Illinois' Groundwater Protection Program

McHenry County Presentation – July 10, 2019

Rick Cobb, P.G.,

Acting Division Manager

Division of Public Water Supplies

Illinois EPA

The IGPA Provides a Comprehensive Framework for Groundwater Protection

- Ambient Monitoring
- Policy Planning & Inter-Governmental Coordination
- Community Well Site Surveys, Hazard Reviews and Needs Assessments,
- Groundwater Education & Research
- Regional Groundwater Protection Planning
- Statutory & Regulatory Provisions

IGPA Sets Illinois' Groundwater Protection Policy [415 ILCS 55/2(b)]

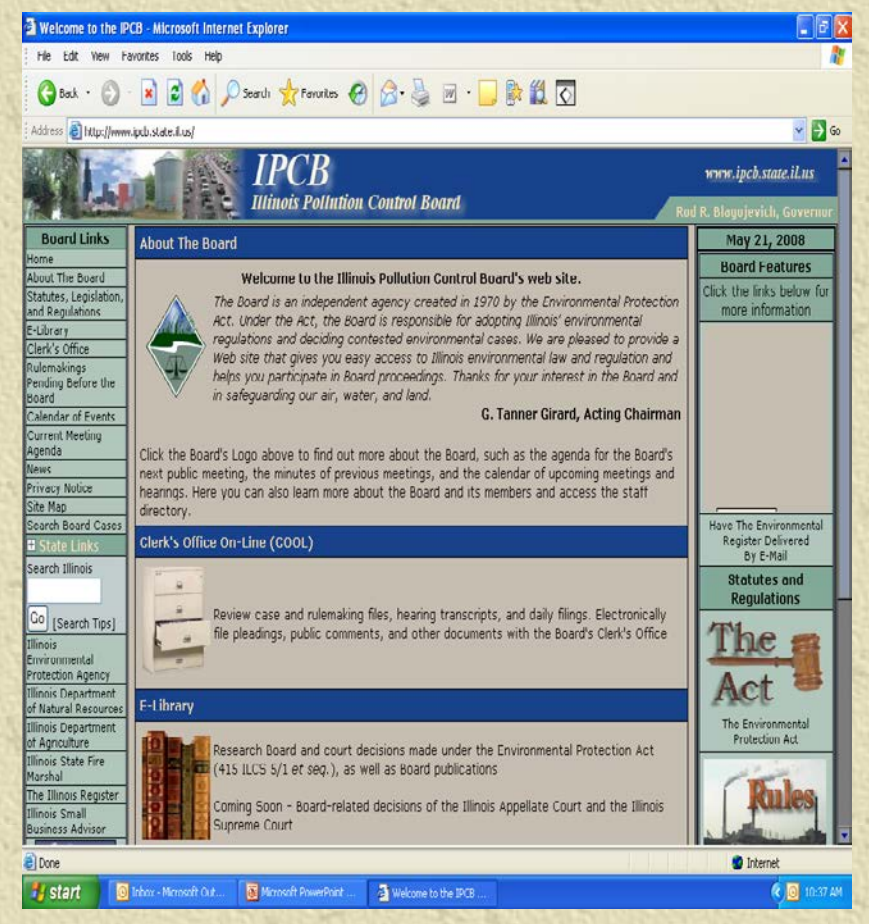
- It is the policy of the State of Illinois to restore, protect, and enhance the groundwaters of the State, as a natural and public resource. The State recognizes the essential and pervasive role of groundwater in the social and economic well-being of the people of Illinois, and its vital importance to the general health, safety, and welfare.

IGPA Sets Illinois' Groundwater Protection Policy [415 ILCS 55/2(b)] cont.

- It is further recognized as consistent with this policy that the groundwater resources of the State be utilized for beneficial and legitimate purposes; **that waste and degradation of the resources be prevented; and that the underground water resource be managed to allow for maximum benefit of** the people of the State of Illinois.

Comprehensive Groundwater Quality Standards Regulation

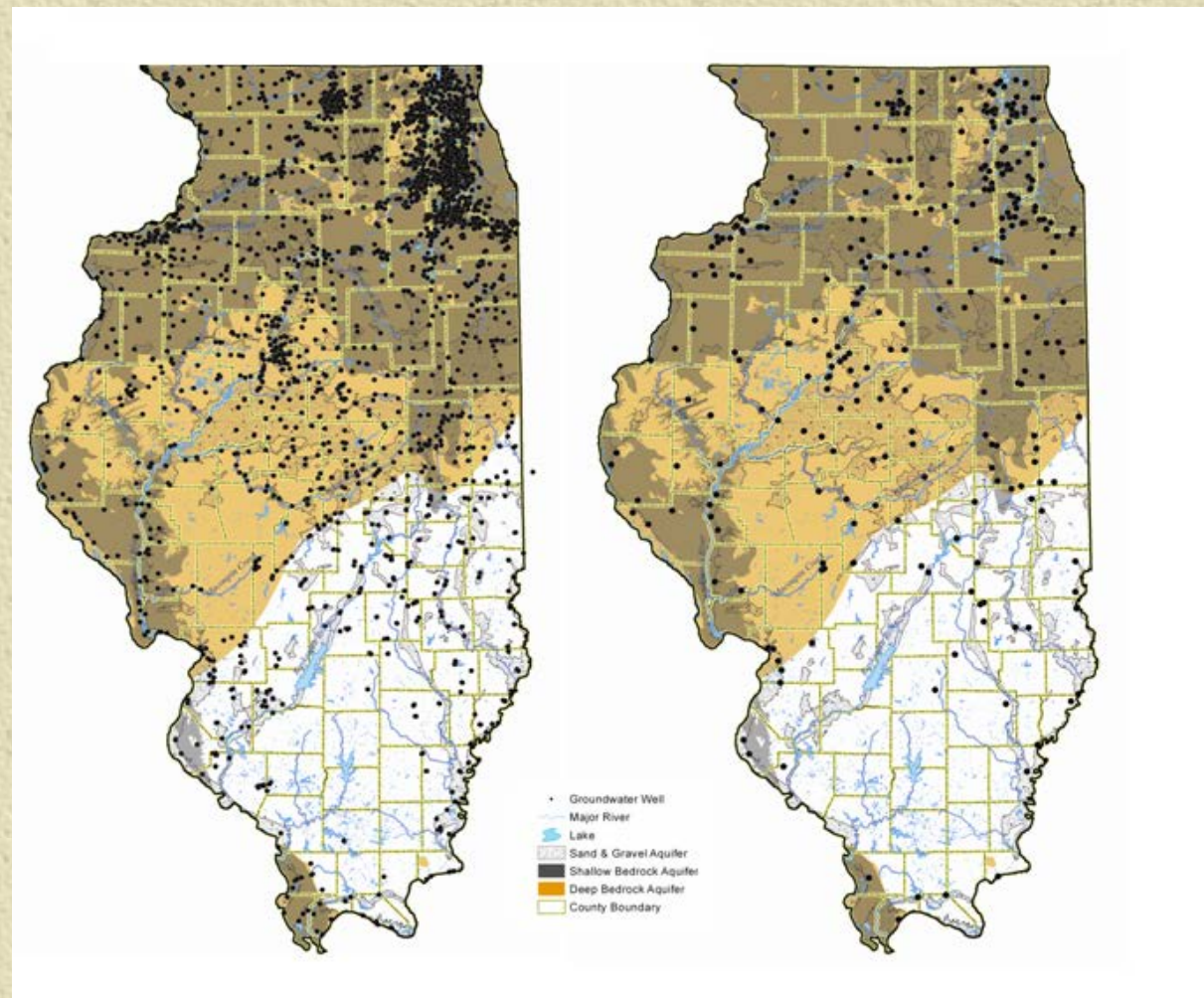
- Standards are Applied through a Resource-Based Groundwater Classification System
- Provides for a Management Zone within any Groundwater Class for Remediation Activities or Through TACO



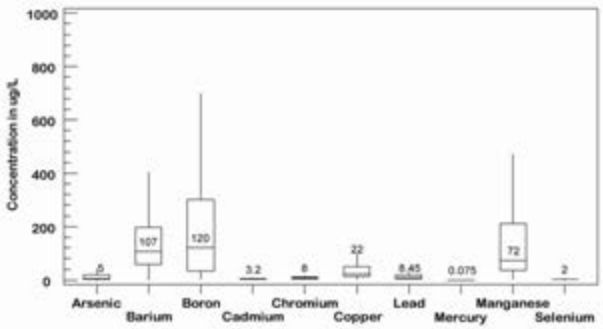
Groundwater Monitoring

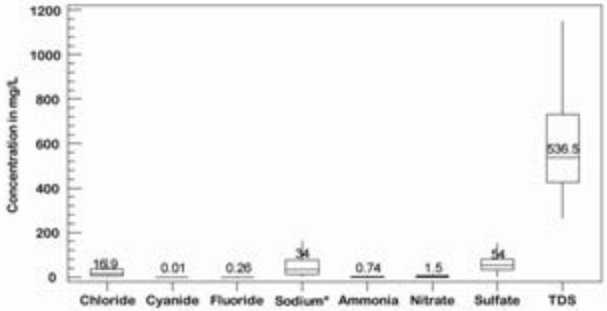
- Illinois Groundwater Protection Act
  - 415 ILCS 5/13.1 – Agency State Wide Groundwater Monitoring Network
- Illinois Groundwater Protection Act
  - 415 ILCS 55/7(b)(1) – Long-term groundwater monitoring network
- Interagency Coordinating Committee on Groundwater (ICCG) 415 ILCS 55/4
- Governor Appointed Groundwater Advisory Council (GAC) 415 ILCS 55/5

Ambient Groundwater Monitoring [415 ILCS 5/13.1] and [415 ILCS 55/7(b)(1)]

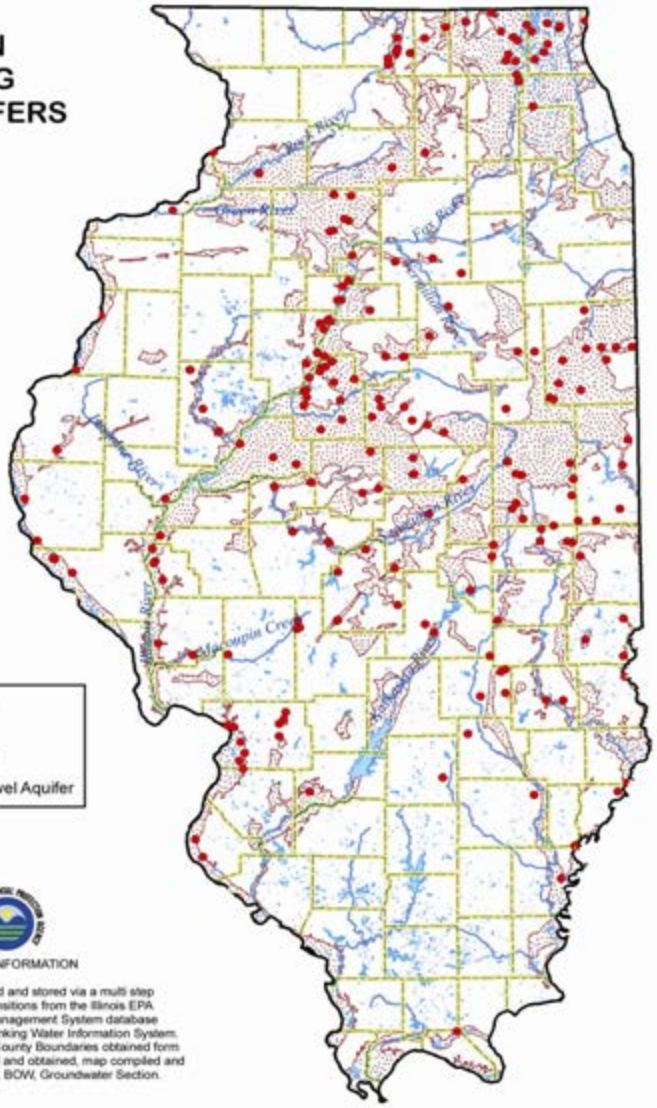


INORGANIC WATER QUALITY DATA WITHIN ILLINOIS CWS PROBABILISTIC MONITORING NETWORK WELLS IN SAND AND GRAVEL AQUIFERS





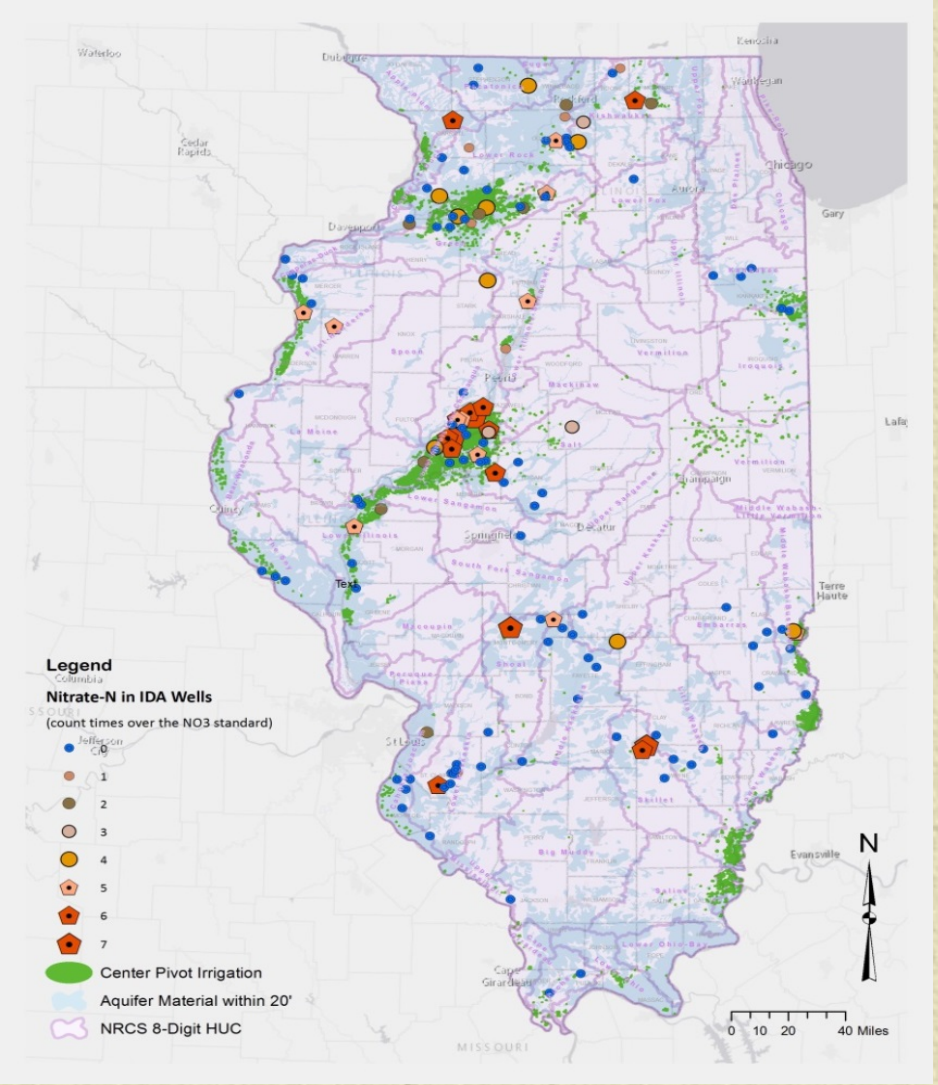
* Sodium concentrations are in ug/L



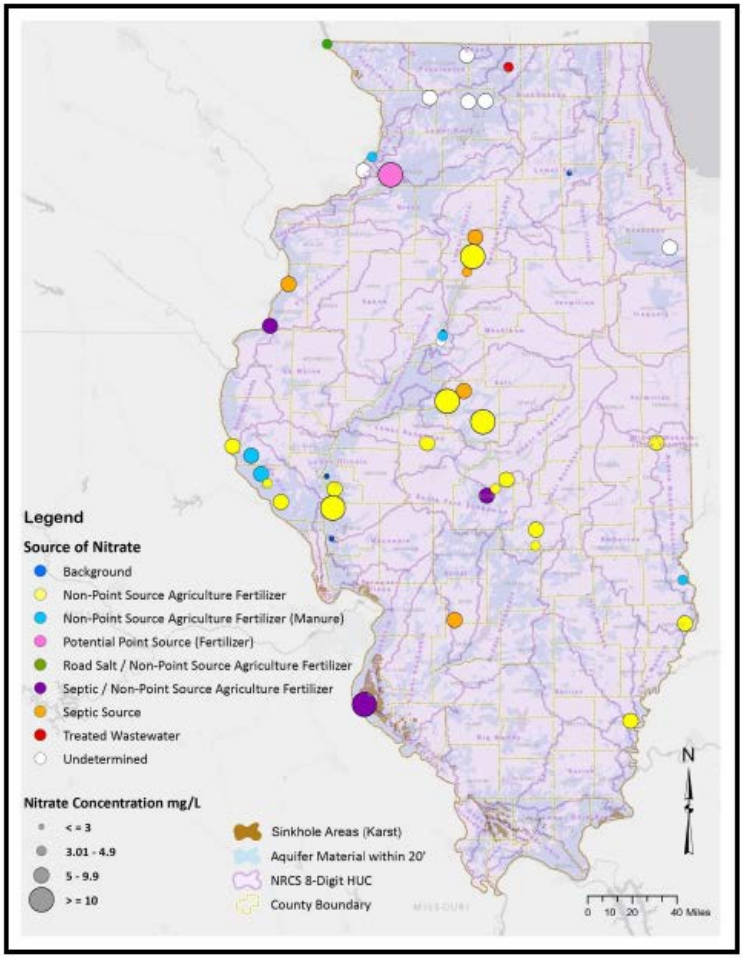
SOURCE INFORMATION

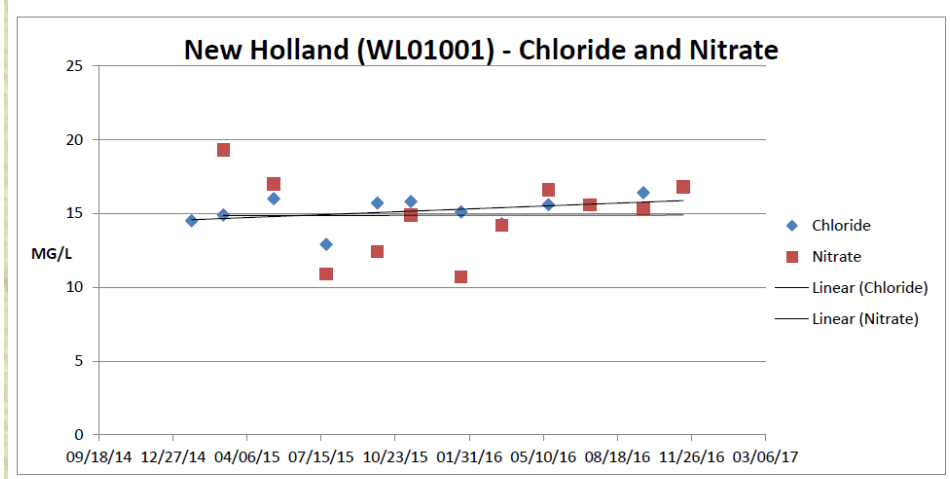
Inorganic data are verified and stored via a multi step process that includes transitions from the Illinois EPA Laboratory Information Management System database and reside within the Safe Drinking Water Information System. Sand & Gravel Aquifers and County Boundaries obtained form IDNR. CWS wells field verified and obtained, map compiled and created by the Illinois EPA, BOW, Groundwater Section.

Nitrate hot spots in IDA wells with center-pivot irrigation wells (from IDA, 2015)

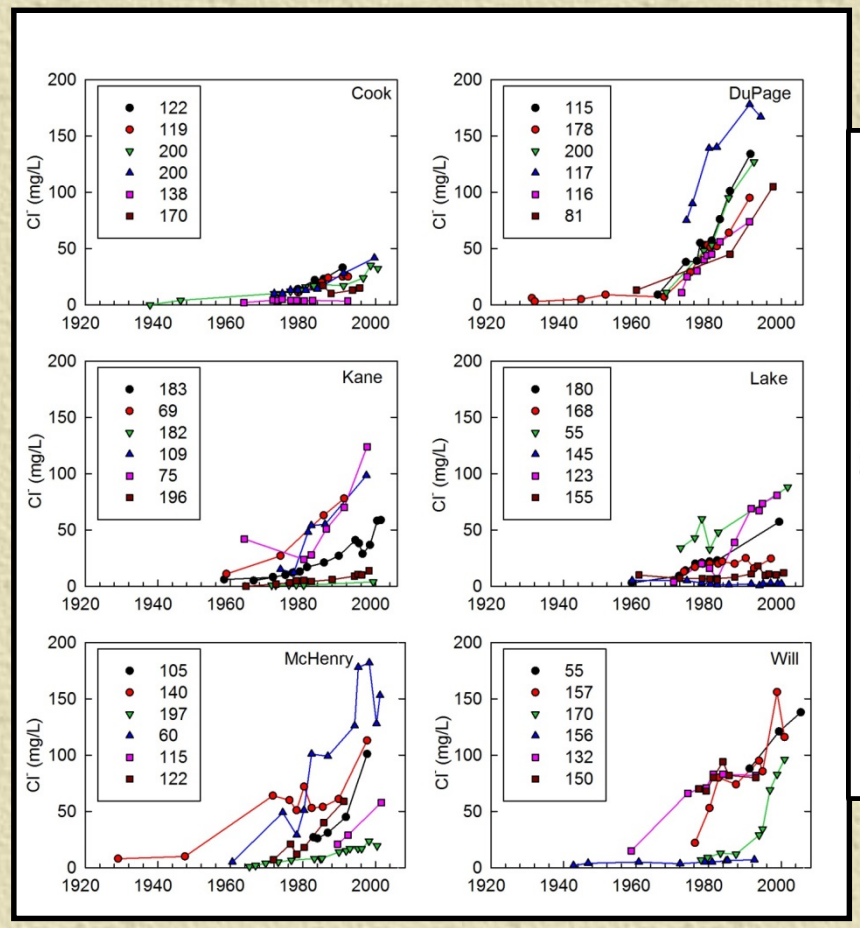


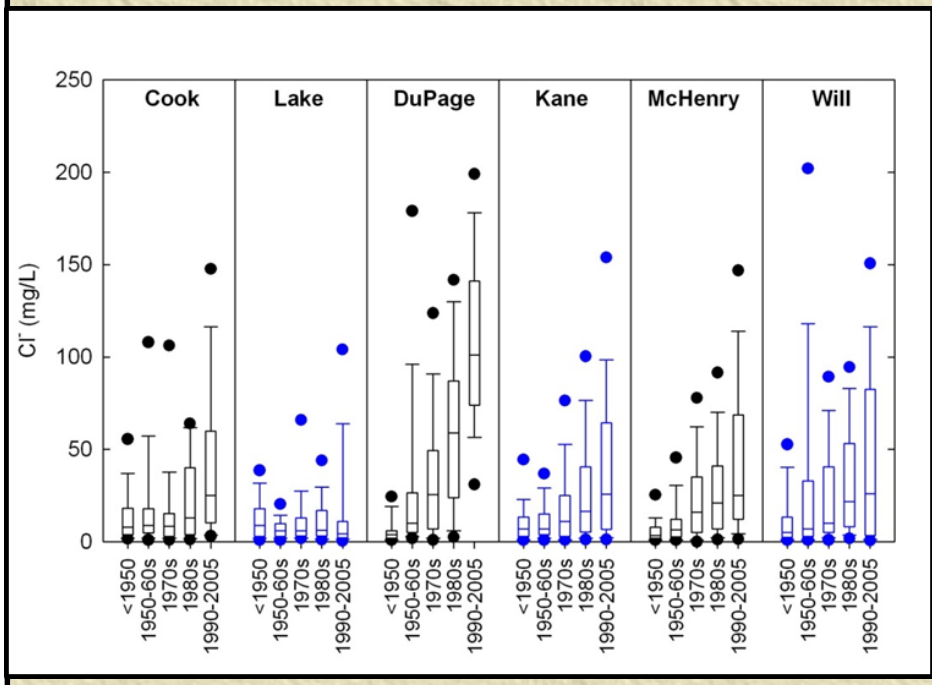
Nitrate Trends in CWS Wells

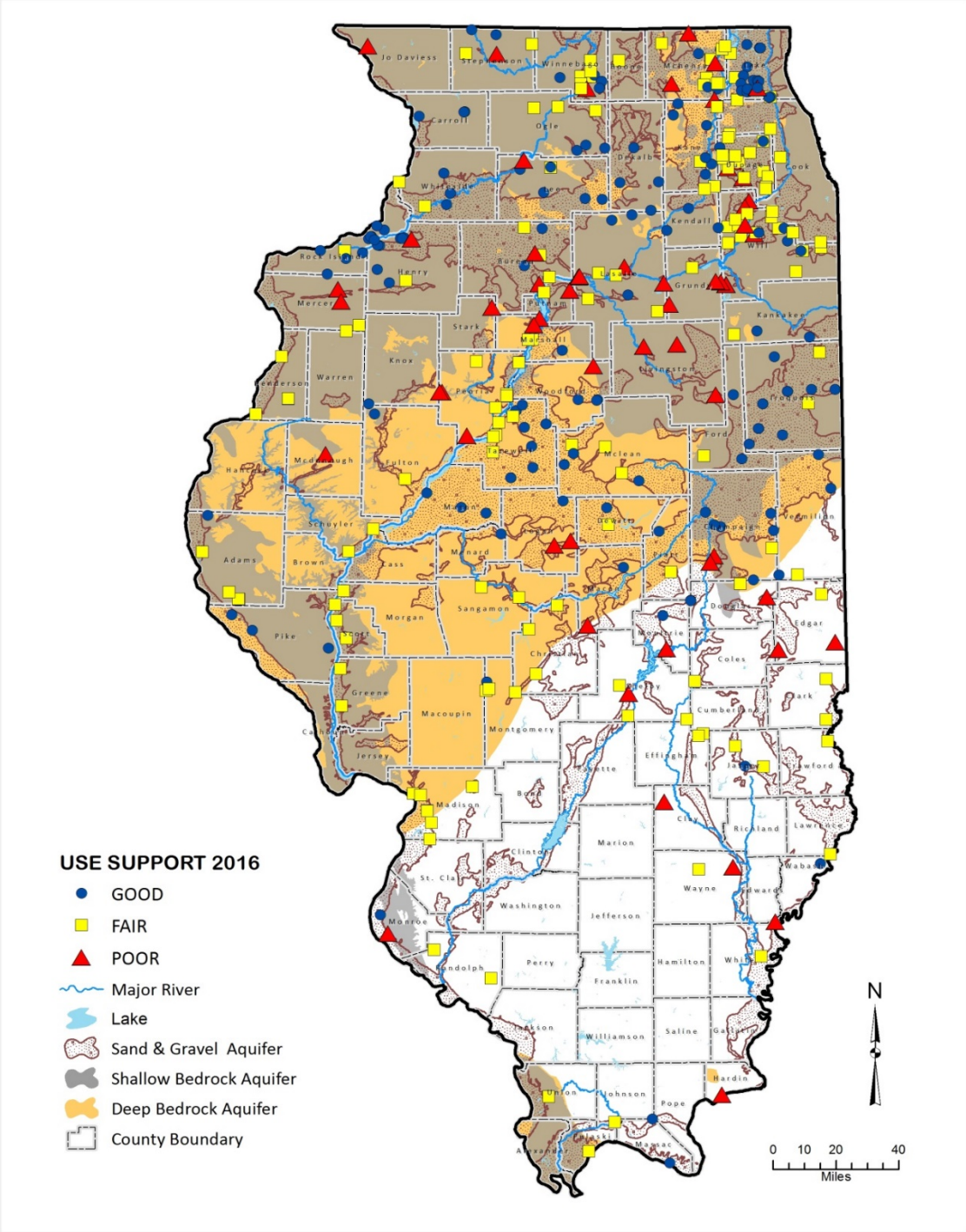




Chlorides in Groundwater






USE SUPPORT 2016
GOOD
FAIR
POOR
Major River
Lake
Sand & Gravel Aquifer
Shallow Bedrock Aquifer
Deep Bedrock Aquifer
County Boundary
N
0 10 20 40
Miles

Right-to-Know (RTK) – Volatile Organic Compounds – Threats to Private Wells

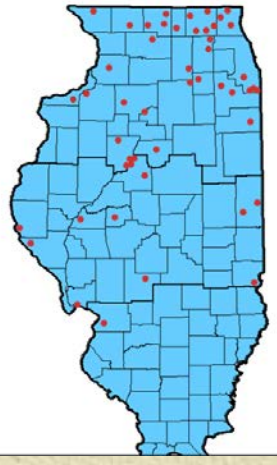
Groundwater Contamination

Red Dots on the map link to notices and news releases provided by the Illinois Department of Public Health per the 2002 Illinois' Right-to-Know law (*Please see 415 ILCS 55/9.1 regarding Notification of actual or potential contamination.*) to alert private well users to groundwater contamination that may threaten their wells. The notices occur when groundwater contamination is detected in public water supply wells at levels determined by Illinois EPA to be a threat to private well users in the vicinity. This would not necessarily constitute a threat to the public water supply.

Public Water Supplies by County

Dots on map indicate public water supplies for which we have further information regarding groundwater contamination.

Click on any county that contains a colored dot to get a listing of public water supplies for that county and links to associated documents.



- Adams County
- Boone County
- Bureau County
- Cass County
- Clark County
- Cook County
- DeKalb County
- DuPage County
- Henry County
- Jersey County
- Jo Daviess County
- Kane County
- Kankakee County
- Kendall County
- Lake County
- Madison County
- McHenry County
- Menard County
- Montgomery County
- Ogle County
- Peoria County
- Pike County
- Putnam County
- Rock Island County

McHenry County

Lakewood

Lakewood, Illinois
IDPH News Release

City of Crystal Lake
Public Water Supply

Crystal Lake, Illinois 60012
IDPH News Release

Village of Fox River Grove
Public Water Supply

Fox River Grove, Illinois 60021
IDPH News Release

City of Harvard
Public Water Supply

Harvard, Illinois 60033
IDPH News Release

Village of Hebron
Public Water Supply

Hebron, Illinois 60034
IDPH News Release

Village of Island Lake
Public Water Supply

Island Lake, Illinois 60042
IDPH News Release

Village of Union
Community Water Supply

Union, Illinois 60180
IDPH News Release

City of Marengo
Community Water Supply

Marengo, Illinois 60152
IDPH News Release

RTK- VOC- Contaminated CWS

The notices listed below were issued by Illinois EPA as required by the Illinois Right-to-Know 2009 law regarding contamination that has affected public water supplies that use wells for their primary drinking water source, or as a back-up source to lake water or river water.

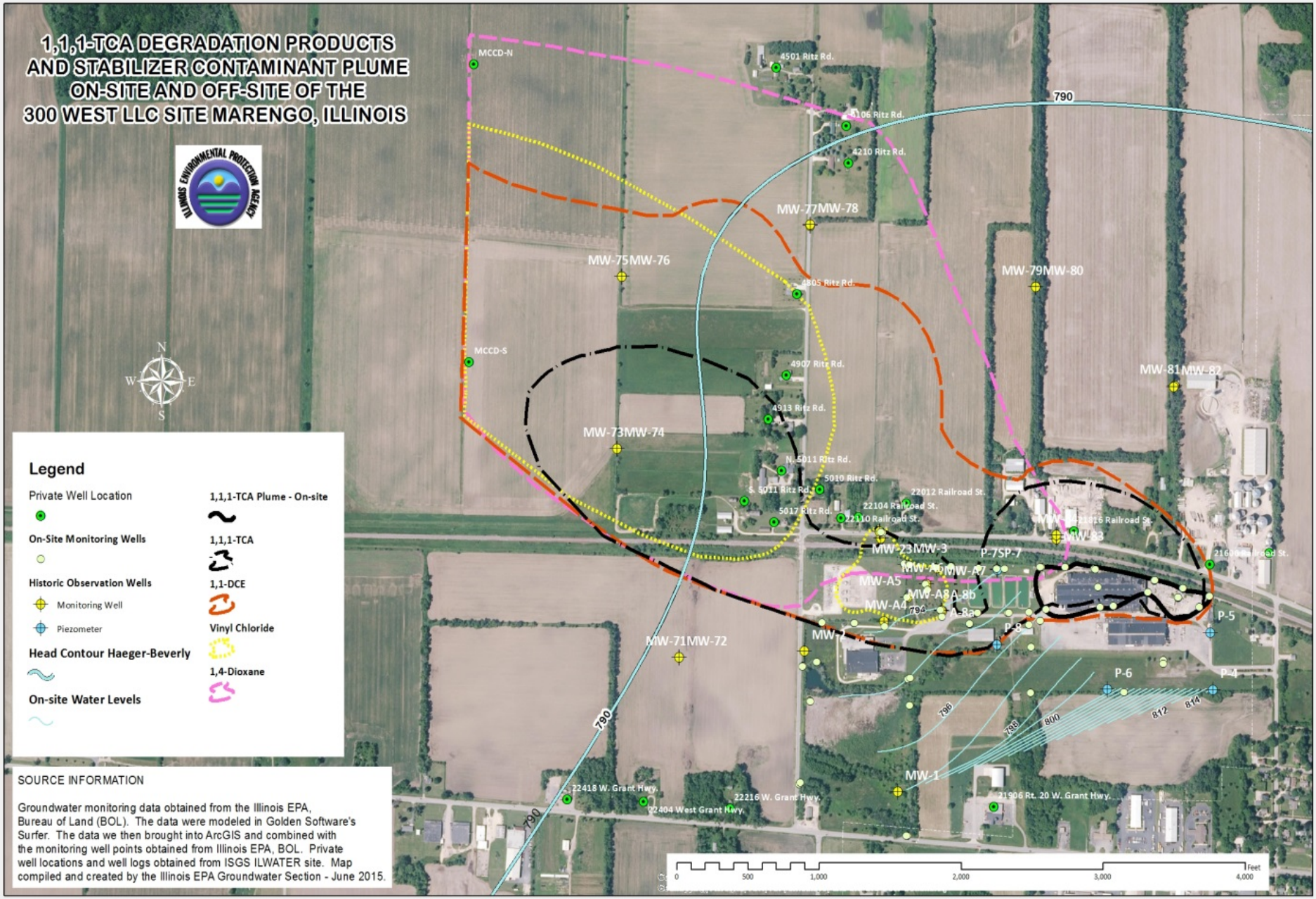
The notices occur when groundwater contamination is detected in public water supply wells at levels that are determined by Illinois EPA to be a threat to public health in excess of Class I Groundwater Standards.

Public Water Supply	Available Documents	Date
Green Meadow Estates of Rockford LLC	• Press Release - April 13, 2018 • Notification Letter to Green Meadow Estates of Rockford LLC	April 13, 2018
Sauk Village	• Press Release - August 14, 2012 • Press Release - July 27, 2012 • Press Release - July 25, 2012 • Press Release - July 23, 2012 • Press Release - July 16, 2012 • Notification Letter to Sauk Village PWS • Notification Letter to Connected Supply (Candlelight Village MHP) • Notification Letter to Connected Supply (Weatherstone Lakes MHP) • Sauk Village PWS Fact Sheet 1 • Sauk Village PWS Fact Sheet 2 • Sauk Village PWS Fact Sheet 2 • Sauk Village PWS Fact Sheet 3 • Sauk Village PWS Fact Sheet 3	July 16, 2012
Crystal Lake	• Press Release • Notification Letter to Parent Supply • Notification Letter to Connected Supply	December 4, 2009
Fox River Grove	• Press Release • Notification Letter	November 20, 2009
Hennepin	• Press Release • Notification Letter	November 20, 2009
Rockford PWS	• Press Release • Notification Letter	November 20, 2009
Six Oaks Mobile Home Park	• Press Release • Notification Letter	November 20, 2009
Sauk Village PWS	• Notification Letter	June 11, 2009

PUBLIC WATER USERS

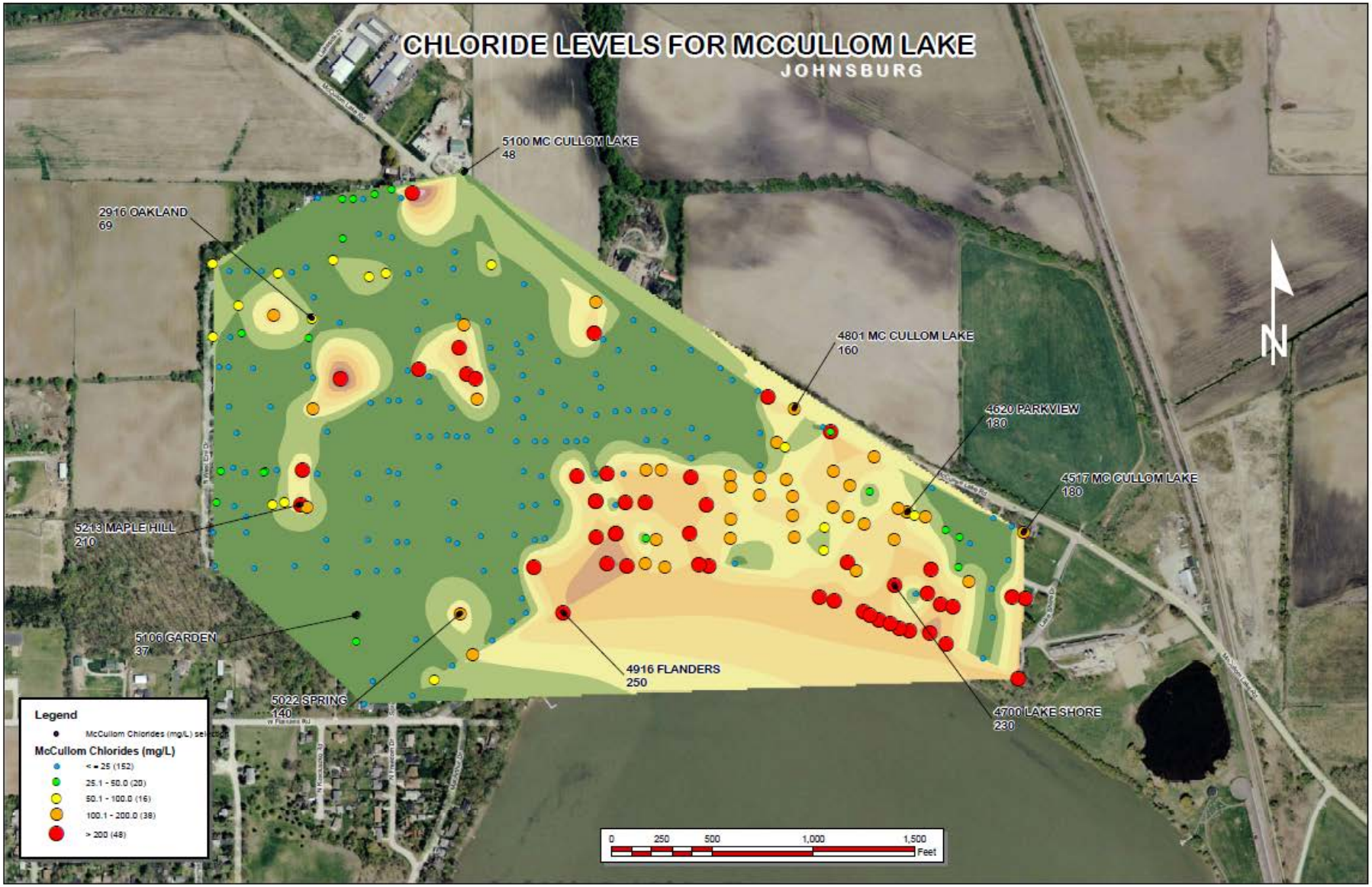
- Drinking Water Permits
- Drinking Water Compliance
- Groundwater Quality Protection
- Source Water Assessment and Protection
- Drinking Water Operator Certification
- **Groundwater Contamination Notices**
- Assessment of Chromium-6
- Community Water Supply Testing Program
- Lead Service Line Information
- Drinking Water Field Operations

1,1,1-TCA DEGRADATION PRODUCTS AND STABILIZER CONTAMINANT PLUME ON-SITE AND OFF-SITE OF THE 300 WEST LLC SITE MARENGO, ILLINOIS



SOURCE INFORMATION

Groundwater monitoring data obtained from the Illinois EPA, Bureau of Land (BOL). The data were modeled in Golden Software's Surfer. The data we then brought into ArcGIS and combined with the monitoring well points obtained from Illinois EPA, BOL. Private well locations and well logs obtained from ISGS ILWATER site. Map compiled and created by the Illinois EPA Groundwater Section - June 2015.


CHLORIDE LEVELS FOR MCCULLOM LAKE
JOHNSBURG
5100 MC CULLOM LAKE
48
2916 OAKLAND
69
4801 MC CULLOM LAKE
160
4620 PARKVIEW
180
4517 MC CULLOM LAKE
180
5213 MAPLE HILL
210
5106 GARDEN
37
4916 FLANDERS
250
5022 SPRING
140
4700 LAKE SHORE
230
N
Legend
McCullom Chlorides (mg/L) sel
McCullom Chlorides (mg/L)
< = 25 (152)
25.1 - 50.0 (20)
50.1 - 100.0 (16)
100.1 - 200.0 (38)
> 200 (48)
0
250
500
1,000
1,500
Feet

McCullom Lake VOC Detection Data

09-22-102-044

Client ID	Analyte	Result	Units	MRL
4917 McCullomLk@KitchenSink	1,1,1-Trichloroethane	0.7	ug/L	0.5

09-21-236-007

Client ID	Analyte	Result	Units	MRL
2904 Hickory @ Bathroom Tap	Trichloroethylene	1.1	ug/L	0.5

09-22-105-014

Client ID	Analyte	Result	Units	MRL
4907 Fountain @ Kitchen Sink	1,2-Dichloroethane	0.6	ug/L	0.5

09-22-153-017

Client ID	Analyte	Result	Units	MRL
2813 Beachview@OutsideTap	1,1,1-Trichloroethane	2	ug/L	0.5

09-21-235-005

Client ID	Analyte	Result	Units	MRL
5111 East @ Outside Spigot	1,2-Dichloroethane	0.7	ug/L	0.5
5111 East @ Outside Spigot	Tetrahydrofuran	5.1	ug/L	5

09-22-127-035

Client ID	Analyte	Result	Units	MRL
4800 Parkview/Outside Spigot	Tetrahydrofuran	11	ug/L	5

09-22-127-014

Client ID	Analyte	Result	Units	MRL
4713 McCullomLk@Well 2	Tetrachloroethylene	4	ug/L	0.5

09-22-178-004

Client ID	Analyte	Result	Units	MRL
2802 Beachview@KitchenSink	1,1,1-Trichloroethane	0.7	ug/L	0.5

09-21-276-032

Client ID	Analyte	Result	Units	MRL
5305 Maple Hill@Kitchen Tap	Styrene	0.6	ug/L	0.5

09-22-153-018

Client ID	Analyte	Result	Units	MRL
2805 Beachview@OutsideTap	1,1,1-Trichloroethane	1.2	ug/L	0.5

09-22-153-021

Client ID	Analyte	Result	Units	MRL
2713 Beachview@Outside Tap	1,1,1-Trichloroethane	1.2	ug/L	0.5

09-22-105-035

Client ID	Analyte	Result	Units	MRL
2810 Spring/Outside Tap	4-Methyl-2-pentanone	3.7	ug/L	2
2810 Spring/Outside Tap	Chloroethane	1	ug/L	0.5
2810 Spring/Outside Tap	Cyclohexanone	5.2	ug/L	5
2810 Spring/Outside Tap	Dichloromethane	2.4	ug/L	0.5
2810 Spring/Outside Tap	tert-Butyl alcohol	20	ug/L	2
2810 Spring/Outside Tap	Tetrahydrofuran	7	ug/L	5

09-22-153-023

Client ID	Analyte	Result	Units	MRL
2709 Beachview@Outside Tap	Trichloroethylene	0.6	ug/L	0.5

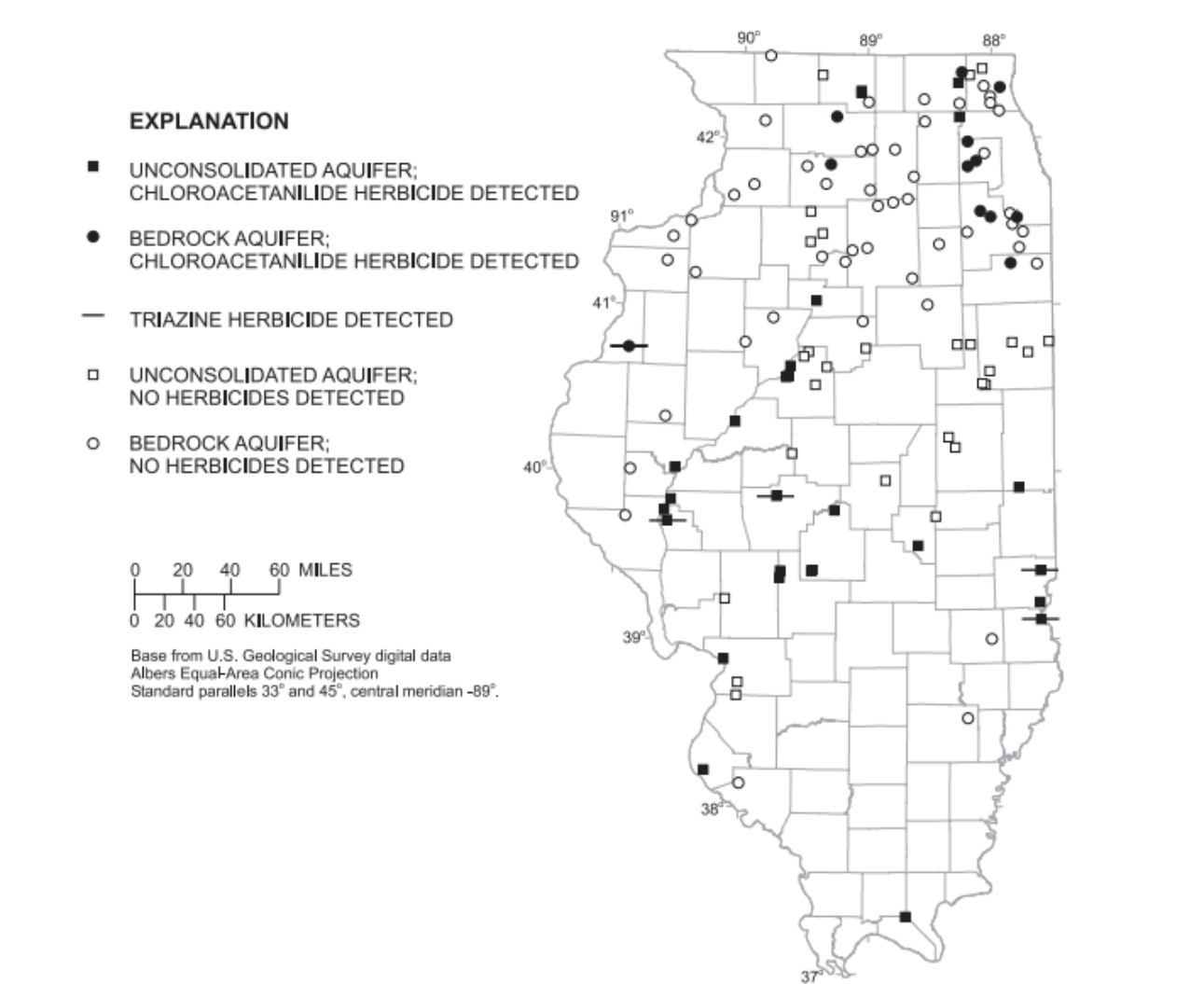
09-22-154-004

Client ID	Analyte	Result	Units	MRL
5019 Orchard@Outside Tap	Cyclohexanone	35	ug/L	5
5019 Orchard@Outside Tap	Tetrahydrofuran	89	ug/L	5

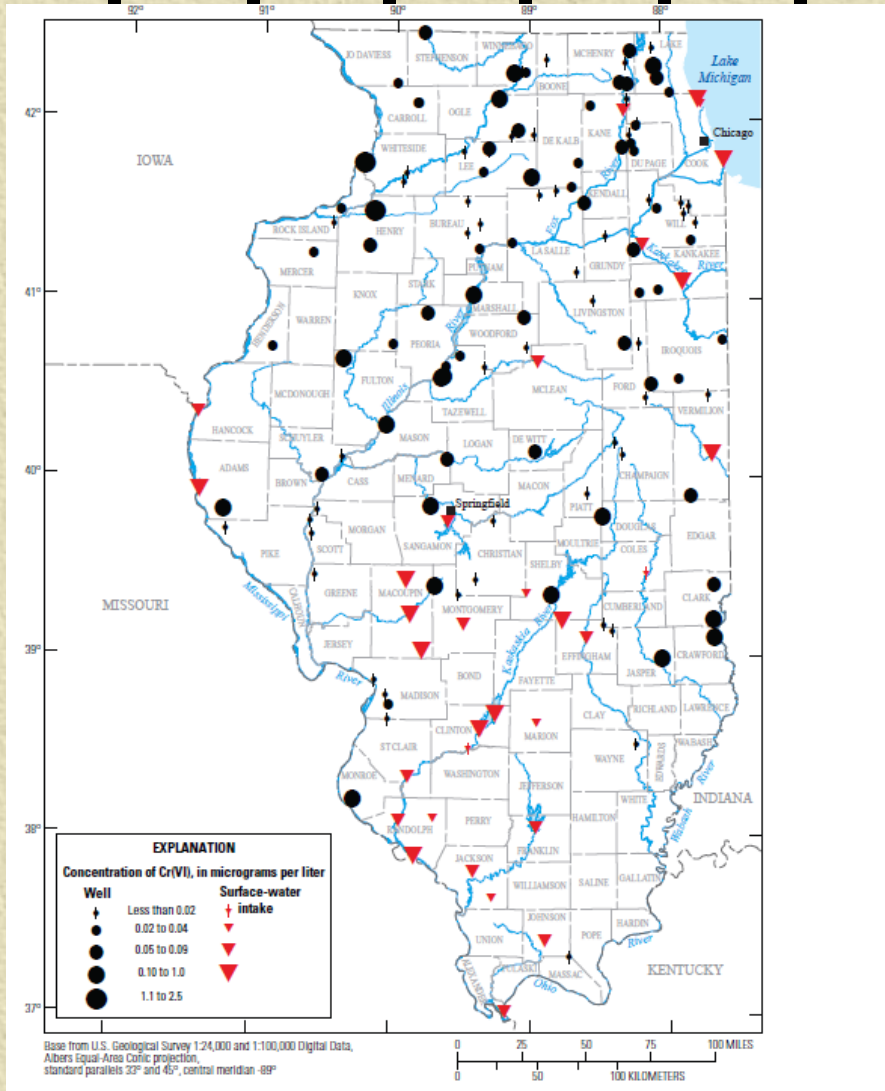
09-22-182-021

Client ID	Analyte	Result	Units	MRL
4601 Lake Shore/Kitchen Tap	Styrene	1.8	ug/L	0.5

Herbicide Transformation Products in CWS Wells



Cr(VI) Network Results



Assessing Per- and Poly Fluoroalkyl Substances

METHOD 537.1

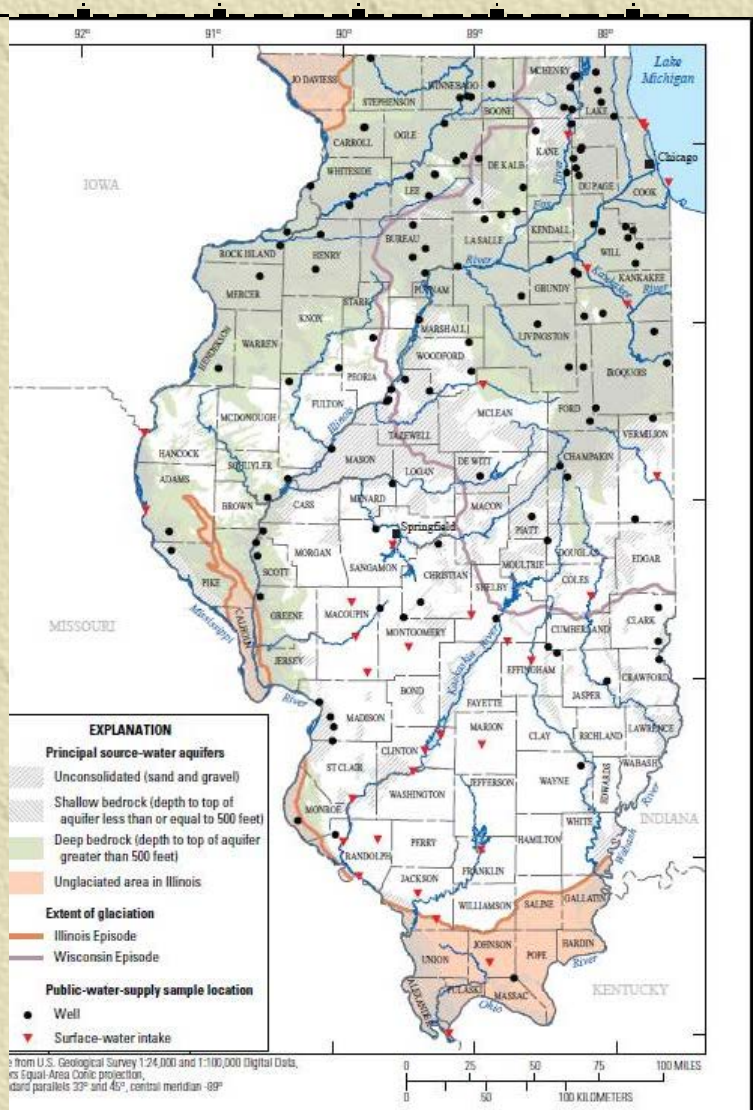
DETERMINATION OF SELECTED PER- AND POLYFLUORINATED ALKYL SUBSTANCES IN DRINKING WATER BY SOLID PHASE EXTRACTION AND LIQUID CHROMATOGRAPHY/TANDEM MASS SPECTROMETRY (LC/MS/MS)

1. **SCOPE AND APPLICATION**

1.1. This is a solid phase extraction (SPE) liquid chromatography/tandem mass spectrometry (LC/MS/MS) method for the determination of selected per- and polyfluorinated alkyl substances (PFAS) in drinking water. Accuracy and precision data have been generated in reagent water and drinking water for the compounds listed in the table below.

Analyte[a]	Acronym	Chemical Abstract Services Registry Number (CASRN)
Hexafluoropropylene oxide dimer acid	HFPO-DA	13252-13-6[b]
N-ethyl perfluorooctanesulfonamidoacetic acid	NEtFOSAA	2991-50-6
N-methyl perfluorooctanesulfonamidoacetic acid	NMeFOSAA	2355-31-9
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluorodecanoic acid	PFDA	335-76-2
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluorononanoic acid	PFNA	375-95-1
Perfluorooctanesulfonic acid	PFOS	1763-23-1
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorotetradecanoic acid	PFTA	376-06-7
Perfluorotridecanoic acid	PFTrDA	72629-94-8
Perfluoroundecanoic acid	PFUnA	2058-94-8
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid	11Cl-PF3OUdS	763051-92-9[c]
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid	9Cl-PF3ONS	756426-58-1[d]
4,8-dioxa-3H-perfluorononanoic acid	ADONA	919005-14-4[e]

[a] Some PFAS are commercially available as ammonium, sodium and potassium salts. This method measures all forms of the analytes as anions while the counterion is inconsequential. Analytes may be purchased as acids or as any of the corresponding salts (see Section 7.2.3 regarding correcting the analyte concentration for the salt content).
[b] HFPO-DA is one component of the GenX processing aid technology.
[c] 11Cl-PF3OUdS is available in salt form (e.g. CASRN of potassium salt is 83329-89-9).
[d] 9Cl-PF3ONS analyte is available in salt form (e.g. CASRN of potassium salt is 73606-19-6)
[e] ADONA is available as the sodium salt (no CASRN) and the ammonium salt (CASRN is 958445-448).



Accessing Groundwater and Drinking Data Over the Internet

- Drinking Water Watch
- Ambient monitoring network wells
- CWS wells
- Linked to GIS Web Service

ILLINOIS INTEGRATED WATER QUALITY REPORT AND SECTION 303(d) LIST, 2016

- https://www2.illinois.gov/epa/Documents/iepa/water-quality/watershed-management/tmdls/2016/303-d-list/iwq-report-ground-water.pdf

Community Well Site Surveys & Assessments

- IGPA Established a Survey Program for CWS Well Sites
- Hazard Reviews

Source Water Assessment Fact Sheets

Illinois Environmental Protection Agency

USGS

Source Water Assessment Program

FACT SHEET

MC HENRY

MCHENRY COUNTY

Prepared in cooperation with the U.S. Geological Survey.

Information and data used in the preparation of this Fact Sheet are provided by the Illinois EPA and are subject to revision.

IMPORTANCE OF SOURCE WATER:
The City of McHenry (Facility Number 1110600) utilizes 8 active community water supply wells. Wells #2, #3, #5, #6, #7, #8, #9, and #10 (Illinois EPA #20207, #20208, #20210, #20211, #00214, #00674, #00874, and #01099, respectively) produce approximately 2.16 million gallons of finished water per day delivered to 5,719 service connections and serve an estimated population of 15,597 individuals.

WATER SUPPLIES THAT OBTAIN SOURCE WATER FROM THIS FACILITY:
No connected water supplies existed at the time this Source Water Assessment fact sheet was completed.

SOURCE OF WATER SUPPLY:
McHenry's wells are located in several well fields. Wells #2 and #3 are located on the south side of McHenry southwest of the intersection of South Green Street and West St. Paul's Avenue. Wells #5 and #6 are located off of State Route 120 in the northwest corner of McHenry. Well #5 is at the southern end of Beach Road and well #6 is at the southern end of Glen Drive. Wells #7 and #8 are located on the southwest corner of McHenry northwest of the intersection of West Crystal Lake Road and West Malibu Court. Wells #9 and #10 are located proximate to each other on north side of McHenry. Well #10 is at 2007 Pine Street. Well #9 is east of well #10 and located at the north end of Birch Lane.

McHenry also has two abandoned wells and one inactive well. Well #1 is located northwest of the intersection of Waukegan Street and North Green Street. Abandoned well #4 (Illinois EPA #20209) is located several blocks to the northeast of wells #2 and #3. Inactive well #11 (Illinois EPA #01351) is located east of the Fox river and northwest of the intersection of State Route 120 and Adams Drive. Well #11 is a new well and is awaiting the construction of a treatment facility.

Wells #2, #3, #5, #6, #7, #8, #9, and #10, which range in depth from 60 to 240 feet, produce at the following rates, measured in gallons per minute (gpm): 550 gpm, 235 gpm, 475 gpm, 550 gpm, 550 gpm, 285 gpm, 880 gpm, and 400 gpm, respectively. Wells #2 and #5 utilize shallow sand and gravel aquifers overlain by alluvium. Alluvium consists of a mixture of gravel, sand, silt, and clay deposited along streams. Well #3 utilizes both shallow sand and gravel and shallow bedrock aquifers and is overlain by alluvium. Wells #6 through #10 utilize shallow bedrock aquifers. Well #6 is overlain by permeable alluvium. Permeability is a measure of the capability of a soil or sediment to transmit fluids. Wells #7 and #8 are overlain by a thin layer of sand and gravel over relatively impermeable glacial till. Well #9 is overlain by thick permeable sand and gravel. Well #10 is overlain by relatively impermeable glacial till with a layer of sand within 20 feet of the surface. The Illinois EPA does not have on file any information on the aquifer type or surface materials overlaying well #11. Wells #2, #5, and #6 are considered geologically sensitive by the Illinois EPA. Wells #3, #7, #8, #9, and #10 are not considered geologically sensitive.

WELL DATA FOR THIS FACILITY:

Well ID	Well Description	Status	Depth (Feet)	Min Setback (Feet)	Aquifer Description
00214	W7 AT 115 S CRYSTAL LK RD OU	A	240	200	Devonian/Silurian
00674	WELL #6 W PLNT #3 APPROX 150	A	203	200	Devonian/Silurian
00874	WELL#9 150' E OF PLANT #4	A	206	200	Devonian/Silurian
20206	WELL #1 AT 1111 GREEN ST., AB	B	62	400	Sand & Gravel
20207	WELL 2 AT 105 N. GREEN STREE	A	60	400	Sand & Gravel
20208	WELL 3 ON S GREEN ST AT IRON	A	185	200	Mixed
20209	WELL 4 WAS AT 3401 FAIRWAY D	B	185	200	Devonian/Silurian
20210	WELL 5 AT 1401 BEACH ROAD	A	95	400	Sand & Gravel
20211	WELL 6 APPROXIMATELY 100 FT.	A	131	400	Devonian/Silurian
01099	WELL #10 AT 2007 PINE	A	233	200	Devonian/Silurian
01351	WELL 11 AT 2812 BARNEY COUR	I	102	400	

SOURCE WATER QUALITY:
McHenry's wells were sampled as part of the Statewide Groundwater Monitoring Network starting in 1982. All of the active wells were sampled for inorganic chemicals (IOC) and volatile organic compounds (VOC) and wells #2, #5, #6, #8, #9, and #10 were sampled for synthetic organic compounds (SOC). No sampling data was available for well #11.

IOC analysis indicates that concentrations of these compounds are consistent with other sand and gravel aquifers in Illinois. It is important to note that the IOC results were below the groundwater quality standards established in 35 Illinois Administrative Code Part 620.410, with the exception of manganese. Well #2 has elevated levels of manganese which meet and exceed the standard of 150 ppb. Levels ranged between 138 and 170 ppb. Wells #2, #3, #5, and #6 have elevated levels of iron. However, these levels are well below the standard. The Illinois EPA considers the elevated levels of iron and manganese observed in these wells a result of natural mineralization in the sand and gravel aquifer. Hence, the levels of manganese are not considered a violation because of the stipulation in 35 Illinois Administrative Code Part 620.410 that no violation occurs as a result of the natural occurrence of an IOC.

Review of the VOC and SOC data collected for these sampling events did not detect any quantifiable levels of organic compounds.

FINISHED WATER QUALITY:
As referenced in the Source Water Quality section of this report, the IOC, VOC, and SOC levels were below the groundwater quality standards and consistent with other shallow sand and gravel aquifers in Illinois, with the exception of manganese. After the treatment process, the manganese levels were brought down below the finished water quality standards. Further information on finished water quality data tables of monitored parameters, contaminants detected, health advisory information, drinking water standards, and maximum contaminant levels is available at http://www.epa.gov/ogwdw/. Similar information is also available in the Consumer Confidence Report supplied by the City of McHenry to its consumers.

POTENTIAL SOURCES OF CONTAMINATION:
The sites labeled on the Wellhead Protection Planning Map and described in the following table are considered "potential" sources of contamination. (Maps and tables are not available in the Visually Impaired Accessible version. However, information included in the maps and tables is summarized within the text sections of this fact sheet.) The Illinois EPA performed a detailed Well Site Survey in 1991 and Illinois Rural Water Association (IRWA) surveyed the recharge areas in 2002 to identify potential sources of contamination to the City's wells. These sources are identified based on the nature of their activity, the availability of data in electronic databases, and their geographic proximity to the source water protection area. In addition, the Illinois EPA made use of information from its leaking underground storage tank database (http://epadata.epa.state.il.us/land/ust/search.asp) and site remediation program database (http://epadata.epa.state.il.us/land/srp/search.asp) to further assess potential sources of contamination to the City's source water. These databases include information from the Illinois EPA Division of Land Pollution Control (LPC) and the Illinois Emergency Management Agency (IEMA). The following

Well ID	Map Code	Site Name	Site Description	Distance (Feet)
20210	23217	LEE AUTO PARTS	STORE/SALES	1300
20210	23218	MCHENRY LUBE EXPRESS	AUTO REPAIR	1550
20210	23205	MORRIE & SONS AUTO & TRUCK	AUTO REPAIR	1300
20210	01968	SUNNYSIDE DODGE CO	BELOW GROUND STORAGE (PET	1500
20210	01969	S&S PETROLEUM #125	BELOW GROUND STORAGE (PET	1750
20210	01970	UNION 76	BELOW GROUND STORAGE (PET	1825
20210	12725	AMOCO GAS STATION	BELOW GROUND STORAGE (PET	3250
20211	23217	LEE AUTO PARTS	STORE/SALES	1300
20211	23205	MORRIE & SONS AUTO & TRUCK	AUTO REPAIR	1550
20211	23218	MCHENRY LUBE EXPRESS	AUTO REPAIR	1800
20211	01969	S&S PETROLEUM #125	BELOW GROUND STORAGE (PET	1325
20211	01970	UNION 76	BELOW GROUND STORAGE (PET	1450
20211	01968	SUNNYSIDE DODGE CO	BELOW GROUND STORAGE (PET	1200
20211	12725	AMOCO GAS STATION	BELOW GROUND STORAGE (PET	3550

OTHER IDENTIFIED POTENTIAL SOURCES:
For this community water supply, no additional potential sources of contamination have been identified beyond those in Illinois EPA databases.

SUSCEPTIBILITY TO CONTAMINATION:
To determine McHenry's susceptibility to groundwater contamination, the Well Site Survey, published in 1992, and the recharge area survey performed by IRWA were reviewed. During the survey of McHenry's source water protection area, Illinois EPA staff recorded potential sources, routes, or possible problem sites within the 200 or 400 foot minimum setback zones and 1,000 foot maximum setback zones and IRWA recorded sites within the recharge areas. Two sites exist within 400 feet of wells #2 and #3. No sites are located in the combined maximum setback zone. Four sites are located inside the recharge area and one additional site is proximate to the recharge area. Wells #5 and #6 have no sites located within the minimum or maximum setback zones. Three sites are located inside the recharge area and an additional four sites are located outside the recharge area. No sites are located in the minimum or maximum setback zones around wells #7, #8, or #9. No sites are located within the minimum setback zone around well #10 but one site is located within the maximum setback zone.

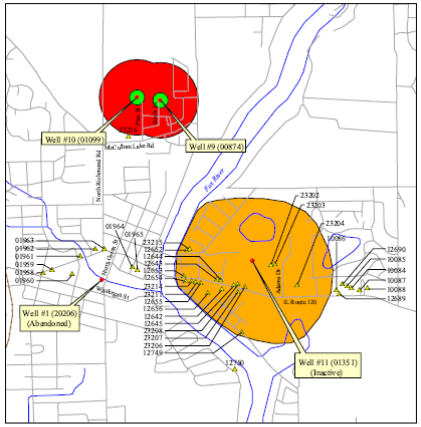
The Illinois EPA considers the source water of this facility to be susceptible to VOC contamination. This determination is based on a number of criteria including: monitoring conducted at the wells, monitoring conducted at the entry point to the distribution system, the available hydrogeologic data on the wells, and the land-use activities in the recharge area of the wells.

SOURCE WATER PROTECTION EFFORTS:
The Illinois Environmental Protection Act established minimum protection zones of either 200 or 400 feet for McHenry's active community water supply wells. These minimum protection zones are regulated by the Illinois EPA. In addition to the minimum setback zones, three recharge areas have been delineated. These delineations included wells #2, #5, #6, and #11. A recharge area is the geographic area surrounding a well or well field providing potable water to a community water supply as modeled using computer software to determine a five-year time of travel.

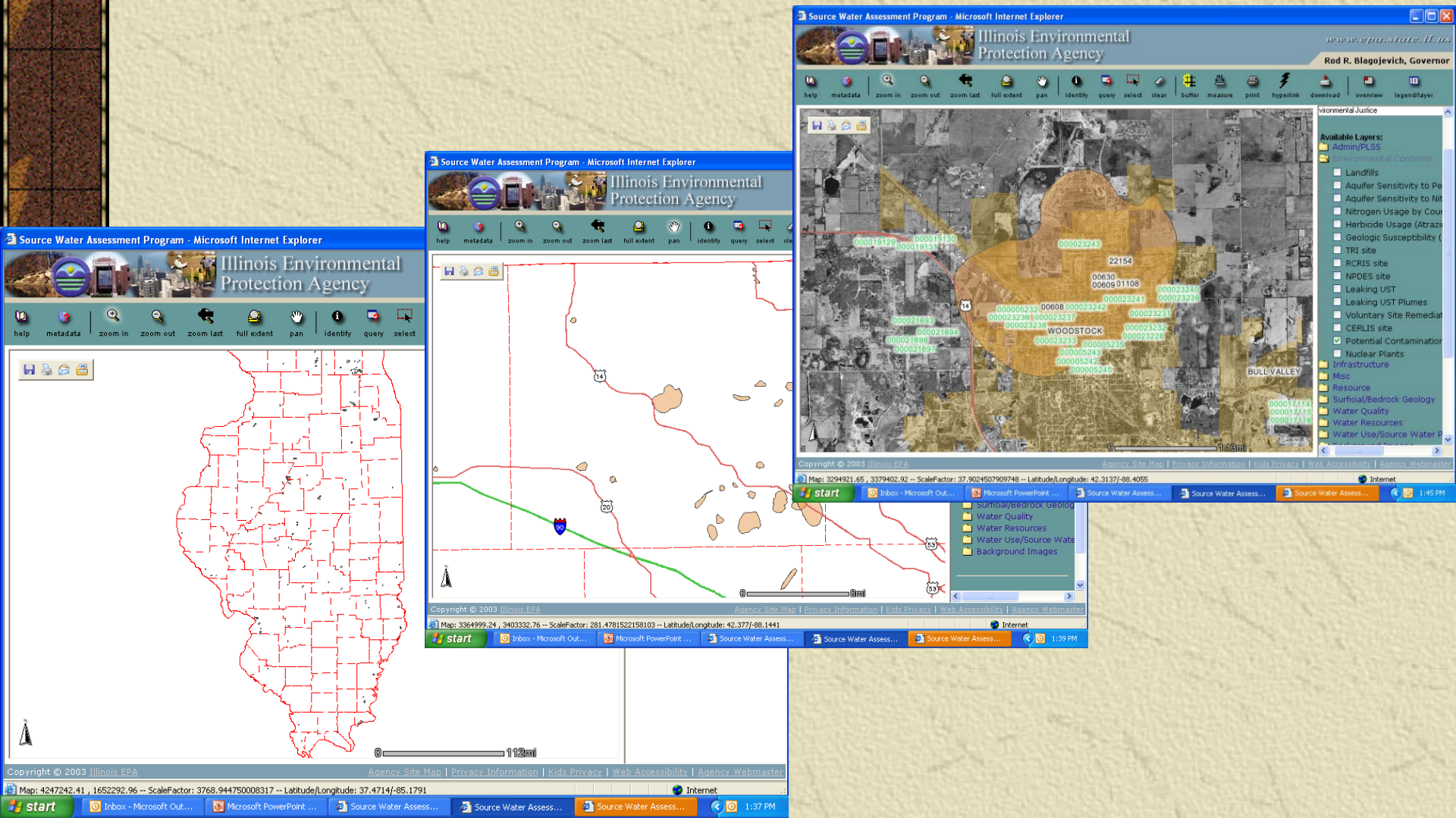
In addition to source water protection, the finished water is protected by a cross connection control ordinance. Cross connection protection is crucial to a water system because a cross connection to either the water treatment plant (for example, at bulk water loading stations) or in the distribution system may negate all source water protection initiatives provided by the supply.

To further minimize the risk to the City's water supply, the Illinois EPA recommends that the following activities be assessed. First, the supply may wish to petition McHenry City Council to enact a maximum setback zone ordinance. These ordinances are authorized by the Illinois Environmental Protection Act and allow county and municipal officials the opportunity to provide additional protection up to 1,000 feet from their wells. Second, the Illinois EPA recommends that McHenry adopt both a wellhead protection plan and recharge area management

FIGURE 1: WELLHEAD PROTECTION PLANNING MAP FOR MCHENRY (FACILITY #1110600)



Delineated WHPA's



Illinois Environmental Protection Agency

www.epa.state.il.

Rod R. Blagojevich, Gover

p | metadata | zoom in | zoom out | zoom last | full extent | pan | identify | query | select | clear | buffer | measure | print | hyperlink | download | overview | legend/layer

Refresh Map

Select Active Layer:

CWS Wells

Available Layers:

- Admin/PLSS
- Environmental Concern
- Infrastructure
- Misc
- Resource
- Surficial/Bedrock Geolo
- Water Quality
- Water Resources
- Water Use/Source Wa
- Background Images

Refresh Map

Query/Selection Results - Microsoft Internet Explorer

Save These Data as CSV

CWS Wells

Rec	area	perimeter	well_id	w_cws_num	w_cws_name	w_status	w_suscept	w_policy	w_min_setb	w_d_depth	w_aquifer	amb_well	x_
1	-9999	0	00849	1110650	MARENGO	A	C2	U	400	58	0101	0	32454
2	-	0	20193	1110650	MARENGO	A	A2	U	400	88	0101	0	32436

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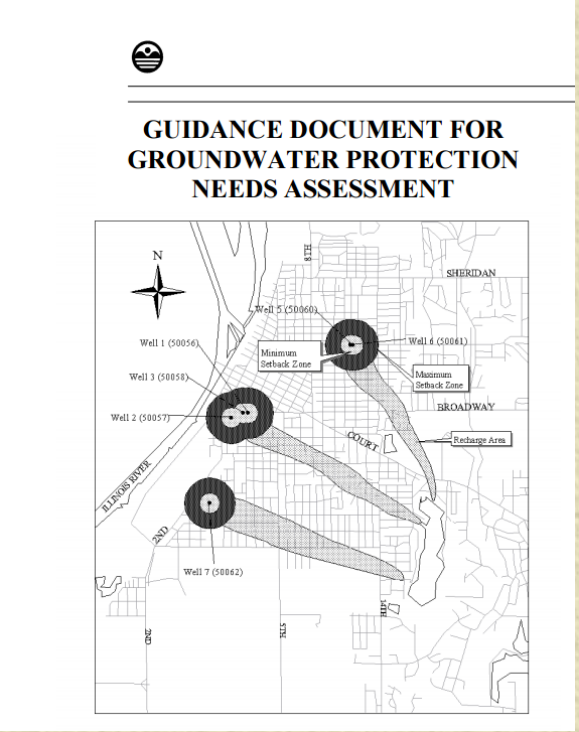
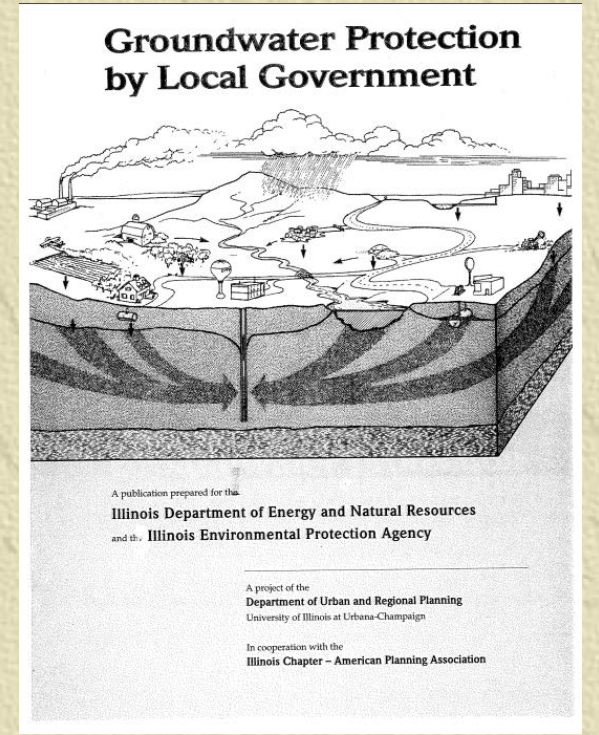
lap: 3253138.23 , 3354138.67 -- Scale

Guidance Documents

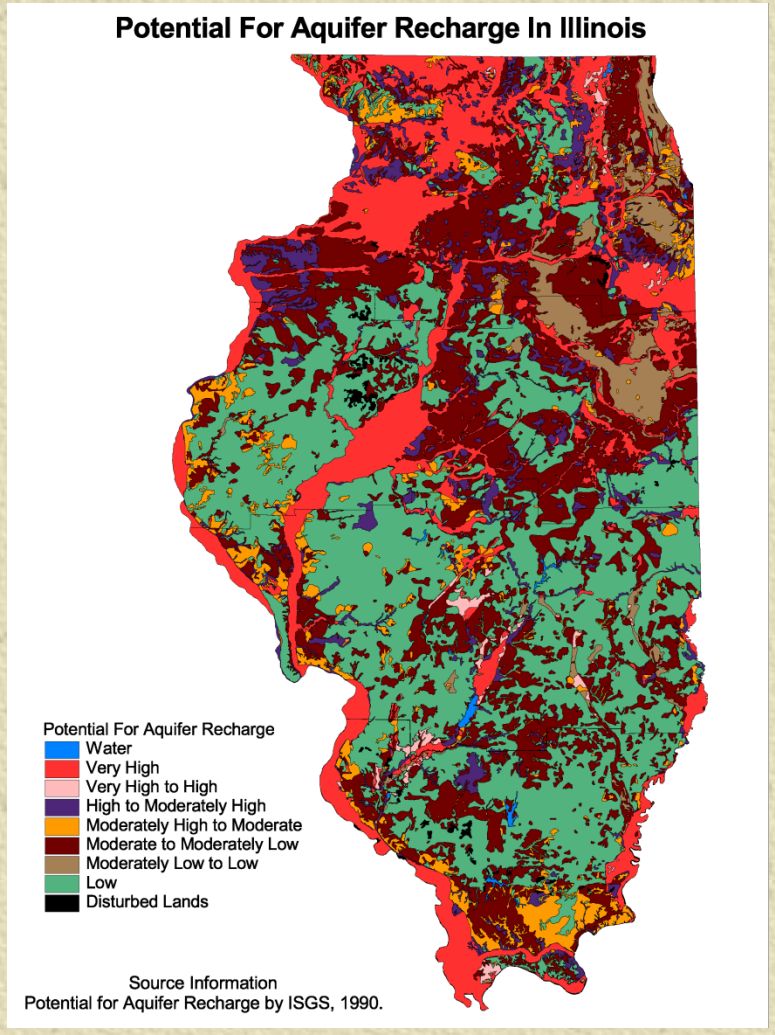
- ***Groundwater Protection by Local Government***
- ***Guidance Document for Groundwater Protection Needs Assessment***





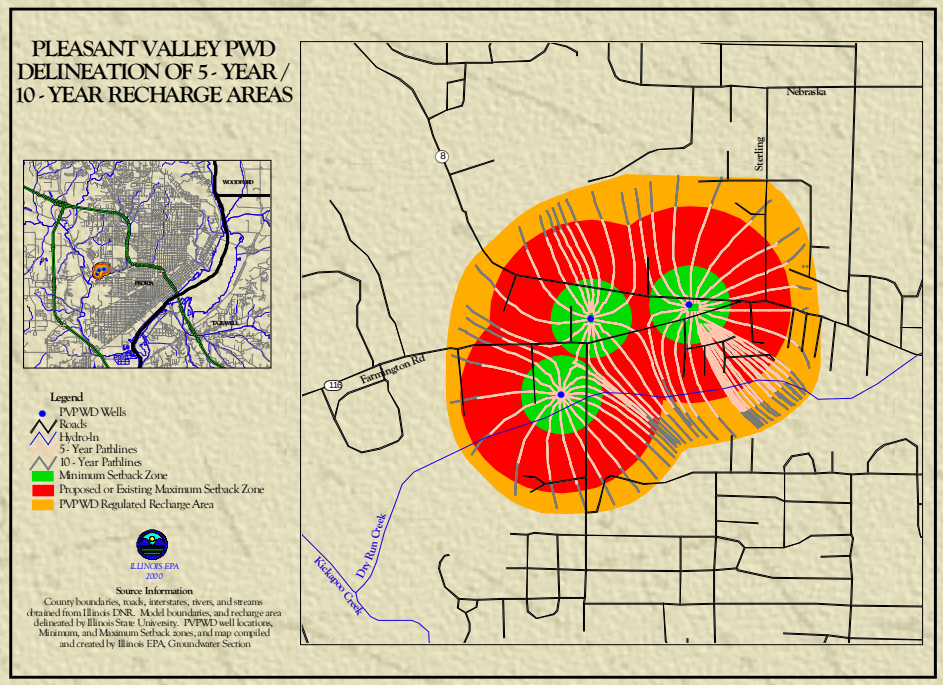
Regional Groundwater Protection Planning [415 ILCS 5/17.2]

- IGPA Required the Formation of Regional Planning Committees
- Formation of these Planning Regions Based on Statewide Mapping of "Appropriate Recharge Areas"
- Functions to Establish Protection Efforts that Best Address Regional Groundwater Protection Concerns

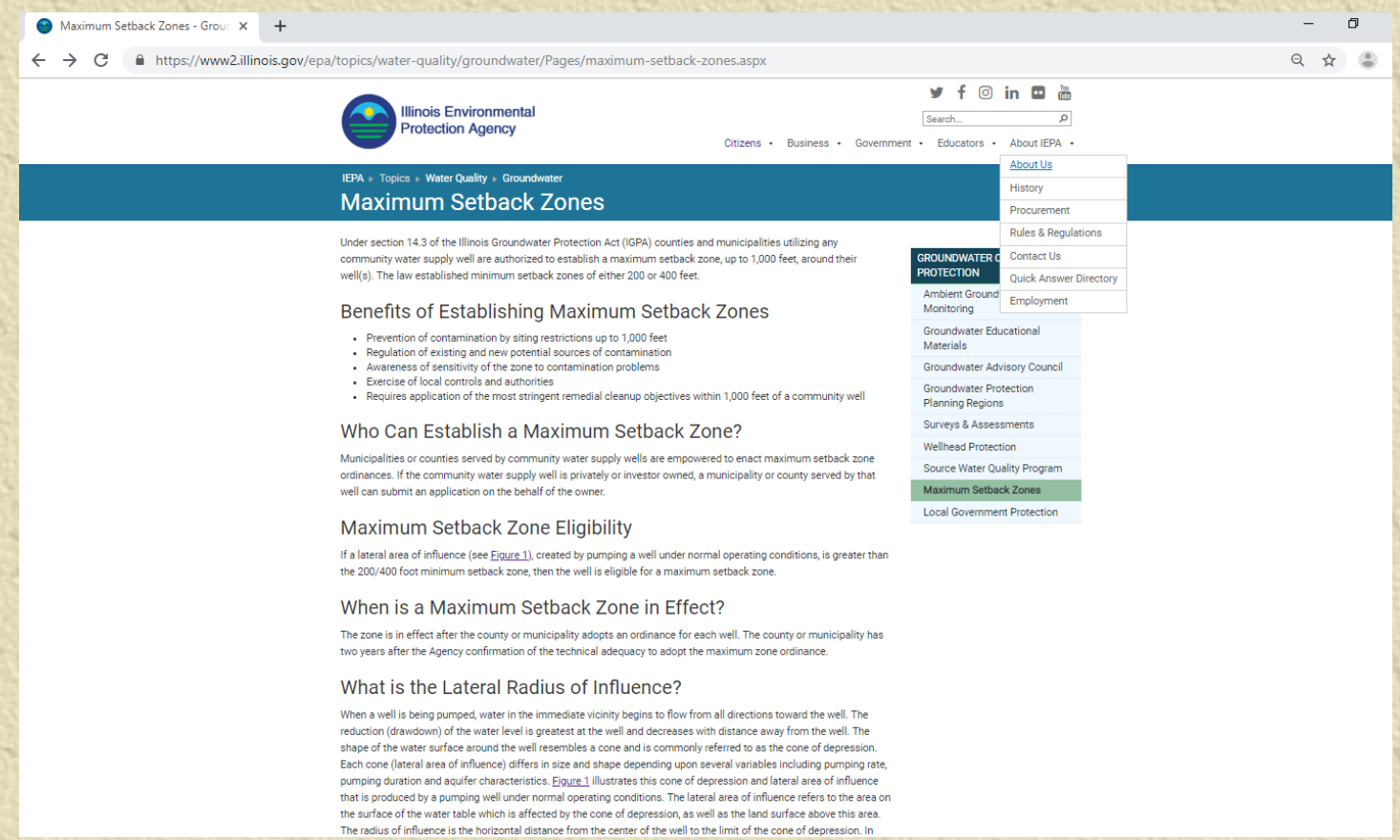


Authority for Recharge Area Protection

- Mechanism for Protecting Potable Resource Groundwater for Areas which the Maximum Setback Zone (1000 ft.) is Insufficient
- Established through Pollution Control Board Rule Making



Maximum Setback Zones



Maximum Setback Zones - Grou

https://www2.illinois.gov/epa/topics/water-quality/groundwater/Pages/maximum-setback-zones.aspx

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Maximum Setback Zones

Under section 14.3 of the Illinois Groundwater Protection Act (IGPA) counties and municipalities utilizing any community water supply well are authorized to establish a maximum setback zone, up to 1,000 feet, around their well(s). The law established minimum setback zones of either 200 or 400 feet.

Benefits of Establishing Maximum Setback Zones

- Prevention of contamination by siting restrictions up to 1,000 feet
- Regulation of existing and new potential sources of contamination
- Awareness of sensitivity of the zone to contamination problems
- Exercise of local controls and authorities
- Requires application of the most stringent remedial cleanup objectives within 1,000 feet of a community well

Who Can Establish a Maximum Setback Zone?

Municipalities or counties served by community water supply wells are empowered to enact maximum setback zone ordinances. If the community water supply well is privately or investor owned, a municipality or county served by that well can submit an application on the behalf of the owner.

Maximum Setback Zone Eligibility

If a lateral area of influence (see Figure 1), created by pumping a well under normal operating conditions, is greater than the 200/400 foot minimum setback zone, then the well is eligible for a maximum setback zone.

When is a Maximum Setback Zone in Effect?

The zone is in effect after the county or municipality adopts an ordinance for each well. The county or municipality has two years after the Agency confirmation of the technical adequacy to adopt the maximum zone ordinance.

What is the Lateral Radius of Influence?

When a well is being pumped, water in the immediate vicinity begins to flow from all directions toward the well. The reduction (drawdown) of the water level is greatest at the well and decreases with distance away from the well. The shape of the water surface around the well resembles a cone and is commonly referred to as the cone of depression. Each cone (lateral area of influence) differs in size and shape depending upon several variables including pumping rate, pumping duration and aquifer characteristics. Figure 1 illustrates this cone of depression and lateral area of influence that is produced by a pumping well under normal operating conditions. The lateral area of influence refers to the area on the surface of the water table which is affected by the cone of depression, as well as the land surface above this area. The radius of influence is the horizontal distance from the center of the well to the limit of the cone of depression. In

GROUNDWATER PROTECTION

Ambient Ground Monitoring
Groundwater Educational Materials
Groundwater Advisory Council
Groundwater Protection Planning Regions
Surveys & Assessments
Wellhead Protection
Source Water Quality Program
Maximum Setback Zones
Local Government Protection

Local Wellhead Protection Efforts

- Central Region Groundwater Protection Committee's web page at;
- Tazewell County Groundwater Protection Ordinance and the City of Pekin's Overlay Wellhead Ordinance at:
- http://www.epa.illinois.gov/topics/community-relations/sites/mahomet-aquifer-task-force/index

Education

- Provide Administrative and Technical Support for Education Activities
  - Regional Planning Field Days
  - Clean Water Celebration
- State-wide Groundwater Protection Policy Forum and Workshops

35 Ill. Adm. Code 601.101

- ***Assure that all persons served by community public water supplies receive water which is safe in quality, clean, adequate in quantity of satisfactory mineral character for ordinary domestic consumption***

35 Ill. Adm. Code 604.200

- ***Each water supply must take its raw water from the best available source that is economically reasonable and technically possible.***

Proposed Source Water Protection Planning Rules

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ANSI/AWWA G300-07
(First Edition)

American Water Works Association

The Authoritative Resource on Safe Water®

AWWA Standard

Source Water Protection

STANDARD
Since 1881

ANSI American National Standards Institute

Effective Date: July 1, 2007
This edition approved: Jan. 21, 2007
Approved by American National Standards Institute: April 20, 2007

628.16
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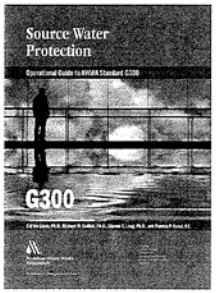
Source Water Protection

Chi Ho Sham is with The Cadmus Group (www.cadmusgroup.com), Watertown, Mass. Sharon C. Long is with the University of Wisconsin and Wisconsin State Laboratory of Hygiene, (www.slh.wisc.edu), Madison, Wis. Richard W. Gullick is with the Passaic Valley Water Commission (www.pvwc.com), Clifton, N.J.

AWWA Standard Supports Utility Efforts to Protect Source Water

Drinking water utilities can turn to AWWA Standard G300 as the definitive standard for source water supply protection. Now an operational guide provides further support. BY CHI HO SHAM, SHARON C. LONG, AND RICHARD W. GULLICK

ONE OF AWWA'S MAIN GOALS is to help water utilities evaluate and improve their water quality, operations, maintenance, and infrastructure. Several AWWA programs and publications—including standards—support this mission. For more than 100 years, AWWA has produced peer-reviewed standards for materials and processes to help water and wastewater utilities and their service providers meet customer, investor, and government regulator expectations. AWWA standards, which are American National Standards Institute (ANSI) approved and recognized worldwide, are intended to improve overall utility operations and service.



MANAGEMENT STANDARDS

Recently, AWWA developed the Utility Management Standards program (G Series Standards) to assess service quality and management efficiency based on recognized best practices. Through established standards and formal recognition by professional organizations, the program promotes improvements in service quality and efficient management.

The utility management standards address utility managers' widespread need for consistency and reliability in knowing what's expected in utility management and operation. These standards are valuable resources regarding increased scrutiny concerning accountability and regulation and the difficult economic realities of an aging infrastructure, changing water demand, and a shrinking workforce.

The utility management standards are designed to cover the principal activities of a typical water or wastewater utility. To date, standards have been developed for

- Water Treatment Plant Operations and Management, G100-11
- Distribution Systems Operation and Management, G200-09
- Source Water Protection (SWP), G300-07
- Utility Management System, G400-09
- Business Practices for Operation and Management, G410-09
- Communications and Customer Relations, G420-09
- Security Practices for Operation and Management, G430-09
- Emergency Preparedness Practices, G440-11

It's anticipated that additional topics will be added, including wastewater utility-specific topics.

The utility management standards are developed according to a formal, ANSI-recognized, AWWA-managed process. This is accomplished using volunteer committees to establish standard practices in a uniform and appropriate format.

SOURCE WATER PROTECTION

The AWWA Standard G300, Source Water Protection, is a drinking water utility's definitive standard for protecting its drinking water supply source(s). Effective on July 1, 2007, AWWA G300 outlines the components of a successful SWP program and requirements for meeting the standard.

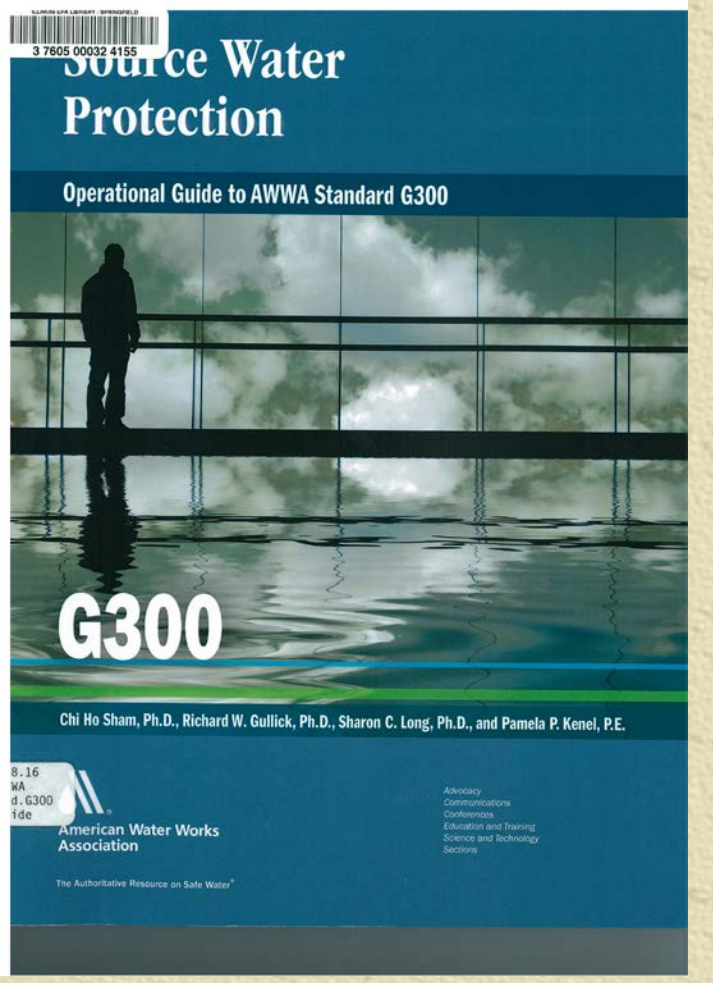
SWP program objectives are to maintain, safeguard, and improve the quality of a given source water. The program helps utilities achieve numerous benefits, which serve as incentives for developing and implementing SWP activities. Potential incentives include

- greater public health protection, especially for sensitive subpopulations,

New Illinois Pollution Control Board Regulation – Effective August 2019

- Section 604. 300 -Purpose
- Section 604.305 Source Water Protection Plan Requirement & Contents
- Section 604.310 -Vision statement
- Section 604.315 Source water assessment
- Section 604.320 Source Water Protection Plan Objectives
- Section 604.325 Action Plan
- Section 604.330 Submission
- Section 604.335 Agency Approval
- Section 604.340 Evaluation and Revision

Source Water Protection Operational Guide AWWA G300



Vision Statement

- The CWS' policy and commitment to protecting source water
- Explanation of the CWS resources and barriers to protecting source water
- Names of the individuals who developed the vision statement

Source Water Assessment

- Statement of the importance of source water
- List of supplies that obtain water from this supply
- Delineation
- Report on the quality of source water and finished water
- ID of potential contamination sources
- Susceptibility analysis
- Explanation of efforts to protect source water

Source Water Protection Plan Objectives

- The source water protection plan must contain a list of the community water supply's objectives to protecting source water
- These objectives can include meeting the requirements of any of the Sections in this Subpart, including developing a vision statement or performing a source water assessment
- Objectives may also address the specific problems or issues identified in the source water assessment, and should consider current and potential future issues

Action Plan

- Descriptions of all projects, programs, and activities developed by the community water supply to meet the objectives listed in Section 654.520
- The community water supply's schedule for implementing projects, programs and activities
- Identification of the necessary resources to implement the plan
- Identification of the potential problems/obstacles for implementing the plan

Submission

- A community water supply that first commenced construction after the effective date of this section must develop and submit a source water protection plan simultaneously with the construction permit application
- A community water supply in existence of the effective date of this section must develop and submit to the Agency for approval a source water protection plan within the following time frame after the effective date of this section:
  - Within 2 years for CWS serving a population greater than 50,000 persons;
  - Within 3 years for CWS serving a population greater than 3,000 but less than 50,000 persons; or
  - Within 5 years for CWS serving a population less than 3,000

Evaluation and Revision

- The community water supply shall review and revise as necessary its source water protection plan no less than every five years
- If the community water supply revises its source water protection plan, it must submit the plan to the Agency for approval pursuant to Section 654.535 of this Subpart

CONCLUSION