EPA Region 5 Records Ctr.
291219

Five-Year Review Report

Third Five-Year Review Report

for

Southeast Rockford Groundwater Contamination Site

Winnebago County, Rockford Illinois

May, 2008

PREPARED BY:

U.S. Environmental Protection Agency
Region 5
Chicago, Illinois

Approved by: Date:

Thomas R. Short Jr. 5/15/08

Richard C. Karl
Superfund Division Director
U.S. EPA

[This page intentionally left blank.]

Five-Year Review Report

Table of Contents

List of Acronyms 5

Executive Summary 7

Five-Year Review Summary Form 10

I. Introduction 13

II. Site Chronology 14

III. Background 17
- Physical Characteristics 17
- Land and Resource Use 17
- History of Contamination 17
- Initial Response/Removal Action 18
- Basis for Taking Action 18

IV. Remedial Actions 22
- Remedy Selection 22
- Remedy Implementation 26
- Institutional Controls 28
- System Operations/O&M Costs 32

V. Progress Since the Last Review 33

VI. Five-Year Review Process 35
- Administrative Components 35
- Community Notification and Involvement 36
- Document/Data Review 36
- Site Inspection 36
- Interviews 36

VII. Technical Assessment 36
- Question A: Is the remedy functioning as intended by the decision documents? 36
- Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid? 37
- Question C: Has any other information come to light that could call into question the protectiveness of the remedy? 37

VIII. Issues 38

X. Recommendations and Follow-up Actions 38

X. Protectiveness Statement(s) 40

XI. Next Review 41

Tables

Table 1 – Chronology of Site Events
Table 2 – Selected Remedial Actions for Source Areas 4, 7, 9/10, and 11
Table 3 – Summary of Institutional Controls for Restricted Areas
Table 4 – Actions Taken Since the Last Five-Year Review
Table 5 – Issues
Table 6 – Recommendations and Follow-up Actions

Figures

Figure 1 – Southeast Rockford Superfund Site Map
Figure 2 – Groundwater Plume Boundary
Figure 3 - Location of Source Areas
Figure 4 - Groundwater Monitoring Well Network

Attachments

Attachment A - Winnebago County Code
Attachment B – Newspaper Announcement
Attachment C – Photos of Treatment Building for MW 35

List of Acronyms

AOC	Administrative Order on Consent
CD	Consent Decree
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DCA	1,1-Dichloroethane
DNAPL	Dense Non-aqueous Phase Liquid
EPA	United States Environmental Protection Agency
ETX	Ethylbenzene, Toluene, and Xylene
GAC	Granular Activated Carbon
IDPH	Illinois Department of Public Health
LNAPL	Light Non-aqueous Phase Liquid
MCL	Maximum Contaminant Level
MPE	Multiphase Extraction
NAPL	Non-aqueous Phase Liquid
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
PCE	Tetrachloroethene
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SERGWC	Southeast Rockford Groundwater Contamination site
TCA	1,1,1-Trichloroethane
TACO	Tiered Approach to Corrective Action Objectives
TCE	Trichloroethene
ug/kg	microgram per kilogram
UU/UE	Unlimited Use/Unrestricted Exposure
VOC	Volatile Organic Compound

[This page intentionally left blank.]

Executive Summary

This is the third five-year review for the Southeast Rockford Groundwater Contamination (SERGWC) site in Rockford, Illinois. The purpose of this third five-year review is to evaluate the implementation and performance of the remedy (or cleanup actions) taken at the site to determine whether the remedy is or will be protective of human health and the environment. The SERGWC site is divided into three operable units (OUs): Operable Unit 1 (Drinking Water OU), Operable Unit 2 (Groundwater OU), and Operable Unit 3 (Source Control OU).

Protectiveness Statements:

Operable Unit 1

The remedy at OU 1 is protective of human health and the environment, all immediate health threats and exposure pathways that could result in unacceptable risks are being controlled. All 264 residences with contaminated private wells were provided a clean, alternative drinking water supply via the hook-up of those residences to the City of Rockford's municipal water. Impacted residential wells were also properly abandoned to ensure that the wells could not be used in the future. Additionally, the activated carbon treatment unit at the City of Rockford Municipal Well 35 is effective in removing volatile organic compounds from the groundwater so that this well can now be used to supply clean drinking water during periods of peak demand. ICs prohibiting the use of contaminated groundwater underneath OU1 residences are addressed by OU2.

Operable Unit 2

The remedy at OU2 is protective of human health and the environment in the short term. All immediate health threats through the ingestion of contaminated drinking water were eliminated. An additional 283 homes/businesses now have a clean, alternate drinking water supply via the hook-up to the City of Rockford's municipal water system. Existing private wells were also properly abandoned so the affected wells can no longer be used. Additionally, groundwater monitoring results show that natural attenuation of the aquifer is occurring. ICs, to restrict groundwater usage, are also in place at OU2 and cover the OU1 areas. Local ordinances are in place that require all properties within 200 feet of a public water supply to connect to the water supply instead of drilling a new well and for property owners to obtain a well permit for a new well or for well repairs. These measures help to eliminate the potential for exposure to contaminated groundwater at the site. However, in order for the remedy to be protective in the long-term, several additional actions need to be implemented. These actions include a more in-depth study of the ordinance to assure long-term effectiveness, and a current evaluation of the groundwater plume to determine if the plume has migrated into previously unimpacted areas. If it is determined that this migration has occurred or is imminent, then it will be necessary to determine whether there are any exposures of concern. Additionally, long-term protectiveness requires compliance with the groundwater use restrictions. Compliance with effective ICs will be ensured by implementing, monitoring and maintaining effective ICs as well as maintaining

the site remedy components. Long-term stewardship must be ensured to verify compliance with ICs.

Operable Unit 3

The remedies at OU3 are expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. The remedy has not been fully implemented at Source Areas 4, 7, 9/10, and 11. Although contaminants are present in subsurface soil, under current conditions there is no potential for exposure to the contaminated soils. ICs, to restrict groundwater usage within the site, are effectively in place by the implementation of the OU2 remedy. Affected homes and businesses that are located within a source area are also located within the larger area of the groundwater plume; therefore, the ICs implemented under the OU2 ROD effectively limit the potential for exposure to contaminated groundwater at the OU3 source areas. Land use restrictions are not in place. However, an IC evaluation study will be performed and an IC plan developed. Additionally, long-term protectiveness requires compliance with the groundwater use restrictions. Compliance with effective ICs will be ensured by implementing, monitoring and maintaining effective ICs as well as maintaining the site remedy components. Long-term stewardship must be ensured to verify compliance with ICs.

[This page intentionally left blank.]

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site name ***(from WasteLAN)*****: Southeast Rockford Groundwater Contamination site**		
EPA ID ***(from WasteLAN)*****: ILD981000417**		
Region: 5	**State: IL**	**City/County: Rockford/ Winnebago**
SITE STATUS		
NPL status: X Final ☐ Deleted ☐ Other (specify)		
Remediation status (choose all that apply): X Under Construction X Operating ☐ Complete		
Multiple OUs?* x YES ☐ NO	**Construction completion date:**	
Has site been put into reuse? ☐ YES X NO		
REVIEW STATUS		
Lead agency: X☐ EPA X☐ State ☐ Tribe ☐ Other Federal Agency _ U.S. EPA lead on overseeing the PRP implementation of the Remedial Action to be conducted at Source Area 9/10 of OU3. _ State lead on all other OUs.		
Author name: Shari Kolak		
Author title: Remedial Project Manager	**Author affiliation: U.S. EPA, Region 5**	
Review period:** **1 /15 /2008 to 5/15/ 2008**		
Date(s) of site inspection: 3/ 5 /2008		
Type of review: x Post-SARA ☐ Pre-SARA ☐ NPL-Removal only ☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead ☐ Regional Discretion		
Review number: ☐ 1 (first) ☐ 2 (second) X 3 (third) ☐ Other (specify) _____		
Triggering action: ☐ Actual RA Onsite Construction at OU #____ ☐Actual RA Start at OU#____ ☐ Construction Completion X Previous Five-Year Review Report ☐ Other (specify)		
Triggering action date ***(from WasteLAN)*****: 5/ 15 /2003**		
Due date ***(five years after triggering action date)*****: 5 /15 /2008**		

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

Issues:

- A groundwater plume may have migrated into previously unimpacted areas and there may be a potential for potable well users to be exposed to contaminated groundwater;
- ICs have not been fully evaluated at OU2. A review of the OU2 institutional controls is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in-place for long-term stewardship at the site; and
- ICs (land use restrictions) are not in place at the OU3 Source Areas.

Recommendations and Follow-up Actions:

- Evaluate whether the groundwater plume has migrated into previously unimpacted areas. If it is determined that this migration has occurred or is imminent, then it will be necessary to determine whether there are any exposures of concern;
- Conduct IC evaluation study for OU2. An IC Plan will be developed by U.S. EPA within six (6) months of completing the IC study. The Plan will incorporate the results of the evaluation activities and plan for additional IC activities as needed including planning for long- term stewardship; and
- Conduct an IC evaluation study and develop an IC Plan for the OU3 source areas.

Protectiveness Statement(s):

Operable Unit 1: The remedy at OU 1 is protective of human health and the environment, all immediate health threats and exposure pathways that could result in unacceptable risks are being controlled. All 264 residences with contaminated private wells were provided a clean, alternative drinking water supply via the hook-up of those residences to the City of Rockford's municipal water. Impacted residential wells were also properly abandoned to ensure that the wells could not be used in the future. Additionally, the activated carbon treatment unit at the City of Rockford Municipal Well 35 is effective in removing volatile organic compounds from the groundwater so that this well can now be used to supply clean drinking water during periods of peak demand. ICs prohibiting the use of contaminated groundwater underneath OU1 residences are addressed by OU2.

Operable Unit 2: The remedy at OU2 is protective of human health and the environment in the short term. All immediate health threats through the ingestion of contaminated drinking water were eliminated. An additional 283 homes/businesses now have a clean, alternate drinking water supply via the hook-up to the City of Rockford's municipal water system. Existing private wells were also properly abandoned so the affected wells can no longer be used. Additionally, groundwater monitoring results show that natural attenuation of the aquifer is occurring. ICs, to restrict groundwater usage, are also in place at OU2 and cover the OU1 areas. Local ordinances are in place that require all properties within 200 feet of a public water supply to connect to the water supply instead of drilling a new well and for property owners to obtain a well permit for a new well or for well repairs. These measures help to eliminate the potential for exposure to contaminated groundwater at the site. However, in order for the remedy to be protective in the long-term, several additional actions need to be implemented. These actions include a more in-depth study of the ordinance to assure long-term effectiveness, and a current evaluation of the groundwater plume to determine if the plume has migrated into previously unimpacted areas. If it is determined that

this migration has occurred or is imminent, then it will be necessary to determine whether there are any exposures of concern. Additionally, long-term protectiveness requires compliance with the groundwater use restrictions. Compliance with effective ICs will be ensured by implementing, monitoring and maintaining effective ICs as well as maintaining the site remedy components. Long-term stewardship must be ensured to verify compliance with ICs.

Operable Unit 3: The remedies at OU3 are expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. The remedy has not been fully implemented at Source Areas 4, 7, 9/10, and 11. Although contaminants are present in subsurface soil, under current conditions there is no potential for exposure to the contaminated soils. ICs, to restrict groundwater usage within the site, are effectively in place by the implementation of the OU2 remedy. Affected homes and businesses that are located within a source area are also located within the larger area of the groundwater plume; therefore, the ICs implemented under the OU2 ROD effectively limit the potential for exposure to contaminated groundwater at the OU3 source areas. Land use restrictions are not in place. However, an IC evaluation study will be performed and an IC plan developed. Additionally, long term protectiveness requires compliance with the groundwater use restrictions. Compliance with effective ICs will be ensured by implementing, monitoring and maintaining effective ICs as well as maintaining the site remedy components. Long-term stewardship must be ensured to verify compliance with ICs.

Date of last Regional review of Human Exposure Indicator (from WasteLAN): _10/15/2007_____
Human Exposure Survey Status (from WasteLAN): _Current Human Exposure Not Controlled_ __
Date of last Regional review of Groundwater Migration Indicator (from WasteLAN): _7/2/2007___
Groundwater Migration Survey Status (from WasteLAN): _Contaminated Groundwater Migration Under Control
Ready for Reuse Determination Status (from WasteLAN): _Not ready for reuse

Five-Year Review Report

I. Introduction

The United States Environmental Protection Agency (U.S. EPA), Region 5, has conducted the third five-year review of the remedial actions implemented at the Southeast Rockford Groundwater Contamination (SERGWC) site in Rockford, Illinois. The Illinois Environmental Protection Agency (Illinois EPA) Remedial Project Manager (RPM) provided technical support in preparing this five-year review report. The third five-year review was conducted from January 15, 2008 to May 15, 2008. This report documents the results of the review. The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in the five-year review reports. In addition, five-year review reports identify deficiencies found during the review, if any, and identify recommendations to address them.

The Agency is preparing this five-year review report pursuant to CERCLA § 121 and the National Contingency Plan (NCP). CERCLA § 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with Section 104 or 106, the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above such levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The triggering action for this policy review is the date of completion of the second five-year review report, as shown in U.S. EPA's WasteLan database: May 15, 2003. Due to the fact that hazardous substances, pollutants, or contaminates remain at the site above levels that allow for unrestricted use and unlimited exposure, another five-year review is required.

II. Site Chronology

Table 1: Chronology of Site Events

Event	Date
Area manufacturing operations begin	**Early 20th Century**
Initial discovery of VOC contamination in City of Rockford Water Utility system wells	**1981**
Contaminated municipal wells shut down	**1982**
Private residential well sampling	**1984-1989**
NPL final listing	**March 31, 1989**
Initial U.S. EPA Time-Critical Removal Action - bottled water distributed to affected area residents and point of use carbon filters installed at residential water taps. Subsequent actions include extending water mains and providing municipal water service connections to 283 residential homes.	**August 1989 -1991**
Remedial Investigation/Feasibility Study (RI/FS) and Proposed Plan for Operable Unit 1 (OU1)	**March 1991**
Record of Decision Signed for OU1	**June 14, 1991**
U.S. EPA Remedial Design Start at OU1 U.S. EPA Remedial Design Complete at OU1	**June 1991** **July 1991**
U.S. EPA Remedial Action Construction Start at OU1	**July 1991**
An additional 264 residences hooked-up to municipal water supply and the installation of a granulated activated carbon unit to Municipal Intake Well 35 as part of OU1 remedial action	**November 1991**
Phase I/II remedial investigation conducted at OU2; further plume definition	**1992-1994**
Remedial Action Complete at OU1 - remedy certified as operational and functional	**December 1992**
Illinois EPA reports on findings of Indoor Air Sampling Study for residential areas at Source Areas 4 and 7	**June 1994**

Table 1: Chronology of Site Events

Event	Date
Record of Decision Signed for OU2 (Groundwater OU) – requires further extension of City of Rockford municipal water supply to an additional 400 home/business and natural attenuation to restore contaminated aquifer	**September 29, 1995**
First Five-Year Review Report	**January 15, 1998**
Consent Decree for OU2 - City of Rockford agrees to extend water mains, install 9 monitoring wells, establish a groundwater monitoring network, and report on aquifer natural attenuation response	**April 1998**
U.S. EPA lead - Remedial Design (RD) Start at OU 2	**November 4, 1998**
Remedial Action Construction Start at OU 2	**December 8, 1998**
Consent Decree – Various private firms provide cost recovery to federal/state agencies and establishment of Source Area 7 special account	**January 1999 and,** **September 2001**
Remedial Action Complete at OU2	**September 1999**
Further source area investigation	**1996-2000**
Record of Decision Signed for OU3 (Source Control OU) – requires the cleanup of soil and leachate at four major areas believed to be the location of sources of contamination to the groundwater or soil/vadose zone	**June 11, 2002**
Cooperative agreement signed with Illinois EPA. U.S. EPA designates the State of Illinois as lead agency and agrees to fund the Illinois EPA to conduct the remedial investigation/feasibility study and the remedial design at the OU3 Source Areas 4, 7, 11, and to oversee the PRPs remedial design at Source Area 9/10	**September 2002** (original CA) **February 28, 2006** (amended CA)
Administrative Order on Consent (AOC) signed by Hamilton Sundstrand for Remedial Design at OU3, Source Area 9/10	**January 13, 2003**

Table 1: Chronology of Site Events

Event	Date
PRP RD Start Source Area 9/10 of OU3	**January 15, 2003**
Second Five-Year Review Report signed	**May 15, 2003**
Indoor Air Sampling at OU3, Source Areas 4 and 7	**June/August 2003**
Source Area 7 RD Start (State-lead)	**June 1, 2005**
Source Area 4 – Interim Soil Excavation (State lead)	**September 15 to September 16, 2005**
Source Area 7, Groundwater Pump and Pilot Test Conducted	**May/June 2006**
RD Completed Source Area 9/10 (PRP lead)	**April 26, 2007**
RD Complete for OU3, Source Area 4 Soil and Leachate (State lead)	**November 2007**
Source Area 11 RD Start (State-lead)	**August 22, 2007**
Third Five-Year Review Site Inspection	**March 2008**
Consent Decree for Implementation of the RA at the Hamilton Sundstrand property located within Source Area 9/10 of OU3 - requires Hamilton Sundstrand to excavate and/or treat contaminated soil and/or leachate and to contain groundwater contamination within the property boundary	**Expected to be signed in May 2008**
RA Construction Start at OU3 Source Area 4	**Expected to begin Summer 2008**
RA Construction Start at OU3 Source Area 7	**Expected to begin 2008/2009**

III. Background

Physical Characteristics

The SERGWC site is contained within an approximately 10 square mile area in the southeast portion of the City of Rockford, Winnebago County; Illinois (See Figure 1). There are approximately 600 homes/businesses in the immediate vicinity of the site. This 10 square mile area is bounded by Harrison Avenue to the north, Sandy Hollow Road to the south, Mulford Road to the east and the Rock River to the west. Within this area are several groundwater contaminant plumes and the boundary of the site is defined by the extent of groundwater contamination with concentrations of total volatile organic compounds (VOCs) above 10 parts per billion (ppb) or micrograms per liter (See Figure 2).

Land and Resource Use

The land that comprises the SERGWC site is predominantly suburban residential with scattered agricultural, industrial, retail and commercial operations. Industrial property use ranges from light-manufacturing facilities up to large manufacturing operations. Commercial facilities include shopping facilities such as grocery stores and fast food restaurants that are used as part of normal family activities, and churches and a community center. Residential areas are mixed throughout the entire site, including parks and other recreational facilities. Future uses of the entire area will likely remain the same as they are today.

The City of Rockford and Winnebago County's primary source of drinking water is groundwater. The Illinois EPA estimates that there are about 600 residential homes within and adjacent to the site that were, at one time, using their private wells for drinking water. A smaller number of businesses with potable use wells are also present within the central portion of the site. Groundwater flows from east to west, towards the Rock River. The Rock River is not used as a source of drinking water.

History of Contamination

Groundwater contaminated with volatile organic compounds (VOCs) was initially discovered by the City of Rockford (City) in 1981 and as a result, four municipal wells were taken out of service. In 1982, the City discovered that private residential wells were contaminated and then closed down more city wells. Contamination of Municipal Well 35, located at Ken Rock Playground, was discovered during a routine sampling of the well in 1984; the well was tested for three priority pollutants and several VOCs were detected. Because contaminants were present at levels above the Safe Drinking Water Act Maximum Contaminant Levels (MCLs), Municipal Well 35 was taken out of service in 1985.

The Illinois EPA confirmed that VOCs were present in city water in 1984, after receiving reports that plating wastes had been illegally disposed of in a private well. In October 1984, the Illinois Department of Public Health (IDPH) initiated a study that involved the sampling of 49 residential wells near the allegedly contaminated private well. Contaminants associated with

plating wastes were not found in the study, but high levels of chlorinated solvents were found in many of the residential wells. Chlorinated solvents (which are a type of VOC) are commonly used in industries for degreasing machinery. Chlorinated solvents found in residential wells included trichloroethylene (TCE), tetrachloroethene (PCE), and 1,1,1-trichloroethane (1,1,1-TCA). The IDPH took an additional 337 water samples from residential wells between 1985 and 1989 to determine how many residential wells were affected by the groundwater contamination. The Illinois State Water Survey also performed a regional groundwater investigation between 1986 and 1988. This investigation also verified widespread residential and municipal well contamination. Several municipal wells owned by the City of Rockford were closed as a result of groundwater contamination in southeast Rockford.

The SERGWC site was proposed for inclusion on the National Priorities List (NPL) on June 24, 1988, and was formally added to the NPL on March 31, 1989 as a state-lead, federally funded Superfund site. The U.S EPA identification number for this site is ILD981000417.

Initial Response/Removal Action

In August 1989, U.S. EPA sampled 112 residential wells around the SERGWC site to determine if an immediate removal action was warranted. Based on the sampling results, U.S. EPA initiated a Superfund time critical removal action to place residents whose water wells had VOC levels equal to or greater than 25% of removal action levels under CERCLA, on bottled water as a temporary measure. In December 1989, the same residents received point-of-use carbon filters from U.S. EPA. Ultimately, U.S. EPA extended water mains and provided service connections for 283 residences as part of the removal action. This action was completed in 1991.

Because of the size and complexity of the groundwater contamination at the SERGWC site, the Illinois EPA and U.S. EPA divided the site into smaller, more manageable groups called operable units (OU). The SERGWC site consists of three operable units: OU1 (Drinking Water OU) which addresses drinking water contamination in residential wells; OU2 (Groundwater OU) which addresses the area-wide groundwater contamination beneath the site; and OU3 (Source Control OU) which addresses four primary source areas (Source Areas 4, 7, 9/10, and 11) responsible for the groundwater contamination.

The U.S. EPA provided funding to Illinois EPA to implement and oversee the cleanup at OU1 and OU2. In September 2002, U.S. EPA signed a Cooperative Agreement with Illinois EPA which designated the Illinois EPA the lead agency and in which U.S. EPA agreed to fund the Illinois EPA to conduct the RI/FS and the RD at the OU3 Source Areas 4, 7, 11. Under this agreement, the U.S. EPA also funded the Illinois EPA to oversee the Potentially Responsible Party (PRP) remedial design at Source Area 9/10.

Basis for Taking Action

Chlorinated VOCs are the main contaminant of concern in drinking water, soil, leachate, and in groundwater at the SERGC site.

Operable Unit 1

The Illinois EPA started work on the OU1 RI/FS in June 1990 and the ROD for OU1 was signed June 14, 1991. Approximately 117 wells were sampled as a part of the OU1 RI. The objective of the sampling was to determine how many homes had wells with levels of VOCs below the time critical removal action cutoff (discussed previously), but above Maximum Contaminant Levels (MCLs). Illinois EPA's sampling confirmed that additional residential homes were impacted by the groundwater contamination at the site. Prior to the hook-up of many residences/businesses to the City's water supply, the human health risk assessment for OU1 showed that the ingestion of groundwater presented a significant risk to people that used their private wells for drinking water due to the presence of chlorinated VOCs. Risks posed by drinking contaminated groundwater were eliminated as a result of implementation of the remedial action selected in the OU1 ROD.

Operable Unit 2

In May 1991, the Illinois EPA conducted the OU2 RI/FS. The objective of the OU2 RI was to characterize the nature and extent of groundwater contamination throughout the SERGWC site, and to develop information on the source areas that were responsible for the contamination. The RI was conducted in two phases because of the size and complexity of the site. Phase I sampling was completed in October of 1991 and, based on preliminary data, eight potential sources of groundwater contamination were identified. Phase II sampling activities were completed in January 1994. Although several other groundwater plumes of contamination were identified, the Phase II investigation concluded that there were four primary source areas (Source Areas 4, 7, 9/10, and 11) that were impacting the groundwater at the site. The Phase II activities also included residential air sampling at Source Areas 4 and 7 and groundwater modeling. Groundwater modeling was used as a tool to predict future contaminant concentrations within the plume and the general direction the plume was migrating. The modeling indicated that contaminant levels for 1,1,1-TCA in the plume will remain at levels above its MCL of 200 ppb for 205 years, assuming that the four source areas are remediated. However, if the four source areas are not remediated, modeling predicts that over 300 years will be necessary for remediation of the groundwater.

Based upon the results of the RI, the human health risk assessment for OU2 showed the potential for unacceptable risks to people that use, or would use their private wells for drinking water in the future. The OU2 risk assessment assumed that the groundwater plume migrated into previously unimpacted areas and that people were exposed by ingesting contaminated groundwater.

Operable Unit 3

Since OU3 consists of four distinct source areas, a discussion of the source area locations, RI sampling results and the results of the OU3 risk assessment are provided below. Figure 3 shows the location of Source Areas 4, 7, 9/10, and 11.

Source Area 4

Source Area 4 is located east of Marshall Street, south of Harrison Avenue and north of Alton Avenue in a mixed industrial/commercial and residential area. Source Area 4 is comprised of a building, and associated parking lot that formerly housed Swebco Manufacturing, Inc (Swebco), a precision machine shop that produced metal parts. Currently, the building is occupied by wood pallet manufacturing and refurbishing operations. Although the source of contamination was once thought to be underground storage tanks (UST), a records review produced no indication of USTs. The source of contamination at Area 4 is currently believed to have resulted from the deposition of waste material directly to the ground below a loading dock of the Swebco building.

Subsurface investigation on the south, east, and north side of the former Swebco Manufacturing property indicate that the source of soil VOC contamination in Area 4 is limited to the area beneath the parking lot. Elevated concentrations of soil vapor have migrated eastward from the source area and beneath the western portion of Barrett's Trailer Park, but soil contamination was not found in the park. An 8-foot thick LNAPL zone is present at the water table in the source area, and DNAPL was not found. The estimated volume of contaminated soil is 30,000 cubic feet in Area 4, and the maximum observed soil concentration was 510,000 microgram per kilogram (ug/kg) of TCA, the primary VOC contaminant in Source Area 4 soils.

Source Area 7

Source Area 7 is located in the most southeastern portion of the SERGWC site, northwest of the intersection of Alpine and Sandy Hollow Road. Source Area 7 contains Ekberg Park, a municipal park owned and maintained by the Rockford Park District. The park consists of open grassland, paved tennis and basketball courts, a children's playground, and a parking area. Source Area 7 also includes privately owned agricultural land and wooded areas to the south and north of the park.

The extent of VOC soil contamination in the northern part of Area 7 extends northward from the north end of Ekberg Park for a distance of approximately 150 feet. The vertical extent of contamination extends to a depth of 29 feet in the northern part of the park, based on the maximum depth of drilling. NAPL was found at a depth of about 26 feet in one boring, corresponding to 11 feet below the water table. The estimated volume of VOC-contaminated soil is 265,000 cubic yards in Area 7 (including the volume estimated during Phase II), and the maximum observed soil concentration was 875,450 ug/kg of total VOCs. Surface water in the creek along the north boundary of Source Area 7 contains low levels of the same VOCs found in Area 7 soils, indicating that shallow groundwater from Source Area 7 are locally discharging to the creek. Creek sediments are not currently showing impacts from VOCs.

Source Area 9/10

Source Area 9/10 is an industrial area that is bounded by 11th Street on the east, 23rd Avenue on the north, Harrison Avenue on the south, and 6th Street on the west. The properties to the

immediate north of Area 9/10, across Twenty-third Avenue, are zoned residential and to the south, across Harrison Avenue, are zoned commercial and mixed residential.

Significant sources of chlorinated VOC contamination are likely present at Sundstrand Plant #1, based on soil gas and groundwater data that show little or no contamination on the upgradient side of the plant and elevated concentrations on the downgradient side. Moreover, known releases of chlorinated VOCs have occurred at more than one location on the Sundstrand property and at the former Mid-States Industrial facility, the Nylint property, and the Rockford Products facility. Elevated TCA concentration in groundwater immediately downgradient of Sundstrand indicates the presence of NAPL because the aqueous solubility limit of TCA exceeded one percent. This potential existence of DNAPL will influence the fate and transport of contaminants. Based on the subsurface characteristics in the area, DNAPL in Area 9/10 would migrate vertically downward to the clay layer at 130 feet and would then provide an ongoing source of VOCs to the aquifer until remediated.

Source Area 11

Source Area 11 is situated in a mixed industrial, commercial, and residential area of Rockford, Illinois located east of Eleventh Street at the corner of Eleventh Street and Harrison Avenue. Soil contamination in Area 11 is dominated by the aromatic VOCs, ethylbenzene, toluene, and xylene (ETX), which are primarily located in the uppermost part of the saturated zone. This zone of ETX contamination extends from the east edge of the above-ground storage tank area west to 11th Street, based on soil samples collected during the OU3, Phase II RI investigation. In addition, significant ETX contamination was found at the northwest portion of the Rohr Manufacturing building, thereby extending the area of known contamination by another 150 feet northward. It is likely that elevated ETX concentrations exist beneath the west end of the Rohr building. High ETX concentrations were not found west of 11th Street, approximately 120 feet from the Rohr facility. Chlorinated VOCs are present in Area 11 soils, however elevated detection limits (> 10,000 ug/kg) caused by high ETX concentrations prevent accurate determination of chlorinated VOCs in the highly contaminated zones.

Risk Assessments

The OU3 human health risk assessment concluded that concentrations of contaminants in soil at Source Areas 4, 7, and 11 exist at levels that are not protective of human health for groundwater consumption. The risk assessment also concluded that concentrations of contaminants in soil at Source Area 4 exist at levels that are not protective of human health via the direct contact exposure pathway. In cases where the site concentration exceeds levels protective of human health and the environment, risks to human health are considered unacceptable. A human health risk assessment for Source Area 9/10 was not performed because of insufficient RI data due to access issues encountered at this source area. However, the concentration of 12 ppm of 1,1,1-TCA in groundwater indicates that NAPLs are likely present. The likelihood that NAPLs are present at Area 9/10 constitutes a principal threat. In accordance with the NCP, remedial alternatives were evaluated to address principal threats posed at this source area.

Groundwater investigations performed at the time of the risk assessment do not indicate that site-related groundwater contaminates are adversely impacting the Rock River. Groundwater modeling, at the time of the risk assessment, indicated that even if the four OU3 source areas were not remediated, VOC concentrations in groundwater would not exceed surface water criteria and in fact, are expected to be two orders of magnitude below the criteria. Endangered species have not been identified at any of the source areas.

Indoor and outdoor air quality monitoring was initially performed in 1993 to assess the potential for vapor intrusion in the homes in Source Areas 4 and 7. The assessment concluded that indoor air was a potential pathway of concern at Source Area 4 but not at Source Area 7. Residential air sampling was conducted in indoor air of homes within Source Area 4 and 7 during the OU2 RI. The 1995 OU2 RI Report concluded that all chemicals detected in residential homes were below health-based air guidelines available at the time and that indoor air concentrations could not be directly correlated with groundwater contamination. Because the majority of the indoor air samples with significant detections were those taken from sump pits in basements of homes in Source Area 4, IDPH recommended that the pits be filled to limit potential exposure. Contact with the owners of homes with sump pits indicated that many had taken the advice of IDPH and filled the pits. Indoor air sampling was not conducted in Source Areas 9/10 and 11 because these areas are primarily industrial/ commercial and because soil gas concentrations near homes were low.

Because U.S. EPA guidance on evaluating the vapor intrusion to indoor air pathway was updated, Illinois EPA reevaluated indoor air quality and reassessed potential risks for residences in Source Areas 4 and 7 in 2004. Samples were collected in 2003 and the results presented in the 2004 Indoor Air Study report. The 2004 report concluded that although VOCs in soil gas were present at concentrations that could result in a potential risk, incomplete or inadequate migration pathways from the OU3 source areas prevent VOCs from infiltrating residences in sufficient quantities that would result in a human health risk.

IV. Remedial Actions

Remedy Selection

The overall site strategy was to first address immediate health risks to residents that were using their private wells for drinking water by providing bottled water to affected residents. The next step was to provide a clean, alternative source of drinking water, as a permanent solution, by connecting affected homes/businesses to city water. This was the goal of the first operable unit. Once the immediate health risks were eliminated, the next step was to determine if there were additional homes/business that had impacted potable-use and then, to address the cleanup and restoration of the contaminated groundwater underlying the site. This was the goal of the second operable unit. Finally, the goal of the third operable unit was to clean up the four primary source areas that were responsible for the groundwater contamination; restore contaminated groundwater to drinking water standards within a reasonable period of time; and, to control further migration of groundwater contamination beyond its current extent.

Cleanup remedies selected in the OU1, OU2, and OU3 RODs and their corresponding cleanup objectives are discussed below.

Operable Unit 1

Based upon the results of the OU1 RI/FS, the Illinois EPA issued a proposed plan for OU1 in March of 1991. The Illinois EPA signed the OU1 ROD on May 22, 1991 and the U.S. EPA signed on June 14, 1991. The remedial action objective in the OU1 ROD was to eliminate the risks associated with exposure of the contaminated groundwater to residents of the Southeast Rockford area that use their private wells for drinking water. The remedy for OU1 was an interim action remedy that addressed immediate health threats by providing clean, alternative drinking water supplies to affected residents. The OU1 ROD did not address the sources of the site-wide groundwater contamination or the remediation of the contaminated plume. The remediation of the contaminated plume and source areas responsible for the contamination would be addressed in the later RODs.

The major components of the OU1 remedy selected in the May 1991 ROD include:

- Construction of new water mains within targeted areas where no water mains existed and connection of these water mains to the City of Rockford water distribution system;

- Installation of service connections between the new water mains and affected residences which do not currently have access to municipal water;

- Installation of service connections between the new water mains and affected residences that already have water mains but are not connected to municipal water;

- Treating water pumped from Rockford Municipal Well 35 with granular activated carbon to achieve drinking water standards (this well only to be utilized during peak demand hours); and

- Abandonment of existing private wells at residences that received hook-ups to city water.

Operable Unit 2

Based upon the results of the OU2 RI/FS, the Illinois EPA issued a proposed plan for OU2 in July of 1995. The Illinois EPA and U.S. EPA signed the OU2 ROD September 20, 1995. The remedial action objectives of the OU2 ROD were to eliminate the risks to human health and the environment by preventing exposure to groundwater contaminants; restore contaminated groundwater to drinking water standards within a reasonable period of time; and control further migration of groundwater contamination beyond its current extent. Cleanup goals for groundwater are the federal MCLs.

The major components of the OU2 ROD that address exposures to groundwater contamination include:

- City water main extensions;
- Groundwater Monitoring for 205 years;
- Water service connections to selected homes and businesses projected to have combined concentrations of 1,1,1,-TCA and 1,1,-Dichloroethane (1,1-DCA) at levels of 5 ppb or greater;
- Future water service connections to selected homes and businesses (if necessary);
- Future source control measures at the primary source areas responsible for the contamination;
- Continued use of granular activated carbon treatment at Rockford Municipal Well 35; and
- Institutional controls (restrict public usage of, and therefore exposure to, site-related contaminated groundwater).

Although source control measures were a component of the OU2 ROD, the ROD stated that source control measures would be evaluated in the OU3 ROD.

Major components of the ROD that deal with management of groundwater migration include:

- Usage of natural processes (natural attenuation) to restore the groundwater to MCL concentrations throughout the aquifer;
- Presumption that source control measures would be undertaken to reduce loadings to groundwater system, and reduce time required from 300 (without source control) to 200 years for achievement of goals;
- Institutional controls to curtail land use and opportunity for drinking water well installation downgradient of the site. Supplementing such controls is a local ordinance which requires issuance of a groundwater well permit before installation of any new drinking water well in an area of environmental degradation;
- Implementation of a long-term groundwater monitoring program designed to track horizontal and vertical extent of contaminated groundwater plume boundaries, monitor changes in chemical constituents and concentrations, and collect data to confirm that intrinsic biodegradation is occurring. The monitoring program consists of existing and

new monitoring wells that monitors any expansion of the plume toward new or existing water supply wells; and

- Activated carbon treatment at Municipal Well 35.

Operable Unit 3

Based upon the results of the OU3 RI/FS, the Illinois EPA issued a proposed plan for OU3 in June of 2001. The Illinois EPA signed the OU3 ROD on May 8, 2002 and the U.S. EPA signed on June 11, 2002. The remedial action objectives of the OU3 ROD are to prevent the public from dermal contact and ingestion of soil, or inhalation of airborne contaminants in soil that exceed state or federal health-based levels, or that pose a threat to human health; and, prevent further migration of contamination from the source areas to the underlying aquifer. Source Area 7, because of its unique characteristics as a park containing a creek, has the following additional remedial objectives: prevent the public from direct contact with and ingestion of surface water or home-grown vegetables near the park containing contamination in excess of state or federal standards or that poses a threat to human health or the environment.

The OU3 ROD addressed the cleanup of soil and leachate at the source areas (Source Areas 4, 7, 9/10, and 11) thought to be responsible for the groundwater contamination. Soil remedies in the ROD consisted of either low temperature thermal desorption or soil vapor extraction measures. Cleanup goals for soils and groundwater were established using the State of Illinois Tiered Approach to Corrective Action Objectives (TACO) regulations. Cleanup goals for ingestion of vegetables was established outside of TACO but using an approach approved by Illinois EPA and U.S. EPA. The leachate remedy consists of the establishment of groundwater management zones (GMZ), monitoring, and either limited extraction pumping to achieve on-site containment of the plume, plus treatment of collected water, or air sparging or other related enhancement that would supplement soil vapor extraction measures. In the case of Source Area 9/10, the need to invoke the contingent remedy in the OU3 ROD is dependant upon the presence of free product, the presence of NAPLs, and relative success of soil remedy. Cleanup goals for leachate are federal MCLs that must be met at the GMZ boundary.

Institutional controls to restrict public usage of (and therefore exposure to) site-related contaminated groundwater are required by the OU3 ROD. The forms of Institutional Controls (ICs) include curtailing land use and preventing drinking water well installation downgradient of the site.

The major components of the selected remedial actions for the OU3 source areas are shown in Table 2.

Table 2: Selected Remedial Actions for Source Areas 4, 7, 9/10, and 11

Source Area	Selected Remedy
Source Area 4	• Soil excavation followed by on-site low temperature thermal desorption with afterburner for gaseous emission control; • Hydraulic containment; and • Institutional Controls
Source Area 7	• A combination of soil vapor extraction (SVE) and air sparging system; with vapors thus collected treated via catalytic oxidation; • Air sparging, to supplement SVE, would be conducted in shallower portions of the saturated zone. Air sparging wells may be about 50' in depth; • Multiphase extraction (MPE) system with air stripper usage to manage collected VOCs. Subsequent surface water discharge to a nearby creek is then expected; • Hydraulic containment; and • Institutional Controls
Source Area 9/10	• Soil vapor extraction and enhanced air sparging with activated carbon treatment to treat leachate; • Contingent remedy if DNAPLs are discovered in groundwater or if concentrations in groundwater are not decreasing after implementation of SVE; and • Institutional Controls
Source Area 11	• Soil vapor extraction wells with vapor emissions treatment using catalytic oxidation; and • Institutional Controls

Remedy Implementation

Operable Unit 1

The remedial action at OU1 is already completed. Construction of the remedy began in July 1991 and was completed in July 1992. By November 1991, a total of 547 residential homes were hooked-up to the City of Rockford's municipal water. Construction of the Granular Activated Carbon (GAC) treatment building, to treat water pumped from for Municipal Well 35 to achieve drinking water standards, was completed in April 1998. In December 1992, U.S. EPA issued a Remedial Action Report certifying that OU1 remedy was operational and functional. Based on the U.S. EPA March 2008 site inspection, the OU1 remedy continues to be operational and functional. The OU1 ROD required no ICs because the OU1 remedy addressed the immediate, not the long-term, health threats posed by drinking contaminated groundwater. It was reported to U.S. EPA by the Water Utility Supervisor that the City has plans to

decommission Municipal Well 35 so that they will no longer have to use this well for drinking water.

Operable Unit 2

In the October 1997 Consent Decree signed with U.S. EPA and Illinois EPA, the City of Rockford agreed to maintain, install and expand its water main service and hook-ups to homes and businesses within the site, and to commence long-term monitoring well network sampling and analysis. The City of Rockford also agreed, in the later amended Consent Decree, to pay (on behalf of generator and owner/operator covenant beneficiary parties) for U.S. EPA and State of Illinois past costs related to the site.

The remedial action at OU2 is already completed. The portion of the OU2 remedy that dealt with water main extensions was completed by April 1998. By this time, approximately 264 affected homes/businesses were hooked-up to city water and there are no exposures of concern. Despite numerous attempts by the City, nine establishments refused hook-ups to city water. Quarterly groundwater sampling from Municipal Well 35 has consistently showed that VOC concentrations in groundwater are below the MCL. Based on the sampling results, the carbon treatment unit appears to be effective in treating VOCs in groundwater.

The portion of the OU2 remedy that dealt with the groundwater monitoring well construction began in December 1998 and was completed in March 1999. Since 1999, the City has collected groundwater samples from 34 monitoring wells on a semi-annual basis and reported its findings to Illinois EPA and U.S. EPA. Figure 4 shows the groundwater monitoring well network locations. As of this five-year review, total VOC concentrations in groundwater have generally decreased since 1999 with the exception of monitoring locations immediately downgradient of the source areas. This is expected since the implementation of the remedial action at the source areas has not yet occurred. It is expected that total VOC concentrations will decrease at these monitoring locations once the source area remedies have been fully implemented. In addition, natural attenuation of the groundwater appears to be occurring across the SERGWC site based on the ratio of parent VOC concentrations with associated breaking product concentrations.

Based on the groundwater monitoring results to date, U.S. EPA is recommending that an evaluation be conducted to determine if the groundwater plume has migrated into previously unimpacted areas. If it is determined that this migration has occurred or is imminent, then it will be necessary to determine whether there are any exposures of concern.

In September 1999, the City of Rockford submitted a Remedial Action Report certifying that the groundwater monitoring well network and GAC components of the OU2 remedy are operational and functional. Based on the U.S. EPA March 2008 site inspection, the OU2 remedy continues to be operational and functional.

Operable Unit 3

Through the September 2002 Cooperative Agreement, the U.S. EPA funded the Illinois EPA to conduct the RI/FS, and the remedial design for Source Areas 4, 7, and 11. The cooperative

agreement also provided funding to Illinois EPA to conduct the RI/FS and provide oversight of the PRP remedial design at Source Area 9/10. As of this five-year review, the remedial action has not yet been implemented at Source Areas 4, 7, 9/10, and 11; however, an interim soil removal of highly contaminated surface soil was conducted at Source Area 4 in September 2005 to eliminate the direct contact exposure route. Implementation of the leachate portion of the remedy at Source Area 4 is scheduled to begin in the summer of 2008 and in late-2008/early 2009 at Source Area 7. Source Area 11 is still in the design phase of the remedy.

The PRP completed the design phase for the Hamilton Sundstrand property portion of Source Area 9/10 in April 2007. The U.S. EPA, State of Illinois, and Department of Justice are currently negotiating a Consent Decree with Hamilton Sundstrand for performance of the RA at their property located within OU3 Source Area 9/10. All parties are expected to sign the Consent Decree by the end of May 2008.

Institutional Controls

Institutional controls are non-engineered instruments, such as administrative and legal controls that help to minimize the potential for exposure to contamination and that protect the integrity of the remedy. ICs are required to assure protectiveness for any areas which do not allow for unlimited use or unrestricted exposure (UU/UE).

The table below summarizes existing institutional controls for these restricted areas.

Table 3: Summary of Institutional Controls for Restricted Areas

Media, remedy components & areas that do not support UU/UE based on current conditions	***Objectives of IC***	***Title of Institutional Control Instrument Implemented***
Treatment Equipment of Well 35-OU1	Protect the Integrity of the Remedy Component	Site is controlled due to ownership and limited access by the City. No long term IC is needed since well will be decommissioned
Groundwater – OU 2 current area that exceeds groundwater cleanup standards for total VOCs. Figure 2 shows the extent of the groundwater plume boundary.	Prohibit groundwater use until cleanup standards are achieved	Ordinance - Section 86-111 of Winnebago County Code Article III, November 1999 requires all properties within 200 feet of a public water supply to connect to the water supply instead of drilling a well. Section 86-114 of the Winnebago County Code also requires property owners to

Media, remedy components & areas that do not support UU/UE based on current conditions	***Objectives of IC***	***Title of Institutional Control Instrument Implemented***
		obtain a well permit for a new well or for well repairs. (Attachment A – Winnebago County Code) - Under review. Property owners who have wells which are impacted and who refused to hook up to municipal water were notified that the well is contaminated.
Source Areas 4, 7, 9/10, and 11. OU3 - (industries that had leaking underground storage tanks that held waste oils and solvents; and dumping ground that received waste oils and unknown materials) Figure 3 shows the location for Source Areas 4, 7, 9/10, and 11.	Area is under investigation Prohibit groundwater use until cleanup standards are achieved	Ordinance - Section 86-111 of Winnebago County Code Article III, November 1999 requires all properties within 200 feet of a public water supply to connect to the water supply instead of drilling a well. Section 86-114 of the Winnebago County Code also requires property owners to obtain a well permit for a new well or for well repairs. (Attachment A – Winnebago County Code) - Under review. Deed restrictions to be implemented, if needed

Maps which depict the current conditions of the site and areas which do not allow for UU/UE will be updated as part of the IC Plans discussed below.

OU2 ICs also cover OU1 areas.

Cleanup goals for groundwater were based on unlimited use/unrestricted exposure. However the groundwater at the site is not anticipated to reach cleanup standards until 205 years after the source control remedies are implemented. Since the groundwater at the site is not anticipated to reach cleanup standards for many years, ICs to restrict public usage of (and therefore exposure to) site-related contaminated groundwater are necessary.

Most of the property owners have been provided with a safe source of drinking water via the municipality. Nine residents refused to be hooked-up during implementation of the OU2 ROD and CD. The City of Rockford notified these nine residents on numerous occasions that the groundwater was contaminated but the owners still refused to be hooked-up. The State of Illinois also conducted door to door visits to inform them. Since the last five-year review, two homes and one business were hooked-up to city water.

ICs to restrict groundwater usage are in place at OU2 and OU3. As mentioned above, the Winnebago County local ordinance restricts new wells from being installed in areas where the groundwater is not safe to use. These measures help to eliminate the potential for exposure to contaminated groundwater at the site. Initial IC evaluation activities have revealed that although the ordinance appears to be effective, additional steps must be taken to evaluate the protectiveness of ICs. Illinois EPA and U.S. EPA will conduct additional IC evaluation activities and prepare an IC plan to document the results of the study and plan for additional activities as necessary including long-term stewardship. The IC plan will ensure that ICs cover the aerial extent of the groundwater plume that exceeds MCLs.

The OU3 ROD also requires ICs in the form of land and groundwater use restrictions. Although the remedies have not been implemented at each source area, land use restrictions will be necessary if, after remediation, the remaining soils do not allow for unlimited use/unrestricted exposure. Land use restrictions are necessary to prevent the public from ingestion of soil, inhalation of airborne contaminants, and direct contact with soil containing contamination in excess of state or federal standards or that poses a threat to human health. Institutional controls to restrict groundwater usage within the GMZ will also be necessary to prevent the public from exposure to contaminated groundwater.

Land use restrictions are not currently in place at the OU3 source areas. As the remedies are implemented, land use restrictions may be required. It is for this reason that U.S. EPA is recommending that the Illinois EPA conduct an IC evaluation study by September 2008, for Source Areas 4, 7, 9/10 and 11, with the exception of the Hamilton Sundstrand property located within Source Area 9/10. Within 60 days of receipt of the IC evaluation study, U.S. EPA will develop an IC plan for OU3 source areas, with the exception of the Hamilton Sundstrand property portion of Source Area 9/10 (discussed below). The IC plan will incorporate the results of the evaluation and plan for additional IC activities as needed including planning for long-term stewardship. Maps that depict the current conditions of the site and areas which do not allow for UU/UE will be developed as part of the IC Plan.

Hamilton Sundstrand submitted a draft O&M plan for their property located within Source Area 9/10 at OU3. A review of the draft O&M plan shows that there is no discussion of implementing a land use restriction as required by the OU3 ROD. However, the CD for performance of the RA requires Hamilton Sundstrand to implement IC measures on their property. Once the CD for performance of the RA at the Hamilton Sundstrand property is entered by the court, U.S. EPA will also request that Hamilton Sundstrand conduct an IC evaluation study for their property. Within 60 days of receipt of the IC evaluation study, U.S. EPA will develop an IC plan for the

Hamilton Sundstrand property. The IC plan will incorporate the results of the evaluation and plan for additional IC activities as needed including planning for long- term stewardship. Maps that depict the current conditions of the Hamilton Sundstrand property which do not allow for UU/UE will be developed as part of the IC Plan.

ICs in place: Site wide Groundwater Restriction Ordinance*:* The groundwater is not anticipated to reach cleanup standards until 205 years after the source control remedies are implemented. Groundwater use restrictions are necessary to prohibit usage of the groundwater until groundwater cleanup standards are met throughout the plume. Preliminary IC evaluation activities have revealed that an ordinance exits for the County of Winnebago to regulate groundwater use in the County. The Winnebago County local ordinance restricts new wells from being installed in areas where the groundwater is not safe to use. Section 86-111 of Winnebago County Code Article III, November 1999 requires all properties within 200 feet of a public water supply to connect to the water supply instead of drilling a well. The areas where groundwater contaminants are above drinking water standards are serviced by the City of Rockford water supply so no new wells are expected to be permitted in these areas. Section 86-114 of the Winnebago County Code, Article III, November 1999 also requires property owners to obtain a well permit for a new well or for well repairs. On the permit, the county can notify the applicant that the well is located in a contaminated area and can recommend that the well be sampled for contaminants. If contaminants are detected, the county can recommend that a home treatment unit be installed. The county can also recommend that new and redrilled wells be installed below the zone of contamination so that only clean water comes into the wells; and can notify U.S. EPA when a new permit is issued in the area. These measures help to eliminate the potential for exposure to contaminated groundwater at the site.

The ordinance is discussed below:

i. **Objective**: The Winnebago County Code requires a permit for a new well or repair of an existing well. It is through the permitting process that the applicant is notified that a well is located within an area of contamination.

ii. **Physical Area:** The current groundwater area that exceeds cleanup standards is identified in Figure 2. The ordinance covers the geographical area of groundwater that exceeds groundwater cleanup standards as well as a buffer zone.

iii. **Long Term Stewardship**: Long term protectiveness at the site requires compliance with groundwater use restrictions. The County has authority to deny site plan applications that include groundwater wells under County Code Section 86-114. The County has authority to require abandonment of existing groundwater wells under County Code Section 86-114.

Through the IC evaluation activities, the Illinois EPA and U.S. EPA will determine if long-term stewardship procedures are in place. In order to assure that the procedures are effective in the long-term, an annual certification is needed which includes: a) a statement that the ordinance is still in place and effective, b) identification of the

restricted area in the City ordinance; c) discussion of whether the boundaries of the restricted area are sufficient to prevent exposure to off-property groundwater contamination; d) inspection and location of any new wells located in and around the study area; and e) contingency actions. Also use of a communications plan and use of the one-call system will help to assure that effective procedures are in place.

iv. **Current Compliance**: Based on inspections and interviews with City officials, U.S. EPA and Illinois EPA believe that most residents are hooked up to city water and the Agencies are not aware of any wells installed within the groundwater restricted area. However there are several residents who refused to hook up. U.S. EPA and Illinois EPA will evaluate what, if anything, should be done to address this situation. The groundwater restriction ordinance appears to be functioning as intended.

System Operations/O&M Costs

The City of Rockford is conducting the long-term monitoring and maintenance activities in accordance with the OU1 O&M plan written by the Illinois EPA and approved by U.S. EPA in December 1992. The primary activities associated with O&M at OU1 include:

- Maintenance and repair of all water main extensions provided to residents;
- Inspection, maintenance and repair of all associated fixtures on the City right-of-way property (e.g., fire hydrants, valves, etc.);
- Inspection, maintenance and repair of the GAC treatment unit at Municipal Well 35;
- Water quality sampling of plant influent and effluent; and
- Analysis of the carbon absorber train influent and effluent.

The City of Rockford also conducts the long-term monitoring and maintenance activities related to the groundwater monitoring well network portion of the OU2 remedy in accordance with the O&M plan approved by the Illinois EPA and U. S. EPA in December 1992.
The primary activities associated with O&M at OU2 include:

- Inspection, maintenance and repair or replacement of 34 monitoring wells that comprise the monitoring well network;
- Semi-annual sampling of groundwater monitoring well network;
- Inspection, maintenance and repair or replacement of the GAC treatment unit at Municipal Well 35; and
- Characterization and off-site disposal of spent GAC media.

Annual O&M costs were estimated in the OU1 ROD to be $436,800 (Year 1-5) and $ 58,800 (Years 5-30). Annual O&M costs for OU1 were not available at the time of this five-year review. U.S. EPA will obtain the O&M costs from the City of Rockford and report these costs during the next five-year review. Annual O&M costs were estimated in the OU2 ROD to be $65,000. Annual costs for O&M activities associated with the groundwater monitoring well network and GAC treatment unit are approximately $60,000, which is slightly below the estimated costs in the ROD. Annual O&M costs for the OU3 source areas varied depending on the remedy selected. Since the remedy is not yet constructed at the OU3 source areas, no O&M costs are being reported at this time.

V. Progress Since the Last Review

During the second five-year review, six issues were identified but only one issue affects the future protectiveness of the OU2 remedy. The issue that affects future protectiveness of the OU2 remedy is that nine property owners have refused to be hooked-up to city water and may be using their private wells for drinking water. The U.S. EPA and the City of Rockford notified property owners of the existing situation regarding contaminated groundwater in the area and the property owners chose not to connect to the City of Rockford water supply system. Despite numerous attempts by the City of Rockford, these property owners still refused to be hooked-up to city water. Since the last five-year review, two homes and one business were connected to city water. The two homes and business are located within the overall Southeast Rockford Study area but outside the OU2 groundwater plume boundary.

Table 4: Actions Taken Since the Last Five-Year Review

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
Small number of establishments that elected not to hook-up to clean municipal water	Send letter to City of Rockford and/or Winnebago County requesting the City/County to investigate the potential applicability of local code and/or zoning ordinance when property ownership changes for those homes/businesses that refused hook-up to clean municipal water supply	U.S. EPA	Within 60 days of second five-year review	Winnebago County notifies prospective purchasers of a property that are not hooked-up to city water that the property is located within an area of environmental contamination. If the drinking water well is contaminated, the County can require a treatment system be installed at the home or that a well be re-drilled and	On-going

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
				installed below the zone of contamination.	
Could movement of groundwater into Rock River be a cause of concern?	Review City of Rockford semiannual groundwater monitoring network reports	U.S. EPA	None	Reports are continually reviewed by U.S. EPA and Illinois EPA. An evaluation of the potential for impacts to the Rock River is being recommended in this third five-year review.	On-going
Do deep municipal wells draw down plume contaminants into water supply?	Contact the City of Rockford concerning spatial and depth configuration of other municipal supply wells. Request from the City and U.S. EPA Region 5 Safe Drinking Water program to find out what information exists pertaining to past/ongoing intake/supply monitoring	U.S. EPA	Within 60 days of second five-year review report	City contacted and Municipal Well 35 sampling results reviewed. No VOCs detected above Class I drinking water standards.	2003
Is it necessary to invoke deeper groundwater zone contingency measures at OU3, Source Area 9/10?	Evaluate whether contaminant loadings to the aquifer are being reduced sufficiently through implementation of the source control remedial action.	U.S. EPA	Two to three years after the remedial action has been im-plemented at Source Area 9/10	No actions were taken because the OU3 source control remedy has not yet been implemented at Source Area 9/10	

Issues from Previous Review	Recommendations/ Follow-up Actions	Party Responsible	Milestone Date	Action Taken and Outcome	Date of Action
While vapor intrusion was not a pathway of concern in the OU3 risk assessment, consider findings of upcoming vapor intrusion pathway sampling	Work with Illinois EPA to evaluate whether vapor intrusion around certain residential zones at Source Areas 4 and 7 is a pathway of concern	U.S. EPA and Illinois EPA	After vapor intrusion pathway sampling is completed	Illinois EPA conducted Indoor Air Sampling Study in 1994 and 2003 and concluded that vapor intrusion is not a significant pathway of concern	July 2003 (study conducted) Final Report June, 2004
Could NAPLs pose a problem that current selected remedies do not address?	Consider new information that may be revealed during remedial design/remedial action measures concerning NAPLs presence, and if so, consider remedies that would address remediation of the NAPLs	U.S. EPA and Illinois EPA	On-going	Remedial design sampling data indicates the presence of NAPLs at Source Areas 4 and 7. If the selected remedies do not remediate NAPLs, then other remedies will be evaluated.	On-going

The second five-year review report also identified other issues to consider in the future but did not provide recommendations or follow-up actions to address these issues. The other issues identified in the second five-year review report are provided below. These issues will be considered during future evaluations of the protectiveness of OU2 and OU3 remedies.

- Consider aquifer trends/response as source control efforts are implemented;
- Consider new sampling or analytical techniques possibly adopted in site quality control procedures; and
- Consider developments in future trends in municipal water supply needs; will there be a need to go deeper into the aquifer and if so, what impacts will occur?

VI. Five-Year Review Process

Administrative Components

The Illinois EPA was notified on November 8, 2007, that U.S. EPA was conducting a third five-year review for the SERGWC site. The U.S. EPA RPM, Shari Kolak, headed the five-year review and was assisted by the Illinois EPA Project Manager, Thomas Williams.

Community Notification and Involvement

On February 29, 2008, U.S. EPA informed the local community that a third five-year review was being conducted for the SERGWC site. The community was notified via an announcement in the Rockford local newspaper. This notice described the cleanup measures taken to date at the site, locations of the repositories, and provided contact information for the U.S.EPA Community Involvement Coordinator, Mike Joyce, for the site. A copy of the newspaper announcement is included in Attachment B. Since the announcement notice has been issued, the City of Rockford public works notified the U.S. EPA of their interest in the five-year review.

Document/Data Review

Much of the documents and data reviewed were from the groundwater monitoring network that is maintained, sampled, and analyzed by technical representatives of the City of Rockford.

Site Inspection

U.S. EPA conducted a site inspection in March 2008. The U.S. EPA, Illinois EPA and its consultants, and the Water Utility Supervisor for the City of Rockford were present at the March inspection. No problems were identified during the inspection. The inspection included viewing the extraction wells at Source Area 4, monitoring wells, and the Municipal Well 35 treatment building. Photos of the Municipal Well 35 treatment building are in Attachment C to this report.

Interviews

The Water Utility Supervisor for the City of Rockford was interviewed during the March site inspection. The City supervisor indicated that quarterly sampling of groundwater from Municipal Well 35 has had VOC concentrations that were consistently below the MCL. The supervisor showed a chart to the U.S. EPA RPM that documented these results.

VII. Technical Assessment

Question A: Is the remedy functioning as intended by the decision documents?

Yes, for OU1 and OU2. The OU1 and OU2 remedies are operational and functional. A total of 547 homes and businesses with impacted private wells now have a clean drinking water via the hook-up to city water. All health threats posed by drinking contaminated water are eliminated and there are no exposures of concern. ICs were required at OU2 and OU3. ICs to restrict groundwater usage at OU2 are in place, and also cover the OU1 areas. A Winnebago County local ordinance restricts new wells from being installed in areas where the groundwater is not safe to use. Section 86-111 of Winnebago County Code Article III, November 1999 requires all properties within 200 feet of a public water supply to connect to the water supply instead of drilling a well. Section 86-114 of the Winnebago County Code Article III also requires property owners to obtain a well permit for a new well or for well repairs. The county also notifies the applicants if a well is located in a contaminated area and can recommend that the well be

sampled for contaminants. If contaminants are detected, the county can recommend that a home treatment unit be installed. The county can also recommend that new and redrilled wells be installed below the zone of contamination so that only clean water comes into the wells; and also notifies U.S. EPA when a new permit is issued in the area. These measures help to eliminate the potential for exposure to contaminated groundwater at the site. Water mains were also extended on neighborhood streets where private wells are present in case future hook-ups to city water are needed. The Ordinance will be further evaluated to assure its long-term effectiveness. Although most homes and businesses are hooked-up to city water, the groundwater plume may have migrated over time and there may be a potential for potable well users to be exposed to contaminated groundwater. For this reason, U.S. EPA is recommending that an evaluation be made to determine whether the groundwater plume has migrated into previously unimpacted areas. If it is determined that this migration has occurred or is imminent, then it will be necessary to determine whether there are any exposures of concern.

As of this five-year review, the remedial action has not yet been implemented at the OU3 Source Areas 4, 7, 9/10, and 11; however, an interim soil removal of highly contaminated surface soil was conducted at Source Area 4 in September 2005 to eliminate the direct contact exposure route. Implementation of remedial action is scheduled to begin during the summer of 2008 at Source Area 4 and late in 2008 at Source Area 7. Source Area 11 is still in the design phase of the remedy. Institutional controls, in the form of groundwater use restrictions, are in place at OU3 source areas but land use restrictions are not yet in place. Although land use restrictions are not yet in place, there are no exposures via dermal contact with contaminated soil because contamination is present at depth and not in the surface soils. While there is no potential for exposure via dermal contact, there is a potential for exposure to subsurface soils if the property is developed in a manner that would bring the contaminated subsurface soils to the surface. For example, the City of Rockford currently has construction projects planned for Source Areas 7 and 11 that will require monitoring by Illinois EPA. For this reason, U.S. EPA is recommending that the Illinois EPA conduct an IC evaluation for the OU3 source areas with the exception of the Hamilton Sundstrand property located within Source Area 9/10. Within 60 days after the CD for RA implementation is signed, U.S. EPA will request that Hamilton Sundstrand conduct an IC evaluation study for their property located within Source Area 9/10.

Question B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Yes, these items remain the same.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No, for OU1 and OU2. The remedy has not been implemented at any of the OU3 Source Areas. However, sampling data collected during the Source Area 11 remedial design indicates that VOCs are present in groundwater in excess of Class I groundwater standards. Because the remedy selected for Source Area 11 addresses soil and not groundwater, the OU3 ROD will

likely be amended in the future to include a remedy that will remediate contaminated groundwater.

VIII. Issues

Table 5: Issues

Issues	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
Groundwater plume may have migrated into previously unimpacted areas and there may be a potential for potable well users to be exposed to contaminated groundwater.	N	Y
ICs have not been fully evaluated at OU2. A review of the OU2 institutional controls is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in-place for long-term stewardship at the Site.	N	Y
Institutional Controls (land use restrictions) are not in place at the OU3 Source Areas.	N	Y

X. Recommendations and Follow-up Actions

Table 6: Recommendations and Follow-up Actions

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
Groundwater plume may have migrated into previously unimpacted areas and there may be a potential for potable well users to be exposed to contaminated groundwater	Evaluate whether the groundwater plume has migrated into previously unimpacted areas. If it is determined that migration has occurred or is imminent, then evaluate whether there are any exposures of concern.	Illinois EPA	U.S. EPA	Evaluate plume migration within 6 months of five-year review. If additional groundwater samples are needed or new wells installed, then the this task will be completed before next five- year	N	Y

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
				review.		
The ICs have not been fully evaluated at OU2. A review of the institutional controls is needed to assure that the remedy is functioning as intended with regard to the ICs and to ensure effective procedures are in-place for long-term stewardship at the site.	IC evaluation activities are underway or will be undertaken. Conduct IC evaluation study for OU2. An IC Plan will be developed by U.S. EPA within six (6) months of completing the IC study. The Plan will incorporate the results of the evaluation activities and plan for additional IC activities as needed including planning for long-term stewardship.	Illinois EPA and U.S. EPA	U.S. EPA	Within 6 months of receipt of the IC evaluation study (estimated February 2009).	N	Y
Institutional controls (land use restrictions) are not in place at the OU3 Source Areas	Conduct IC evaluation study for OU3 source areas	Illinois EPA and U.S. EPA	U.S. EPA	September 2008	N	Y
	Conduct IC evaluation study for the Hamilton Sundstrand property located within the OU3 Source Area 9/10	Hamilton Sundstrand	U.S. EPA	Within 60 days after the CD for Implementation of the RA is entered by the court	N	Y

Issue	Recommendations and Follow-up Actions	Party Responsible	Oversight Agency	Milestone Date	Affects Protectiveness (Y/N)	
					Current	Future
	Develop IC Plan for OU3 Source Areas including the Hamilton Sundstrand property Source Area 9/10	U.S. EPA	U.S. EPA	Within 6 months of receipt of the IC evaluation studies (estimated February 2009)	N	Y

X. Protectiveness Statement(s)

Operable Unit 1

The remedy at OU 1 is protective of human health and the environment, all immediate health threats and exposure pathways that could result in unacceptable risks are being controlled. All 264 residences with contaminated private wells were provided a clean, alternative drinking water supply via the hook-up of those residences to the City of Rockford's municipal water. Impacted residential wells were also properly abandoned to ensure that the wells could not be used in the future. Additionally, the activated carbon treatment unit at the City of Rockford Municipal Well 35 is effective in removing volatile organic compounds from the groundwater so that this well can now be used to supply clean drinking water during periods of peak demand. ICs prohibiting the use of contaminated groundwater underneath OU1 residences are addressed by OU2.

Operable Unit 2

The remedy at OU2 is protective of human health and the environment in the short term. All immediate health threats through the ingestion of contaminated drinking water were eliminated. An additional 283 homes/businesses now have a clean, alternate drinking water supply via the hook-up to the City of Rockford's municipal water system. Existing private wells were also properly abandoned so the affected wells can no longer be used. Additionally, groundwater monitoring results show that natural attenuation of the aquifer is occurring. ICs, to restrict groundwater usage, are also in place at OU2 and cover the OU1 areas. Local ordinances are in place that require all properties within 200 feet of a public water supply to connect to the water supply instead of drilling a new well and for property owners to obtain a well permit for a new well or for well repairs. These measures help to eliminate the potential for exposure to contaminated groundwater at the site. However, in order for the remedy to be protective in the long-term, several additional actions need to be implemented. These actions include a more in-depth study of the ordinance to assure long-term effectiveness, and a current evaluation of the groundwater plume to determine if the plume has migrated into previously unimpacted areas. If it is determined that this migration has occurred or is imminent, then it will be necessary to determine whether there are any exposures of concern. Additionally, long term protectiveness

requires compliance with the groundwater use restrictions. Compliance with effective ICs will be ensured by implementing, monitoring and maintaining effective ICs as well as maintaining the site remedy components. Long-term stewardship must be ensured to verify compliance with ICs.

Operable Unit 3

The remedies at OU3 are expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. The remedy has not been fully implemented at Source Areas 4, 7, 9/10, and 11. Although contaminants are present in subsurface soil, under current conditions there is no potential for exposure to the contaminated soils. ICs, to restrict groundwater usage within the site, are effectively in place by the implementation of the OU2 remedy. Affected homes and businesses that are located within a source area are also located within the larger area of the groundwater plume; therefore, the ICs implemented under the OU2 ROD effectively limit the potential for exposure to contaminated groundwater at the OU3 source areas. Land use restrictions are not in place. However, an IC evaluation study will be performed and an IC plan developed. Additionally, long term protectiveness requires compliance with the groundwater use restrictions. Compliance with effective ICs will be ensured by implementing, monitoring and maintaining effective ICs as well as maintaining the site remedy components. Long-term stewardship must be ensured to verify compliance with ICs.

XI. Next Review

The next five-year review will be completed by May 2013, five years from the signature date of this review.

Tables

Chronology of Site Events
Selected Remedial Actions for Source Areas 4, 7, 9/10, and 11
Summary of Institutional Controls for Restricted Areas
Actions Taken Since the Last Five-Year Review
Issues
Recommendations and Follow-up Actions

Figures

Southeast Rockford Superfund Site Map
Groundwater Plume Boundary
Location of Source Areas
Groundwater Monitoring Well Network Location

Attachments

Winnebago County Code
Newspaper Announcement

Photos of Treatment Building for MW 35

Figures

Southeast Rockford Superfund Site

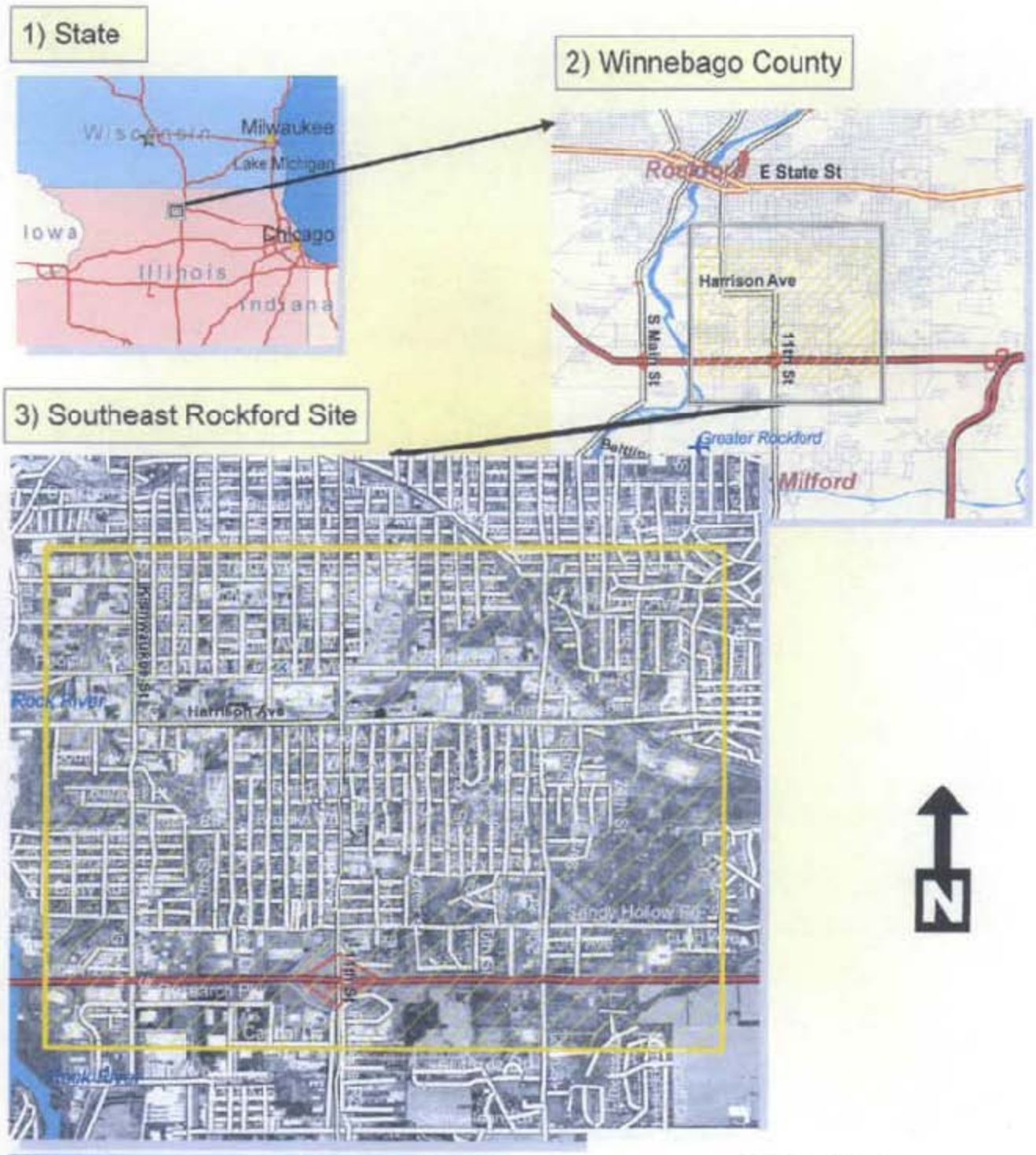
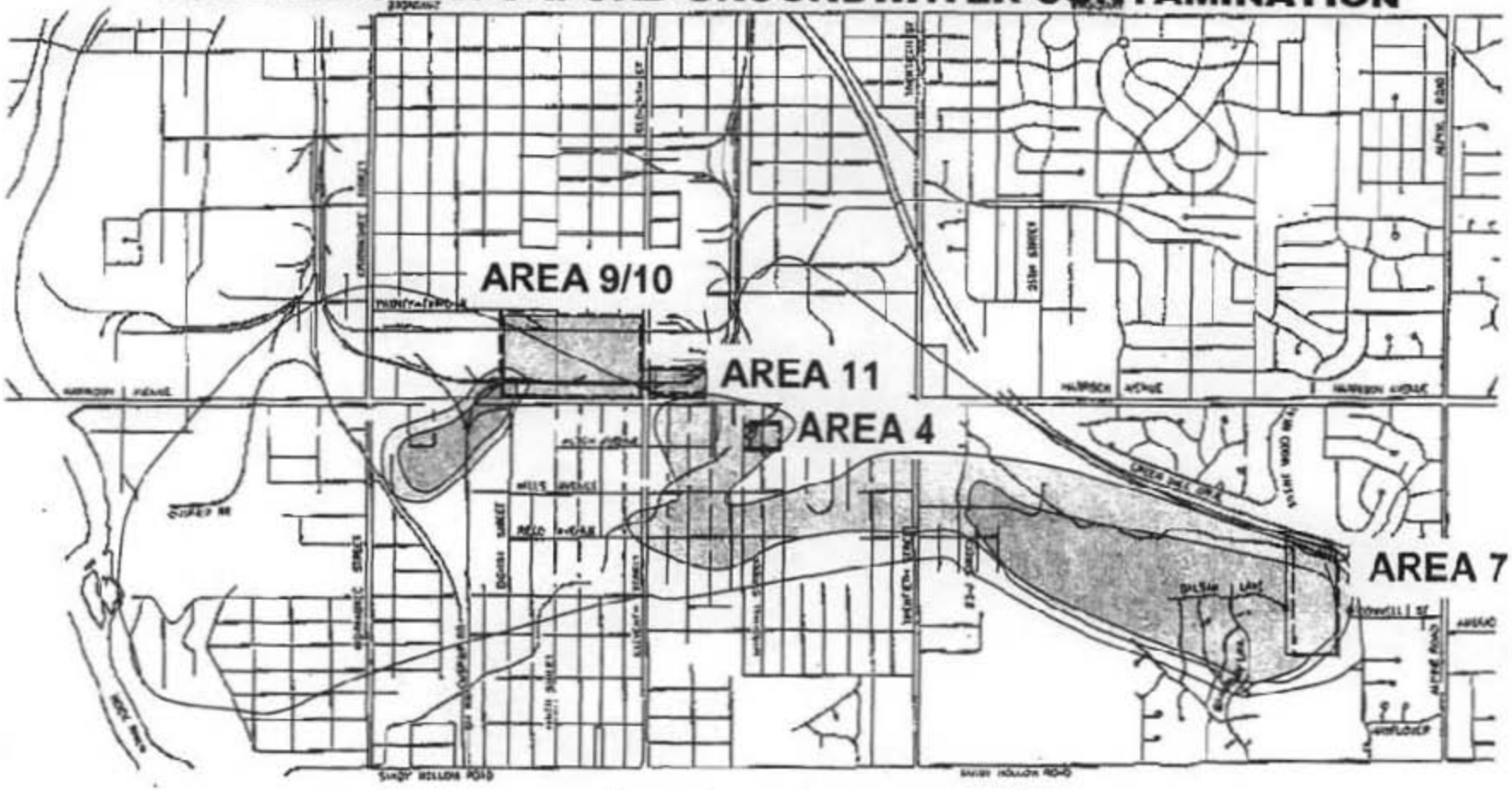


FIGURE 1:
SOUTHEAST ROCKFORD
SUPERFUND SITE MAP

SOUTHEAST ROCKFORD GROUNDWATER CONTAMINATION



AREA of CONCERN

- Total Chlorinated VOCs > 10 ppb
- Total Chlorinated VOCs > 100 ppb
- Total Chlorinated VOCs > 1000 ppb

FIGURE 2:
GROUNDWATER PLUME BOUNDARY

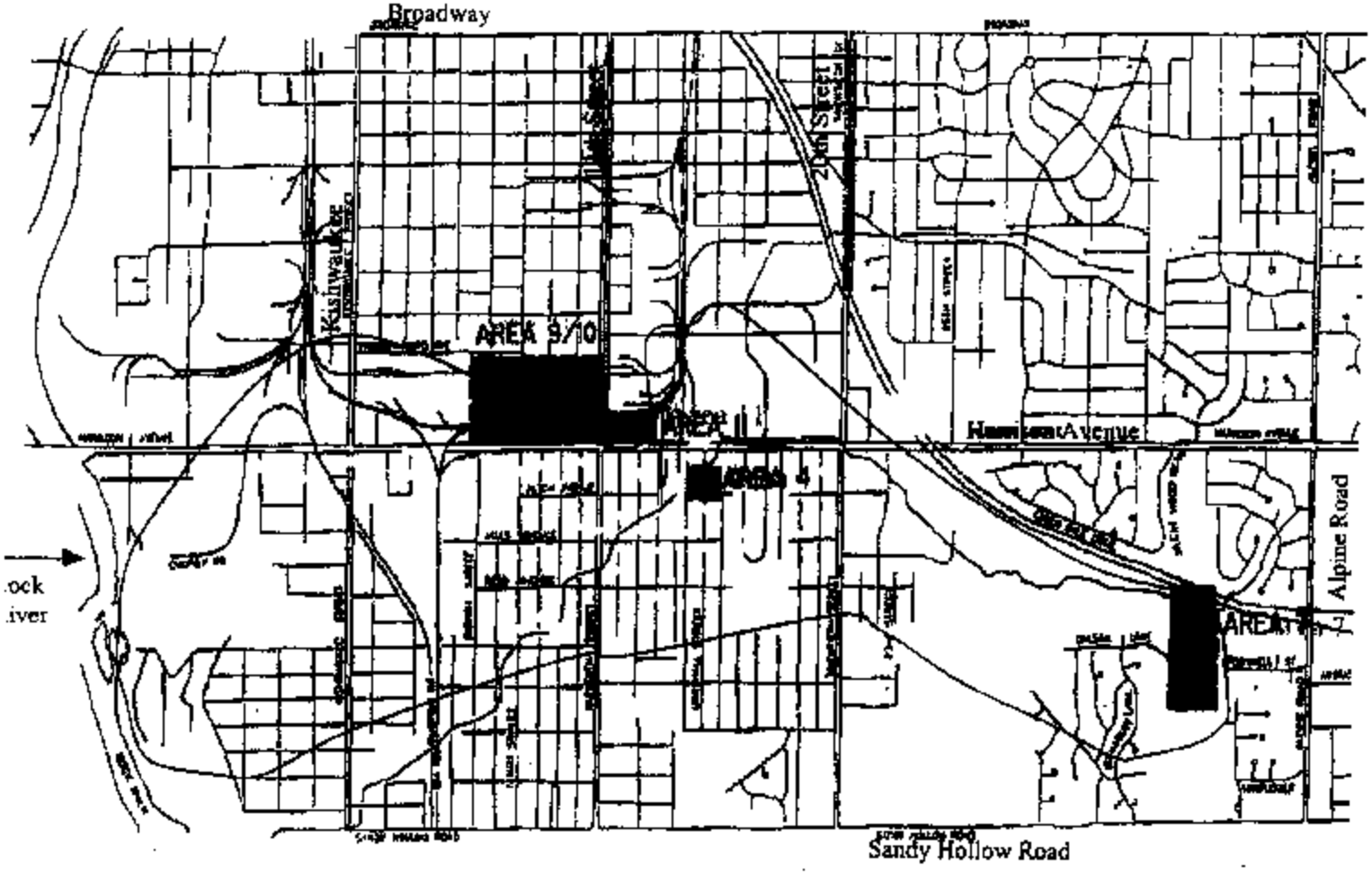


FIGURE 3:
LOCATION OF SOURCE AREAS

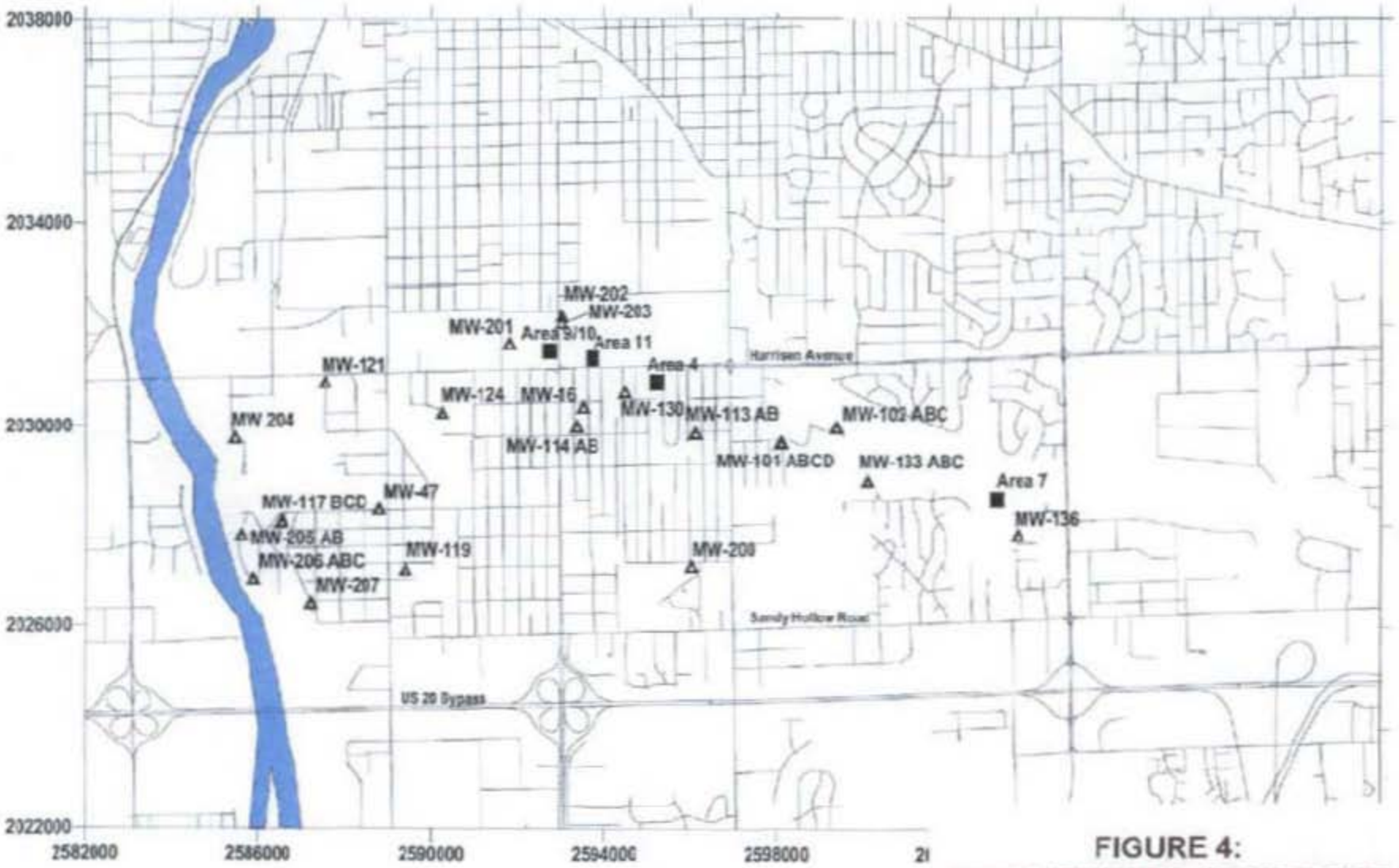


FIGURE 4:
GROUNDWATER MONITORING WELL NETWORK

Attachments

Attachment A

WINNEBAGO COUNTY CODE ARTICLE III

Water Supply and Service

DEPARTMENT OF PUBLIC HEALTH
WINNEBAGO COUNTY

Winnebago County Department of Public Health
401 Division Street
Rockford, Illinois 61104
(815)962-5092

November 1999

WINNEBAGO COUNTY
PRIVATE WATER WELL CODE

Division 1. Definition of Terms

Sec. 86-106. Definitions

Division 2. General Provisions

Sec. 86-107. Private water supply standards
Sec. 86-108. Owner's responsibility
Sec. 86-109. Building occupancy
Sec. 86-110. Maintenance
Sec. 86-111. Public water supplies; when required
Sec. 86-112. Individual service

Division 3. Adoption of Illinois Water Well Construction Code and Illinois Water Well Pump Installation Code

Sec. 86-113. Adoption of state codes

Division 4. Permit Requirements

Sec. 86-114. General provisions
Sec. 86-115. Contractor requirements
Sec. 86-116. Permit fee
Sec. 86-117. Permit application requirements
Sec. 86-118. Expiration
Sec. 86-119. Inspections
Sec. 86-120. Notification
Sec. 86-121. Well specification log

Division 5. Construction of Wells Generally DIV

Sec. 86-122. Location of well sites
Sec. 86-123. Platforms
Sec. 86-124. Casings
Sec. 86-125. Wells in basements
Sec. 86-126. Wells with buried seals
Sec. 86-127. Well pits
Sec. 86-128. Pressure tanks
Sec. 86-129. Pumping equipment
Sec. 86-130. Pump suction lines
Sec. 86-131. Water distribution lines
Sec. 86-132. Backflow protection
Sec. 86-133. Unsafe water supply
Sec. 86-134. Disinfection
Sec. 86-135. Abandonment of wells
Sec. 86-136. Capping of wells

Division 6. Water Quality Standards

Sec. 86-137. General provisions
Sec. 86-138. Microbiological standards
Sec. 86-139. Adoption of other water quality standards
Sec. 86-140. Sampling point

Division 7. Administration

Sec. 86-141. Enforcement

Sec. 86-142. Revocation or suspension of permit
Sec. 86-143. Interpretation, purpose, and conflict

ARTICLE III. WATER SUPPLY AND SERVICE*

***Editor's note:** Ord. No. 99-CO-84, adopted Nov. 23, 1999, repealed Art. III in its entirety and enacted a new article to read as herein set out. The former Art. III, §§ 86-106–86-119, pertained to similar subject matter and derived from Code 1964, §§ 9-32–9-45; Ord. No. 88-CO-78, adopted Oct. 27, 1988; and Ord. No. 91-CO-36, adopted June 13, 1991.

Cross references: Environment, ch. 42; health and sanitation, ch. 50.

DIVISION 1. DEFINITIONS

Sec. 86-106. Definitions of terms.

(a) As used in this article, unless the context specifies otherwise:

Abandoned well means a water or monitoring well which is no longer used to supply water, or which is in such a state of disrepair that the well or boring has the potential for transmitting contaminants into an aquifer or otherwise threatens the public health or safety.

Applicant means the owner as defined herein or his or its authorized agent.

Aquifer means a water bearing formation that transmits water in sufficient quantity to supply a well.

Department means the Winnebago County Department of Public Health.

Modification means any change, replacement, or other alteration of a water well. This includes, but is not limited to, deepening of a well, installation of a pitless adapter, replacing or repairing a casing or a well screen, capping a well, and any other changes of a well structure. It does not include replacement of a pump or well cap.

Monitoring well means a water well intended for the purpose of determining groundwater quantity, quality, and/or piezometric measurements.

Owner means the person or corporation or other legal entity in whose name the property appears on the records of the county recorder.

Potable water means water that is bacteriologically and chemically safe for human consumption.

Shock chlorination means a one-time addition of a disinfectant (bleach) in order to remove bacterial contamination from the water supply.

Water well means any excavation that is drilled, cored, bored, washed, driven, dug, jetted or otherwise constructed when the intended use of such excavation is for the location, diversion, artificial recharge or acquisition of ground water, except monitoring wells.

Well cap means an arrangement or device used to establish a watertight gasket at the junction of a well pump or piping with the well casing cover at the upper terminal of the well, the purpose of which is to prevent contaminated water or other material from entering the well.

(b) Terms not herein defined shall have the meaning customarily assigned to them, except for

those terms defined elsewhere in this article.

(Ord. No. 99-CO-84, 11-23-99)

DIVISION 2. GENERAL PROVISIONS

Sec. 86-107. Private water supply standards.

(a) All private sources of water, as well as the distribution system of water shall be located, constructed, and maintained in strict conformance with this article.

(b) The use or attempted use of groundwater as a potable water supply from within the area shown on Exhibit A and more particularly described on Exhibit B, both attached to Ordinance No. 2003-CO-72 and incorporated herein by reference, by the installation of wells, or by any other method is hereby prohibited.

(1) The prohibition contained in subsection (b) shall apply to the county, including the operation of a water utility.

(2) Any person violating the provisions of this section shall be subject to a fine of $500.00 for each violation.

(3) The chairman of the county board is authorized to enter into memoranda of understanding with the state environmental protection agency and other agreements or contracts with other governmental entities, as may be or as becomes necessary to implement the spirit and intent of this section.

(Ord. No. 99-CO-84, 11-23-99; Ord. No. 2003-CO-72, 7-11-03)

Sec. 86-108. Owner's responsibility.

The owners of each building in which people live, work, or assemble shall provide a potable water supply sufficient in quality, quantity and pressure to adequately serve all fixtures therein.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-109. Building occupancy.

No person shall occupy or permit occupancy of any building not in compliance with section 86-108 of this article.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-110. Maintenance.

The owner of each private water supply system shall maintain all components of that system so that they function properly and are in good repair.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-111. Public water supplies; when required.

(a) Where a public water supply main is within 200 feet, as measured along a public right-of-way or existing easement, of the property line of the property proposed to be served by a private well, no permit for such a well shall be issued and the property shall connect to the public water supply if water service is desired. Furthermore, no permit shall be issued for a private well on any property which is already connected to and served by a public water system, except that non-residential properties may be permitted to install a well for non-potable purposes, provided it is approved by the appropriate water utility and the system complies with all applicable cross connection controls and ordinances.

(b) The regulations imposed by subsection (a) of this section shall not apply if, as a condition of connection to a public water supply, the owner of the property will be required to annex or to sign a pre-annexation agreement with any municipality, unless the owner voluntarily wishes to do so, excepting all industrial users.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-112. Individual service.

Each residential property, business building, or enterprise shall be served by its own separate water well located on the property whereon it is located except where the residence, building, or enterprise is connected to a community or public water supply.

(Ord. No. 99-CO-84, 11-23-99)

DIVISION 3. ADOPTION OF ILLINOIS WATER WELL CONSTRUCTION CODE AND ILLINOIS WATER WELL PUMP INSTALLATION CODE

Sec. 86-113. Adoption of state codes.

The Illinois Water Well Code, 1994, and the Illinois Water Well Pump Installation Code, 1992, as now enacted or hereafter amended, are adopted and incorporated by reference.

(Ord. No. 99-CO-84, 11-23-99)

DIVISION 4. PERMIT REQUIREMENTS

Sec. 86-114. General provisions.

No person shall construct, modify, or cap a well until a permit for such work has been issued by the department. Applications for permits shall be in writing on forms provided by the department and shall be signed by the applicant. Permits are not transferable.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-115. Contractor requirements.

All well drilling contractors, well pump installation contractors, and other authorized constructors of wells doing business in the county shall be licensed by the State of Illinois.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-116. Permit fee.

The fee to construct or deepen a well shall be $100.00 and shall be paid to the department prior to granting of a permit. There shall be no fee for otherwise modifying a well.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-117. Permit application requirements.

(a) Application for a permit to construct a well shall be accompanied by a site plan drawn to scale and fully dimensioned with specifications as necessary to fully describe the system. The site plan shall indicate the locations of the following (existing or proposed):

(1) Location of the well in relation to two adjacent lot lines.

(2) Lot boundaries.

(3) Private sewage disposal systems or sanitary sewer lines.

(4) Buildings.

(5) Driveways.

(6) Sidewalks, decks, and patios.

(7) Private sewage disposal systems and sewer lines on adjoining lots.

(8) Above or below ground swimming pools.

(b) Application for a permit to modify a well shall be accompanied by a site plan drawing indicating the following:

(1) Lot boundaries.

(2) Location of the well in relation to two adjacent lot lines.

(3) Potential sources of contamination that may affect the well.

(c) The permit application shall contain the following information:

(1) Property address.

(2) Contractor's name, license number, and address.

(3) Name and address of property owner.

(4) Public water availability.

(5) Construction method of well (drilled, driven, other).

(6) Estimate of well depth and depth to bedrock.

(7) Type and expected use of well.

(8) Section, Township, Range, & Quarter Section of well site.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-118. Expiration.

The permit shall be void if construction has not commenced within one year of the date of issuance. Any excavation or installation at the end of one year shall require an additional fee of $100.00. At no time shall any permit fee be returned.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-119. Inspection.

Department personnel shall have access to the property at any reasonable time after a permit application has been filed in order to determine satisfactory compliance with the provisions set forth in this article. Access shall be deemed essential, but not limited, to the following:

(1) Any stage of construction or modification of a system.

(2) Final inspection.

(3) Sampling of private water supply system.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-120. Notification.

The owner or contractor shall give 48 hours advance notice, exclusive of weekends and/or state holidays, to the department before beginning the construction of a new well or the capping or sealing of an existing well except in emergencies in which case the contractor must provide notification during the next business day. Emergencies are defined as instances where loss of water is experienced for any reason. No work on the water well shall be done until the notification is given. The owner or contractor shall give the department as much notice as possible before beginning work to modify an existing water well. No work shall begin until the department has been notified.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-121. Well specification log.

All persons digging, drilling, or driving wells shall maintain a log of the specifications of the constructed well which shall be submitted to the health officer of the county within 30 days of construction of each well.

(Ord. No. 99-CO-84, 11-23-99)

DIVISION 5. CONSTRUCTION OF WELLS GENERALLY

Sec. 86-122. Location of well sites.

All well sites shall be located at a point of high elevation and as far removed from known possible sources of contamination as the general layout of the premises permit. Minimum distance between the well and sources of contamination shall be maintained as follows:

Feet

(1) Dry wells or Class I injection wells . . . 200

(2) Cesspools . . . 150

(3) Subsurface seepage tile . . . 100

(4) Seepage pits . . . 100

(5) Privy vaults . . . 75

(6) Manure piles . . . 75

(7) Tile sewers and drains . . . 50

(8) Barnyard or animal confinement lot . . . 50

(9) Septic tanks . . . 50

(10) Cast iron sewers having leaded or mechanical joints . . . 10

(11) Potential contamination sources unspecified above must be evaluated for each particular instance and distances arrived at based on the pertinent facts.

Note: These distances listed apply only in clay and loam soils. In gravel and sand formations safe distances will be variable being greater than for clay or loam soils.

Refer to Illinois Water Well Construction Code for applicable minimum distances.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-123. Platforms.

Well platforms shall be of watertight, reinforced concrete placed on an earth fill higher than the natural grade.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-124. Casings.

Well casings shall terminate a minimum of eight inches above the grade of the natural ground surface. Well casings for drilled wells shall be of not less than four inches inside diameter. All well casings must be of new material.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-125. Wells in basements.

New wells shall not be constructed in basements. An existing well located in a basement shall conform to the following conditions:

(1) The casing shall extend at least 12 inches above the basement floor or the highest known flood elevation, whichever is higher.

(2) The well casing shall have a well seal which prevents contaminants from entering the well.

(3) An approved floor drain or approved sump pump shall be provided.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-126. Wells with buried seals.

Existing wells with buried seals shall be acceptable until removal of the seal becomes necessary for any reason. At that time the well must be brought into compliance with this article or connection made to a community or public water supply as herein provided.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-127. Well pits.

New wells shall not be constructed in pits. Existing pit installations may be accepted if the following conditions exist:

(1) The well pit shall be structurally sound and watertight. The casing shall extend at least 12 inches above the pit floor and have a well seal to prevent contamination from entering the well.

(2) A watertight cover must be provided for the well pit.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-128. Pressure tanks.

For each residential structure a pressure tank shall be installed. For buildings to be used for other than residential purposes, the minimum pressure storage capacity shall be consistent with the proposed use of the building. The pressure storage tank shall be installed in a location which is not subject to flooding and which is convenient for maintenance or replacement.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-129. Pumping equipment.

A sanitary seal shall be provided for the annular space between the drop pipe and the casing. Pump room floors shall be of impervious construction and shall slope away from the pump pedestal. In every instance the pump base and the well casing, or well opening, shall be at least eight inches above the floor.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-130. Pump suction lines.

All buried suction lines shall be enclosed in a pressure discharge line maintained at system pressure.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-131. Water distribution lines.

(a) The water supply shall not have a physical connection with any non-potable water supply. On new installations all water lines and sewer lines shall be not less than ten feet apart horizontally and shall be separated by undisturbed earth.

(b) Water and sewer lines shall not cross except where such condition cannot be reasonably avoided. At necessary crossings the water line shall be kept at least 18 inches above the top of

the sewer line, which vertical separation shall be maintained at least ten feet from the sewer line on each side of the crossing. The sewer shall be constructed of cast iron pipe with watertight joints for a distance of ten feet from the water line.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-132. Backflow protection.

All plumbing fixtures and other equipment connected to the water supply lines shall be so constructed and installed as to safeguard the water supply from the possibility of contamination through cross connections or back siphoning.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-133. Unsafe water supply.

(a) If water samples collected from a private water supply indicate the water to be bacteriologically unsafe, as determined by the department, the supply will not be approved for use.

(b) No water that has been condemned as unfit for human consumption after analysis shall be used for human consumption until the water supply has been declared safe by the health officer of the county.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-134. Disinfection.

(a) Where a chemical injection system is directly connected to a water well system, it shall not permit direct feeding of disinfectants or other chemicals into the aquifer through the well casing.

(b) Disinfection of a source of water will not be accepted as a substitute for good sanitary practice including proper location and construction of water facilities.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-135. Abandonment of wells.

Abandoned wells, borings, and monitoring wells shall be sealed in accordance with the requirements of the Illinois Department of Public Health. Abandoned water wells shall be sealed by a licensed water well driller. An individual who is not so licensed may seal a well, provided the well is located on land which is owned or leased by such individual for farming purposes or such person's place of abode and provided a request is made to the department prior to the commencement of sealing indicating how the water well is to be sealed and the materials used. The department shall approve the request provided the methods and materials are in compliance with state code requirements.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-136. Capping of wells.

Wells with discontinued use, but intended to be brought back into service, and meeting all other

provisions of this code, may be capped for a period not to exceed one year by written agreement with the health officer. Capped wells shall have the pump removed and a watertight cap or welded plate placed atop the casing. The casing of a capped well shall be painted orange as an indication of status. Capped wells not brought into compliance with said agreement shall be properly sealed.

(Ord. No. 99-CO-84, 11-23-99)

DIVISION 6. WATER QUALITY STANDARDS

Sec. 86-137. General provisions.

For a private water supply to be deemed safe for use, it shall produce water of a quality consistent with the standards described in this article. A safe water supply shall be considered that which has been sampled and approved in a manner consistent with the state water well code. Sampling of a shock chlorinated water supply shall be performed no less than ten days after chlorination to assure bacteriological conformance with section 86-138.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-138. Microbiological standards.

The following maximum contaminant level for coliform bacteria is applicable to all private water supply systems:

(1) *Colilert.* When utilizing this technique, there shall be no positive indication of enzymatic activity defining the presence of coliform bacteria in the sample.

(2) *Membrane filter.* When utilizing this technique, there shall be no coliform bacteria present per 100 milliliters in the sample.

(3) *Fermentation tube.* When utilizing this technique (in either ten or 100 milliliter standard portions), there shall be no indication of coliform bacteria present in any portion of the sample.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-139. Adoption of other water quality standards.

In addition to the microbiological standards described in section 86-138 of this article, this article shall adopt, by reference, the water quality standards described in the Federal National Primary Drinking Water Regulations (40 CFR 141 and 142; 1988) 52 Federal Regulations 25690 through 25717; July 8, 1987, and 53 Federal Regulations 25801 through 25111; July 1, 1988) and any subsequent amendments or revisions thereto.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-140. Sampling point.

Water samples shall be taken at points which are representative of the conditions within the distribution system. For non-potable wells, an easily accessible sampling point shall be provided.

(Ord. No. 99-CO-84, 11-23-99)

DIVISION 7. ADMINISTRATION

Sec. 86-141. Enforcement.

Violations of this article shall be punishable as provided under chapter 1, section 1-11 of this Code. The state's attorney may in addition bring action to restrain such action or enjoin the operation of any such persons.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-142. Revocation or suspension of permit.

The department shall have the authority to revoke or suspend permits when they are issued in error, or where the provisions of this article are violated. The reason for the revocation or suspension of a permit shall be posted in writing at the site, or mailed to the applicant at the address provided in the permit application.

(Ord. No. 99-CO-84, 11-23-99)

Sec. 86-143. Interpretation, purpose, and conflict.

The provisions of this article shall be held to be the minimum requirements for the promotion of public health, safety, and general welfare.

(1) In any case where a provision of this article is found to be in conflict with a provision of any zoning, building, safety, or health ordinance or code in force in the incorporated areas existing on the effective date of this article; the provision which establishes the higher standard for the promotion and protection of the health and safety of the people shall prevail.

(2) Should any section, clause, or provision of this article be declared by a court of competent jurisdiction to be invalid, such decision shall not effect the validity of the article as a whole or any part thereof, other than the part so declared to be invalid.

(Ord. No. 99-CO-84, 11-23-99)

Attachment B

CHERRY TOMATOES $1.39
1 quart
STOR
320 N. Court 965-
OPEN MON-FRI 8-6:00 • SAT
CLOSED SUNDAYS

EPA Begins Review of Southeast Rockford Groundwater Contamination Superfund Site

Rockford, Illinois

U.S. Environmental Protection Agency is reviewing this Superfund site to ensure the cleanup continues to protect human health and the environment. Superfund law requires five-year reviews where hazardous waste remains managed on-site. This is the site's third five-year review. This is a complicated Superfund site spread over a large area containing residential, commercial and industrial properties. It is being cleaned up in partnership with Illinois Environmental Protection Agency.

Briefly, some of the cleanup measures selected for the Southeast Rockford Groundwater Contamination site were:

- providing a clean water supply to more than 800 homes
- dealing with several areas of polluted soil that are sources of the ground-water contamination
- using soil vapor extraction, air sparaging, multi-phase extraction, air stripping and catalytic oxidation to remove solvents from the soil and ground water from source areas designated by the Operable Unit 3 Record of Decision signed in June 2002
- natural attenuation of the ground water
- implementing a long-term, ground-water monitoring program

Site-related documents are available for viewing at these Rockford locations:

Rock River Branch
Rockford Public Library
3128 S. 11th St.

Main Library
Rockford Public Library
215 N. Wyman St.

Documents are also available at:

EPA Region 5 Records Center
77 W. Jackson Blvd., Seventh Floor
Chicago, Ill.

For more information please contact:
Mike Joyce
EPA Community Involvement Coordinator
312-353-5546
Toll free, 800-621-8431, 9 a.m. – 4:30 p.m., weekdays
joyce.mike@epa.gov

Attachment C

IMG 1