

The State of Water in McHenry County, Illinois

McHenry County Challenge

- McHenry County is <u>solely</u> dependant on groundwater for all of its potable water needs
 - Lake Michigan Water is not an option
- Adequate groundwater quantity *and* quality is <u>essential</u> to the present and future well being of McHenry County agriculturalists, residents and businesses.
 - Including things like recreation, aesthetics, food production...
- The groundwater supply is:
 - Limited
 - Vulnerable to pollution

How Much Water Do We Use in McHenry County?



Municipal Water Supplies



McHenry County Water Supply Projections



Map Legend

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-] Townships/Areas with Surplus Groundwater Capacity (Ratio 0.0 0.6)
- Townships/Areas of Groundwater Concern (Ratio 0.6 0.8)
- Townships/Areas with Potential for Groundwater Shortage (Ratio > 0.8)
- Water Features
- Railroads
 - Incorporated Municipality

The Hydrologic Cycle



The Future of a Community

Water Supply Planing

- •Sound & Healthy Economy
- •Healthy Environment
- Open Space & Agriculture
- •High Quality of Life
- •Sustainable & Safe Water Supply

Smart Growth



What about Public Safety and Fire Protection?

Lack of Water Supply Planning

- •Loss of Jobs, Retail & Industry
- •Degraded Natural Areas & Loss of Open Space
- Loss of Agriculture
- •Decreased Quality of Life
- •Decreased Property Values
- Stagnation

Sprawl

Why is it that water takes up **70% of the earth's surface** and **60% of our bodies**, yet so little of our thinking?



Imagine turning water problems into opportunities!

Opportunity:

 To rethink the way we treat and value water in McHenry County and across the Region! Safe Water... a Basic Requirement



Create a Program to:

Protect and preserve the *quantity and quality* of groundwater for our generation and future generations, including the built and natural environment.

Integrated Water Resources 7 Step Planning Process



Integrated Water Resource Planning (Palmer and Lundberg 2003)

Integrated Water Resources Planning

Integrated Water Resources Planning

- Encourages cooperative planning
- Scientific Understanding
- Reasonable / Attainable Goals
- Planning "Team":
 - government leaders & regional partners,
 - business and industry,
 - agriculture, nurseries, sod farms
 - special interest groups,
 - residents
- Shared Vision = Common Goals



We're All In the Same Bathtub

Water Resources Action Plan



- Manage supply <u>and</u> demand
- Plan for growth <u>and</u> drought
- Utilize water <u>conservation</u> programs
- <u>Value</u> the land and treat water in all its forms as a <u>resource</u>!
 - Stormwater, Groundwater, Surface Water, Wetlands... they are all part of the water cycle and natural water balance.
- Consider all your "<u>development</u>" options
 - Open space, agriculture, pervious pavement, raingardens, parks, conservation design developments, buffer strips, and more...
- Increase <u>access</u> to recycling centers
- Educate, Educate, Educate!!!

Water Resources Action Plan:

Quality

Pollution Prevention Education

Sensible Salting

Quantity

Water Conservation

Conservation Design

Quantity & Quality

- Groundwater Recharge
- Protection of Water
 Dependent Ecosystems
- > Wastewater
- Water Supply Planning
 - > Drought Preparedness
 - **Contingency Planning**

Implementation



Steps to Implementation

- 1. Scientific Research
- 2. Symposiums, Workshops, and other Educational Offerings
 - 1. Municipal
 - 2. Public
 - ✤ Adult Education
 - Youth Education
 - 3. Private Business Owners
 - Agriculture, turf management, snow operators and more...
- 3. Municipal and County-Board Support

Research and Development



County of McHenry 3D Hydrogeological Mapping





Sample of Locations



ISGS Fieldwork July –Oct 2008

- Borehole (obs. well)
- Geophysical transect
- McHenry County
 3D Mapping Project



In the Field







Wellhead protectors





Geophysics – Seismic Method







Geophysics (seismic methods)

Northeast McHenry County near Thelan Sand and Gravel





Interpretation of Borehole Data and Historical Records (view from the southwest)

Component of NE Illinois Water Supply Planning Project











Illinois State Geological Survey Cross Section...



Illinois State Geological Survey



Cross section compiled by J.Thomason, Illinois State Geological Survey

Illinois State Geological Survey



Cross section compiled by J.Thomason, Illinois State Geological Survey



Example: Detailed 3D Hydrogeologic Mapping in Lake County, IL

Central Great Lakes Geologic Mapping Coalition Project, ISGS Jason Thomason, Ardith Hansel, Mike Barnhardt, Barb Stiff, Steve Brown, Andy Stumpf



Note: yellows (sand and gravel; aquifers) greens and purples (clay rich units; aquitards)



Sensitive Aquifer Recharge Areas



Cassandra McKinney

- Observation Wells
- Stream Gauges
- Water Quality Monitoring





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Observation Wells in McHenry County



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Observation Wells in McHenry County



Sensitive
Aquifer
Recharge
Areas
Map

Observation Wells

Stickney Run Observation Well

DESCRIPTION

Location: McHenry County, Illinois Hydrologic Unit Code: 07120006 Latitude 42°18'20", Longitude 88°15'42" NAD83 Land-surface elevation 785.32 feet above sea level NAVD88 Well Depth 113.0 feet. Hole Depth 153 feet.

Well is completed in the Sand and gravel aquifers (glaciated regions) (N100GLCIAL) national aquifer. This well is completed in the Quaternary System (110QRNR) local aquifer

Prairieview Education Center Observation Well

DESCRIPTION:

- **Location:** McHenry County, Illinois **Latitude** 42°15'47.4",
- Longitude 88°14'23.1" NAD83
- Land-surface elevation 835 Ft. Above Sea Level. NGVD29
- Hole Depth 217 feet
- **Well is completed in** the Sand and gravel aquifers (glaciated regions) (N100GLCIAL) national aquifer. This well is completed in the Quaternary System (110QRNR) local aquifer

Example of a Hydrograph from Greenwood Township

Water Quality Overview

Preliminary Water Quality Data

- High Iron Countywide
- Low Chlorides in 38 of 41 wells
- Overall pretty good water quality
- High nitrates in 2 wells
- Arsenic of concern in 20% of wells
- NoVOC's really of concern in any of the observation wells
 - <u>In Watershed study area no concerns in</u> <u>observation wells.</u>

Groundwater Task Force

Task Force:

- Meet every other month
 - To discuss implementation
 - To make revisions when and where necessary
 - Location to rotate around County

Next Meeting: Village of Spring Grove Tuesday, February 8, 2011 2:00 – 3:30 pm

Symposiums, Workshops & Other Educational Offerings

Winter Snow and Ice Operations – Training and Certification

- Public and Private Sector
 - Environmental Impacts
 - Storage
 - Handling
 - Application Rates
 - Material Options
 - Anti-icing
 - De-icing
 - Equipment Calibration

Medication Disposal Program

In partnership with:

- Local Law Enforcement
- Illinois Environmental Protection Agency

Open to all county "residents" –

- Not open to physicians, nursing homes, or pharmacies
- Free anonymous disposal of:
 - Most controlled and uncontrolled pharmaceuticals
 - Most over the counter remedies

Additional Programs Available to Public

pending available funding

- Partners in Paint Recycling Programs (Townships)
- Household Hazardous Waste Disposal Program (Lake County Solid Waste Action Agency and Rockford)
- Electronic Waste Disposal Program
- School "Water" Lessons
 - 2nd & 8th Grade McHenry County Schools Environmental Education Program has trained teachers ready to go to schools and youth groups to teach about water.
 - ✓ K-12 lessons available on <u>www.mchenryh2o.com</u>

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Programs In Development: Hobby Farms – Horses

- Nutrient Management
 - Manure Composting
- Pasture management
 - Horse to acre ratios
 - Rotational grazing
- Grassed buffer strips
- And more...

Programs in Development: Turf Management and Certification

- Public and Private Sector
 - SoilTesting
 - Phosphorous Fertilizer Education
 - Application Rates and Timing
 - Irrigation
 - Water Conservation

Educational Materials Available

More available online at www.mchenryh2o.com

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Conserve Water At Home

Indoors

- Replace your fixtures with water efficient models
 - For Example: Toilet, Showerhead, Washing Machine

Fix Leaking Faucets and Toilets

• Toilet Leaks can waste 200+ gallons per day.

- Faucets leaking one drop per second can waste 2,700 gallons of water per year!
- Turn off the Water when you brush your teeth...

<u>Outdoors</u>

- Your Lawn only needs <u>one inch of water per week</u>.
- During a drought let lawns go dormant. Dormant lawns only require ¹/₄ "to ¹/₂" every 2 4 weeks.
- Install a moisture sensor on your irrigation system. This will turn off sprinklers during the rain and only apply water when the grass needs it.
- When watering, water lawn or garden early in the morning when sun rays are not as hot.
- Sidewalks, patios, and driveways don't need to be watered. Adjust your sprinklers accordingly.

Water Resources Website!

- \checkmark Water Resources Action Plan
 - \checkmark Model policies and ordinances
- ✓ Children's Activities
- ✓ Teacher Lesson Plans
- ✓ Brochures
- ✓ Groundwater Research
- ✓ Newspaper Articles

Consider the water supply implications of all decisions

- Encourage municipal leaders to make water supply planning part of your cities comprehensive plan
- ✓ Value Water in all of its forms as a resource!
- ✓ Safe water is a basic requirement of life!
- ✓ Every ounce of Source Water Protection Matters!

 Pass this information along to your friends and neighbors!

QUESTIONS?

"We abuse land because we regard it as a commodity belonging to us. When we see land as a community to which we belong, we may begin to use it with love and respect."

Aldo Leopold, A Sand County Almanac

Cassandra McKinney

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