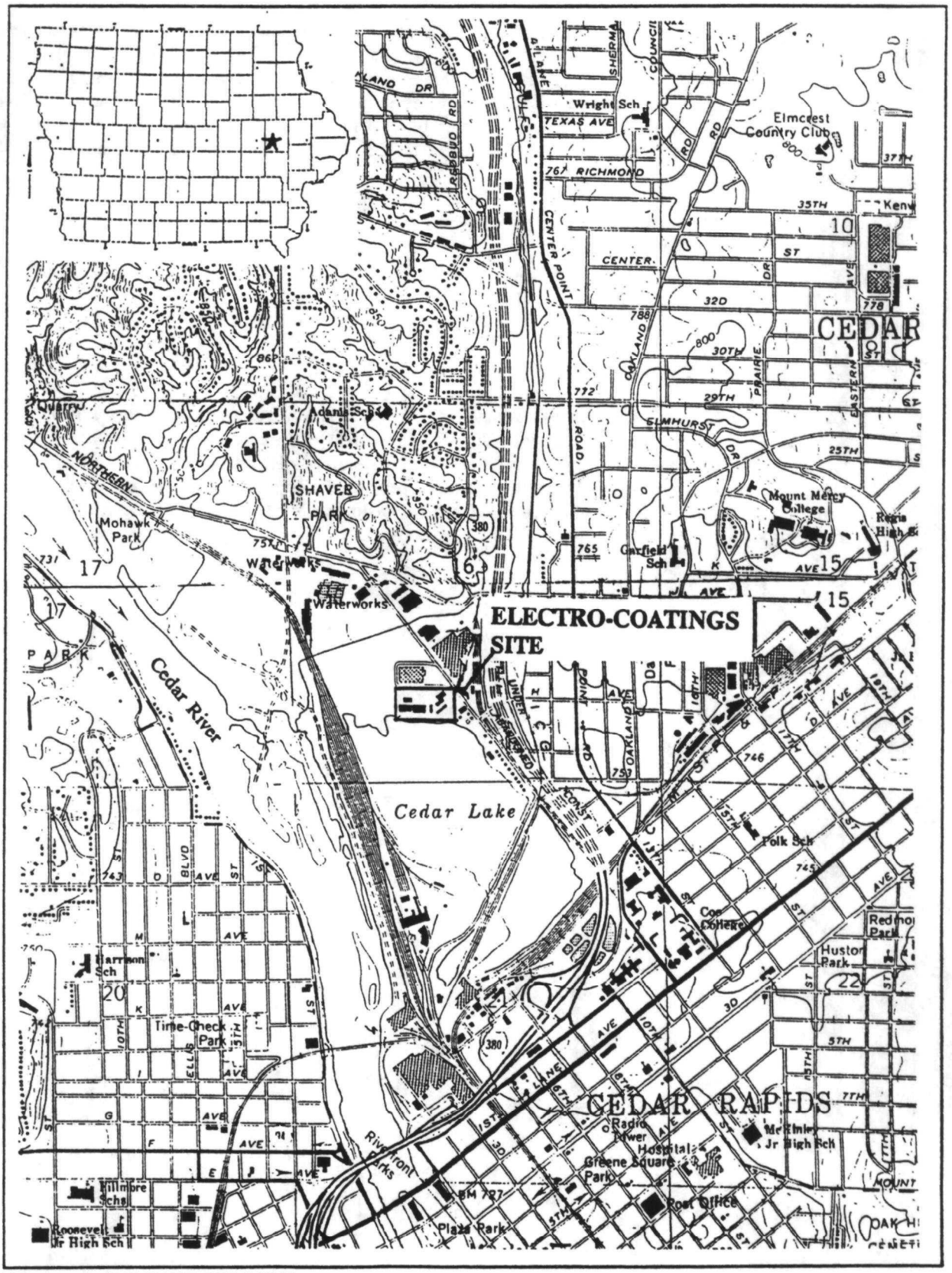


Figure 1: LOCATION MAP

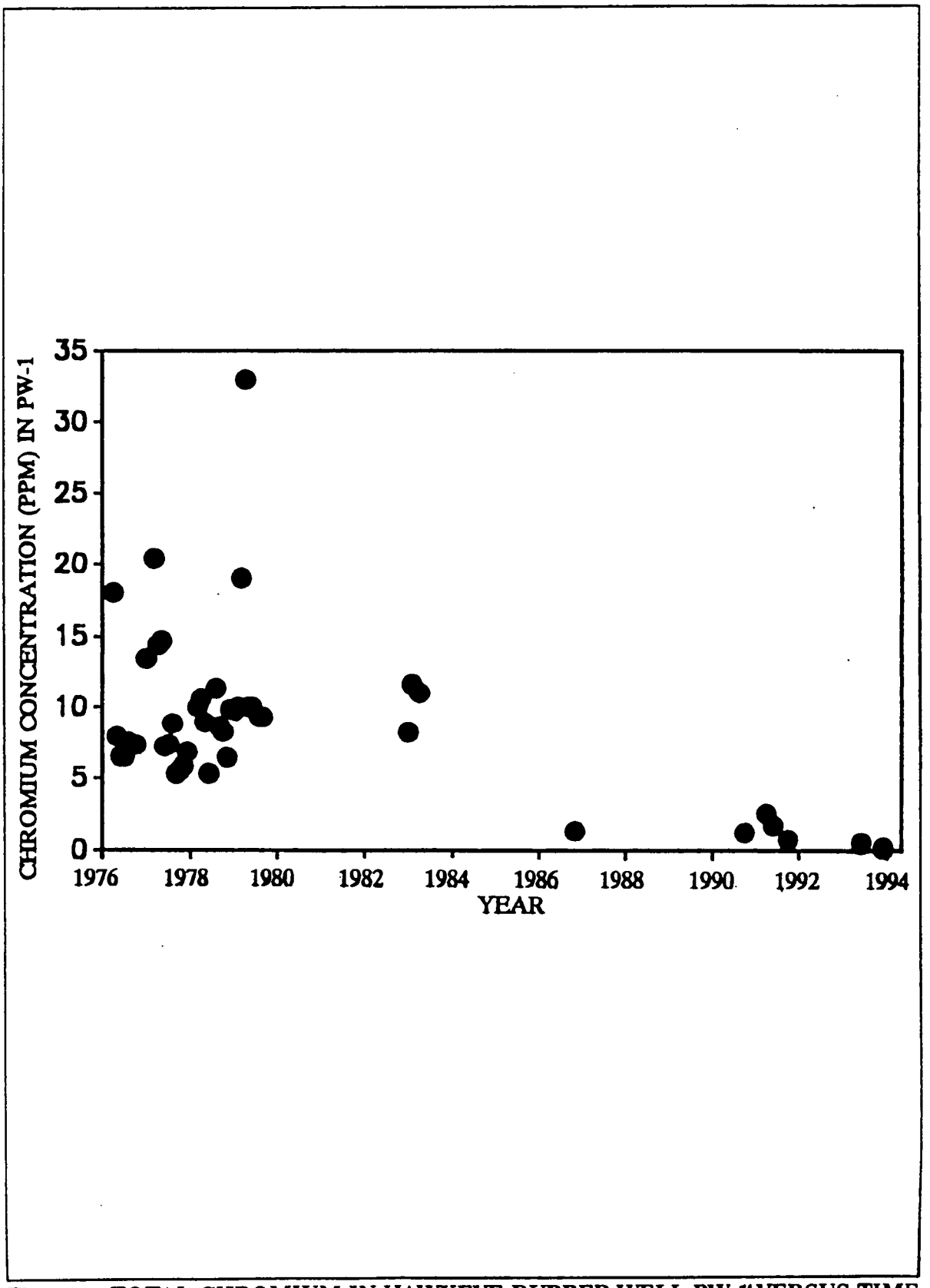


Figure 2: TOTAL CHROMIUM IN HAWKEYE RUBBER WELL PW-1 VERSUS TIME

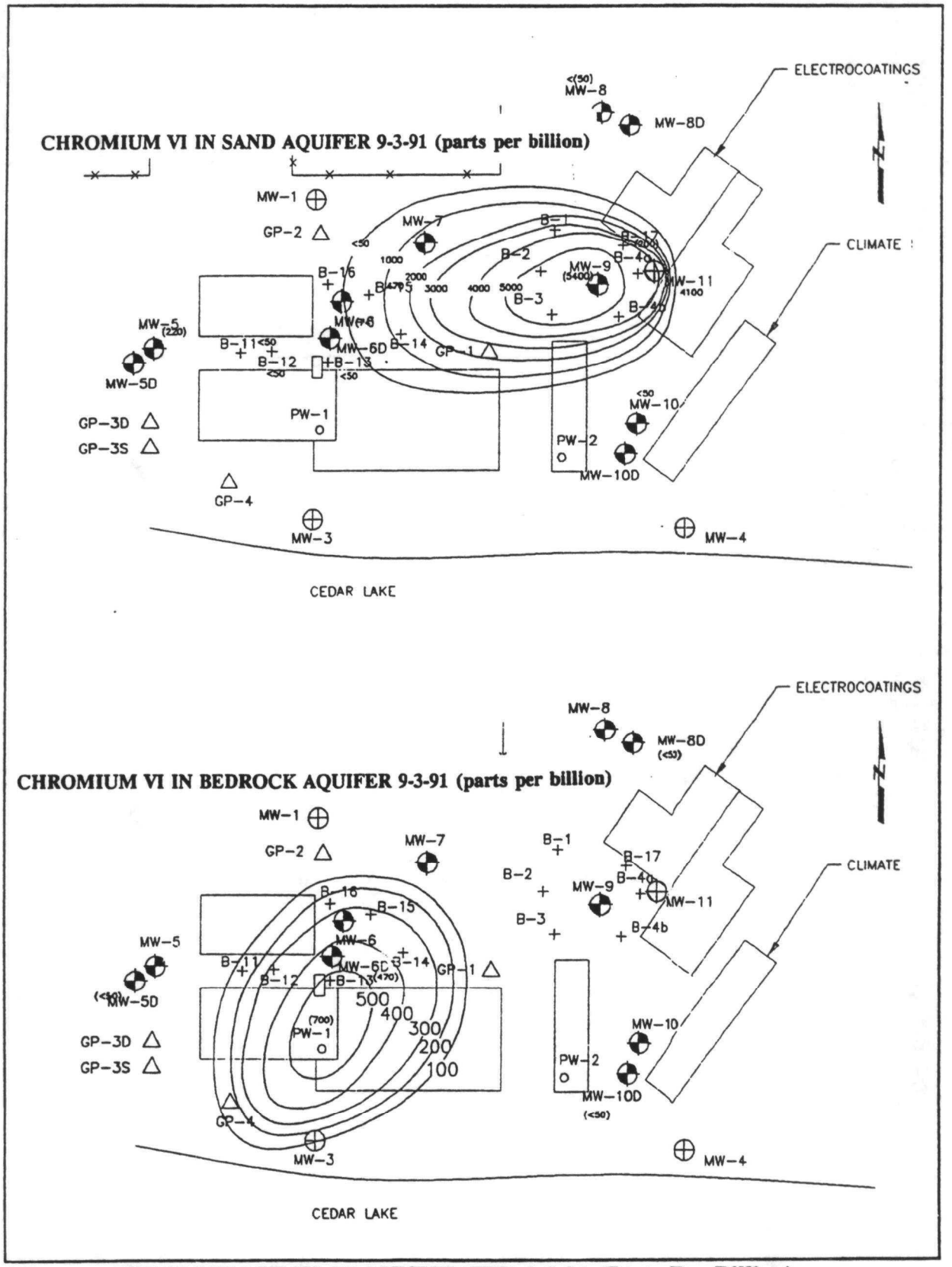
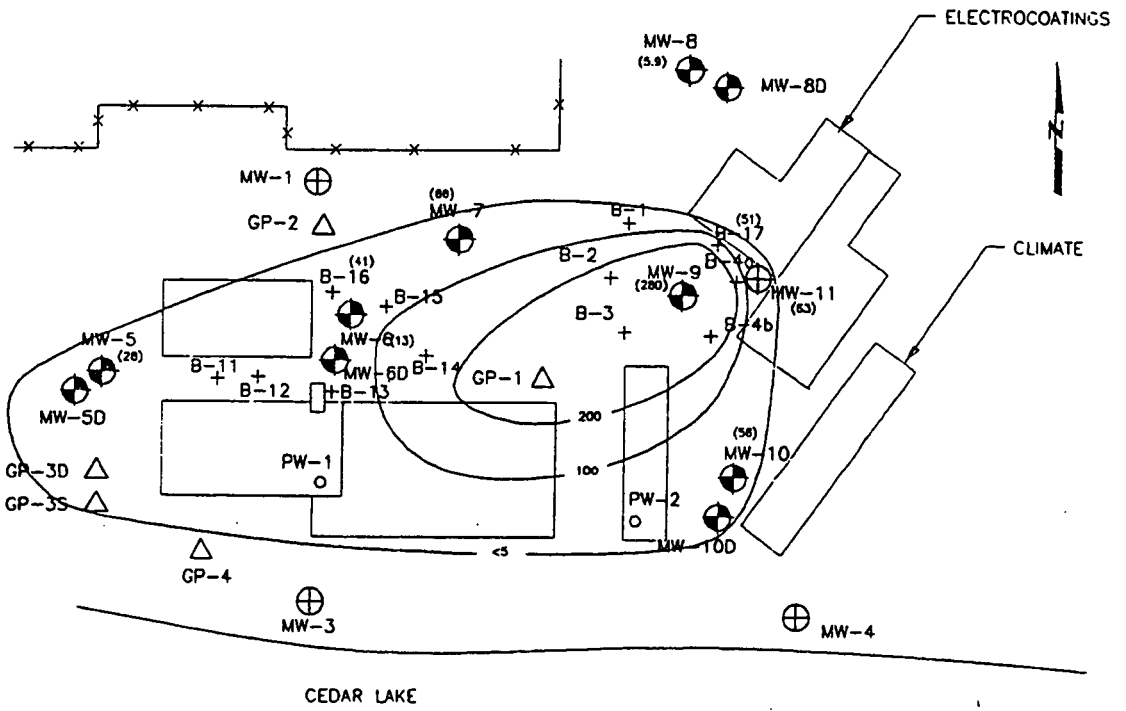


Figure 3: CHROMIUM VI IN GROUNDWATER 9-3-91 (Parts Per Billion)



Sample collected 9-3-91

Results in parts per billion

Figure 4: TRICHLOROETHENE IN GROUNDWATER 9-3-91 (Parts Per Billion)

III. RESPONSIVENESS SUMMARY

3.1 Comments from the July 26, 1994, Public Meeting

A public meeting on the June 1, 1994 Proposed Plan was held on July 26, 1994, in Cedar Rapids. Fourteen people attended this meeting including 3 from the DNR, 2 from the EPA, 2 from the Iowa Department of Health, 2 representatives from Electro-Coatings, Inc., 2 representatives from the Cedar Rapids public water supply, 2 representatives from the League of Women Voters, and 1 private citizen. The following is a summary of the comments and questions which were received at the July 26, 1994, public meeting:

1. **Question:** Do we expect the current drinking water standard for chromium (i.e., 100 parts per billion (PPB)) to be permanent? Other EPA standards have not been permanent, usually becoming smaller.

   Response: It is certainly possible that the drinking water standard for chromium could change. However, it is not likely that the standard for chromium would be substantially reduced for the following reasons:

   - chromium is a trace nutrient;
   - the drinking standard for chromium was recently **increased** from 50 PPB to 100 PPB; and
   - very low drinking water standards are typically associated with carcinogenic compounds and, while hexavalent chromium is a suspected carcinogen by inhalation, it is not a suspected carcinogen by ingestion.

2. **Question:** How much chromium leaked initially?

   Response: It is estimated that the initial leak consisted of about 200 gallons of solution containing 32 ounces of chromic acid flake per gallon.

3. **Question:** Was chromium found in water and sediment samples from Cedar Lake?

   Response: Chromium was found in two samples of water from Cedar Lake at concentrations below the MCL. However, chromium was not detected in split samples collected and analyzed by the DNR. Chromium was also not detected in a subsequent water sample from Cedar Lake. Only low levels (i.e., typical of background soils) of chromium were detected in sediment samples from Cedar Lake. It should be noted that samples were collected near former discharge points.

4. **Question:** Why has there been such a long time lag between identification of the problem and finally deciding what to do about it?

   Response: The problem was identified in March of 1976, more than 18 years ago. Measures were initially taken by Electro-Coatings to cease further releases. They also installed monitoring wells at the direction of the state which they sampled frequently for a couple of years along with the Hawkeye Rubber production wells. Little activity occurred from about 1979 to 1983. In 1983, interest in the site was renewed when samples of the Hawkeye Rubber PW-1 were collected by the municipal wastewater treatment plant which indicated that persistent levels of chromium contamination remained. In response, Electro-Coatings installed another monitoring well and resumed sampling of monitoring well for a few months. The DNR identified the site for preremedial CERCLA consideration. Again little activity occurred until 1986 when the DNR conducted a site inspection which subsequently led to the site being proposed for the National Priorities List (NPL) in June of 1988. Listing of the site on the NPL became a final in October of 1989. The DNR issued an administrative order to Electro-Coatings

in September of 1989 for conducting a remedial investigation and feasibility study (RI/FS) of the site. The company was in bankruptcy at the time and was not able to proceed. In September of 1990, the DNR initiated remedial investigation activities. In October of 1990, Electro-Coatings entered into a consent order with DNR in which they agreed to conduct the RI/FS. They conducted three phases of investigation in 1991 and submitted an RI/FS report to DNR in April 1992. The April 1992 RI/FS suggested that the Hawkeye Rubber Company was the primary source of VOC contamination. In response to this uncertainty, the DNR conducted a supplemental remedial investigation in June of 1992 and completed a report on this supplemental RI in October of 1992. In January of 1993 Electro-Coatings was asked to revise the RI/FS. They responded with an Addendum to the RI/FS in April 1993. From that time until the Proposed Plan was approved by EPA in July of 1994, the DNR and EPA prepared supplemental RI and FS documents and went through a series of reviews and modifications of these documents and the Proposed Plan between the two agencies.

It should be noted that throughout the history of this site, never has a worsening condition been identified. That is, an expansion of the contaminant plume or increase in contaminant levels has not been found which would suggest the need for immediate action. It has been apparent for some time that the Hawkeye Rubber well PW-1 has done a good job of containing most contamination emanating from the Electro-Coatings site.

5. **Question:** What is going to happen with Hawkeye Rubber?

Response: Shortly after Hawkeye Rubber was confirmed as the source of PCE contamination, they took action to replace their degreasing equipment which used PCE with equipment that uses soap and water. They have also conducted a groundwater investigation. Currently they are awaiting direction from the DNR as to what action to take next. The DNR will give this direction upon completion of the ROD. The action required of Hawkeye Rubber will be consistent with the Electro-Coatings ROD. The DNR plans to address the Hawkeye Rubber site under state authority.