Site: Hastings GW
ID #: NED985862628
Break: 11.6 . Well 3
Other: Ingersoll-Rand 2-26-93

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
726 MINNESOTA AVENUE
KANSAS CITY, KANSAS 66101

FEB 26 1993

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REMD SECTION

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

J.D. Ray, Esq.
Assistant Company Counsel
and Environmental Counsel
Ingersoll-Rand Company
200 Chestnut Ridge Road
Woodcliff Lake, New Jersey 07675

Re: Hastings Ground Water Contamination Site
Well #3 Subsite
General Notice of Liability to Ingersoll-Rand Company

30353455
Superfund

Dear Mr. Ray:

By letter dated April 21, 1992, the United States Environmental Protection Agency ("EPA") informed Ingersoll-Rand Company ("Ingersoll-Rand") of its ongoing investigation of ground water contamination at the Hastings Ground Water Contamination Site. EPA requested information concerning Ingersoll-Rand's use of various chemicals, including 1,1,1,-trichloroethane ("TCA") and tetrachloroethene ("PCE") at one of the subsites at the hastings Site known as the Well #3 Subsite.

Based on information that EPA gathered, including information Ingersoll-Rand provided to EPA concerning its use of TCA and PCE at the Well #3 Subsite, EPA has reason to believe that the TCA and PCE present at the Well #3 Subsite emanated from the Ingersoll-Rand property. This letter is notice that Ingersoll-Rand may be potentially liable for costs that EPA has incurred and will incur in responding to the release and threat of release of TCA and PCE into the ground water at the Well #3 Subsite.

Proposed Plan

EPA has completed its evaluation of various alternatives for mitigating the ground water contamination at the Well #3 Subsite. The alternatives are described in detail in the draft Feasibility Study Report which has been placed with other site documents at the Hastings Public Library. On January 25, 1993, EPA published its preferred alternative in the Proposed Plan for the Well #3 Subsite Ground Water Operable Unit. A copy of the Proposed Plan is enclosed with this letter.

EPA held a public meeting in Hastings on February 16, 1993 to explain the preferred alternative and receive comments. The transcript to that meeting will be available to the public next week and will be placed in the Hastings Public Library. EPA will continue to receive comments on the Proposed Plan until February 25, 1993. At the conclusion of the comment period, and after full consideration of all comments, EPA will select a remedy and publish that selection in its Record of Decision. As a potentially responsible party for the TCA/PCE ground water contamination at the Well #3 Subsite, Ingersoll-Rand may be asked to perform the ground water remedial action for the TCA/PCE plume or to finance such ground water remedial action.

If you have any questions regarding this matter that are of a technical nature, please call Diane Easley, Remedial Project Manager, at 913/551-7797. If you have questions of a legal nature, please contact Audrey Asher, Senior Assistant Regional Counsel, at 913/551-7255.

Sincerely,

David A. Wagoner
Director, Waste Management Division

Enclosure

cc: Annette Kovar, Esq., NDEQ

Proposed Plan for the Well #3 Subsite Ground Water Operable Unit Hastings Ground Water Contamination Site Hastings, Nebraska

EPA Region VII

January 1993

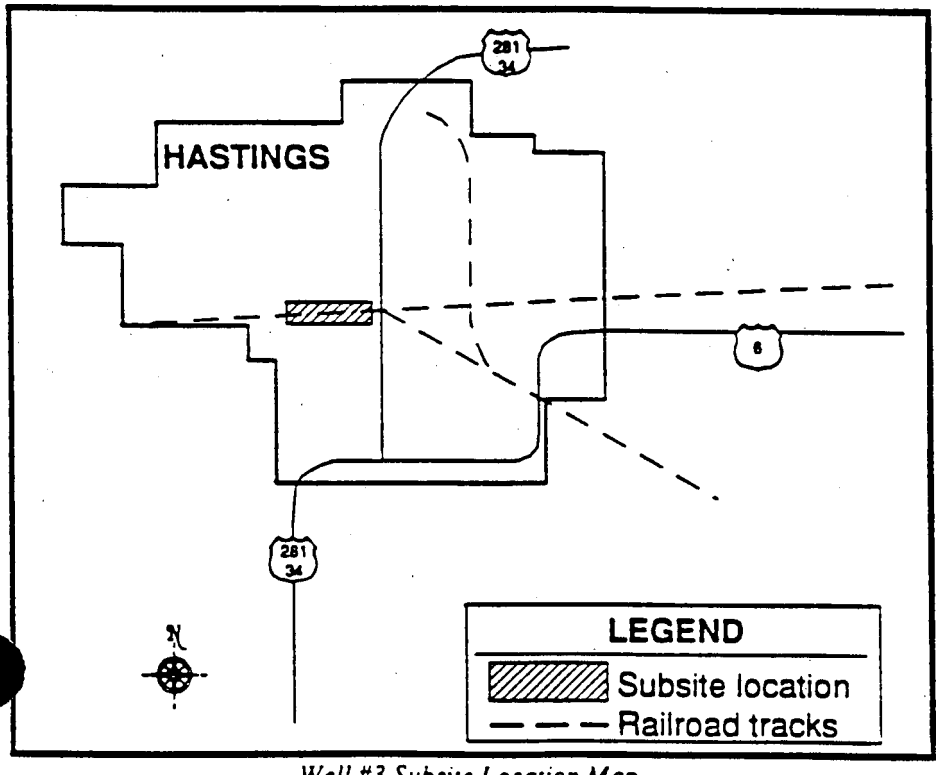
Section 117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, as amended in 1986, requires that a Proposed Plan for remediating contamination problems at a Superfund site be made available for public comment. The U.S. Environmental Protection Agency (EPA) is presenting this document as the Proposed Plan for the Well #3 subsite of the Hastings Ground Water Contamination Site located in Hastings, Adams County, Nebraska.

This Proposed Plan provides background information on the Well #3 subsite, the alternative interim remedies considered by EPA to address the contamination problems at the subsite, and EPA's proposed remedial alternative for two distinct ground water plumes found at the subsite.

This Proposed Plan also outlines how the public can participate in the final selection of the remedy. EPA, the lead agency in the selection process, in consultation with the Nebraska Department of Environmental Quality (NDEQ), the support agency, will select an interim remedial action only after considering comments received from the community during a public comment period.

INTRODUCTION

This Proposed Plan presents EPA's preferred interim remedy to control and reduce contamination problems in the ground water at the Well #3 subsite (the subsite) of the Hastings Ground Water Contamination Site. This subsite is one of seven subsites that make up the larger Hastings Ground Water Contamination Site. EPA is interested in treating ground water contamination at the subsite as quickly as possible. This Proposed Plan recommends an interim remedy that will rapidly reduce contaminant levels in the ground water. Because hazardous substances will remain on site, EPA will review the effectiveness of the interim action within five years. Review and evaluation will continue a EPA develops final remedial action alternatives for the subsite.



Well #3 Subsite Location Map

This Proposed Plan is based on the results of the following:

- Ground water contamination studies performed at the subsite and presented in the Well #3 Ground Water Remedial Investigation (RI) Report;

- Evaluation of potential risks to human health and the environment posed by contamination at the subsite; and

- The draft Feasibility Study (FS) Report, which identifies and evaluates alternatives for protecting human health and the environment from risks posed by the carbon tetrachloride (CCl_4) and trichlorothene (TCE) ground water plumes at the subsite.

The Proposed Plan highlights key information from the noted documents, but is not a substitute for them. These documents, along with the Administrative Record, are available for review at the local information repositories (see page 12). The Administrative Record is available only at the Hastings Public Library and EPA's Region VII office. The RI and draft FS Report and Proposed Plan will be furnished to the other two repositories.

Based on these studies, EPA proposes to contain the ground water contamination by pumping the contaminated ground water of each plume to the surface to prevent further movement of the contaminants. Ground water will be treated and replaced (i.e., reinjected) or made available for beneficial use.

PURPOSE OF THE PROPOSED PLAN

The primary purpose of the Proposed Plan is to present to the public EPA's preferred remedial alternative for remediating contamination problems at the Well #3 subsite. The public is encouraged to take part in the final selection of the interim remedy by submitting written or oral comments on the preferred alternative or any other alternative considered by EPA. Comments may be submitted during a public comment period from January 25 to February 25, 1993 and at a public meeting on February 16, 1993 (see page 11 for additional information regarding the public meeting). Public comment will be considered and incorporated as appropriate.

After receiving and reviewing all comments from the public, EPA will announce the selected remedy in a Record of Decision (ROD). The comments received during the public comment period will be summarized and responded to in the Responsiveness Summary section of the ROD.

SITE BACKGROUND

Due to the ground water contamination found in Hastings, EPA identified the area as a Superfund site and placed it on the National Priorities List (NPL) in 1986. The NPL is a nationwide list of hazardous waste sites that are eligible for investigation and remediation under the Superfund program.

The population within the City of Hastings is approximately 23,000. The city obtains all of its drinking water supply from the municipal system which taps the ground water aquifer known as the Pleistocene aquifer. The contamination problems addressed by this Proposed Plan pertain to this aquifer.

The Well #3 subsite is located east of Maple Avenue and north of the Burlington Northern Railroad tracks. Contaminants found at the subsite include CCl_4, TCE, 1,1,1-trichloroethane (TCA), chloroform and tetrachloroethane (PCE).

EPA investigations indicated that the most likely cause of the CCl_4 contamination at the subsite was a grain fumigant spill. During the 1960s, when there were large grain crop surpluses, extensive amounts of grain were stored for long periods of time while waiting for market. Fumigants were used on the grain in an effort to keep the grain in good condition. A primary ingredient of the liquid grain fumigants that were used then was CCl_4. Chloroform is a breakdown product of CCl_4.

The source for the TCE and TCA contamination at the subsite has not yet been identified. However, the subsite is a part of the Central Industrial Area, which contains commercial and industrial properties situated along the Burlington Northern Railroad right-of-way. Past and present industrial operations in the central industrial area include metal fabricating and plating, printing, plastic products fabrication, grain storage and distribution, and other types of light industry. TCE and TCA were used as

degreasing solvents by metal finishing industries, as well as other industries.

SITE HISTORY

In 1983, the City of Hastings attempted to put municipal well M-18 into service, 40 years after installation. However, following startup, complaints by citizens of Hastings of foul taste and odor prompted the city to remove the well from service permanently. The Nebraska Department of Environmental Control (NDEC) analyzed samples collected from Well M-18 in 1983 and 1984 and detected elevated levels of the compounds TCA, TCE, and PCE. These compounds belong to a general class of compounds referred to as volatile organic compounds (VOCs). VOCs are those chemicals that tend to evaporate when exposed to air. The NDEC also detected elevated levels of these and other VOCs in three other municipal wells in Hastings.

Three other municipal wells, M-3, M-10, and M-12, were taken out of service in 1983 and 1984 due to contamination. City water supply wells that are still in service are monitored by the Nebraska Department of Health (NDOH) to ensure that the public water supply is safe.[1]

Several locations on the west side of Hastings, upgradient of municipal well M-3, were suspected as source areas for the CCl_4 contamination. Between 1986 and 1989, EPA performed a field investigation to identify and characterize these suspected source areas. The results of the data indicated that a former grain storage facility was the area from which the CCl_4 found in municipal well M-3 emanated.

On September 26, 1989, EPA signed a ROD for interim source control at the subsite.[2] The purpose of the source control action is to remediate the contaminated soils above the aquifer (the vadose zone) in the area where spills occurred in order to prevent the continued migration of contaminants into the aquifer. EPA selected Soil Vapor Extraction (SVE) and treatment of air emissions by granular activated carbon (GAC) for a source control action at this subsite. The SVE process uses a vacuum to remove contaminant vapor from the soils. The vapors from the SVE system are treated by GAC to remove the VOCs before being released to the air. EPA, with the State of Nebraska, is in the process of implementing the source control remedy using SVE.

EPA is addressing the ground water contamination and the soil contamination at the subsite as separate actions. This Proposed Plan addresses a CCl_4 ground water plume and a TCE ground water plume at the Well #3 subsite.

NATURE AND EXTENT OF CONTAMINATION

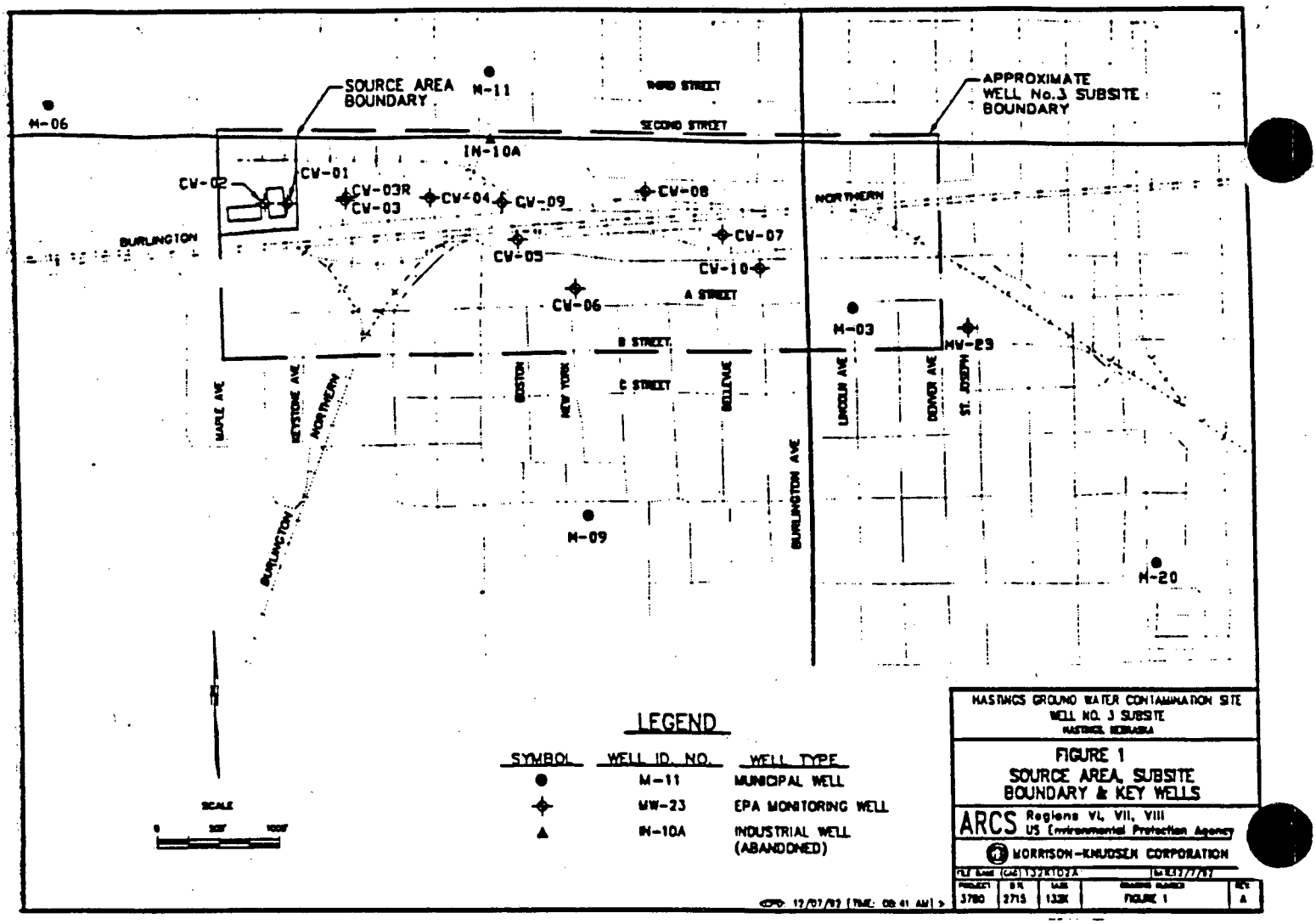
EPA installed ground water monitoring wells (Figure 1) at the subsite from 1986 to 1992. During this period and to the present, EPA has been collecting ground water samples and has detected elevated levels of a number of VOCs, including CCl_4, TCE, TCA, PCE, chloroform, and 1,1-dichloroethene (DCE) in the ground water.

Prior to 1990, EPA installed two ground water monitoring wells at the subsite, MW-23 and CW-1, to assist in defining the extent of the CCl_4 plume. In 1991, EPA added six monitoring wells (CW-2, CW-3, CW-4, CW-5, CW-6 and CW-7) and collected *in-situ* water samples[3] during the drilling of these wells. In addition, quarterly ground water samples have been collected from completed subsite wells. The analytical results from monitoring well CW-7 indicated that the subsite was contaminated with TCE, 1,1,1-TCA, and other VOCs. The original intent of these sampling efforts was to characterize the CCl_4 and chloroform plume that began at the source control area and contaminated municipal well M-3. An unexpected result was the discovery of high levels of TCE, TCA, PCE, and DCE in CW-7. A separate subsequent investigation was undertaken to characterize this plume. In 1992, EPA installed three additional monitoring wells (CW-8, CW-9, and CW-10) to determine

[1] If future sampling indicates that any City supply wells are contaminated, the NDOH is authorized under the Safe Water Drinking Act to respond.

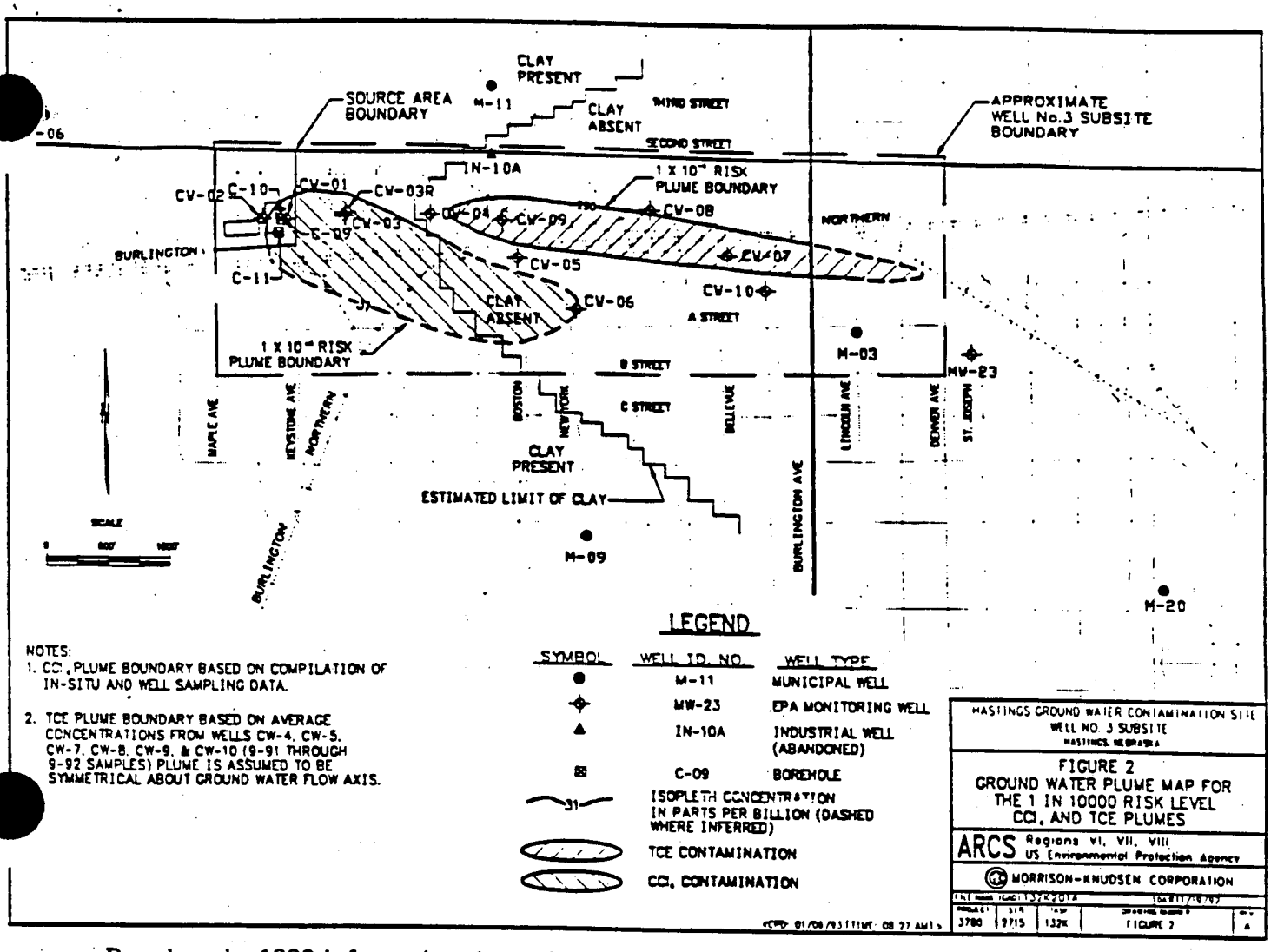
[2] The ROD and supporting documents are available for review a the Hastings Public Library.

[3] *In-situ* water samples are one-time only water samples collected at precise depths.



the extent of the TCE/TCA contamination and to locate the potential source of the contamination. Figure 1 illustrates the location of subsite monitoring wells and all municipal water supply wells in the area of the subsite.

As more fully explained in the RI Report and the draft FS Report, two separate areas of VOC contamination within the aquifer have been identified. The two areas of contamination are referred to as the $CC1_4$ plume and the TCE plume based on the most predominant ground water contaminants found in the plume areas. Figure 2 shows the estimated plume boundaries based on a ground water contaminant concentration that is equal to a 1 in 10,000 (1×10^{-4}) excess lifetime cancer risk (that is a contaminant concentration that would cause cancer in 1 in 10,000 individuals assuming a lifetime of exposure at that concentration). EPA has targeted contaminated ground water exceeding the 1 in 10,000 risk level as an appropriate cleanup goal for interim ground water actions in Hastings. It should be noted that low level contamination extends farther east than the plume boundaries shown and that the two plumes intermingle with each other at lower concentrations. As previously mentioned, the $CC1_4$ contamination source has been identified and is undergoing remediation under the source control action. The TCE contamination source is presently unidentified, but appears to be emanating from an area north of the Burlington-Northern Railroad tracks between monitoring well CW-4 and CW-9. EPA is issuing information requests to some of the businesses that had operated in that general location. Based on information that Dutton-Lainson Co. used significant quantities of TCE and TCA at its plant site, EPA has requested that Dutton-Lainson Co., who owns the property directly north of CW-4 and CW-9, undertake a focused site investigation to determine the amount of TCE contamination present within the vadose zone at this location, and if warranted by its findings, mitigate the soil contamination.



Based on the 1992 information shown in Figure 2, EPA proposes to implement two separate interim actions to address plume contaminant levels exceeding the 1 in 10,000 risk level. The volume of contaminated ground water in the $CC1_4$ plume to be addressed by this interim action is approximately 27 million gallons, and contains approximately 79 pounds of $CC1_4$. In the TCE plume there is approximately 97 million gallons of contaminated ground water and 720 pounds of TCE.

The data indicate that the subsite's surface contamination has migrated and may continue to migrate to the ground water beneath and downgradient of the subsite. All data results are presented in the RI Report which was released on December 14, 1992. The draft FS, based on the RI Report, was released on January 15, 1993.

SUMMARY OF SITE RISKS

Superfund law requires EPA to seek permanent solutions to protect human health and the environment from hazardous chemicals. These solutions provide for removal, treatment, or containment of dangerous chemicals so that any remaining contamination does not pose an unacceptable health risk to anyone who might come into contact with it.

EPA has evaluated potential risks to human health posed by ground water contamination if no remedial action were taken. The Baseline Risk Assessment, included as Section 5 of the RI Report, is based on the results of the contamination studies and evaluates potential cancerous and non-cancerous risks. The results presented here apply to the 1992 study, and prior studies conducted at the Well #3 subsite and other Hastings subsites contaminated with TCE and TCA.

In preparing the Baseline Risk Assessment, EPA first determined the most likely ways in which community members might come into contact with site-related chemicals. EPA determined that residents living near the Well #3 subsite might be exposed to contaminants in ground water if they drink ground water, come into direct contact with the ground water while bathing, or inhale ground water vapors while cooking or showering. EPA concluded that the chemicals in the ground water at the Well #3 subsite might pose a health risk to residents who use the ground water. The predominant chemicals are CCl_4 and TCE. The interim action will focus on reducing risk to human health and the environment that result from exposure to these chemicals.

EPA considers exposure to a chemical an unacceptable cancer risk if it leads to more than one additional case of cancer for every 10,000 people exposed to it over a 30-year period. The term cancer risk sometimes is referred to as "excess cancer risk" because it is the number of additional cases above the average number of cases that are expected to occur in the general population if the chemicals were not present. EPA's assessment of the Well #3 subsite determined that exposure to the levels of CCl_4 detected might lead to 30 additional cancer cases per 10,000 people and exposure to TCE at the levels currently detected might lead to three additional cancer cases for every 10,000 people exposed over a 30-year period. The fact that these risk levels are unacceptable prompted EPA to consider an interim action to rapidly reduce the risk levels while a final solution is being developed.

In addition to estimating potential cancerous health effects, the Baseline Risk Assessment evaluated potential non-cancerous health effects caused by site-related chemicals. EPA determined that exposure to the primary VOCs (CCl_4 and TCE) detected at the subsite might cause harmful non-cancerous health effects to nearby residents using the ground water. These effects include central nervous system depression and effects on the heart, liver, kidneys, and lungs.

REMEDIATION GOALS

EPA's objective at a Superfund site is to protect human health and the environment. The subsite ground water interim actions to be conducte at the Hastings Ground Water Contamination Site will have a common interim goal: to achieve containment and reduction of cancer risk levels to one case in an exposed population of 10,000 over a 30-year period. In addition, EPA's interim goal at the Well #3 subsite is to rapidly reduce contaminant levels to the 1 in 10,000 risk level for each contaminant (target concentration) within approximately 10 years. EPA will ensure that any final remedial action will minimize the potential for human exposure to ground water exceeding health-based standards. EPA proposes an interim action at this subsite because the contamination problem will become worse if left unaddressed.

DESCRIPTION OF ALTERNATIVES

The remedial alternatives described in the draft FS Report fall into three general categories. These are: no action, institutional controls, and plume management (See Table 1).

Under the no-action alternative, the subsite would remain in its present condition. The potential for exposure to contaminant levels exceeding health standards by the community would still exist. EPA policy requires consideration of a no-action alternative to serve as a basis against which the other remedial alternatives can be compared.

Institutional controls are actions which lower the risk of exposure to contamination through physical and/or legal means. For areas affected by the Well #3 subsite, institutional controls would include deed restrictions to limit future development, monitoring of the ground water, and supply well installation. Under this alternative, ground water monitoring would be required to track movement of contamination in the ground water. Additional ground water monitoring wells might be installed.

Each plume management alternative incl mass removal of contaminated ground water and

containment of the contaminant plume. This is most commonly achieved by removing the contaminated ground water through extraction wells and treatment of this ground water to remove contaminants. See Table 2 for definitions.

In order to compare mass removal and containment alternatives for the CCl_4 and TCE contaminant plumes, an estimate was made of the ground water pumping rate that would have to be employed to contain the plume and achieve the target concentration (less than 31 ug/l for CCl_4 and 290 ug/l for TCE) in approximately 10-years. For CCl_4, analyses indicate that pumping for 12 years at a flow rate of 25 gallons per minute would be sufficient to reach the target concentration. For TCE, analyses indicate that pumping for 10 years at a flow rate of 40 gallons per minute would be sufficient to reach the target concentration. These rates were selected as reasonable scenarios to compare the ground water alternatives. Pumping rates will be determined as part of the Remedial Design. A higher rate than considered for cost analysis would remove contaminants in a lesser amount of time, but could be more costly. The pumping rates considered are discussed in the draft FS Report.

The plume management alternatives differ by ground water treatment process options, as shown in Table 1:

- For the CCl_4 plume management alternatives described in the draft FS Report, the capital costs and annual operation and maintenance costs ranged from $1,042 to $1,104 million for a 12-year period.
- For the TCE plume management alternatives described in the draft FS Report, the capital costs and annual operation and maintenance costs ranged from $768,000 to $829,000, based upon treatment, for a 10-year period.

EPA'S EVALUATION CRITERIA

The following nine evaluation criteria were developed by EPA to serve as a basis for comparing remedial alternatives against each other. Analysis of alternatives by use of these criteria is required by the National Contingency Plan (NCP), 40 CFR 300.430.

The nine criteria are divided into three categories: Threshold Criteria, Primary Balancing Criteria, and Modifying Criteria.

Threshold Criteria:

1. Overall Protection of Human Health and the Environment
2. Compliance with all State and Federal Environmental Regulations and relevant and appropriate requirements (ARARs)

Primary Balancing Criteria:

3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility, or Volume Through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost

Modifying Criteria:

8. State Acceptance
9. Community Acceptance

If any remedial alternatives identified during the FS do not meet the Threshold Criteria (Criteria 1 and 2), EPA will not consider them as possible remedies. During EPA's evaluation of the interim action alternatives, the ARARs listed in Table 3 were considered. There are three types of ARARs to be addressed, i.e., chemical specific, action specific, and location specific.

- Chemical-specific ARARs are requirements that set final concentrations of chemicals of concern in the contaminated material (e.g., ground water, soil) which must be achieved by the remedial action.

- Action-specific ARARs are those requirements that set standards on the treatment and discharge components of the remedial action. Action-specific ARARs apply to the interim and final remedial action.

- Location-specific ARARs are requirements that might apply to a remedial action due to the site's unique cultural, archaeological, historical, or physical setting (e.g., wetlands). Loca-

tion-specific ARARs will not apply to the interim or final remedial action at the Well #3 subsite because there are no such features in the subsite area.

If the alternatives satisfy the Threshold Criteria, they then are evaluated against the next five criteria, called the Primary Balancing Criteria. These criteria are used to compare the remedial alternatives against each other in terms of effectiveness, degree of difficulty involved, and cost. The final two criteria, state acceptance and community acceptance, are called Modifying Criteria. The alternatives are compared against the Modifying Criteria after the state and the community have reviewed and commented on the Proposed Plan and the other alternatives considered by EPA. A complete description of these criteria appears in the draft FS.

After the public has had an opportunity to comment on the Proposed Plan, the preferred alternatives will be evaluated against the public comments.

SUMMARY OF PREFERRED ALTERNATIVE

EPA recommends "Mass Removal and Containment with Liquid Phase Granular Activated Carbon Treatment and Ground Water Reinjection," as its preferred alternative for protecting human health and the environment from ground water contamination. EPA has identified this as its preferred alternative because, based on the information available, it provides the best balance among the other alternatives presented in the draft FS with respect to the nine evaluation criteria, listed above. EPA believes the preferred alternative, as previously stated, is protective, implementable, and effective in reducing the toxicity, mobility, and volume of contamination present at the subsite. EPA prefers GAC treatment of ground water over air stripping treatment without air emission controls because GAC treatment does not result in the release of contaminants to the atmosphere. In addition, air stripping with air emission controls would be more costly than EPA's preferred alternative. Although all ARARs would not be met with the preferred alternative, the NCP stipulates that an alternative that does not meet an ARAR may be selected if the alternative is an interim measure and will become part of a total remedial action that will attain the ARARs.[4] The preferred alternative will be effective over the short-term and consistent with the expected final remedy for the site which will have long-term effectiveness and achieve permanence. The discussion below provides additional information regarding EPA's evaluation of the preferred alternative.

The recommended alternatives provide approaches to containing and removing contaminant mass from the ground water plumes. EPA recommends these approaches to address the significant levels of CCl_4 and TCE contamination at the Well #3 subsite that are within the bounds of the municipal water supply system. The proposed interim actions will rapidly reduce contaminant concentrations and be consistent with the expected final remedy. As a result of the recommended approaches, EPA's preferred alternatives would achieve long-term effectiveness. The aquifer water would be pumped via extraction wells whose locations would be determined as part of the design of the system. Conceptual extraction well locations are illustrated in Figures 3 and 4 on page The pumped ground water would be treated with and then reinjected into the aquifer. Injection into the aquifer upstream of each contaminant plume is preferred. However, other locations may be considered. The pumping would generally remove contaminant mass and contain each contaminant plume within the area shown in Figure 2. EPA's preferred alternatives would meet the criteria for long-term effectiveness and permanence. All extracted ground water would be treated to drinking water quality prior to reinjectio or reuse or to the appropriate level to assume that all action specific ARARs would be met.

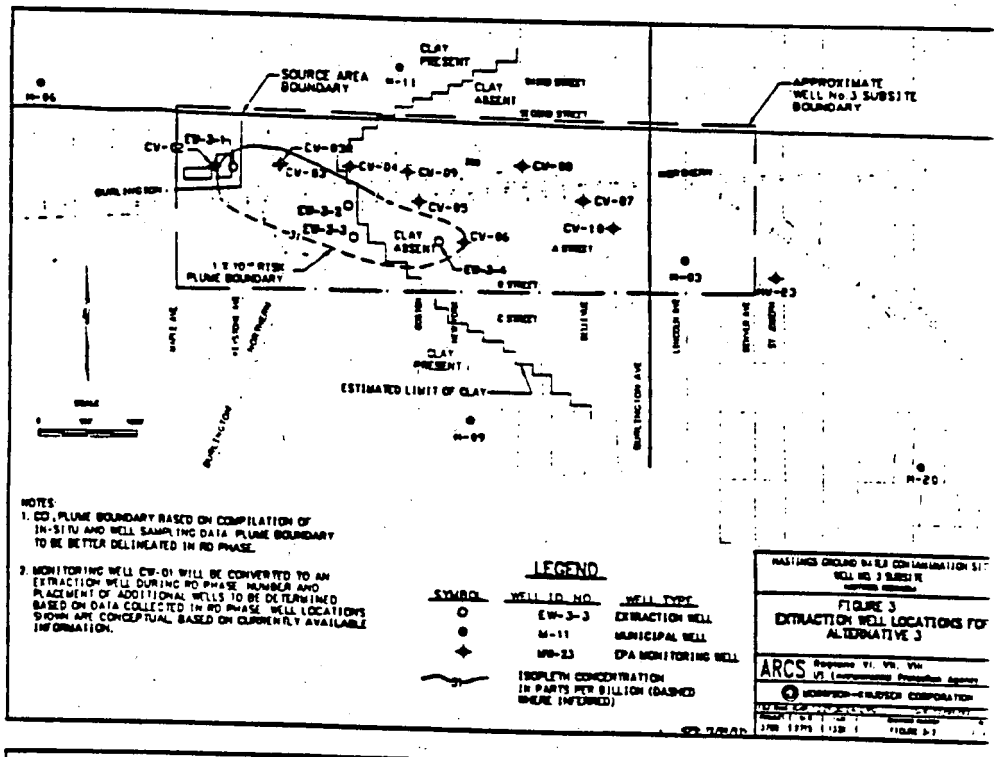
Before identifying GAC treatment as the preferred interim remedy for each plume, EPA compared its performance features against other treatmen processes. Consideration also was given to treatmen by air sparging or ultraviolet (UV) photooxidation. Air sparging is an emerging technology that has beer applied recently for remediation of ground water

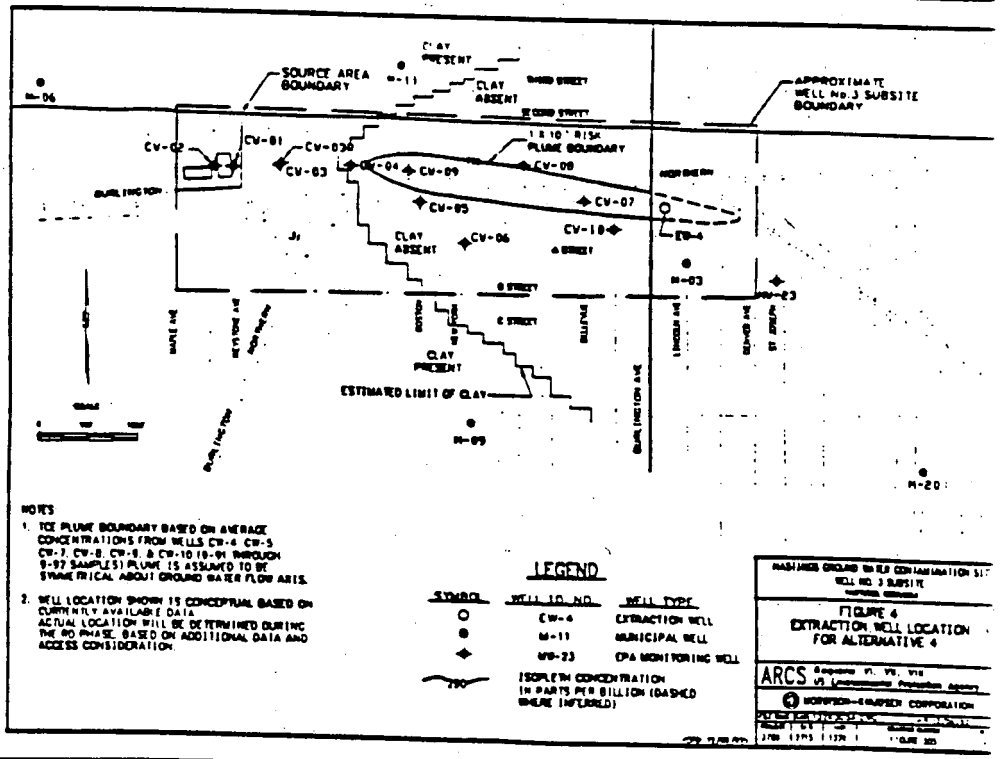
[4]The CCl_4 and TCE could still be found in the ground w levels that exceed MCLs outside the containment area with th preferred alternative.

contaminated with VOCs without extraction of the water from the aquifer. However, the cost and physical problems associated with air sparging, and the need to expand or install new SVE facilities make this technology less implementable and more costly than extraction and treatment. UV photooxidation is a relatively new technology that combines a chemical oxidant such as ozone and/or hydrogen peroxide with ultraviolet light to oxidize VOCs to carbon dioxide and water. A pilot program would be needed to demonstrate the effectiveness, implementability, and cost-effectiveness of the technology. Both air sparging and UV photo-oxidation were not retained as viable treatment alternatives at this subsite. EPA considers GAC to be the better alternative for the Well #3 subsite for the interim action.

GAC is a proven technology that has been used to treat extracted ground water successfully at a number of Superfund sites. This process is easily implemented. GAC treatment has several distinct advantages over air stripping without emission contols: there are no air emissions associated with the process; it is effective in removing a wide range of VOCs and other organics; and it is also effective over a wide range of influent concentrations. All of these factors reduce the risk of human exposure during operation. Additionally, GAC is a relatively low maintenance process compared to UV photooxidation and air sparging. The system requires frequent monitoring, but little in the way of maintenance. Monitoring and carbon change outs would become less frequent with time as experience is gained and influent concentrations decrease.

Operationally, the GAC treatment plant would consist of an influent tank to provide surge capacity an equalization of flow into the carbon columns. Contam nant removal should be nearly 100 percent. Series op tion, that is, the water flowing through the two carbon beds in sequence, gives GAC the additional advantage over the other considered processes of having a reserve treatment capacity at all times. By monitoring the effl from the first column in the series, contaminant break-





through would be detected well before the contaminants enter the second column in the series.

EPA has considered costs due to carbon usage. Carbon consumption is directly proportional to the amount of contamination removed from the ground water. Because of this, the process is sensitive to influent contaminant concentrations. Costs can increase if the actual contaminant loading rate is higher than estimated in the FS. EPA believes that the advantage of GAC outweigh any risk of a higher than anticipated cost.

EPA has identified ground water reinjection as the preferred method of water discharge because of its ability to return treated ground water to the aquifer. Reinjection was considered preferable to surface water discharge because the latter would not result in beneficial use of the pumped ground water. Reinjection and other beneficial use of the treated ground water (industrial, irrigation, etc.) will be evaluated during the Remedial Design (RD) phase.

To address the CCl_4 plume, EPA estimates that it would cost $469,000 in capital and require approximately 12 years to reduce CCl_4 levels in the ground water to levels that approach an acceptable health risk, as defined by EPA. The present worth of the remedy, in 1992 dollars, based on operating costs for a 12-year life, is estimated to be $1.1 million.

To address the TCE plume, EPA estimates that it would cost $294,000 in capital and require 10 years to reduce TCE levels in the ground water to levels that approach an acceptable health risk, as defined by EPA. The present worth of the remedy, in 1992 dollars, based on operating costs for a ten-year life, is estimated to be $829,000.

COMMUNITY PARTICIPATION

EPA invites the public to comment on the proposed plan and any of the other alternatives EPA has considered. The public comment period is scheduled from January 25 to February 25, 1993. Interested individuals may submit written comments to Hattie Thomas, EPA's Community Relations Coordinator for the Well #3 subsite, at the address provided below. Comments must be postmarked no later than February 25, 1993.

In addition to mailing in written comments community members also can submit comments in person at a public meeting EPA has scheduled for February 16, 1993, at 7 p.m. at the Hastings Public Library, 4th and Denver Streets. At the meeting, EPA officials will present information and answer questions about the Proposed Plan. Changes to the preferred alternative or a change from the preferred alternative to another alternative may be made if public comments or additional data indicate that such a change would result in a more appropriate solution.

EPA will respond to all the comments received during the public comment period in a document called a Responsiveness Summary. The Responsiveness Summary is published in a section of the ROD. EPA will place public notices in local newspapers to announce its final decision.

Community members are encouraged to review the RI Report and draft FS Report prepared for the Well #3 subsite. These documents, along with information on the Superfund process, are available for review at the following local information repositories:

Hastings Public Library
4th and Denver Streets
Hastings, Nebraska 68901
(402) 461-2346

Central Community College Library
East U.S. Highway 6
Nuckolls Building
Hastings, Nebraska 68901
(402) 461-2478

Clay County Court House
County Clerk's Office
111 West Fairfield
Clay Center, Nebraska 68933
(402) 762-3463

For further information on the Well #3 subsite, please contact the following EPA personnel (technical comments should be addressed to Ms. Easley):

Hattie Thomas, Community Relations Coordinator
EPA Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101
(913) 551-7003

Diane Easley, Remedial Project Manager
EPA Region VII
726 Minnesota Avenue
Kansas City, Kansas 66101
(913) 551-7711

Table 1
Remedial Action Alternatives

1. No Action

2. Institutional Controls
   - Ground water monitoring
   - Installation of new public supply well
   - Present Net Worth,[1] 30-years = $812,000

3. **CCl_4 Plume Management to a 1 X 10^{-4} Risk Level**

   A. Ground Water Treatment with GAC Adsorption
   - Extraction wells pumping at approximately 25 gallons per minute
   - Treatment of water by GAC
   - Reinjection/reuse of treated water
   - Present Worth,[1] 12-years = $1,104,000

   B. Ground Water Treatment with Air Stripping[2]
   - Extraction wells pumping at approximately 25 gallons per minute.
   - Treatment of water by Air Stripping
   - Reinjection/Reuse of treated water
   - Present Worth,[1] 12-years = $1,042,000

4. **TCE Plume Management Alternatives to a 1 X 10^{-4} Risk Level**

   A. Ground Water Treatment with GAC Adsorption
   - Extraction well pumping at approximately 40 gallons per minute
   - Treatment of water by GAC
   - Reinjection/Reuse of treated water
   - Present Worth,[1] 10-years = $829,000

   B. Ground Water Treatment with Air Stripping[2]
   - Extraction well pumping at approximately 40 gallons per minute
   - Treatment of water by Air Stripping
   - Reinjection/Reuse of treated water
   - Present Worth,[1] 10-years = $768,000

[1]Includes capital costs, operation and maintenance
[2]No control of air emissions. Contaminants released directly to air.

Table 2
Description of Plume Management Extraction, Treatment, and Discharge Technologies

Ground Water Extraction

The placement and pumping of extraction wells within or downgradient of the contaminant plume. Wells are installed with screens in the contaminated portion of the aquifer. Submersible pumps are installed to extract the contaminated ground water to the surface. The pumped water can then be directed to a treatment facility through pipes.

GAC Adsorption

Granular Activated Carbon (GAC) Adsorption is a proven treatment technology for the removal of organic compounds from water. The contaminated ground water is passed through a bed of granular activated carbon to remove contaminants. The carbon is then transported off-site and the chemicals removed from it using an EPA-approved technique so that the carbon could be used again.

Air Stripping

Air stripping is another proven technology for the removal of VOCs from water. Contaminated ground water is pumped to the top of a tall tower where it flows down through a bed of packing material in the tower. Air is blown up through the tower. Volatile contaminants evaporate out of the water and enter the air.

Reinjection

Treated ground water is reinjected through a pipeline and injection wells into the aquifer west of the subsite, upstream of the contaminant plume.

Table 3
Applicable, or Relevant and Appropriate Requirements (ARARs)

The following ARARs would apply to the alternatives considered:

Federal Standards	State Standards
Safe Drinking Water Act	Nebraska Environmental Protection Act • Water Quality Standards • Ground Water Quality Standards • Air Pollution Control Regulations • National Pollutant Discharge Elimination Systems • Pretreatment Regulations • Injection Well Regulations • Solid Waste Management Regulations • Hazardous Waste Management Regulations
Clean Air Act	
Resource Conservation and Recovery Act	
Occupational Safety and Health Act	
Clean Water Act	

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