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# Wellhead Protection Plan
# Unit Well 9
# City of Madison, Wisconsin

City of Madison
Wisconsin

*Prepared for:*
Madison Water Utility
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Madison, WI 53713

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*September 2006*

Earth Tech Project No. 82359

## TABLE OF CONTENTS

## LIST OF FIGURES



## LIST OF TABLES



## LIST OF APPENDICES

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# EXECUTIVE SUMMARY

## EXECUTIVE SUMMARY

This report is a Wellhead Protection Plan (WHPP) for City of Madison Unit Well 9. The primary purposes of this WHPP are to define the WHPA for Unit Well 9 and establish specific criteria for protection of Unit Well 9 and groundwater resources in the WHPA including management strategies to maintain a high quality water supply, free of contamination. The primary goal of wellhead protection (WHP) planning is to protect water supply wells from contamination and, thereby, protect people who obtain their water supply from those wells.

This WHPP was prepared for Unit Well 9 to conform to the requirements of the Wisconsin Administrative Code, Chapter NR 811, Section 16(5), for wellhead protection (WHP) planning.

Unit Well 9 is located at 4724 Spaanem Avenue in the City of Madison. Construction of Unit Well 9 was completed in 1950. Unit Well 9 is 843 feet deep, is open to the lower bedrock (sandstone) aquifer and has a design capacity of approximately 1,700 gallons per minute (gpm).

Land use in the vicinity of Unit Well 9 is primarily residential with commercial in distant areas. Historically, the land in the vicinity of Unit Well 9 was zoned residential.

As part of the Dane County regional hydrologic study, a regional groundwater flow model was prepared for Dane County and was used to delineate time-related (5-, 50-, and 100-year time of travel (TOT)) zones of contribution (ZOCs) for municipal wells (Krohelski et. al., 2000) including Unit Well 9. ZOCs extend radially around Unit Well 9, and toward the south-southeast in the simulated upgradient groundwater flow direction.

Figure 3-5 shows the wellhead protection area (WHPA) for Unit Well 9. Two zones of protection are within the WHPA. Zone A is defined by the 5-year TOT ZOC. Zone B is defined by a 1,200-foot fixed radius around Unit Well 9. The WHPA will provide a conservative protection zone to account for changes in pumping rates, pumping duration, and interference drawdown from other existing and future wells.

A contaminant source inventory (CSI) was performed for the Unit Well 9 area during February 2005. Known potential and existing contaminant sources within the Unit Well 9 WHPA include sanitary sewer, spill sites, active underground storage tank (UST) sites, and probable use of pesticide, herbicide, and nutrient loading on residential lawns. Several other potential and existing contaminant sources were identified in other ZOCs.

Programs and activities to be used by the City of Madison and others for WHPA management at Unit Well 9 are grouped into five principal categories as follows:

1. Existing Programs

    a. Clean Sweep Collection Program
    b. On-site waste disposal system maintenance
    c. Well abandonment
    d. Land application of sludge and septage
    e. Spill notification and awareness of remedial investigation and cleanup

2. Land Use Controls

    a. Existing zoning/WHP overlay zoning and ordinance

3. Intergovernmental Cooperation

    a. Land use planning and site plan review

4. Monitoring

    a. CSI maintenance
    b. Water quality monitoring

5. Public Education and Awareness

    a. Availability of WHPP
    b. Public informational meeting
    c. News releases
    d. Informational materials distributed to residents in WHPA
    e. Land use and contamination source awareness
    f. School programs

Some of these programs and activities are currently being performed, while others are new and will be implemented immediately to help protect Unit Well 9.

The Madison Water Utility has an existing water conservation program and encourages water conservation. The Utility has formulated a contingency plan for providing water in the event that Unit Well 9 or one or more of the City's other water supply wells became contaminated or removed from service. Well 9 is part of Pressure Zone 4. Valves could be opened to allow water to move from the Main Pressure Zone to Pressure Zone 4 in the event of a Well 9 failure.

The City of Madison has a WHP ordinance and overlay zoning district. The WHP ordinance helps ensure that other potential contaminant sources are not located in the Unit Well 9 WHPA.

# CHAPTER 1

# INTRODUCTION AND BACKGROUND

# 1.0 INTRODUCTION AND BACKGROUND

## 1.1 INTRODUCTION

This report is a WHPP for City of Madison Unit Well 9. The primary purposes of this WHPP are to define the WHPA for Unit Well 9 and establish specific criteria for protection of Unit Well 9 and groundwater resources in the WHPA including management strategies to maintain a high quality water supply, free of contamination. The primary goal of wellhead protection (WHP) planning is to protect water supply wells from contamination and, thereby, protect people who obtain their water supply from those wells.

The term "wellhead" refers to the physical structure (well) at the land surface through which groundwater is withdrawn from a subsurface water-bearing formation (aquifer). A WHPA is defined by federal law as "the surface and subsurface area surrounding a water well or wellfield, through which contaminants are reasonably likely to move toward and reach such water well or wellfield" (United States Environmental Protection Agency (USEPA), 2005).

This WHPP was prepared for Unit Well 9 to conform to the requirements of the Wisconsin Administrative Code, Chapter NR 811, Section 16(5), for WHP planning. A copy of this section of the code is in Appendix A. The project scope included the following:

1. Research available information regarding the geology and hydrogeology of the well sites and aquifer parameters.

2. Research well construction and proposed operation of Unit Well 9.

3. Coordinate with Dane County Regional Planning Commission (DCRPC) for previously delineated 5-year TOT capture zones for Unit Well 9.

4. Perform a CSI to identify and characterize existing and potential contamination sources within the 5-year TOT capture zone and within a ½-mile radius of Unit Well 9.

5. Assist with the determination of a WHPA for Unit Well 9.

6. Assist with the development of WHP management strategies.

## 1.2 LOCATION AND BACKGROUND

Unit Well 9 is located at 4724 Spaanem Avenue in the City of Madison. The well site is in the NW¼, SW¼ of the NE¼, of Section 16, Township 7 North, Range 10 East, Dane County, Wisconsin. Figure 1-1 shows the location of Unit Well 9 and other water system facilities in the City of Madison. A portion of the survey plat showing the well site is in Appendix B. Construction of Unit Well 9 was completed in 1950. Unit Well 9 was originally owned by the City of Monona. The City of Madison obtained the well in the 1960s.

The City water system serves approximately 218,000 people and consists of 24 active wells, 28 booster pumping facilities, 24 ground storage reservoirs, 5 elevated water storage tanks, and approximately 840 miles of water transmission and distribution mains. Because of the varying

topography in the Madison area, the water system is divided into 11 separate pressure zones. Unit Well 9 is located in the City's Southeast Pressure Zone 4. Unit Well 9 is located approximately 3.7 miles northeast of Unit Well 30, and 0.8 miles south-southwest of Unit Well 23.

## 1.3 UNIT WELL 9

Unit Well 9 was constructed to a depth of 843 feet. The well is cased with 20-inch OD steel casing grouted to a depth of 200 feet below ground. A 19.5-inch diameter open borehole extends from 200 to 300 feet in depth. A 16-inch diameter open borehole extends from 300 to 843 feet in depth. Sandstone bedrock was encountered at a depth of 56.5 feet. Thin beds of siltstone, dolomite and shale were also encountered, but the primary formation consists of sandstone. Basalt was encountered at a depth of 830 feet. Unit Well 9 was test pumped and had an original specific capacity of 4.4 gallons per minute per foot of drawdown (gpm/ft). After the borehole was shot (blasted), the well was test pumped at a rate of 1,770 gpm and had a specific capacity of 24.2 gpm/ft. The static water level is approximately 110 feet below the ground surface. A construction report and formation log prepared by the WGNHS is in Appendix C.

DANE COUNTY

INDEX MAP

N

0' 7000' 14000'

SCALE

LAKEVIEW PRESSURE ZONE (5)

EAST PRESSURE ZONE (1)

GLACIER HEIGHTS PRESSURE ZONE (2)

MAIN PRESSURE ZONE (6)

RICHMOND HILLS PRESSURE ZONE (3)

UNIT WELL 9

ALLIS HEIGHTS RESERVOIR

SOUTHEAST PRESSURE ZONE (4)

PRESSURE ZONE (11)

NORTHWEST PRESSURE ZONE (8)

WEST PRESSURE ZONE (10)

SOUTHWEST PRESSURE ZONE (7)

SMITH PRESSURE ZONE (9)

LAKE MENDOTA

LAKE MONONA

LAKE WINGRA

LAKE WAUBESA

UNIVERSITY BAY

MONONA BAY

SQUAW BAY

UPPER MUD LAKE

YAHARA RIVER

CHEROKEE MARSH

STARKWEATHER CREEK

PASSAGE BRANCH

BLACK EARTH CREEK

LEGEND

20 UNIT WELL NUMBER

● WELL

■ RESERVOIR

▲ ELEVATED STORAGE

⊙ BOOSTER PUMP STATION

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FIGURE 1-1

LOCATION OF UNIT WELL 9 & OTHER WATER SYSTEM FACILITIES

MADISON WATER UTILITY

MADISON, WISCONSIN

SEPT 2006

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PRF = \\usstps01\DATA\work\Projects\82359\gra\V7 dgn\FILE 02 = ETW1117L.dgn
DATE=Thu Sep 7 15:13:06 2006 Levels = 1-63
DGN = \\usstps01\data\work\Projects\82359\gra\V7 dgn\FIG1-1.DGN

# CHAPTER 2

# HYDROGEOLOGIC CONDITIONS

# 2.0 HYDROGEOLOGIC CONDITIONS

## 2.1 LAND USE, TOPOGRAPHY, AND DRAINAGE

Land use in the area is primarily residential with some commercial uses in distant areas. Current zoning immediately around Unit Well 9 is Residential (R1, R2, and R3). A portion of the City of Madison zoning map for the Unit Well 9 area is in Appendix D. Land parcels in the Town of Blooming are located approximately 1,500 feet east and west, respectively, from Unit Well 9. The City of Monona is located approximately 2,800 feet west of Unit Well 9.

Well 9 is located on the east edge of what appears to be a northeast-southwest trending drumlin. The ground surface elevation at Unit Well 9 is approximately 925 feet above mean sea level (MSL). The elevation of the drumlin top is approximately 943 ft MSL. Locally, drainage from Well 9 is southward, then westward toward Lake Monona.

## 2.2 GEOLOGY

The area was glaciated by the Green Bay Lobe during the Wisconsinan Stage. The rocks and unlithified deposits in the area range from Precambrian basement rocks to recent soils. The bedrock from oldest to youngest includes Precambrian basalt and Cambrian age bedrock consisting of sandstone, dolomite, and shale.

Figure 2-1 is a geologic cross-section through Unit Wells 9 and 30. A formation log for strata encountered at Unit Well 9 is in Appendix C. The stratigraphic sequence encountered in the wells is briefly described in the following:

### 2.2.1 Precambrian Basement Bedrock

Precambrian bedrock was encountered in water supply Well 9 at a depth of 830 feet below ground surface. The Precambrian bedrock encountered in Well 9 is basalt. The top part of the formation has been altered to dark red clay (Wisconsin Geological and Natural History Survey (WGNHS) Well Log DN-87).

### 2.2.2 Cambrian Bedrock

Cambrian age rocks encountered in Unit Well 9 include in ascending order: the Mount Simon Formation, the Eau Claire Formation, Wonewoc Formation, Tunnel City Group, and Trempealeau Group.

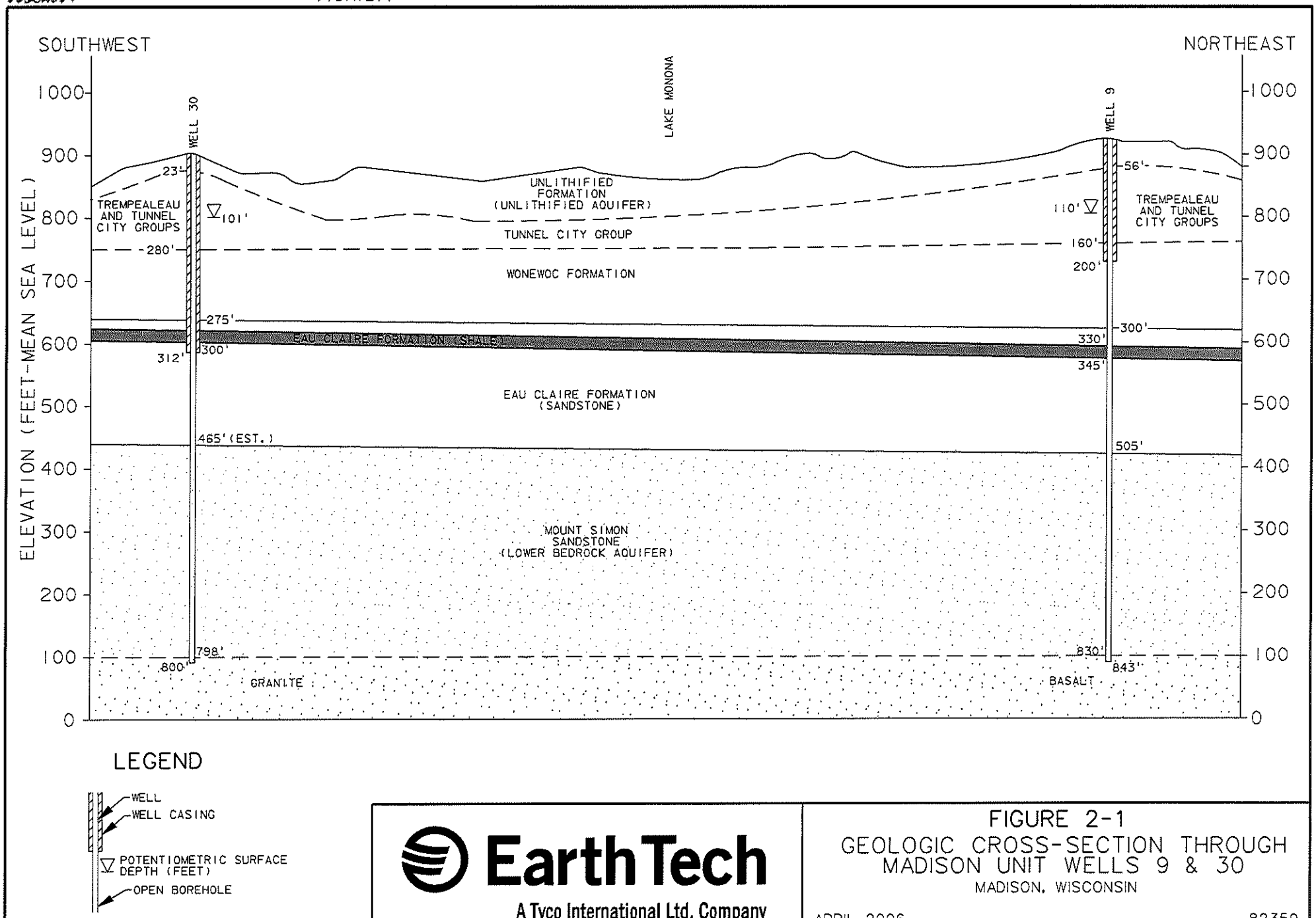
Cambrian age rocks are relatively flat lying in the Madison area. The thickness of deep rock units appears to be relatively consistent in the Madison area, although there are textural and compositional changes, laterally. The occurrence and thickness of the upper Tunnel City/ Trempealeau Groups bedrock varies, because it is the upper erosional surface. The boundary between the Wonewoc Formation and Tunnel City Group is not known with certainty. For this report, glauconitic sandstones are classified as part of the Tunnel City Group. Figure 2-1 shows the strata above the Tunnel City / Trempealeau Groups at Well 9 consists of unlithified deposits. A red, dolomitic shale layer approximately 15 feet thick appears to be laterally extensive through the upper part of the Eau Claire Formation.

$$LEVELS$$
$$PRF$$
$$DATE$$
$$DGN$$

$$DATE$$

$$RFO1$$
$$REFO2$$
$$RFO2$$

$$RFO3$$
$$REFO4$$
$$RFO4$$




## LEGEND

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# FIGURE 2-1
## GEOLOGIC CROSS-SECTION THROUGH MADISON UNIT WELLS 9 & 30
MADISON, WISCONSIN

APRIL 2006

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### 2.2.3 Unlithified Deposits

Bedrock is mantled by unlithified glacial till and alluvial deposits. Clayton and Attig (1997) classify the local near surface unlithified deposits in the immediate vicinity of Unit Well 9 as part of the Horicon Member of the Holy Hill Formation.

At Unit Well 9, the driller described the formation from the top of the sandstone bedrock (encountered at a depth of 56.5 feet) to the ground surface as yellow-gray sandy gravel with much silt (10-56.5 feet depth) and yellow-gray, dolomitic sandy till (0 to 10 feet in depth).

Soils in the immediate vicinity of Unit Well 9 are classified as the McHenry silt loam, and St. Charles silt loam (USDA, 1978). These soils have good contaminant attenuation potential. The DCRPC assigned a risk classification of low to moderate from surface activities in the Unit Well 9 area on the basis of several factors including soil properties (DCRPC, 1999).

## 2.3 HYDROGEOLOGY

In the study area, groundwater occurs within the lower bedrock aquifer, the upper bedrock aquifer, and the unlithified (sand and gravel) aquifer. Locally, the upper bedrock aquifer and sand and gravel aquifer are used for private domestic supplies. Municipal and industrial wells are constructed into the lower bedrock aquifer. Following is a brief discussion about the aquifers:

### 2.3.1 Lower Bedrock Aquifer

The lower bedrock aquifer occurs in the Mount Simon Formation, and lower part of the Eau Claire Formation. The Precambrian bedrock is the base of the lower bedrock aquifer, and the shale layer in the Eau Claire Formation is the upper confining unit. Water occurs within horizontal and vertical fractures, along bedding planes, and between sand grains in the aquifer. The saturated thickness of the lower bedrock aquifer appears to be approximately 485 feet thick in Unit Well 9. The hydraulic conductivity of the lower bedrock aquifer is estimated to be approximately 10 feet per day (ft/day) (Krohelski et. al., 2000). Well 9 is cased to a depth approximately 130 feet above the Eau Claire shale confining layer and is open to more saturated thickness than the lower bedrock aquifer.

The grouted casing in Unit Well 9 terminates in the upper bedrock aquifer and above the Eau Claire confining layer. Water levels measured in Unit Well 9 are believed to be representative of the composite upper and lower bedrock aquifers. It was reported by the Madison Water Utility that the static water level in Well 9 in 2004 was approximately 110 feet below ground level (approximately 815 ft MSL), which is approximately 235 feet above the top of the lower bedrock aquifer. Figure 4 in Appendix E shows the simulated potentiometric surface in the lower bedrock (Mt Simon) aquifer and shows the groundwater flow direction toward Unit Well 9 is from the east, southeast, south and southwest (DCRPC, 2004). Figure 4 shows the potentiometric surface elevation in the vicinity of Unit Well 9 at less than 840 feet MSL. The storativity of the lower bedrock aquifer is estimated to be approximately 0.0003, and the porosity is estimated to be approximately 30 percent (Bradbury, 2001). The porosity of the Eau Claire Formation is estimated to be 5 percent (Bradbury, 2001).

### 2.3.2 Upper Bedrock Aquifer

The upper bedrock aquifer occurs in the upper part of the Eau Claire Formation above the shale and within the Wonewoc Formation and Tunnel City/Trempealeau Groups. Water occurs within fractures, joints, and solution cavities in the dolomite bedrock and within fractures, along bedding planes, and between sand grains in the sandstone.

At Unit Well 9, the combined thickness of the sandstone, dolomite, and siltstone above the shale confining layer is approximately 274 feet. The saturated thickness of the upper bedrock aquifer in the vicinity of Unit Well 9 appears to be approximately 220 feet. Figure 3 (DCRPC, 2004) in Appendix F shows the simulated potentiometric (water table) surface in the upper bedrock aquifer and unlithified (sand and gravel) aquifer. The elevation of the water table surface at Unit Well 9 was not measured. Figure 3 in Appendix F shows the elevation of the simulated water table surface in the vicinity of Unit Well 9 at approximately 860 ft above MSL.

The hydraulic conductivity of the upper bedrock aquifer is estimated to be approximately 5 ft/day (Krohelski et. al., 2000). The porosity of the formations is estimated to be approximately 5 percent (Bradbury, 2001).

### 2.3.3 Sand and Gravel Aquifer

The sand and gravel aquifer occurs in the near surface sand and gravel deposits. The unlithified materials are thin in the vicinity of Unit Well 9. The driller did not report whether saturated formation was encountered in the unlithified materials. Where present, the hydraulic conductivity of the sand and gravel aquifer varies. For modeling purposes, Krohelski et. al., 2000, assumed a hydraulic conductivity of 7 ft/day and a porosity of 20 percent for the sand and gravel aquifer.

### 2.3.4 Groundwater Flow System

Average annual precipitation in the City of Madison area is reported to be approximately 30 to 30.5 inches per year (Cline, 1965; Cotter et. al., 1969). Cline (1965) estimated that the amount of recharge to the groundwater reservoir in the Upper Yahara River basin was approximately 6 in/yr. Swanson (1996) estimated that the recharge rate in Dane County ranges from 0.3 to 6.7 inches per year (in/yr) and has an average value of 2.6 in/yr. Precipitation infiltrates through the till layer and recharges the unlithified and shallow bedrock aquifers. In some areas, a small percentage of water moves downward from the upper bedrock aquifer through the Eau Claire confining layer and into the lower bedrock aquifer. Map 7 in Appendix E shows areas of recharge to, and discharge from the lower bedrock (Mount Simon) aquifer (Bradbury et. al, 1999; DCRPC 1999). Map 7 in Appendix E shows that Unit Well 9 is located in a recharge area for the lower bedrock aquifer. Discharge from the unlithified and shallow bedrock aquifers is to pumping wells and/or to surface waters (lakes, streams and wetlands) in the area. Locally, discharge from the lower bedrock aquifer is primarily to pumping wells.

# CHAPTER 3

# WELLHEAD PROTECTION AREA DELINEATION

# 3.0 WELLHEAD PROTECTION AREA DELINEATION

This chapter describes methodologies used to define the Zone of Influence (ZOI) and Zone of Contribution (ZOC) for Unit Well 9.

## 3.1 ZOI

The ZOI for Unit Well 9 was estimated in accordance with Wisconsin Department of Natural Resources (DNR) requirements based on 30 days of continuous pumping at the rated pump capacity, assuming no aquifer recharge. The ZOI was determined using the Theis Equation. The estimated ZOI for Unit Well 9 to a radius where there is 1 foot of drawdown, is approximately 9.7 miles. The estimated ZOI to a radius of zero drawdown is approximately 23.6 miles. These estimated ZOI are believed to be conservatively large, because the Theis Equation does not incorporate aquifer recharge or the effects of potential hydraulic boundaries. For the calculation, it was assumed that the majority of the open borehole, open to both the lower and upper bedrock aquifers, supplies water to Unit Well 9. Distance-drawdown calculations are in Appendix G.

## 3.2 GROUNDWATER MODEL DEVELOPMENT AND ZOC DELINEATION

As part of the Dane County regional hydrologic study, a regional groundwater flow model was prepared for Dane County and was used to delineate time-related ZOCs for municipal wells (Krohelski et. al., 2000) including Unit Well 9. The Dane County regional hydrologic study was conducted cooperatively by the WGNHS, DCRPC, and the United States Geological Survey (USGS). The USGS modular groundwater modeling code (MODFLOW (McDonald & Harbaugh, 1988)) was used to simulate groundwater flow. After the calibrated groundwater flow model was prepared, PATH3D (Zheng, 1991) was used to determine time-related ZOCs.

The model domain covers an area of 50 by 60 miles and is divided into 144,000 nodes. Each node has regular spacing of 1,312.4 feet (400 meters) on a side. The grid has 200 rows and 240 columns (Krohelski et. al., 2000).

In 2002, the original groundwater flow model was converted from a three-layer model to a four-layer model. The sand and gravel aquifer is Layer 1. The upper bedrock aquifer is Layer 2. The Eau Claire Formation is layer 3, and the lower bedrock aquifer is Layer 4. The model was recalibrated and various boundary conditions were modified (DCRPC, 2001). Other aquifer parameters input into the model were as previously described in Chapter 2 and in Krohelski et. al., 2000.

Four groundwater flow simulations were performed using the calibrated model and different pumping rates for existing and known future municipal supply wells in Dane County (Bradbury, 1998). Simulation No. 1 was performed using the projected pumping rates from municipal wells for the year 2030. Total City of Madison 2030 pumping is projected to be 44.328 million gallons per day (MGD). For Simulation No. 1 projected 2030 pumping was distributed evenly among the city's existing and planned wells for an average rate of 1.4413 MGD. Pumping at a rate of 1.4413 MGD is equivalent to pumping continuously at a rate of approximately 1000 gallons per minute (gpm).

Simulation No. 2 was performed using the "maximum sustained pumping rate" or "one-half design capacity" (Bradbury, 1998). The maximum sustained pumping rate (one-half design capacity) for Unit Well 9 is 1.224 MGD. Pumping at a rate of 1.224 MGD is equivalent to pumping continuously at a rate of 850 gpm.

Simulation No. 3 was performed using full design capacity. Full capacity for Unit Well 9 is 2.448 MGD. Pumping at a rate of 2.448 MGD is equivalent to pumping continuously at a rate of 1,700 gpm.

Simulation No. 4 was performed using the average pumping rate for Well 9 for the maximum year. The maximum pumpage year for Well 9 was 2003 when Unit Well 9 was pumped at an average rate of approximately 1.34 MGD. Pumping at a rate of 1.34 MGD is equivalent to pumping continuously at a rate of 931 gpm.

PATH3D (Zheng, 1991) was used to determine the time-related ZOCs for Unit Well 9. Particles were input in the model around Well 9 and then tracked backward from the well to points where they enter the groundwater flow system.

## 3.3 ZOC

The area that recharges or contributes water to Unit Well 9 is defined as the ZOC. The areal extent of the ZOC (capture zone) depends on the pumping rate, amount of horizontal and vertical recharge, aquifer characteristics, pumping duration, and other stresses such as other pumping wells. It is beneficial to know the well capture zone, because contaminants introduced within the zone could reach Unit Well 9.

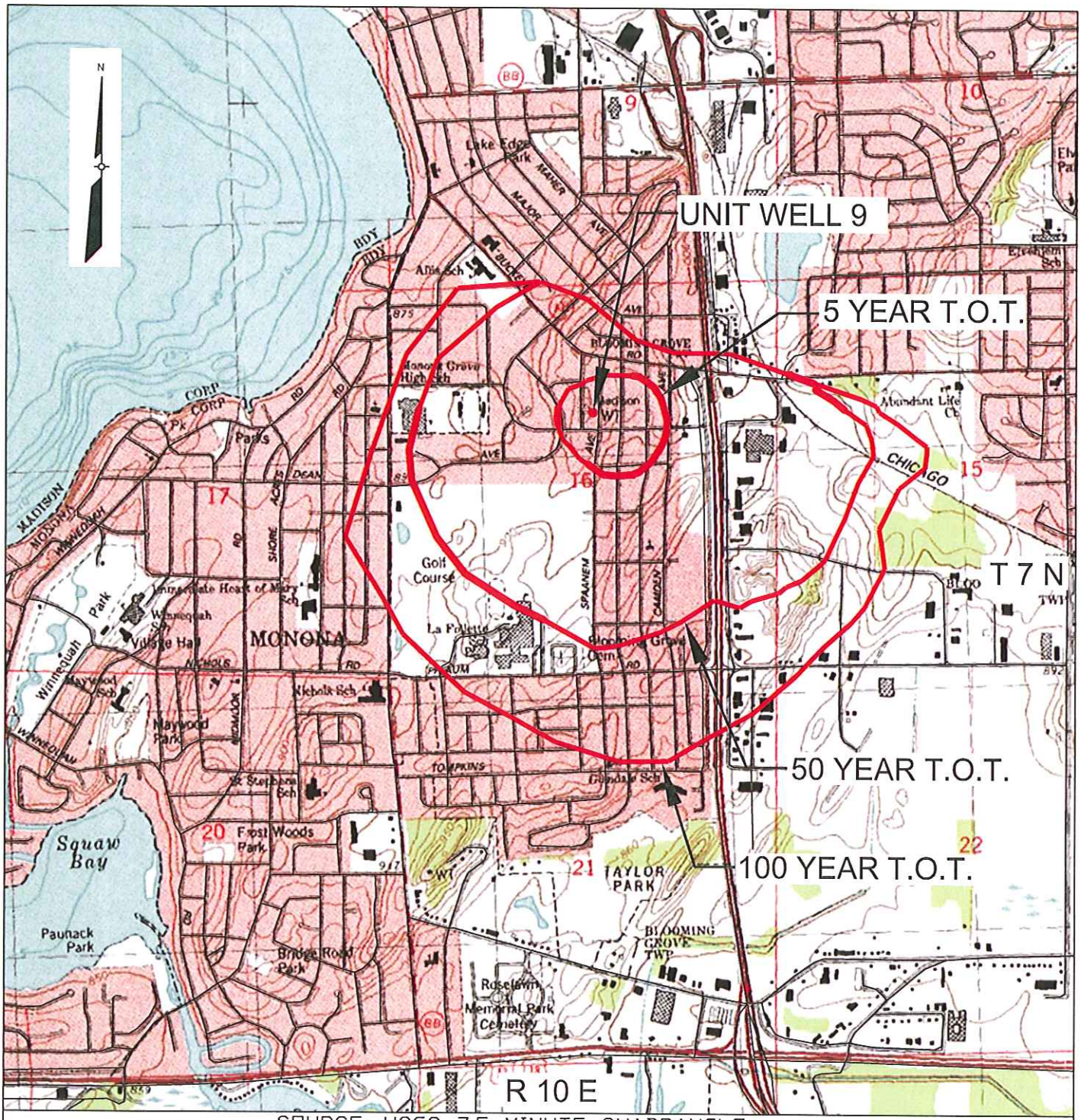
Figure 3-1 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 9 based on the projected 2030 pumping rate (Simulation No. 1). Figure 3-2 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 9 based on the one-half design capacity pumping rate (Simulation No. 2). Figure 3-3 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 9 based on the full design capacity pumping rate (Simulation No. 3). Figure 3-4 shows the 5-, 50-, and 100-year TOT ZOCs for Unit Well 9 based on the average pumping rate for Well 9 for the maximum year (Simulation No. 4).

The capture zones extend toward the south and southeast in the simulated upgradient groundwater flow directions. Table 3-1 summarizes the upgradient and downgradient extent of capture zones for the various pumping simulations. The ZOCs delineated using the Simulation No. 3 pumping rates are more conservatively large compared to the ZOCs delineated using the Simulations Nos. 1, 2, and 4 pumping rates.

Figure 2 in Appendix H shows ultimate regional ZOCs for Unit Well 9 and for other wells in Dane County. The ZOCs for Unit Well 9 are located entirely within Dane County.

## 3.4 WELLHEAD PROTECTION AREA

The Wisconsin Administrative Code (Chapter NR811.16(5)(e)) requires that a WHPA for municipal water supply wells "encompass, at a minimum, that portion of the recharge area equivalent to a 5-year time of travel to the well." Any of the four simulations described above could be used to model the 5-year TOT ZOC for Unit Well 9. It is possible that Unit Well 9 could




SOURCE: USGS 7.5 MINUTE QUADRANGLE,
MADISON WEST & MADISON EAST WISCONSIN, 1983

T.O.T. = TIME OF TRAVEL
Z.O.C.s = ZONES OF CONTRIBUTION

SCALE 1: 24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

DANE COUNTY

INDEX MAP

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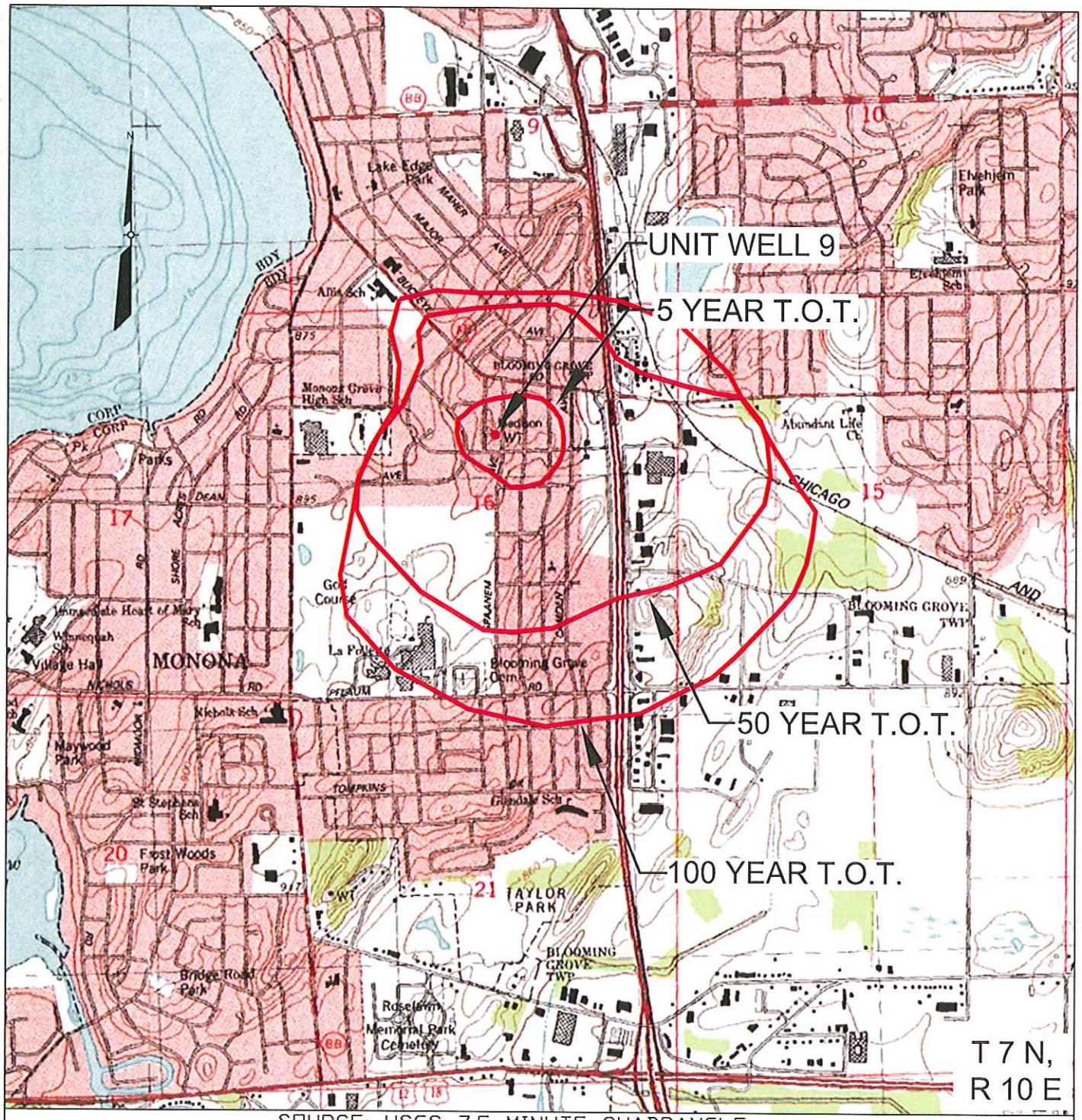
FIGURE 3-1

5, 50 & 100 YEAR T.O.T. Z.O.C.s ASSUMING PROJECTED 2030 PUMPING RATE
MADISON, WISCONSIN

MARCH 2005

82359

Xrefs: L:\work\Projects\82359\gra\DANE_MINRDS_OVERLAY.dwg
Image: L:\work\Projects\82359\gra\madisonwells2.jpg
Time: Mar 10, 2005 - 7:15pm udp
PSLtscale: Ltscale: 1
File: L:\work\Projects\82359\gra\FIG3-1_wells.dwg




SOURCE: USGS 7.5 MINUTE QUADRANGLE,
MADISON WEST & MADISON EAST WISCONSIN, 1983

T.O.T. = TIME OF TRAVEL
Z.O.C.s = ZONES OF CONTRIBUTION

SCALE 1: 24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

DANE COUNTY

INDEX MAP

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FIGURE 3-2

5, 50 & 100 YEAR T.O.T. Z.O.C.s ASSUMING 50 PERCENT CAPACITY PUMPING RATE
MADISON, WISCONSIN

MARCH 2005

82359

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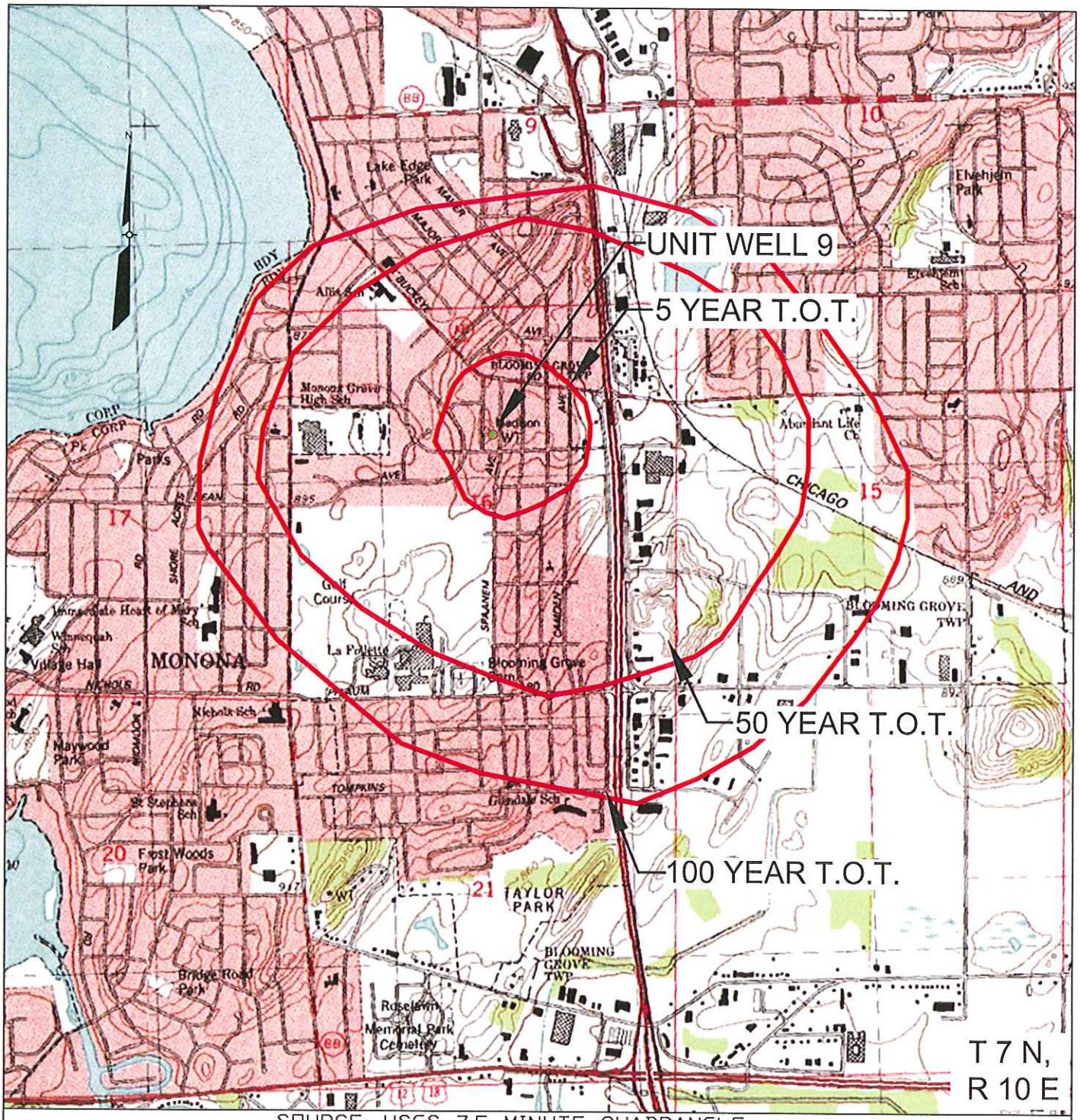


SOURCE: USGS 7.5 MINUTE QUADRANGLE,
MADISON WEST & MADISON EAST WISCONSIN, 1983

T.O.T. = TIME OF TRAVEL
Z.O.C.s = ZONES OF CONTRIBUTION

SCALE 1: 24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

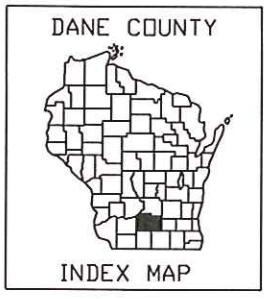


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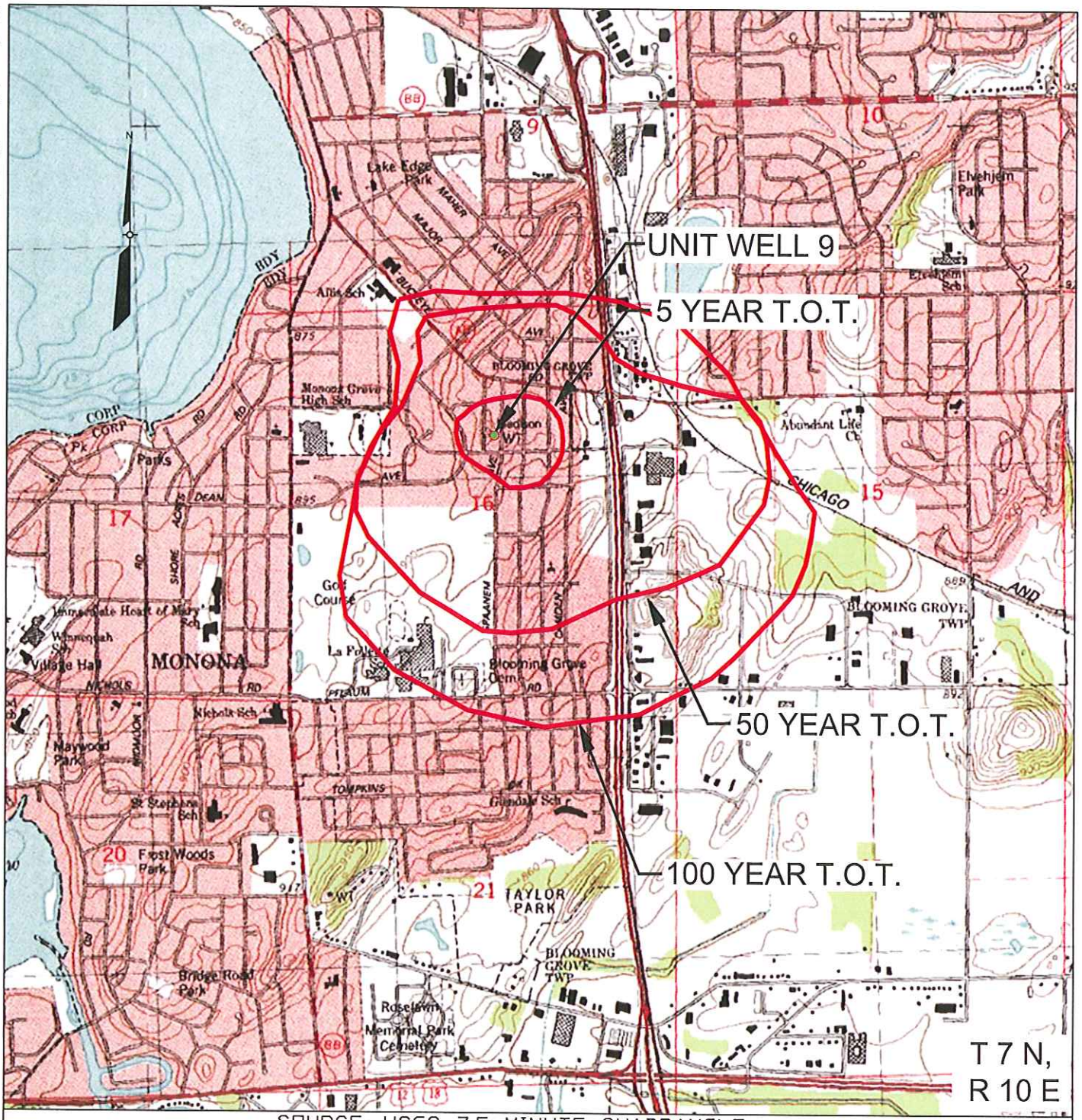
FIGURE 3-3

5, 50 & 100 YEAR T.O.T. Z.O.C.s ASSUMING FULL CAPACITY PUMPING RATE
MADISON, WISCONSIN

MARCH 2005

82359




SOURCE: USGS 7.5 MINUTE QUADRANGLE,
MADISON WEST & MADISON EAST WISCONSIN, 1983

T.O.T. = TIME OF TRAVEL
Z.O.C.s = ZONES OF CONTRIBUTION

SCALE 1: 24000

1 1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

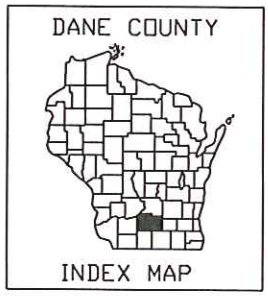



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FIGURE 3-4
5, 50 & 100 YEAR T.O.T. Z.O.C.s ASSUMING PUMPING AT AVERAGE RATE DURING THE MAXIMUM YEAR

MARCH 2005 MADISON, WISCONSIN 82359

ZONE B
1200' RADIUS
ZONE A
N
0' 300' 600' 1200'
SCALE

ZONE B
1200' RADIUS
SHAFFER AVE.
SPANEM AVE.
ALLIS AVE.
UNIT WELL 9
5 YEAR TIME OF TRAVEL CAPTURE ZONE (ZONE A)
E. DEAN AVE.
ZONE A
CAMDEN ROAD
100 YEAR TIME OF TRAVEL CAPTURE ZONE
50 YEAR TIME OF TRAVEL CAPTURE ZONE
CHICAGO AND NORTHWESTERN RAILROAD

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FIGURE 3–5
WELLHEAD PROTECTION AREA
UNIT WELL 9
MADISON, WISCONSIN
SEPTEMBER 2006 46945

Xrefs: L:\work\Projects\82359\gra\wells_zoc_max.dwg
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L:\work\Projects\82359\gra\GIS\New\WELL14ZOC.dwg
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PSLtscale: Ltscale: 1
File: L:\work\Projects\82359\gra\UW_9.dwg Time: Sep 25, 2006 - 8:10am

**TABLE 3-1**
**SUMMARY OF EXTENT OF ZOCs (CAPTURE ZONE)**
**WELLHEAD PROTECTION UNIT WELL 9**
**MADISON, WISCONSIN**

| Item | Simulation No. 1 (projected 2030 pumping rates) | Simulation No. 2 (one-half design capacity pumping rates) | Simulation No. 3 (continuous pumping at full capacity) | Simulation No. 4 Average Pumping Rate During Maximum Pumpage Year |
|---|---|---|---|---|
| Simulated Pumping Rate (MGD) | 1.4413 (1,000 GPM) | 1.224 (850 GPM) | 2.448 (1,700 GPM) | 1.34 (931 GPM) |
| **Upgradient Extent of ZOC (feet)** | | | | |
| 5-year TOT | 1,100 | 1,000 | 1,300 | 950 |
| 50-year TOT | 3,750 | 3,500 | 4,400 | 3,850 |
| 100-year TOT | 4,700 | 4,500 | 5,850 | 4,650 |
| **Downgradient Extent of ZOC (feet)** | | | | |
| 5-year TOT | 400 | 350 | 700 | 500 |

Notes:

MGD = Million Gallons per Day
ZOC = Zone of Contribution
TOT = Time of Travel

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be pumped at near maximum capacity without interruption. Therefore, Simulation No. 3 provides a realistic, but very conservative model of well capture zones for Unit Well 9. Simulation No. 3 was used to generate the long-term capture zones and WHPA for Unit Well 9.

The 5-year TOT ZOC for Unit Well 9 extends approximately 1,300 feet upgradient of the well, and approximately 700 feet downgradient from the well. The 100-year TOT ZOC extends approximately 5,850 feet upgradient from the Unit Well 9. However, protecting the entire 100-year TOT ZOC from Unit Well 9 to the upgradient boundary at the same level of protection, as the area within the 5-year TOT ZOC is likely too severe.

Figure 3-5 shows the WHPA for Unit Well 9. Two zones of protection are within the WHPA. Zone A is the area around Unit Well 9 that is defined by the 5-year TOT ZOC delineated for Simulation No. 3 (full design capacity pumping rate). Zone B is the area around Unit Well 9, beyond Zone A, that is defined by a 1,200-foot fixed radius around Unit Well 9. This radius is selected because the Wisconsin Administrative Code Chapter NR 811.16(4) requires a 1,200-foot separation distance between a municipal water supply well and certain contamination sources.

The boundary of Zone B is larger than the 5-year TOT ZOC delineated for Unit Well 9 on the downgradient side of the well, but is slightly smaller on the upgradient side. The WHPA will provide a conservative protection zone to account for changes in pumping rates, pumping duration, and interference drawdown from other existing and future wells. The WHPA appears to be located entirely within the City of Madison, however, property in the Town of Blooming Grove is immediately east of the WHPA.

# CHAPTER 4

# POTENTIAL CONTAMINANT SOURCES

# 4.0 POTENTIAL CONTAMINANT SOURCES

## 4.1 CONTAMINANT SOURCE INVENTORY

A CSI was performed for the Unit Well 9 area during February 2005. The CSI consisted of a search of government records, interviews, and a reconnaissance survey of the area within a ½-mile radius and the recharge area equivalent to the delineated 100-year TOT of Unit Well 9. General land use observations and reconnaissance were made on February 8, 2005.

Figure 4-1 shows the location of potential, existing, and former contaminant sources in the WHPA within a ½-mile radius and the recharge area equivalent to the delineated 100-year TOT of Unit Well 9. Table 4-1 summarizes potential contaminant sources that were identified and/or reported to be within the WHPA and review area.

Potential, existing, and former contaminant sources within the WHPA and ZOCs for Unit Well 9 include former spills and potential spills along roads and main transportation corridors, active and closed aboveground storage tank (AST) sites, active and closed underground storage tank (UST) sites, active and closed leaking underground storage tank (LUST) sites, drycleaners, road salt use, and pesticide, herbicide, and nutrient loading on commercial and residential lawns.

Based on the available information, the following are descriptions of known potential, existing, and former contaminant sources in the WHPA within a ½-mile radius and the recharge area equivalent to the delineated 100-year TOT of Unit Well 9:

The location of the nearest storm sewer is not known. The nearest section of storm sewer shown on available mapping is approximately 800 feet west of Unit Well 9.

The nearest sanitary sewer main is located in Spaanem Avenue, approximately 57 feet east of Unit Well 9.

There are no apparent private sewage disposal systems or water supply wells in the general vicinity of Unit Well 9.

Based on the site reconnaissance and a review of the Wisconsin registered storage tank list, two active UST sites are located within approximately 1,200 feet of Unit Well 9. The first site is located at 4716 Camden Road, which is approximately 1,100 feet east of Unit Well 9. The second site is located at 4902 Buckeye Road, which is approximately 1,200 feet northeast of Unit Well 9.

There are no reported LUST sites within 1,200 feet of Unit Well 9. The nearest reported LUST site is located approximately 1,300 feet east-southeast of Unit Well 9 at 5005 Allis Avenue. The site has been closed since August 1995.

Based on the site reconnaissance and a review of the Wisconsin registered storage tank list, there are no AST sites reported within 1,200 feet of Unit Well 9. The nearest active AST is located approximately 1,350 feet east-southeast of Unit Well 9 at 1826 South Stoughton Road.

Based on the review of Wisconsin spills, one spill of unknown status and one active spill are located within approximately 1,200 of Unit Well 9. The spill of unknown status occurred in June 2002 when an unknown quantity of pesticide and/or fertilizer was spilled. This site is located at 4704 Allis Avenue, approximately 300 feet southeast of Unit Well 9. The second site is an active spill site, located at 4808 Turner Avenue, and is located approximately 700 feet southeast of Unit Well 9. This spill occurred in 1985 and is considered a historic case.

Two dry cleaning businesses are located in the general vicinity of Unit Well 9. One is located approximately 3,000 feet west of Unit Well 9 at 4500 Monona Drive. The other is located at 2301 Advance Road, approximately 4,600 feet southeast of Unit Well 9.

The nearest golf course is Monona Golf Course and is located approximately 2,500 to 5,000 feet southwest of Unit Well 9.

There are no solid waste disposal sites in the Unit Well 9 WHPA. The nearest known solid waste disposal sites to Unit Well 9 are the Midwest Steel site located approximately 4,500 feet southeast, and the Hy-Ho Silver, Inc. site located approximately 1 mile south-southeast. The type of waste reported at the Midwest Steel site is "auto shredder." The type of waste at the Hy-Ho silver, Inc. site was not reported (DCRPC, 1999). The Superfund database lists the status of the Hy-Ho Silver, Inc. site as "no further remedial action planned" (EDR, 2005).

The nearest cemetery is the Blooming Grove Cemetery located approximately 3,550 to 4,000 feet southwest of Unit Well 9.

There are no apparent ponds in the vicinity of Unit Well 9.

There are no sludge or septage spreading areas in the vicinity of Unit Well 9. The nearest approved septage application site is located approximately 4 miles northeast of Unit Well 9 (DCRPC, 1999).

According to the DNR BRRTS website, there are no properties with residual groundwater contamination exceeding Ch. NR 140 enforcement standards as recorded on the GIS registry within 1,200 feet of Unit Well 9.

Based the site reconnaissance and a review of the government records, no spreading of manure or other wastes are occurring in the vicinity of Unit Well 9.

No bulk salt storage sheds, or bulk pesticide, fertilizer storage, and/or mix-load sites were identified within the ½-mile radius or the recharge area equivalent to the delineated 100-year TOT of Unit Well 9, or within the upgradient recharge area.

The separation distances between Unit Well 9 and potential contaminant sources identified in Wisconsin Administrative Code NR 811.16 are summarized in Table 4-2. It appears that required separation distances from Unit Well 9 and potential contaminant sources identified in the code, are currently being met.

**TABLE 4-1**
**CONTAMINANT SOURCE INVENTORY SUMMARY**
**WELLHEAD PROTECTION UNIT WELL 9**
**MADISON, WISCONSIN**
**MARCH 2005**

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 1 | Kipfer Harlow<br>4704 Allis Avenue<br>Madison, WI | EDR Report-<br>WI - SPILLS | SPILLS: Unknown quantity of pesticide and/or fertilizer on 5/14/02. | Unknown | 300 ft. southeast | Zone A | Moderate |
| 2 | Rick Rdland<br>4808 Turner Avenue<br>Madison, WI | EDR Report-<br>WI - SPILLS (DNR Activity No. 04-13-040728) | SPILLS - unknown gallons of unknown substance was spilled into sanitary sewer on 11/24/85, case open - historic spill; further action may not be necessary. | Active | 700 ft. southeast | Zone A | Low |
| 3 | Ken Strand<br>4716 Camden Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 98976) | Active UST: 300-gallon fuel oil (Tank ID No. 273111). | Active | 1,100 ft. east | Zone A | Moderate - Low |
| 4 | Helen Marks Dicks<br>4902 Buckeye Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 87270) | Active UST: 265-gallon fuel oil (Tank ID No. 273363) | Active | 1,200 ft. northeast | Zone A | Low |
| 5 | Town Of Blooming Grove<br>5005 Allis Avenue<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-002705), Registered UST (Facility ID Nos. 138213 and 138214) | LUST case closed on 8/28/95. Unknown quantity of unknown substance was released (soil contamination). Closed/Removed USTs: 3,000-gallon leaded gasoline (Tank ID No. 275517); 500-gallon diesel (Tank ID No. 275516). | Active | 1,300 ft. east/southeast | Zone A | Low |
| 6 | Roy Sternberg (Former Owner)<br>1826 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - Registered AST (Facility ID 190939) | Active AST: 550-gallon used motor oil (Tank ID No. 660294). | Active | 1,350 ft. east/southeast | ½ mile radius | Moderate |
| 7 | Car Corp. of Madison Inc. (Dent Décor)<br>1850 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000008227 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry.<br><br>Visual Inspection | Conditionally exempt small quantity generator. | Active | 1,500 ft. east - northeast | ½ mile radius | Low |
| 8 | Checkers Auto Parts<br>1830 South Stoughton Road<br>Madison, WI | EDR Report-<br><br>EPA ID No. WIR000051011 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br><br>Visual Inspection | Small quantity generator | Active | 1,550 ft. east-northeast | ½ mile radius | Low |
| 9 | Residence<br>4208 Bainbridge Street<br>Madison, WI | Visual Inspection | Fuel Oil. | Active | 1,550 ft. northwest | ½ mile radius | Low |
| 10 | Sherman Williams Paint<br>1946 Service Road<br>Madison, WI | Visual Inspection | Commercial quantities of paints and thinners. | Active | 1,650 ft. east - southeast | ½ mile radius | Low |
| 11 | MSI Machine Service Inc.<br>1954 Service Road<br>Madison, WI | Visual Inspection | Small quantities of fluids, oils, and lubricants. | Active | 1,700 ft. east - southeast | ½ mile radius | Low |
| 12 | Barbara Sutter<br>4322 Buckeye Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 198608), BRRTS (DNR Activity No. 09-13-297256) | Closed/Removed USTs: 300-gallon leaded gasoline (Tank ID No. 761184); 200-gallon leaded gasoline (Tank ID No. 761177); 200-gallon kerosene (Tank ID No. 761183). BRRTS: UST closure of 3 tanks, no site investigation required 8/8/00. | Closed/Removed | 1,800 ft. northwest | ½ mile radius | Low |

**TABLE 4-1 (cont.)**

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 13 | Marilynn and Byron Chase<br>307 East Lakeview Avenue<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 107477) | Closed/Removed UST: 275-gallon fuel oil (Tank ID No. 273793) | Closed/Removed | 2,000 ft. north | ½ mile radius | Low |
| 14 | Dean Medical Office (Former Owner)<br>1821 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - Registered AST (Facility ID 672170) | Active AST: 2,500-gallon diesel (Tank ID No. 948481). | Active | 2,000 ft. east | ½ mile radius | Moderate |
| 15 | Boumatic LLC<br>1919 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID080494172 -, RCRA-LQG, FINDS - Aerometric Information Retrieval System/ARIS Facility Subsystem; National Emission Inventory; RCRAIS, Toxic Release Inventory, WI Environmental Site Registry, TRIS<br><br>WI - LUST (DNR Activity No 03-13-001948), Registered UST (Facility ID 672719), SPILLS (DNR Activity No. 04-13-038252) | LUST case open since 8/19/93. Unknown quantity of fuel oil and TCE was released (soil and groundwater contamination). Closed/Removed USTs: 2 - 10,000 fuel oil (Tank ID Nos. 271546 and 271557); 2,000-gallon unknown substance (Tank ID No. 272052). Active UST: 6,000-gallon fuel oil (Tank ID No. 273736). SPILLS - Case open since 2/25/81. Historic spill. Further action may not be necessary. (Soil contamination). | Active | 2,100 - 2,800 ft. east/ southeast | ½ mile radius | Moderate |
| 16 | Mautz Paint<br>2030 Service Road<br>Madison, WI | Visual Inspection | Commercial quantities of paints and thinners. | Active | 2,100 ft. southeast | ½ mile radius | Low |
| 17 | Barrs Kawasaki<br>1701 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988629903 - RCRA-SQG, FINDS - RCRAIS<br><br>Visual Inspection | Small quantity generator. | Active | 2,100 ft. northeast | ½ mile radius | Low |
| 18 | Sani Matic Systems<br>1915 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988579009 - RCRA-SQG, FINDS - National Compliance Database, RCRAIS, WI Environmental Site Registry<br><br>WI - ERP (DNR Activity No. 02-13-298256) | Conditionally exempt small quantity generator. ERP: Soil contamination - closure letter/no further action letter issued. | Active | 2,150 ft. east/southeast | ½ mile radius | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 19 | PDQ Gas Station (#115) & Jiffy Stop SVC Station<br>4402 and 4426 Buckeye Road<br>Madison, WI | EDR Report-<br>EPA ID Nos. WI0000233841 and WI0000374819 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br><br>WI - LUST (DNR Activity Nos. 03-13-001599, 03-13-002546, and 03-13-002419), Registered UST (Facility ID 117502 and 117501), SPILLS (DNR Activity Nos. 04-13-051073 and 04-13-041899).<br><br>Visual Inspection | Conditionally exempt small quantity generator. LUST case closed on 5/30/95. Unknown quantity of unleaded gasoline was released (soil contamination). LUST case closed on 4/23/99. Unknown quantity and an unknown substance was released (soil contamination). LUST case closed in 2/21/95. Unknown quantity of an unknown substance was released (soil contamination). Closed/Removed USTs for Facility ID No. 117502: 3 - 12,000-gallon unleaded gasoline (Tank ID Nos. 272552, 272553, and 272554); 6,000-gallon diesel (Tank ID No. 272551); Closed/Removed USTs for Facility ID No. 117501: 8,000-gallon unleaded gasoline (Tank ID No. 272665); 6,000-gallon diesel (Tank ID No. 272666); 4,000-gallon unleaded gasoline (Tank ID No. 272664). Active USTs for Facility ID No. 117501: 1,000-gallon fuel oil (Tank ID No. 271843); 3 - 8,000-gallon unleaded gasoline (Tank ID Nos. 273911, 273912 and 273913); 12,000-gallon unleaded gasoline (Tank ID No. 273910); SPILLS - 12 gallons of unleaded gasoline spilled on 8/5/99. Open case - historic spill. Further action may not be necessary. Unknown amount of unknown substance spilled on 5/4/87. Open case - historic spill. Further action may not be necessary. | Active | 2,250 ft. east-northeast | ½ mile radius | Moderate |
| 20 | Nicolet Audiodiagnostics Division<br>2001 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID982603300 - RCRA-SQG, FINDS - RCRAIS | Small quantity generator. | Active | 2,300 - 2,600 ft. southeast | ½ mile radius | Low |
| 21 | Bark River Culvert and Equipment<br>4301 Buckeye Road<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-000331), Registered UST (Facility ID 674636), Institutional Control - Deed Restriction on the Property | LUST case closed 11/19/99. Unknown quantity of unleaded gasoline was released (soil and groundwater contamination). Closed/Removed USTs: 1,000-gallon diesel (Tank ID No. 272412); 3,000-gallon unleaded gasoline (Tank ID No. 272411); 500-gallon used motor oil (Tank ID No. 272413). | Active | 2,300 ft. east | ½ mile radius | Low |
| 22 | Betty Leiser<br>407 West Lakeview Avenue<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 56915) | Closed/Removed UST: 500-gallon fuel oil (Tank ID No. 273938). | Closed/Removed | 2,350 ft. north | ½ mile radius | Low |
| 23 | Allis Elementary School<br>4201 Buckeye Road<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-127898), Registered UST (Facility ID 79048) | LUST case closed on 1/12/99. Unknown quantity of an unknown substance was released. Closed/Removed UST: 500-gallon unknown substance (Tank ID No. 274214). | Active | 2,400 - 3,000 ft. northwest | ½ mile radius | Low |
| 24 | Lafollette High School<br>702 Pflaum Road<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-002164), Registered UST (Facility ID 678480) | LUST case closed 12/8/95. Unknown quantity of unknown substance was released (soil contamination). Closed/Removed USTs: 550-gallon used motor oil (Tank ID No. 273757); 10,000-gallon fuel oil (Tank ID No. 272409). Active UST: 10,000-gallon fuel oil (Tank ID No. 924201) | Active | 2,400 - 4,100 ft. south-southwest | ½ mile radius | Low |
| 25 | Dutch Mill Auto-Works & Marine<br>1601 South Stoughton Road<br>Madison, WI | Visual Inspection | Small quantities of automotive fluids, oils, and lubricants. | Active | 2,450 ft. northeast | ½ mile radius | Low |
| 26 | Monona Golf Course<br>Monona Drive<br>Madison, WI | Visual Inspection | Grass areas - nutrient, pesticide, herbicide loading. | Active | 2,500- 5,000 ft. southwest | All Zones | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 27 | Napa Autocare Center (Former Owner Clausen Automotive Inc.)<br>2118 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 63643), BRRTS (DNR Activity No. 09-13-293311)<br><br>Visual Inspection | Closed/Removed USTs: 550-gallon used waste oil (Tank ID No. 271454). BRRTS: UST closure - 550-gallon tank, no site investigation required 8/29/95. | Active | 2,500 ft. southeast | ½ mile radius | Low |
| 28 | Monona Grove High School<br>4400 Monona Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WID982423477 - RCRA-SQG, FINDS - RCRAIS<br><br>WI - Registered UST (Facility ID 674690), BRRTS (DNR Activity No. 09-13-291916)<br><br>Visual Inspection | Closed/Removed USTs: 2 - 5,000-gallon fuel oil (Tank ID Nos. 274883, 274884, and 274885). BRRTS - UST closure of 3 tanks, no site investigation required 7/5/95. | Active | 2,500 ft. west | ½ mile radius | Low |
| 29 | Thrifts Painting Outlet<br>1525 South Stoughton Road<br>Madison, WI | Visual Inspection | Commercial quantities of paints and thinners. | Active | 2,550 ft. northeast | ½ mile radius | Low |
| 30 | Lubriquip Inc.<br>2041 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988574182 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Conditionally exempt small quantity generator. | Active | 2,600 ft. southeast | ½ mile radius | Low |
| 31 | Blain's Farm & Fleet<br>2202 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000026005 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br><br>WI - SPILLS (DNR Activity Nos. 04-13-281049 and 04-13-528746)<br><br>Visual Inspection | Conditionally exempt small quantity generator. SPILLS (DNR Activity No. 04-13-281049) - Unknown quantity of motor oil and waste oil spilled into storm sewer and onto concrete/asphalt on 8/5/01, case closed on 8/6/01. SPILLS (DNR Activity No. 04-13-528746) - 30 gallons of hydraulic fluid was spilled on 3/19/93, case closed on 4/15/93 (excavated and disposed of contaminated soil). | Active | 2,750 - 3,300 southeast | Upgradient 50 year TOT | Low |
| 32 | Universal Presentation Concept (UPC Design & Manufacture)<br>1501 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WI0000876110 - RCRA-SQG, FINDS - Aerometric Information Retrieval System/AIRS Facility Subsystem, RCRAIS, WI Environmental Site Registry<br><br>Visual Inspection | Small quantity generator | Active | 2,750 ft. northeast | ½ mile radius | Low |
| 33 | City of Madison<br>111 East Dean Avenue<br>Monona, WI | EDR Report-<br>WI - Registered AST (Facility ID 154083) | Active AST: 500-gallon unleaded gasoline (Tank ID No. 202299); 500-gallon diesel (Tank ID No. 202298); 1,000-gallon used motor oil (Tank ID No. 920297). | Active | 2,750 ft. west/southwest | ½ mile radius | Moderate - Low |
| 34 | M&J Truck & Auto Repair<br>2201 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988596334 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br><br>WI - SPILLS (DNR Activity No. 04-13-047592)<br><br>Visual Inspection | SPILLS: 2 gallons of mineral spirits was contained and recovered on 9/9/92, open case - historic spill, further action may not be necessary. | Active | 3,000 ft. southeast | Upgradient ½ mile radius | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 35 | Klinke Cleaners<br>4500 Monona Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WID049027584 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br>Visual Inspection | Conditionally exempt small quantity generator. | Active | 3,000 ft. west | 50 year TOT | Low |
| 36 | Nakoma Dental Studio LTD<br>4604 Monona Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WID053687570 - RCRA-SQG, FINDS - RCRAIS | Small quantity generator. | Active | 3,050 ft. west - southwest | 50 year TOT | Low |
| 37 | Harry Hill<br>4123 Jerome Street<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 86537) | Closed/Removed USTs: 300-gallon fuel oil (Tank ID No. 273779). | Closed/Removed | 3,050 ft. northwest | 100 year TOT | Low |
| 38 | Citgo Gas Station (Formerly Monona Grove Amoco - Monona Grove Properties)<br>4624 Monona Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WID988592838 - RCRA-SQG, FINDS - RCRAIS and WI Environmental Site Registry<br>WI - LUST (DNR Activity No. 03-13-002094), Registered UST (Facility ID 52861)<br>Visual Inspection | LUST case closed on 12/11/95. Unknown quantity of an unknown substance was released (soil contamination). Temporarily Out of Service USTs: 12,000-gallon unleaded gasoline (Tank ID No. 272988); 2 - 10,000-gallon unleaded gasoline (Tank ID Nos. 272989 and 272990); 550-gallon used motor oil (Tank ID No. 272987). Closed/Removed USTs: 6,000-gallon leaded gasoline (Tank ID No. 272497); 550-gallon used motor oil (Tank ID No. 272485); 6,000-gallon unleaded gasoline (Tank ID No. 272496); 550-gallon fuel oil (Tank ID No. 272486); 8,000-gallon unleaded gasoline (Tank ID No. 272498). | Active | 3,100 ft. west southwest | 50 year TOT | Low |
| 39 | Phil's Car Care LLC<br>4422 Helgesen Drive<br>Madison, WI | Visual Inspection | Small quantities of automotive fluids, paints, oils, and lubricants. | Active | 3,100 ft. southeast | Upgradient 50 year TOT | Low |
| 40 | 513 Bowman Avenue<br>Madison, WI | EDR Report-<br>ERNS | Reported release of oil or hazardous substance. No further information. | Active | 3,100 ft. north | 50 year TOT | Low |
| 41 | A to Z Rental and Sales<br>2209 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - Registered AST (Facility ID 150022) | Active ASTs: 300-gallon diesel (Tank ID No. 202013); 275 used motor oil (Tank ID No. 963409); 300-gallon kerosene (Tank ID No. 202014). | Active | 3,100 ft. southeast | Upgradient 50 year TOT | Low |
| 42 | Harlan Teklad (Supersweet Feed)<br>1401 South Stoughton Road<br>Madison, WI | EDR Report-<br>FINDS - Aerometric Information Retrieval system\AIRS Facility Subsystem<br>WI - LUST (DNR Activity No. 03-13-000762), Registered UST (Facility ID 135075), BRRTS (DNR Activity No. 09-13-295362) | LUST case closed 04/9/91. Unknown quantity of diesel and fuel oil released (soil contamination). Closed/Removed USTs: 2 - 10,000-gallon diesel (Tank ID Nos. 271567 and 272091); 3 - 7,500-gallon fuel oil (Tank ID Nos. 272093, 272092, and 273126); 2 - 8,000-gallon diesel (Tank ID Nos. 265769 and 271566). BRRTS: UST closure - no site investigation required 3/14/90. | Active | 3,250 ft. northeast | 50 year TOT | Low |
| 43 | Cellular One Switch Facility<br>4417 Helgesen Drive<br>Madison, WI | EDR Report-<br>WI - Registered AST (Facility ID 150896) | Active AST: 1,000-gallon diesel (Tank ID No. 202281). | Active | 3,250 ft. southeast | Upgradient 50 year TOT | Low |
| 44 | Valley Bank<br>4607 Monona Drive<br>4605 Monona Drive<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-001738), Registered UST (Facility ID 140084) | LUST case closed on 4/8/97. Unknown quantity of an unknown substance was released (soil contamination). Closed/Removed USTs: 2 - 100-gallon leaded gasoline (Tank ID Nos. 274980 and 274981); 1,000-gallon used motor oil (Tank ID No. 274979); 1,500-gallon leaded gasoline (Tank ID No. 274984); 2 - 1,000-gallon leaded gasoline (Tank ID Nos. 274982 and 274983); 2 - 3,000-gallon leaded gasoline (Tank ID No. 274985 and 274986). | Active | 3,300 ft. west | 100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 45 | Roman Auto Body<br>2227 A South Stoughton Road<br>Madison, WI | Visual Inspection | Small quantities of automotive fluids, paints, oils, and lubricants. | Active | 4,000 ft. southeast | Upgradient<br>50 year TOT | Low |
| 46 | Maintenance Warehouse<br>4501 Helgesen Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000050914 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Conditionally exempt small quantity generator. | Active | 3,450 ft. southeast | Upgradient<br>50 year TOT | Low |
| 47 | Jenks (Alignment) Service Center<br>2318 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988604070 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br><br>Visual Inspection | Small quantity generator. | Active | 3,500 ft. southeast | Upgradient<br>50 year TOT | Low |
| 48 | Little Printing Company, LLC<br>4535 Helgesen Drive<br>Madison, WI | Visual Inspection | Small quantities of printing dyes, toners, and chemicals. | Active | 3,500 ft. southeast | Upgradient<br>50 year TOT | Low |
| 49 | Blooming Grove Cemetery<br>798 Pflaum Road<br>Madison, WI | Visual Inspection | Cemetery. | -- | 3,550 - 4,000 ft. southwest | 100 year TOT | Low |
| 50 | Bonner Auto Body<br>2402 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988578209 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br><br>WI - LUST (DNR Activity No. 03-13-284844), Registered UST (Facility ID 680032) | Conditionally exempt small quantity generator. LUST closed on 1/17/03. Unknown quantity of diesel release (soil contamination). Closed/Removed USTs: 500-gallon unleaded gasoline (Tank ID No. 271553). | Active | 3,550 ft. southeast | Upgradient<br>50 year TOT | Low |
| 51 | Auto Body Specialist<br>2406 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI- Registered AST (Facility ID 679813) | Closed/Removed ASTs: 2 - 300-gallon used motor oil (Tank ID Nos. 202272 and 202273). | Closed/Removed | 3,600 ft. southeast | Upgradient<br>50 year TOT | Low |
| 52 | Bachmann Construction Co. Inc.<br>1201 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 89761) & AST (Facility ID 89761)<br><br>Visual Inspection | Closed/Removed USTs: 1,000-gallon leaded gasoline (Tank ID No. 271556); 5,000-gallon leaded gasoline (Tank ID No. 271547). Closed/Removed ASTs: 1,000-gallon unleaded gasoline (Tank ID No. 202260); 2 - 1,000-gallon diesel (Tank ID No. 202261 and 202262) | Closed/Removed | 3,650 ft. northeast | 100 year TOT | Low |
| 53 | Max Power Cylinders Inc.<br>2315 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000033357 - RCRA-SQG, FINDS - RCRAIS | Small quantity generator. | Active | 3,700 ft. southeast | Upgradient<br>50 year TOT | Low |
| 54 | Madison Truck & Equipment<br>2410 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-001597), Registered UST (Facility ID 106824) | LUST case closed on 1/3/94. Unknown quantity of unleaded gasoline and waste oil was released (soil contamination). Closed/Removed USTs: 500-gallon used motor oil (Tank ID No. 271561); 2 - 1,000-gallon leaded gasoline (Tank ID Nos. 272871 and 271560); 1,000-gallon used motor oil (Tank ID No. 272872) | Active | 3,750 ft. southeast | Upgradient<br>50 year TOT | Low |
| 55 | David Griffith<br>105 Parkway Drive<br>Monona, WI | EDR Report-<br>WI - Registered UST (Facility ID 107776) | Closed/Removed UST: 1,000-gallon fuel oil (Tank ID No. 274943). | Closed/Removed | 3,750 ft. northwest | 100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 56 | Drott Tractor Co Inc.<br>2405 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID023317100 - RCRA-SQG, FINDS - RCRAIS<br><br>WI - Registered UST (Facility ID 72211). | Closed/Removed USTs: 2 - 250-gallon used motor oil (Tank ID Nos. 272185 and 272186); 1,000-gallon diesel (Tank ID No. 272187); 1,000-gallon unleaded gasoline (Tank ID No. 272188). | Active | 3,800 ft. southeast | Upgradient 50 year TOT | Low |
| 57 | Evanstad Property<br>4601 Wallace Avenue<br>Monona, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-171038), Registered UST (Facility ID 60490) | LUST case closed on 8/3/04. Unknown quantity of unknown substance was released. (Soil contamination). Closed/Removed USTs: 500-gallon fuel oil (Tank ID No. 275035). | Closed/Removed | 3,900 ft. west | 100 year TOT | Low |
| 58 | Pauline Christianson<br>4513 Wallace Avenue<br>Monona, WI | EDR Report-<br>WI - Registered UST (Facility ID 117440), ERP (DNR Activity No. 02-13-001653) | Closed/Removed UST: 175-gallon fuel oil (Tank ID No. 275030). ERP: Soil contamination - closure letter/no further action letter issued. | Closed/Removed | 3,900 ft. west | 100 year TOT | Low |
| 59 | Pauline Christianson<br>4313 Wallace Avenue<br>Monona, WI | EDR Report-<br>WI - Registered UST (Facility ID 117439) | Abandoned with Product UST: 175-gallon fuel oil (Tank ID No. 275029). | Abandoned | 3,900 ft. west | 100 year TOT | Low |
| 60 | Durline Scales and Manufacturing<br>2425 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID982644478 - RCRA-SQG, FINDS - RCRAIS<br>WI - Registered UST (Facility ID 69482), BRRTS (DNR Activity No. 07-13-281167) | Closed/Removed USTs: 1,000-gallon diesel (Tank ID No. 271570); 4,000-gallon leaded (Tank ID No. 271571); Deleted/Duplicate USTs: 500-gallon leaded gasoline (Tank ID No. 272918); 1,500-gallon diesel (Tank ID No. 272919). BRRTS: Off-site exemption letter issued 7/31/01. | Active | 3,950 ft. southeast | Upgradient 50 year TOT | Low |
| 61 | Open Pantry- bp Gas Station<br>1412 Pflaum Road<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000035568 - RCRA-SQG, FINDS - RCRAIS<br><br>WI- LUST (DNR Activity No. 03-13-002855), Registered UST (Facility ID 115579), SPILLS (DNR Activity Nos. 04-13-040111 and 04-13-218815), BRRTS (DNR Activity No. 09-13-291961)<br><br>Visual Inspection | LUST case closed on 12/22/97. Unknown quantity of unknown substance was released (soil contamination). Closed/Removed USTs: 2 - 10,000-gallon unleaded gasoline (Tank ID No. 272029 and 2720301); 6,000-gallon unleaded gasoline (Tank ID No. 272031); 1,000-gallon used motor oil (Tank ID No. 273402). Active USTs: 10,000-gallon unleaded (Tank ID No. 16605); 8,000-gallon unleaded (Tank ID No. 16596); 8,000-gallon diesel (Tank ID No. 16604). SPILLS - unknown quantity of unknown substance spilled into storm sewer on 1/20/85. Open case - historic spill. Further action may not be necessary. 50 gallons of unleaded gasoline spilled onto the concrete/asphalt. Case closed on 4/2/97. BRRTS: UST closure - no site investigation required 3/17/92. | Closed | 4,100 ft. southeast | Upgradient 50 year TOT | Low |
| 62 | Badger Forward Supply Inc.<br>2427 South Stoughton Road<br>(Richard Fritz)<br>2609 Sieferth Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988606018 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br><br>WI- Registered UST (Facility ID 80238) | Closed/Removed USTs: 1,000-gallon leaded gasoline (Tank ID No. 273345). | Active | 4,100 ft. southeast | Upgradient 50 year TOT | Low |
| 63 | SBC Services Inc. - Environmental Management<br>805 Pflaum Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 153604) & AST (Facility ID 153604) | Closed/Removed USTs: 1,000-gallon gasoline Tank ID No. 272269); Closed/Filled with Inert Material: 500-gallon fuel oil (Tank ID No. 782317). Closed/Removed ASTs: 2,000-gallon diesel (Tank ID No. 202128); 2 - 250-gallon diesel (Tank ID Nos. 202233 and 202234); 4,000-gallon diesel (Tank ID No. 916159). | Closed/Removed | 4,100 ft. south | Upgradient 100 year TOT | Low |
| 64 | Vitran Express<br>4702 Helgesen Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000043885 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Conditionally exempt small quantity generator. | Active | 4,250 ft. southeast | Upgradient 50 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 65 | Amoco Gas Station (15894) -Closed<br>1415 Pflaum Road<br>Madison, WI | EDR Report-<br>EPA ID WID988597324 - RCRA-SQG, FINDS - RCRAIS<br>WI- LUST (DNR Activity No. 03-10-000716), Registered UST (Facility ID 52786)<br>Visual Inspection | LUST case closed on 6/6/00 an unknown quantity of unleaded gasoline was released (soil and groundwater contamination). Closed/Removed USTs - 2 - 4,000-gallon leaded gasoline (Tank ID Nos. 272635 and 272634), 4 - 4,000-gallon unleaded gasoline (Tank ID Nos. 272539, 272538, 272537, and 272536), 2 - 10,000-gallon unleaded gasoline (Tank ID Nos. 271612 and 272536), 550-gallon used motor oil (Tank ID Nos. 272209). Active USTs - 3 - 12,000-gallon unleaded gasoline (Tank ID Nos. 273276, 273277, and 273278) | Closed | 4,300 ft. southeast | Upgradient<br>100 year TOT | Low |
| 66 | Hillcraft<br>2202 Advance Road<br>Madison, WI | EDR Report-<br>FINDS - National Compliance Database<br>Visual Inspection | Furniture manufacture. | Active | 4,300 ft. southeast | Upgradient<br>100 year TOT | Low |
| 67 | The Douglas Stewart Co.<br>2402 Advance Road<br>Madison, WI | EDR Report-<br>WI - Registered AST (Facility ID 684945) | Active AST: 550-gallon diesel (Tank ID No. 963228). | Active | 4,400 - 4,800 ft. southeast | Upgradient<br>50 year TOT | Low |
| 68 | Maaco Auto Painting<br>& Bodyworks<br>4416 Pflaum Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988643813 - RCRA-SQG, FINDS - RCRAIS<br>Visual Inspection | Small quantities of automotive fluids, paints, oils, and lubricants. | Active | 4,400 ft. southeast | Upgradient<br>100 year TOT | Low |
| 69 | Valvoline Instant Oil Change/ Schoepp Motors East<br>2512 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988611695 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry<br>Visual Inspection | Conditionally exempt small quantity generator. | Active | 4,500 ft. southeast | Upgradient<br>100 year TOT | Low |
| 70 | Wisconsin Industrial Truck<br>2501 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988576328 - RCRA-SQG, FINDS - RCRAIS, Environmental Site Registry<br>WI - LUST (DNR Activity No. 03-13-152105), Registered UST (Facility ID 146581) | LUST case closed on 10/29/01. Unknown quantity of unknown substance was released (surface water, groundwater, and fractured bedrock contamination). Closed/Removed USTs: 1,000-gallon unleaded gasoline (Tank ID No. 271573); 500-gallon used motor oil (Tank ID No. 271574) | Active | 4,500 ft. southeast | Upgradient<br>100 year TOT | Low |
| 71 | Jaeckle Wholesale Inc.<br>2310 Daniels Street<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000110908 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry, HMIRS<br>WI- SPILLS (DNR Activity No. 04-13-190896) | SPILLS - 45 gallons of transformer mineral oil and grease was spilled on ground surface on 7/11/94, case closed on 7/18/94 - no further action necessary (soil contamination). | Active | 4,500 ft. southeast | Upgradient<br>50 year TOT | Low |
| 72 | Dawes Rigging and Crane<br>4710 Helgesen Drive<br>Madison, WI | EDR Report-<br>WI - Registered AST (Facility ID 151697) | Active AST: 2,000-gallon diesel (Tank ID No. 202304). | Active | 4,550 ft. southeast | Upgradient<br>100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 73 | Hangers (Formerly Badger Front Wheel Drive)<br>2301 Advance Road<br>Madison, WI | EDR Report (Formerly Badger Front Wheel Drive)-<br>EPA ID No. WI0000881953 - RCRA-SQG, FINDS - RCRAIS<br><br>Visual Inspection (Hangers) | Drycleaners (Hangers). | Active | 4,600 ft. southeast | Upgradient 100 year TOT | Low |
| 74 | Auto Repair, GSN Auto, and Bob's Auto Repair<br>4709 Helgesen Drive<br>Madison, WI | Visual Inspection | Small quantities of automotive fluids, paints, oils, and lubricants. | Active | 4,700 ft. southeast | Upgradient 100 year TOT | Low |
| 75 | Abes Auto Clinic<br>4514 Pflaum Road<br>Madison, WI | Visual Inspection | Small quantities of automotive fluids, paints, oils, and lubricants. | Active | 4,800 ft. southeast | Upgradient 100 year TOT | Low |
| 76 | Royal T Promotions<br>1950 South Stoughton Road<br>4525 Pflaum Road<br>Madison, WI | EDR Report-<br>1950 South Stoughton Road: EPA ID No. WID988611406 and 4225 Pflaum Road: EPA ID No. WID988630257 - RCRA-SQG, FINDS - RCRAIS and WI Environmental Site Registry | Small quantity generator. | Active | 4,800 ft. southeast | Upgradient 100 year TOT | Low |
| 77 | Sullivan Brothers Inc.<br>2515 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 134782) | Closed/Removed USTs: 2,000-gallon unleaded gasoline (Tank ID No. 271555); 2 - 2,000-gallon diesel (Tank ID Nos. 271554 and 272752); 2,000-gallon leaded gasoline (Tank ID No. 272753) | Closed/Removed | 4,850 ft. southeast | Upgradient 100 year TOT | Low |
| 78 | AGA Gas, Inc.<br>4802 Pflaum Road<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000028324 - RCRA-SQG, FINDS - RCRAIS, HMIRS<br><br>WI - Registered UST (Facility ID 681565) & AST (Facility ID 155256)<br><br>Visual Inspection | Conditionally exempt small quantity generator. Active USTs: 20,000-gallon diesel (Tank ID No. 273935). Active AST: 550-gallon used motor oil (Tank ID No. 202310).<br><br>Air separation plant. Linde (Liquide Carbonic). | Active | 5,000 - 5,900 ft. southeast | Upgradient 100 year TOT | Low |
| 79 | World Wide Auto Parts (Rich Hankins)<br>2517 Seiferth Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 139679)<br>Visual Inspection | Closed/Removed USTs: 1,111-gallon unknown substance (Tank ID No. 272047). | Closed/Removed | 5,000 ft. southeast | Upgradient 100 year TOT | Low |
| | Michael and Robinson<br>2517 Sieferth Road<br>Madison, WI | EDR Report-<br>FINDS - Integrated Compliance Information, National Compliance Database<br><br>Visual Inspection | Not known. | Active | 5,000 ft. southeast | Upgradient 100 year TOT | Low |
| | Hazardous Materials Management<br>2517 Sieferth Road<br>Madison, WI | EDR Report-<br>FINDS - National Compliance Database<br><br>Visual Inspection | Not known. | Active | 5,000 ft. southeast | Upgradient 100 year TOT | Low |
| 80 | Midwest Wholesale<br>4610 Pflaum Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 111122) & AST (Facility ID 111122) | Closed/Removed USTs: 500-gallon unknown substance (Tank ID No. 275395); 550-gallon unleaded gasoline (Tank ID No. 271611); 1,000-gallon unleaded gasoline (Tank ID No. 432780). Active ASTs: 1,000-gallon unleaded gasoline (Tank ID No. 961601); 1,000-gallon diesel (Tank ID No. 877959). | Active | 5,050 ft. southeast | Upgradient 100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 81 | LaidLaw Transit Services Inc.<br>2601 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000035238 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Conditionally exempt small quantity generator. | Active | 5,100 ft. southeast | Upgradient 100 year TOT | Low |
| 82 | A.J. Sweet<br>4850 Helgesen Drive<br>Madison, WI | Visual Inspection | Food processing. | Active | 5,200 - 6,000 ft. southeast | Upgradient 100 year TOT | Low |
| 83 | Cascade Asset Management Handling<br>2601 Seiferth Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988604658 - RCRA-SQG, FINDS - RCRAIS<br><br>Visual Inspection | Small quantity generator. | Active | 5,200 ft. southeast | Upgradient 100 year TOT | Low |
| 84 | Sletten Vending<br>2605 South Stoughton Road<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-223083), Registered UST (Facility ID 131908), BRRTS (DNR Activity No. 09-13-292563) | LUST case closed on 5/13/99. Unknown quantity of unknown substance (soil contamination). Closed/Removed USTs: 1,000-gallon unleaded gasoline (Tank ID No. 273608). BRRTS: UST closure of 1 tank, no site investigation required 10/29/98. | Active | 5,250 ft. southeast | Upgradient 100 year TOT | Low |
| 85 | Mainline Industrial Distribution<br>2606 Sieferth Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 106908) | Closed/Removed USTs: 500-gallon unleaded gasoline (Tank ID No. 273603). | Closed/Removed | 5,250 ft. southeast | Upgradient 100 year TOT | Low |
| 86 | 2534 Advance Road to Pflaum Road<br>Madison, WI | EDR Report-<br>WI - SPILLS (DNR Activity No. 04-13-209755) | SPILLS - 25 gallons of fuel oil was spilled on concrete/asphalt on 7/15/96, case closed on 7/17/96, no further action (soil and surface water contamination). | Closed | 5,300 - 5,750 ft. southeast | Upgradient 100 year TOT | Low |
| 87 | Paratransit Services Leasing<br>4605 Pflaum Road<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 110384) | Closed/Removed USTs: 1,200-gallon unleaded gasoline (Tank ID No. 271992) 1,200-gallon diesel (Tank ID No. 273901) | Closed/Removed | 5,300 ft. southeast | Upgradient 100 year TOT | Low |
| 88 | Diamond Vogel Paints<br>2501 Advance Road<br>Madison, WI | Visual Inspection | Industrial, commercial, and residential paints. | Active | 5,400 ft. southeast | Upgradient 100 year TOT | Low |
| 89 | Stine Microbial Products<br>4722 Pflaum Road<br>Madison, WI | EDR Report-<br>EPA ID No. WI0000351304 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Conditionally exempt small quantity generator. | Active | 5,450 ft. southeast | Upgradient 100 year TOT | Low |
| 90 | Liberty Check Printers<br>2530 Advance Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988636593 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Conditionally exempt small quantity generator. | Active | 5,550 ft. southeast | Upgradient 100 year TOT | Low |
| 91 | Perkins Oil<br>4707 Pflaum Road<br>Madison, WI | EDR Report-<br>Registered AST (Facility ID 187815)<br><br>Visual Inspection | Active AST: 2 - 8,000-gallon chemical (Tank ID Nos. 651111 and 651118). | Active | 5,600 ft. southeast | Upgradient 100 year TOT | Low |
| 92 | Advance Collision Repair<br>2533 Advance Road<br>Madison, WI | Visual Inspection | Small quantities of automotive fluids, paints, oils, and lubricants. | Active | 5,750 ft. southeast | Upgradient 100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 93 | Madison Board of Education<br>Maintenance and Service Building<br>4711 Pflaum Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID982421208 - RCRA-SQG, FINDS - RCRAIS and WI Environmental Site Registry<br><br>WI - LUST (DNR Activity No. 03-13-172986), Registered UST (Facility ID 681498) | LUST closed on 11/7/01. Unknown quantity of unknown substance was released (soil and groundwater contamination). Active USTs: 10,000-gallon unleaded gasoline (Tank ID No. 35295). | Active | 5,800 - 6,200 ft. southeast | Upgradient<br>100 year TOT | Low |
| 94 | Four Lakes Drywall<br>Jack Seger<br>Jim Reed (Former Owner)<br>4414 Tompkins Drive<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 78660 (Jim Reed)) and (Facility ID 78661 (Jack Seger)), BRRTS (DNR Activity No. 09-13-293701) | Closed/Removed UST for Facility ID 78660: 1,000-gallon unleaded gasoline (Tank ID No. 273744). Closed/Removed UST for Facility ID 78661: 1,000-gallon leaded gasoline (Tank ID No. 271591). BRRTS: UST closure, no site investigation required 11/29/93. | Closed/Removed | 5,800 ft. southeast | Upgradient<br>100 year TOT | Low |
| 95 | WEIR Slurry Group, Inc. (Minerals)<br>(Warman International Inc.)<br>2701 South Stoughton Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID057166522 - RCRA-SQG, FINDS - Aerometric Information Retrieval System/AIRS Facility Subsystem, National Compliance Database, RCRAIS, Toxic Release Inventory, WI Environmental Site Registry, HMIRS, TRIS<br><br>Visual Inspection | Small quantity generator. | Active | 5,850 - 6,000 ft. southeast | Upgradient<br>100 year TOT | Low |
| 96 | Traffic Signing and Marking Inc.<br>Jane Decker<br>2541 Advance Road<br>Madison, WI | EDR Report-<br><br>EPA ID No. WID988573960 - RCRA-SQG, FINDS - RCRAIS | Small quantity generator. | Active | 5,900 ft. southeast | Upgradient<br>100 year TOT | Low |
| 97 | Printing Plus & Noyce Painting<br>2326 Daniels Street<br>Madison, WI | Visual Inspection | Printing fluids and paints. | Active | 6,000 ft. southeast | Upgradient<br>100 year TOT | Low |
| 98 | The Carlson Co. Inc.<br>2305 Daniels Street<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000003574 - RCRA-SQG, FINDS - Aerometric Information Retrieval System/AIRS Facility Subsystem, National Compliance Database, RCRAIS, WI Environmental Site Registry<br><br>Visual Inspection | Small quantity generator. | Active | 6,000 ft. southeast | Upgradient<br>100 year TOT | Low |
| 99 | Hometown Ice<br>2558 Advance Road<br>Madison, WI | EDR Report-<br>ERNS<br><br>WI - Registered AST (Facility ID 674108) | Active AST: 1,000-gallon diesel (Tank ID No. 202191). | Active | 6,000 ft. southeast | Upgradient<br>100 year TOT | Low |
| 100 | Osmose Wood Preserving Inc.<br>4546 Tompkins Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WID098550361 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Conditionally exempt small quantity generator. | Active | 6,100 ft. southeast | Upgradient<br>100 year TOT | Low |
| 101 | Hy-Ho Silver Inc.<br>4602 Tompkins Drive<br>Madison, WI | EDR Report-<br>EPA ID No. WIND980610596 - CERCLIS-NFRAP<br><br>WI - WDS, BRRTS (DNR Activity No. 09-13-535293) | BRRTS: Superfund - No further action planned 9/1/84. | Active | 6,150 ft. southeast | Upgradient<br>100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 102 | Badger Concrete (Richard Lehnherr - Former Owner)<br>2317 Daniels Street<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 55241), BRRTS (DNR Activity No. 09-13-296831) | Closed/Removed USTs: 1,000-gallon unleaded gasoline (Tank ID No. 271845). BRRTS: UST closure of 1 tank, no site investigation required 11/12/98. | Closed/Removed | 6,150 ft. southwest | Upgradient 100 year TOT | Low |
| 103 | Mary Lee House (Former Owner)<br>4818 Pflaum Road<br>Madison, WI | EDR Report-<br>WI - LUST (DNR Activity No. 03-13-000636), Registered UST (Facility ID 108866) | LUST case closed on 12/3/91. Unknown quantity of unleaded gasoline was released (soil contamination). Closed/Removed USTs: 1,000-gallon unleaded gasoline (Tank ID No. 272611); 1,000-gallon leaded (Tank ID No. 272610). | Closed/Removed | 6,200 ft. southeast | Upgradient 100 year TOT | Low |
| 104 | Scott Signs<br>Myles McAnderson<br>2410 Daniels Street<br>Madison, WI | EDR Report-<br>WI - Registered UST (Facility ID 130804), BRRTS (DNR Activity No. 09-13-295148) | Closed/Removed UST: 500-gallon unleaded (Tank ID No. 273617). BRRTS: UST closure, no site investigation required 1/22/93. | Closed/Removed | 6,200 ft. southeast | Upgradient 100 year TOT | Low |
| 105 | Overnight Trucking<br>4801 Pflaum Road<br>Madison, WI | EDR Report-<br>HMIRS<br><br>WI - SPILLS (DNR Activity No. 04-13-253702) | SPILLS - 25 gallons of formic acid - all neutralized was spilled onto concrete/asphalt on 5/25/00, case closed on 5/26/00, no further action (surface water and storm sewer contamination). | Closed | 6,200 ft. southeast | Upgradient 100 year TOT | Low |
| 106 | Traffic Signing and Marking Inc.<br>Keith Decker<br>2573 Advance Road<br>Madison, WI | EDR Report-<br>EPA ID No. WID988640405 - RCRA-SQG, FINDS - RCRAIS, WI Environmental Site Registry | Small quantity generator. | Active | 6,250 ft. southeast | Upgradient 100 year TOT | Low |
| 107 | Hatch Building Supply<br>2401 Daniels Street<br>Madison, WI | EDR Report-<br>EPA ID No. WIR000118505 - RCRA-SQG<br><br>WI- Registered UST (Facility ID 86956) | Conditionally exempt small quantity generator. Closed Removed USTs: 550-gallon unleaded (Tank ID No. 272741); 500-gallon leaded (Tank ID No. 275396). | Active | 6,300 ft. southeast | Upgradient 100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 108 | Safety Kleen Corp. (5 197 01)<br>2325 Daniels Street<br>Madison, WI | EDR Report-<br>EPA ID No. WID980896633 - CORRACTS; RCRA-TSDF; RCRA-LQG; ERNS; FINDS - National Emissions Inventory, RCRAIS, Toxic Release Inventory, WI Environmental Site Registry; HMIRS; PADS; TRIS<br><br>WI - Registered AST (Facility ID Nos. 153631), SPILLS (DNR Activity Nos. 04-13-044734, 04-13-045543, 04-13-047673, 04-13-047736, 04-13-050154, 04-13-050253, 04-13-050567, 04-13-168031, 04-13-225697, 04-13-262650, and 04-13-461587)<br><br>Visual Inspection | Migration of PCB contaminated groundwater under control (11/14/00). Current human exposure under control (12/9/99). TSDF/Generator Information from 2001; D001 - 1,040,282 pounds, D006 - 7,220 pounds, D007 - 396 pounds, D039 - 979 pounds, F002 - 36,654 pounds; Violations Exist.<br><br>Active ASTs: 9,000-gallon chemical (Tank ID No. 202121); 2 - 12,000-gallon chemical (Tank ID Nos. 202119 and 202120); 2 - 20,000-gallon used motor oil (Tank ID Nos. 202122 and 202123).<br><br>SPILLS for DNR Activity No. 04-13-044734 - 25 gallons of waste motor oil was spilled on 5/24/90, case closed on 1/28/02, soil contamination, historical spill, no further action letter issued. SPILLS for DNR Activity Nos. 04-13-045543 - 200 gallons of waste oil and water was contained and recovered on 3/15/91, open case - historic spill, further action may not be necessary. SPILLS for DNR Activity Nos. 04-13-047673 - 2 gallons of clean mineral spirits was contained and recovered on 9/28/92, open case - historic spill, further action may not be necessary. SPILLS for DNR Activity Nos. 04-13-047736 - 1 gallon of mineral spirits was contained and recovered on 10/14/92, open case - historic spill, further action may not be necessary. SPILLS for DNR Activity Nos. 04-13-050154 - 5 gallons of mineral spirits was contained and recovered on 12/8/94, closed case on 12/8/94 - historic spill. SPILLS for DNR Activity Nos. 04-13-050253 - 10 gallons of oil and grease was contained and recovered on 1/10/95, open case - historic spill, further action may not be necessary. SPILLS for DNR Activity Nos. 04-13-050567 - 7 gallons of mineral spirits was contained and recovered on 4/13/95, open case - historic spill, further action may not be necessary. SPILLS for DNR Activity Nos. 04-13-168031 - 100 gallons of waste oil was contained and recovered on 11/25/96, open case - historic spill, further action may not be necessary. SPILLS for DNR Activity Nos. 04-13-225697 - 300 gallons of waste oil, grease, and naphtha solvent was spilled on concrete/asphalt on 10/22/98, case closed on 11/2/98, no further action (soil contamination). SPILLS for DNR Activity Nos. 04-13-262650 - 3 gallons of used oil with 7 ppm per PCB was spilled on concrete/asphalt on 7/24/00, case closed on 7/24/00, no further action. SPILLS for DNR Activity Nos. 04-13-461587 - 150 gallons of used diesel fuel was spilled on concrete/asphalt on 5/13/03, case closed on 5/23/03, no further action. | Active | 6,300 ft. southeast | Upgradient 100 year TOT | Low |
| 109 | Bobcat of Madison<br>4822 Pflaum Road<br>Madison, WI | EDR Report-<br>WI - Registered AST (Facility ID 150648) | Active AST: 550-gallon diesel (Tank ID No. 202349); 275-gallon used motor oil (Tank ID No. 961940) | Active | 6,350 ft. southeast | Upgradient 100 year TOT | Low |
| 110 | Cenex Station<br>4803 Pflaum Road<br>Madison, WI | EDR Report-<br>WI - SPILLS (DNR Activity No. 04-13-049676) | SPILLS - 9 gallons of fuel oil was contained and recovered on 6/20/94, case closed on 6/20/94, no further action necessary. | Closed | 6,350 ft. southeast | Upgradient 100 year TOT | Low |

TABLE 4-1 (cont.)

| Map Site No. | Owner/Location | Database or Reference Source | Existing, Potential, or Former Contaminant Sources | Reported Status | Approximate Distance to Unit Well 9 | Location within Capture Zone | Estimated Threat to Supply Wells |
|---|---|---|---|---|---|---|---|
| 111 | Magic Wash Car Wash<br>4817 Pflaum Road<br>Madison, WI | Visual Inspection | Small quantities of automotive cleaning detergents and waxes. | Active | 6,500 ft. southeast | Upgradient<br>100 year TOT | Low |
| 112 | Badger Display Signs, Inc.<br>2242 Mustang Way<br>Madison, WI | EDR Report-<br>RCRA-SQG<br><br>Visual Inspection | Small quantity generator. | Active | 6,650 ft. southeast | Upgradient<br>100 year TOT | Low |
| 113 | Numerous Properties Throughout Area | Visual Inspection | Parking Surfaces - runoff to drainage ways and detention areas. | Active | Variable | ½ mile radius and beyond | Low |
| 114 | Numerous Properties Throughout Area | Visual Inspection | Grass Areas - potential nutrient loading. | Active | Variable | ½ mile radius and beyond | Low |
| 115 | Highways 51, Monona Drive, Pflaum Road, and Buckeye Road | Visual Inspection | Salt application.<br>Potential spills. | Active | 800 feet + | ½ mile radius and beyond | Low |

Notes:

1. Zone A = Within 5 year TOT ZOC
2. Zone B = Beyond Zone A, but within 1200-ft. radius.
3. Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)
4. National Priorities List (NPL)
5. Resource Conservation and Recovery Act- Large Quantity Generator (RCRA-LQG)
6. Resource Conservation and Recover Act- Small Quantity Generator (RCRA - SQG)
7. The Facility Index System (FINDS)
8. Wisconsin DNR Spills Database (SPILLS)
9. Wisconsin Leaking Underground Storage Tank List (LUST)
10. Wisconsin Environmental Repair Program Sites (ERP)
11. Underground Storage Tank (UST)
12. Aboveground Storage Tank (AST)
13. Bureau (of Commerce) Remediation and Redevelopment Tracking System (BRRTS)
14. Wisconsin (WI)
15. Resource Conservation and Recovery Information System - Treatment, Storage, and Disposal Facilities (RCRAIS)
16. Wisconsin Department of Natural Resources (DNR)
17. Environmental Protection Agency (EPA)
18. Time of Travel (TOT)
19. List of Licensed Landfills (WF/LF)

**TABLE 4-2**
**MINIMUM SEPARATION REQUIREMENTS**
**BETWEEN PUBLIC WELLS AND**
**POTENTIAL CONTAMINANT SOURCES**
**WELLHEAD PROTECTION PLAN, UNIT WELL 9**
**MADISON, WISCONSIN**
**EARTH TECH PROJECT NO. 82359**

| Potential Contamination Source | Minimum Separation Distance |
|---|---|
| Storm Sewer | 50 feet |
| Sanitary Sewer | 200 feet[1] |
| Sanitary Lift Station | 200 feet |
| Single Family Residential Fuel Oil Tank | 200 feet |
| Septic Tank Receiving Less than 8,000 gpd | 400 feet |
| Cemetery | 400 feet |
| Stormwater Drainage Pond | 400 feet |
| Gasoline or Fuel Oil Tank Approved by Comm 10.10 | 600 feet |
| Land Application of Municipal, Commercial, or Industrial Waste | 1,000 feet |
| Boundaries of Land Spreading Facility Regulated Under Chapter NR 718 | 1,000 feet |
| Industrial, Commercial, or Municipal Wastewater Lagoons or Storage Structures | 1,000 feet |
| Manure Stacks or Storage Structures | 1,000 feet |
| Septic Tanks or Soil Absorptive Units Receiving Greater than 8,000 gpd | 1,000 feet |
| Solid Waste Storage, Transportation, Transfer, Incineration, Air Curtain Destructor, Processing, Wood Burning, or One-Time Disposal or Small Demolition Facility | 1,200 feet |
| Sanitary Landfill | 1,200 feet |
| Property with Residual Groundwater Contamination Exceeding Chapter NR 140 Enforcement Standards as Recorded on the DNR GIS Registry | 1,200 feet |
| Coal Storage Area | 1,200 feet |
| Salt or Deicing Material Storage | 1,200 feet |
| Gasoline or Fuel Oil Storage Tanks not Approved by Comm 10.10 | 1,200 feet |
| Bulk Fuel Storage Facilities | 1,200 feet |
| Pesticide or Fertilizer Handling or Storage Facilities | 1,200 feet |

Reference: Wisconsin Administrative Code, NR 811, June 2003.

Footnote:

[1] Lesser separation for sanitary sewer may be allowed if the sewer is constructed of water main materials and pressure tested. Less than 50 feet separation is not allowed.

## 4.2 LAND USES AND WELLHEAD PROTECTION PLANNING

Existing land uses in the vicinity of Unit Well 9 are generally compatible with WHP planning. Land uses summarized in Table 4-2 should be prohibited in the vicinity of Unit Well 9, within the respective minimum separation distances shown. Also, it is not desirable to have commercial, manufacturing, or industrial districts located in WHPAs. Land uses summarized in Table I-1 in Appendix I should be prohibited from WHPA Zones A and B. Where any of the uses listed in Table I-1 currently exist within Zones A and B, owners should be allowed to upgrade the facilities to facilitate or enhance groundwater protection.

Tables 4-4 and 4-5 in Appendix I summarize several potential sources of groundwater contamination and land uses and their relative risk to groundwater, respectively.

# CHAPTER 5

# MANAGEMENT STRATEGIES

# 5.0 MANAGEMENT STRATEGIES

## 5.1 ALTERNATIVE MANAGEMENT STRATEGIES

Table 5-1 summarizes key elements of a management plan developed for the City of Madison. Activities were identified for resource management within the delineated WHPA and within far upgradient ZOCs.

The various activities can be grouped into five principal categories as follows:

1. Existing programs
2. Land use controls
3. Intergovernmental cooperation
4. Monitoring
5. Public education and awareness

Because all landowners within the WHPA rely on groundwater resources for water supply, and a few maintain private water supply wells, emphasis should be placed on management activities that will provide a mutual benefit to the City of Madison residents and other property owners located within the WHPA and other ZOCs.

### 5.1.1 Category 1 - Existing Programs

#### 5.1.1.1 Hazardous Waste Collection/Disposal Program (Clean Sweep)

The Dane County Department of Public Works and the City of Madison Department of Public Health co-sponsor the Clean Sweep Collection Program. The Clean Sweep program involves collection and disposal of residential, agricultural, and small business hazardous chemicals and wastes. Disposal of household residential hazardous wastes is free. Small quantities of hazardous materials and wastes from small businesses are accepted by appointment, and there is a per-pound charge for materials. There is no charge for disposal of hazardous materials disposed of by producers of agricultural crops and commodities. Collections are held between 7:30 a.m. and 2:00 p.m. on Tuesdays, Wednesdays, Fridays, and Saturdays, May 1 through October 31. The Clean Sweep site is located at the Dane County Highway Garage, 2302 Fish Hatchery Road, Madison, Wisconsin. The phone number at the Clean Sweep site is (608) 267-3105.

Information about the Clean Sweep Collection Program can be obtained by calling (608) 294 5366 or (608) 294-5358. Clean Sweep Collection Program web sites are at:

www.danecountycleansweep.com

and

www.cityofmadison.com/health/envhealth/clnswp.html

The Clean Sweep Collection Program is advertised using public service announcements and materials distributed by municipalities. Funding for the program is provided by a percentage of

tipping fees collected at local landfills and support from the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP). Additional information about the Clean Sweep Collection Program is in Appendix J.

The Clean Sweep Collection Program will be coupled with the City of Madison's WHP planning efforts. The following will be completed for this management activity:

1. Madison Water Utility will send information about the Clean Sweep Collection Program to property owners in the WHPA, to encourage participation in the program.

#### 5.1.1.2 On-Site Waste Disposal System Maintenance

The nearest private sewage disposal systems are located approximately 2.5 miles east and southeast of Unit Well 9. Other private sewage disposal systems are located approximately 5 miles south of Unit Well 9.

The Dane County Human Services Department, Environmental Health Services has an existing program for maintenance/servicing of private on-site waste disposal (septic) systems. Data for private waste disposal systems are recorded in a central database. All owners of septic systems are required every three years to have their septic tanks pumped and inspected and any required maintenance performed. The County charges the owners of septic systems a $26 filing fee at the time the maintenance/servicing is performed.

The Dane County Environmental Health Services investigates complaints about non-complying sewage disposal systems and issues replacement orders to owners of failing systems.

The private sewage disposal systems identified in the general vicinity of Unit Well 9 are located well beyond the 100-year TOT ZOC for Well 9 and are likely low risk to the well.

For this management activity, the City will perform the following:

1. Request that Dane County provide information to owners of private sewage disposal systems located within the ultimate well capture zones, about sewage system maintenance, and the types of waste that should not be disposed of in a septic system.

2. Prepare an article for the newspaper about private sewage disposal systems do's and don'ts.

#### 5.1.1.3 Well Abandonment

The proposed strategies under this category for WHP include public education and private well inventory maintenance. Education will improve awareness on the part of private well owners of the importance of proper well abandonment. No well records were found for private wells located in the Unit Well 9 WHPA, however, there appear to be a few private wells located beyond the WHPA, within the 50- and 100-year TOT ZOCs for Unit Well 9. The existing private wells are owned by private residents, churches and commercial businesses and appear to be terminated in the upper bedrock aquifer.

The City of Madison (General Ordinance Section 13.21) and Dane County (Chapter 45) have well abandonment ordinances for non-complying, unsafe, and unused wells. A copy of the City of Madison Well Abandonment Ordinance and the Dane County ordinance "Relating to Private Water Systems" are in Appendix K. Other information about wells and well abandonment is in Appendix L.

Dane County and the Wisconsin DNR have regulatory authority for proper construction and abandonment of unused wells (Wisconsin Administrative Code, Chapters NR 811 and 812). Dane County sanitarians review well siting permit applications, issue permits, inspect wells after construction and oversee the abandonment of unsafe, unused, or non-complying wells. The Dane County Health Services Division administers a county reimbursement program for abandoning these categories of wells.

The following will be completed for this management activity:

1. Madison Water Utility will request that the Dane County Environmental Health Services provide them the names and addresses of owners of private wells located in the Unit Well 9 WHPA.

2. Madison Water Utility will determine the location of other private water supply wells that may be located within the WHPA and which are not recorded in the County database.

3. Madison Water Utility will send information to property owners located within the Unit Well 9 WHPA, about proper abandonment procedures in the event the property owners have an unused well on their property.

4. Every five years, Madison Water Utility will update the private well inventory for wells located in the WHPA.

5. The City of Madison and Dane County will enforce the existing City and Dane County well abandonment ordinances, to ensure that all private wells are permitted, or properly abandoned if unused.

6. Madison Water Utility will request that Dane County consider proximity and depth of proposed private wells relative to Unit Well 9 prior to issuing permits for construction of new private water supply wells.

7. Madison Water Utility will direct residents to the DNR private well code (Chapter NR 812) or to the Wisconsin DNR private well section (608-266-0821) when questions arise about private water supply wells.

8. The Madison Water Utility will prepare a newspaper article about proper abandonment of unused private wells.

#### 5.1.1.4 Land Application of Sludge and Septage

There is one permitted septage application site far upgradient of Unit Well 9. The site is located approximately 12 miles south of Unit Well 9 and is likely low risk to Unit Well 9. The nearest approved septage disposal site is located approximately 4 miles northeast of Unit Well 9

(DCRPC, 1999). The site is not located upgradient of Unit Well 9. The Wisconsin DNR issues permits for septage and sludge disposal sites in Wisconsin.

The following will be completed for this management activity:

1. Madison Water Utility will provide a copy of the WHPA and recharge area maps to the MMSD and request that sludge and septage not be spread in the Unit Well 9 recharge area equivalent to the 50-year TOT capture zone.

2. Madison Water Utility will provide a copy of the WHPA and recharge area maps to the DNR Watershed Management office (608-267-7694 (central office) 608-275-3325 (Fitchburg office)) and request that new permits for sludge and septage spreading not be issued for properties located in the Unit Well 9 recharge area equivalent to the 50-year TOT capture zone.

3. Madison Water Utility will encourage development of additional authorized septage discharge points in the City of Madison wastewater treatment system.

#### 5.1.1.5 Spill Notification and Awareness of Remedial Investigation and Cleanup

There are no known active or closed remediation sites within the Unit Well 9 WHPA. A closed LUST site is located just beyond the WHPA, at 5005 Allis Avenue (Map site No. 5) and is owned by the Town of Blooming Grove. The following will be completed for this management activity:

1. Madison Water Utility will request that the City Police, DNR and the Dane County Emergency Management Office inform the Utility about future events (spills, leaks, investigations, etc.) that occur in the Unit Well 9 WHPA.

2. Madison Water Utility will monitor the status of existing and potential contamination sources in the WHPA, investigations regarding nature and extent of releases, and the status of cleanup activities.

### 5.1.2 Category 2 - Land Use Controls

#### 5.1.2.1 Existing Zoning/Wellhead Protection Overlay Zoning and Ordinance

The City of Madison, City of Monona, Dane County, and Town of Blooming Grove have land subdivision and zoning ordinances to control and direct development. Land subdivision and zoning ordinances are used to safeguard flood plains, wetlands, shore lands, highway access, air quality, surface water, and other concerns. Existing zoning regulations will be enforced to help protect municipal well recharge areas and groundwater.

The City of Madison has a WHP ordinance. The ordinance prohibits incompatible development with the establishment of an overlay district for the 5-year TOT ZOC (Zone A) and the 1,200-foot radius ZOC (Zone B). The WHP ordinance helps ensure that future potential contamination sources are not located in the Unit Well 9 WHPA. A copy of the WHP ordinance is in Appendix M.

The following will be completed for this management activity:

1. The City of Madison will amend Section 28.06 of the Madison General Ordinances and add Wellhead Protection District No. 9.

2. The City of Madison will provide Dane County, the city of Monona, and the Town of Blooming Grove with a copy of the WHP ordinance and Unit Well 9 WHPA map.

### 5.1.3 Category 3 - Intergovernmental Cooperation

#### 5.1.3.1 Land Use Planning and Site Plan Review

Land use planning is performed to control and direct development. Land use planning and site plan review should also be used to help protect WHPAs. The following will be completed for this management activity:

1. The City of Madison will provide Dane County, the City of Monona, and the Town of Blooming Grove with a copy of:

    a. The WHPP and maps showing the Unit Well 9 WHPA and ZOCs.

    b. A summary of separation distances required between municipal water supply wells and potential contamination sources (Wisconsin Administrative Code, Chapter NR 811.16(4) (d)).

    c. A list of potential contamination sources that can threaten groundwater.

    d. A list of high-risk land uses that should be prohibited from WHPAs.

2. The City of Madison Planning and Development Department will ensure that development complies with separation distances required between municipal water supply wells and potential contamination sources.

3. The City of Madison will encourage the Town of Blooming Grove and Dane County Boards to review proposed development in the WHPA in their jurisdiction, before construction approval, to ensure compliance with separation distances between Unit Well 9 and potential contamination sources.

4. The City of Madison Planning and Development Department will develop an Environmental Permits Checklist for site plan review. The checklist will help ensure compliance with local, County, and State permits and will raise awareness about groundwater protection.

5. The City of Madison Planning and Development Department will provide a copy of the WHPA map and Site Plan Review Environmental Permits Checklist to developers and property owners and require that the developer indicate on the environmental permits checklist and hazardous substances reporting form whether the proposed development is in a WHPA.

### 5.1.4 Category 4 - Monitoring

#### 5.1.4.1 CSI Maintenance

As part of this study, a CSI was conducted within the delineated WHPA and ZOCs. It will be important to maintain current knowledge of land use, potential contamination sources, and development within the WHPA. The following will be completed for this management activity:

1. Madison Water Utility will update the CSI by conducting a windshield survey of properties located in the WHPA and by performing State and Federal database checks on an interval of once every five years.

#### 5.1.4.2 Water Quality Monitoring

Currently, each of the City of Madison's supply wells are tested annually, some are tested more often depending on the analytes, and the detected level. Volatile organic compounds (VOCs) are tested annually and quarterly for several wells. Synthetic organic compounds (SOCs) are tested every three years. Inorganic testing is done every three years. Microbiological testing, total coliform bacteria are tested for weekly. Results are summarized and reviewed for conformance with regulatory drinking water standards, for comparison with current water quality results, and to identify any potential trends in contaminant concentrations.

The following will be completed for this management activity:

1. Madison Water Utility will perform water quality monitoring as required by DNR and as otherwise needed.

### 5.1.5 Category 5 - Public Education and Awareness

The City of Madison will implement an education program to inform area residents of the need to protect the public water supply. Education is the best way to help people understand that what they apply on or dispose in their land today may be what they or their neighbors drink tomorrow. The public education program will consist of the following:

1. Make available copies of the WHPP
2. Public Informational Meeting
3. News releases
4. Make available and distribute information materials
5. Land Use and Contaminant Source Awareness
6. School programs

#### 5.1.5.1 Availability of WHPP

The following will be completed for this management activity:

1. The City of Madison will provide copies of the WHPP for review by the public at the Water Utility Office, Madison Public Library, and City Hall.

2. The City of Madison will provide copies of the WHPP to the City of Monona, Town of Blooming Grove and Dane County.

3. Madison Water Utility will communicate the availability of the plan through a newspaper article.

#### 5.1.5.2 Public Informational Meeting

The purpose of a public informational meeting will be to inform residents of the WHPP, and provide an opportunity for public education and awareness.

The following will be completed for this management activity:

1. The City of Madison will conduct a public informational meeting as part of a City committee meeting or the Common Council meeting during the review phase of the WHPP.

2. The City of Madison will provide WHPA maps available for public review and an information sheet or brochure available for public use.

#### 5.1.5.3 News Releases

The purposes of news releases are to elevate public awareness, educate the public on the need for WHP, and provide examples of prudent WHP measures. Initially, a news release will inform the public that a WHPP has been developed for Unit Well 9, and will indicate the locations where the WHPP will be available for review.

The following will be completed for this management activity:

1. Madison Water Utility will provide a news release to the local newspaper, at the beginning of the WHP project for Unit Well 9, then annually.

#### 5.1.5.4 Informational Materials Distributed to Residents in WHPA

Informational materials will be prepared and distributed to residents living within the WHPA to educate and inform property owners about various topics such as WHP planning activities, and best waste management procedures.

The following will be completed for this management activity:

1. Madison Water Utility will prepare informational materials and/or obtain from the Wisconsin DNR Bureau of Drinking Water and Groundwater, Dane County or UW Extension fliers, brochures, and pamphlets, including:

    a. Information about hazardous waste collection/disposal program (Clean Sweep) activities

    b. Materials describing the proper use and application of lawn fertilizers and pesticides

c. WHP planning

d. Annual Consumer Confidence Report (CCR) containing information about WHP planning

2. Madison Water Utility will update information in website homepage (http://www.madisonwater.org) about WHP planning.

#### 5.1.5.5 Land Use and Contaminant Source Awareness

During the CSI, properties were identified with land uses and existing or potential contaminant sources that pose, or may pose, a risk to groundwater. To increase awareness and minimize risk to groundwater and Unit Well 9, it is important to inform property owners about existing and potential contaminant sources on their properties. An initial mailing will be made at the beginning of the WHP program. In this mailing, property owners will be advised to contact the City if they have questions, or require additional information.

The following will be completed for this management activity:

1. Madison Water Utility will provide information to owners of property with existing or potential contaminant sources located within the WHPA to emphasize the importance of awareness of the WHPA, the owner's location with respect to the WHPA, and potential contaminant source(s) of concern. Specific information to be provided includes:

   a. Leaking underground and aboveground storage tanks

   b. Materials describing the proper use and application of lawn fertilizers and pesticides

#### 5.1.5.6 School Programs

The City of Madison will participate in school education programs. The following will be completed for this management activity:

1. Madison Water Utility will inform schools about the availability of tours at water supply facilities. During tours, students will be exposed to important concepts related to groundwater and WHP.

2. Madison Water Utility will prepare a water/groundwater fact sheet for school education programs.

## 5.2 WATER CONSERVATION PROGRAM

The Madison Water Utility has an existing water conservation program that includes addressing the needs for both water accountability in the distribution system and water conservation by the public.

During 2005, the Utility maintained water accountability in the distribution system of 89 percent. The Utility maintains this high level of water accountability by regularly servicing water meters,

reviewing water accountability records, and conducting water leak detection surveys when needed.

The Utility currently has brochures available free to the public describing useful water conservation measures. The brochures are also distributed to the public and discussed in speaking engagements with local organizations and schools by Water Utility staff.

The Madison Water Utility also has information about water conservation at its website (http://www.madisonwater.org). Water conservation information is in Appendix N.

The Utility has the authority to impose water use restrictions when necessary.

## 5.3 CONTINGENCY PLAN

The Utility has formulated a contingency plan for providing water in the event that Unit Well 9 or one or more of the City's other water supply wells became contaminated or removed from service. The plan primarily relies on the capacity of the system without the capacity of any given well or wells to meet the supply needs of the City of Madison.

The City's water system was designed to supply the maximum water demand for an indefinite period with the largest well out of service. As a result, if Unit Well 9, or any other supply well of the water system, is out of service for a short period of time, the reliable water supply capacity is sufficient to meet demands. Well 9 provides reliable supply to the water system and fire protection for the southeastern part of the City. By utilizing the existing water system currently in place, the City is prepared to meet short-term water supply needs if Unit Well 9 were contaminated or removed from service. Valves in the system would be opened to allow water to move from the Main Pressure Zone to Pressure Zone 4.

Additionally, the City's wells and wellfields are widely spaced and generally have different recharge areas, thereby making them less vulnerable to potential localized contamination. Several nearby Unit Wells are equipped with standby generators or power plugs for connecting portable generators.

The contingency plan also relies on communication with first responders and a plan of action in the event of a water system emergency. Dane County Emergency Management Office will be requested to notify the Water Utility if there is an occurrence in the vicinity of the Unit Well 9 WHPA.

A list of emergency contact numbers was compiled to provide Utility staff immediate access to the appropriate agencies in the event of an emergency. This list is provided in Table 5-2.

## 5.4 MANAGEMENT PLAN

A management plan was formulated to help protect the Unit Well 9 WHPA from existing and potential future sources of contamination. Table 5-1 summarizes major elements of the management plan and includes an implementation schedule for management plan action items.

Public education is an important element in the management plan, particularly because the Unit Well 9 ZOCs include property in the City of Madison, City of Monona, and Town of Blooming

**TABLE 5-1**
**SUMMARY OF MANAGEMENT STRATEGIES**
**WELLHEAD PROTECTION AREA PLAN - UNIT WELL 9**
**MADISON, WISCONSIN**

| Program Category | Activity | Description | Responsible Unit(s) of Government | Implementation Schedule | |
|---|---|---|---|---|---|
| | | | | Date | Action Item |
| 1. Existing Programs | a. Hazardous Waste Collection (CLEAN SWEEP) | • Hazardous waste collection and disposal. Residential, agricultural, and small business hazardous waste. Commercial with small fee. May through October collections in Madison.<br>• Target local property owners and residents to participate. | • Dane County Department of Public Works<br>• City of Madison Department of Public Health | 1. **Spring 2007**<br><br>2. **As needed.** | 1. **Madison Water Utility** send information about the Clean Sweep Collection Program to property owners in the WHPA, to encourage participation in the program.<br><br>2. **Dane County** sponsors advertising and feature articles. |
| | b. On Site Waste Disposal System (Septic) Maintenance | • Maintenance/servicing contract currently required for system owners on record.<br>• Orders issued to confirmed failing system owners.<br>• Include all property/septic system owners in WHPA in notification database.<br>• Conduct Public Education. | • Dane County Environmental Health Department | 1. **Spring 2007, then annually**<br><br>2. **Summer / Fall 2007**<br><br>3. **Every 3 years** | 1. **Madison Water Utility** request that the Dane County Environmental Health Department provide information to owners of private sewage disposal systems about sewage system maintenance, and the types of waste that should not be disposed of in a septic system.<br><br>2. **Madison Water Utility** prepare an article for newspaper release about septic system dos and don'ts.<br><br>3. **Dane County Environmental Health Department** ensure that system maintenance and pumping are performed. |

TABLE 5-1 (cont.)

| Program Category | Activity | Description | Responsible Unit(s) of Government | Implementation Schedule | |
|---|---|---|---|---|---|
| | | | | Date | Action Item |
| 1. Existing Programs (cont.) | c. Private Well Abandonment | • Enforce well abandonment ordinance(s) (Dane County Chapter 45, and City of Madison General Ordinance Sec. 13.21) and review new well construction.<br>• Require proper abandonment of unused and unsafe wells.<br>• Update well inventory in WHPA once every 5 years.<br>• Familiarize with WI Admin. Codes, Chapters NR 141, 811, and 812. | • Wisconsin DNR<br>• Dane County Environmental Health Department<br>• City of Madison | 1. **Winter 2006 / 2007, then annually** | 1. **Madison Water Utility** request that the Dane County Environmental Health Department provide them the names and addresses of owners of private wells located in the Unit Well 9 WHPA. |
| | | | | 2. **Winter 2006 / 2007, then every five years (2011)** | 2. **Madison Water Utility** determine the location of other private water supply wells that may be located within the WHPA and which are not recorded in the County database. |
| | | | | 3. **Spring 2007** | 3. **Madison Water Utility** send private well owners within the WHPA, DNR pamphlets about well upkeep and proper abandonment procedures in the event the owners abandon their existing wells. |
| | | | | 4. **2007, then every five years** | 4. **Madison Water Utility** update the private well inventory for wells located in the WHPA. |
| | | | | 5. **Ongoing** | 5. **City of Madison and Dane County** enforce existing well abandonment ordinances, to ensure that all private wells are permitted, or properly abandoned if unused. |
| | | | | 6. **Spring 2007** | 6. **Madison Water Utility** request that Dane County consider proximity and depth of proposed private wells relative to Unit Well 9 prior to issuing permits for construction of new private water supply wells. |
| | | | | 7. **As needed** | 7. **Madison Water Utility** direct residents to the DNR private well code (Chapter NR 812) or to the Wisconsin DNR private well section (608-266-0821) when questions arise about private water supply wells. |

TABLE 5-1 (cont.)

| Program Category | Activity | Description | Responsible Unit(s) of Government | Implementation Schedule | |
|---|---|---|---|---|---|
| | | | | Date | Action Item |
| 1. Existing Programs (cont.) | d. Land Application of Sludge and Septage | • Enforce existing rules. | • Wisconsin DNR<br>• Dane County<br>• Madison Metropolitan Sewerage District (MMSD) | 1. **Spring 2007** | 1. **Madison Water Utility** provide a copy of the WHPA and recharge area maps to the MMSD and request that sludge not be spread in the Unit Well 9 recharge area equivalent to the 50-year TOT capture zone. |
| | | | | 2. **Spring 2007** | 2. **Madison Water Utility** provide a copy of the WHPA and recharge area maps to the DNR Watershed Management office (608-267-7694 (central office) 608-275-3325 (Fitchburg office)) and request that new permits for sludge and septage spreading not be issued for properties located in the Unit Well 9 recharge area equivalent to the 50-year TOT capture zone. |
| | | | | 3. **Ongoing** | 3. **Madison Water Utility** encourage development of additional authorized septage discharge points in the City of Madison wastewater treatment system. |
| | | | | 4. **Ongoing** | 4. **DNR** enforce rules, particularly in WHPAs. |
| | | | | 5. **2007** | 5. **Dane County** develop regulatory program including ordinance. |
| | e. Spill Notification and Awareness of Remedial Investigation and Cleanup | • Monitor and keep informed of potential contamination sources in the WHPA and recharge areas.<br>• Work with DNR to achieve investigation and cleanup of known contamination sources. | • Wisconsin DNR<br>• Dane County Emergency Management<br>• Wisconsin DATCP and COMM<br>• City of Madison Fire Department | 1. **Spring 2007** | 1. **Madison Water Utility** request that DNR, City Police, and the Dane County Emergency Management Office inform the City about future events (spills, leaks, investigations, etc.) that occur in the Unit Well 9 WHPA or in upgradient recharge areas. |
| | | | | 2. **2007, then ongoing** | 2. **Madison Water Utility** monitor the status of existing and potential contamination sources in the WHPA, investigations regarding nature and extent of releases, and the status of cleanup activities, then determine if Utility action is needed. |
| 2. Land Use Controls | a. Existing Zoning/Wellhead Protection Overlay Zoning and Ordinance | • Enforce existing zoning.<br>• Discourage conditional uses or zoning changes that increase risk to groundwater. | • City of Madison<br>• Dane County Planning and Development<br>• City of Monona<br>• Town of Blooming Grove | 1. **2007 - Ongoing** | 1. **City of Madison** amend WHP ordinance and add WP-9 Wellhead Protection District No.9. |
| | | | | 2. **2007** | 2. **City of Madison** provide Dane County, City of Monona, Town of Blooming Grove with a copy of the WHP ordinance and WHPA map. |
| | | | | 3. **2007** | 3. **Dane County** consider developing WHP Overlay District ordinance. |

**TABLE 5-1 (cont.)**

| Program Category | Activity | Description | Responsible Unit(s) of Government | Implementation Schedule | |
|---|---|---|---|---|---|
| | | | | Date | Action Item |
| 3. Intergovernmental Cooperation | a. Land Use Planning and Site Plan Review | • Cooperate in land use planning to protect groundwater resources and WHPAs.<br>• Keep appraised of development in WHPA.<br>• Ensure development complies with separation distances between the well and potential contamination sources as required by WI Admin. Code, Chapter NR 811.16. | • City of Madison Planning and Development Department<br>• Dane County Planning and Development Department<br>• City of Monona<br>• Town of Blooming Grove | **1. Spring 2007** | **1. City of Madison** provide Dane County, City of Monona, and the Town of Blooming Grove with a copy of:<br>a. The WHPP and maps showing the Unit Well 9 WHPA and ZOCs.<br>b. A summary of separation distances required between municipal water supply wells and potential contamination sources (Wisconsin Administrative Code, Chapter NR 811.16(4)(d)).<br>c. A list of potential contamination sources that can threaten groundwater.<br>d. A list of high risk land uses that should be prohibited from WHPAs. |
| | | | | **2. 2007 - Ongoing** | **2. City of Madison Planning and Development Department** ensure that development complies with separation distances required between municipal water supply wells and potential contamination sources. |
| | | | | **3. 2007 - Ongoing** | **3. City of Madison** encourage the Town of Blooming Grove, City of Monona, and Dane County Boards to review proposed development in the WHPA in their jurisdiction, before construction approval, to ensure compliance with separation distances between Unit Well 9 and potential contamination sources. |
| | | | | **4. 2007** | **4. City of Madison Planning and Development Department** develop an Environmental Permits Checklist for site plan review. The checklist will help ensure compliance with local, County, and State permits and will raise awareness about groundwater protection. |
| | | | | **5. 2007 - Ongoing** | **5. City of Madison Planning and Development Department** provide a copy of the WHPA map and Site Plan Review Environmental Permits Checklist to developers and property owners and require that the developer indicate on the environmental permits checklist and hazardous substances reporting form whether the proposed development is in a WHPA. |

TABLE 5-1 (cont.)

| Program Category | Activity | Description | Responsible Unit(s) of Government | Implementation Schedule | |
|---|---|---|---|---|---|
| | | | | Date | Action Item |
| 4. Monitoring | a. Contaminant Source Inventory (CSI) Maintenance | • Update CSI and conduct windshield survey | • Madison Water Utility | 1. **January 2005, then every 5 years (January 2010)** | 1. **Madison Water Utility** update the CSI by conducting a windshield survey of properties located in the WHPA and by performing State and Federal database checks. |
| | b. Water Quality Monitoring | • Conduct sampling of supply wells. | • Madison Water Utility | 1. **As required - Ongoing** | 1. **Madison Water Utility** perform water quality monitoring as required by DNR and as otherwise needed. |
| 5. Public Education and Awareness | a. Availability of WHPP | • Provide copies to Water Utility Office, Public Library, City Hall, Town of Blooming Grove, City of Monona and Dane County. | • City of Madison | 1. **Spring 2007**<br>2. **Spring 2007**<br>3. **Spring 2007** | 1. **City of Madison** provide copies of the WHPP for review by the public at the Water Utility Office, Madison Public Library, and City Hall.<br>2. **City of Madison** provide copies of the WHPP to the Town of Blooming Grove, City of Monona, and Dane County.<br>3. **Madison Water Utility** communicate the availability of the plan through a newspaper article. |
| | b. Public Informational Meetings | • Perform as part of a City Committee meeting or Common Council Meeting. | • City of Madison | 1. **Spring / Summer 2007**<br>2. **Spring / Summer 2007** | 1. **City of Madison** conduct a public informational meeting as part of a City committee meeting or the Common Council meeting during the review phase of the WHPP.<br>2. **City of Madison** provide WHPA maps for public review and an information sheet or brochure available for public use. |
| | c. News Releases | • Issue early in program implementation, and reinforce annually, as necessary. | • City of Madison | 1. **June 2007, then annually** | 1. **Madison Water Utility** will provide a news release to the local newspaper, about the WHPP for Unit Well 9. |
| | d. Informational Materials Distributed To Residents in WHPA | • Hazardous Waste Collection (Clean Sweep) Program<br>• Materials describing proper use and application of fertilizers and pesticides. | • City of Madison<br>• Wisconsin DNR<br>• University Extension Office | 1. **2007, then ongoing**<br>2. **June 2007** | 1. **Madison Water Utility** prepare informational materials and/or obtain from the Wisconsin DNR Bureau of Drinking Water and Groundwater, Dane County or UW Extension fliers, brochures and pamphlets, including:<br>a. Information about hazardous waste collection/disposal program (Clean Sweep) activities.<br>b. Materials describing the proper use and application of lawn fertilizers and pesticides.<br>c. Wellhead protection planning<br>d. Annual Consumer Confidence Report (CCR) containing information about WHP planning.<br>2. **Madison Water Utility** update information in website (http://www.madisonwater.org) about WHP planning. |

TABLE 5-1 (cont.)

| Program Category | Activity | Description | Responsible Unit(s) of Government | Implementation Schedule | |
|---|---|---|---|---|---|
| | | | | Date | Action Item |
| 5. Public Education and Awareness (cont.) | e. Land Use and Contaminant Source Awareness | • Notify and offer guidance to owners of potential high risk land uses in WHPA. | • City of Madison | **1. June 2007** | **1. Madison Water Utility** provide information to owners of property with existing or potential contamination sources located within the WHPA to emphasize the importance of awareness of the WHPA, the owner's location with respect to the WHPA, and potential contamination source(s) of concern. Specific information to be provided includes:<br>a. Leaking underground and above ground storage tanks.<br>b. Materials describing the proper use and application of lawn fertilizers and pesticides. |
| | f. School Programs | • Participate in school programs. | • City of Madison<br>• University Extension Office<br>• Madison Public Schools | **1. June 2007**<br>**2. 2007** | **1. Madison Water Utility** inform schools about the availability of tours at water supply facilities.<br>**2. Madison Water Utility** prepare a water/groundwater fact sheet for school education. |

**TABLE 5-2**
**EMERGENCY CONTACT NUMBERS**
**WELLHEAD PROTECTION PLAN, UNIT WELL 9**
**MADISON, WISCONSIN**

| | Name | Phone No. |
|---|---|---|
| Water Utility Emergency Service | On-call | Office: 608-266-4665 |
| General Manager | David Denig-Chakroff | Office: 608-266-4651 |
| Principal Engineer | Alan Larson | Office: 608-266-4653 |
| Civil Engineer | Dennis Cawley | Office: 608-261-9243 |
| Police Department | Emergency Dispatch<br>Non-Emergency Dispatch | 911<br>608-255-2345 |
| Fire Department | Emergency Dispatch<br>Administration | 911<br>608-266-4420 |
| Dane County Emergency Response | On-Call | 911 |
| Dane County Emergency Management Office | Hazardous Materials Planning Office (General) | 608-266-4330 |
| Local - DNR Water Supply Contact Person | Tom Stunkard<br>Fitchburg | 608-275-3300 |
| Central Office - DNR Water Supply | Norman Hahn<br>Madison | 608-267-7661 |
| Well Driller | Municipal Well & Pump<br>Tracy Greenfield | Office: 920-324-3400<br>Cellular: 262-424-2328 |
| Well Driller | Layne Northwest<br>Jeff Gibson | Office: 262-246-4646<br>After Hours: 262-246-4646 (menu) |
| Pump Installer | Municipal Well & Pump<br>Tracy Greenfield | Office: 920-324-3400<br>Cellular: 262-424-2328 |
| Pump Installer | Layne Northwest<br>Jeff Gibson | Office: 262-246-4646<br>After Hours: 262-246-4646 (menu) |
| City of Monona, City Clerk | Karen Eley | 608-222-2525 |
| Blooming Grove Town Clerk/Administrator | Audrey Rue | 608-223-1104 |
| State Patrol | Emergency<br>Administration | 911<br>608-266-3212 |
| Hazardous Material Response Team (DNR)<br>Wisconsin Division of Emergency Mgt. | Leroy Conner | 1-800-943-0003 (Menu) |
| Electric Utility | Madison Gas & Electric<br>Emergency Service | 608-252-1111 |

Grove. Educational activities will provide a mutual benefit to the City of Madison and other property owners located within the WHPA.

The hazardous waste collection/disposal program (Clean Sweep) will also be an important part of the management plan. The program provides a means for residents and businesses in the WHPA and throughout the area to properly dispose of hazardous chemicals. Residents and producers of agricultural crops and commodities can dispose of hazardous materials and wastes free of charge. Small quantities of commercial wastes from small businesses can be disposed of for a nominal fee. The City will promote the Clean Sweep programs using the public education activities summarized in this plan.

Local governmental agencies (City, Township, and County) recognize the need for planning to protect WHPAs. Intergovernmental cooperation is an important part of the plan as agencies work together to consider the needs for WHP during planning and permitting processes. The City will provide Dane County, the City of Monona, and the Town of Blooming Grove with a copy of the WHPP and maps showing the Unit Well 9 WHPA, the separation distances required between municipal water supply wells and potential contamination sources (Wisconsin Administrative Code, Chapter NR 811.16(4) (d)), and a list of potential contamination sources that can threaten groundwater. The City will encourage City, County, and Town Boards to help protect the WHPA and upgradient recharge areas when evaluating proposed development.

The City of Madison has a WHP ordinance and overlay zoning district. The WHP ordinance helps ensure that future potential contamination sources located within the City of Madison are not located in the Unit Well 9 WHPA.