Wisconsin
Department of Natural Resources

Drinking Water and Groundwater Study Group Meeting

Madison

January 31, 2018

WISCONSIN
DEPT. OF NATURAL RESOURCES

Beyond the Lead and Copper Rule: Department Initiatives to Get the Lead Out

Bridget Kelly – DNR
William Erikson - DNR

Beyond the Lead and Copper Rule: Department Initiatives to Get the Lead Out

1. Status of Lead and Copper under the Lead and Copper Rule
2. What's happened in the last several years – things we've learned
3. Moving forward – incentivizing lead removal
4. Wrap-up and comments

1. STATUS OF LEAD AND COPPER

Lead and Copper Rule

JUNE 1986
SDWA Amendments Signed

AUGUST 1988
Deadline to Meet Lead Ban
Solders ≤ 0.2%
Pipes/pipe fittings ≤ 8.0 %

JUNE 1991
Original LCR Promulgated

AUGUST 1998
Deadline to Meet
New 'lead-free' definition
Pipes/pipe fittings < 8.0 %

AUGUST 1996
SDWA Amendments Signed

JANUARY 2000
LCR Minor Revisions

JANUARY 2011
Reduction of Lead in
Drinking Water Act Signed
8.0% to 0.25% max lead
wetted surfaces

OCTOBER 2007
LCR Short Term Revisions

DECEMBER 2013
Community Fire
Safety Act Signed

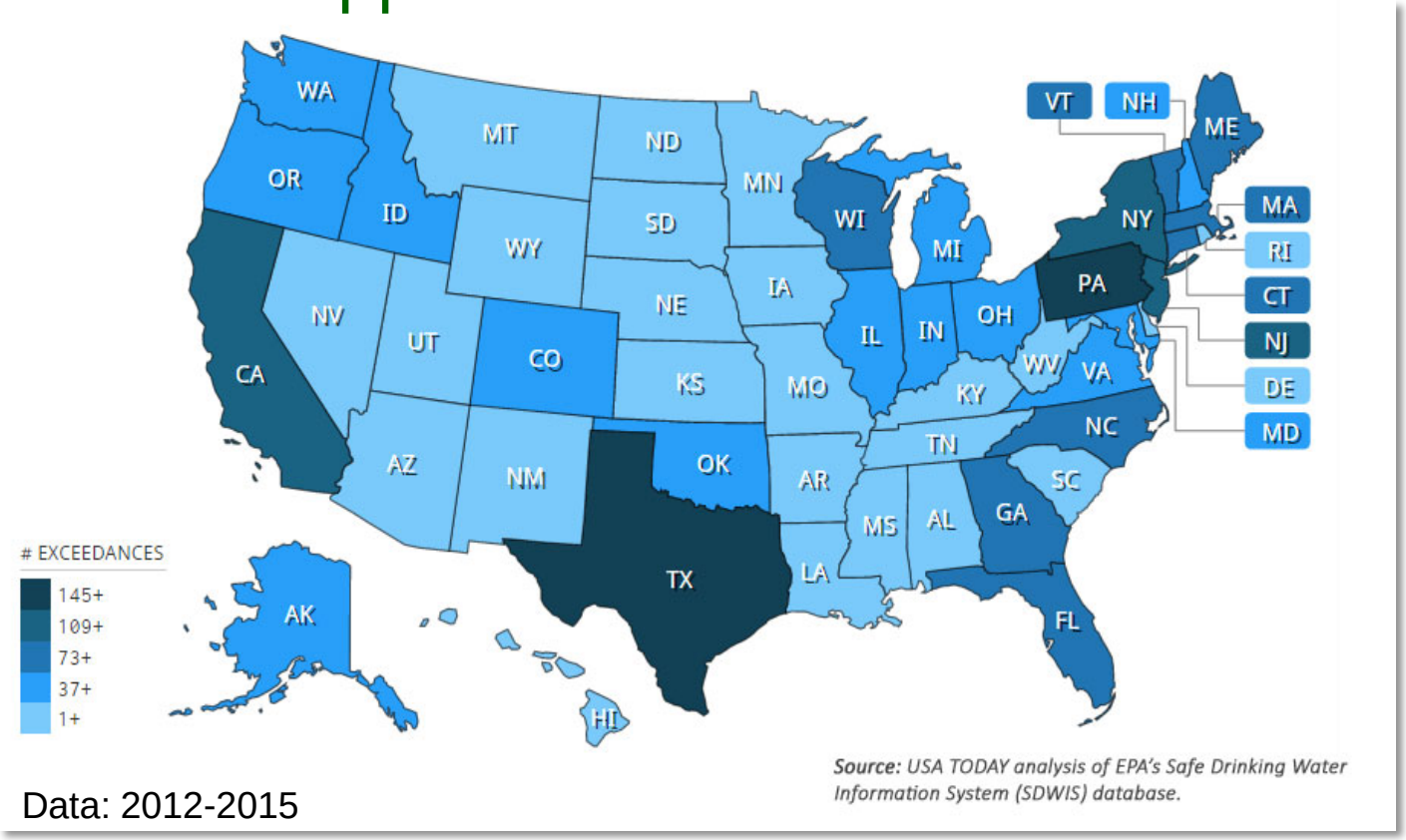
JANUARY 2014
RLDWA Takes Effect

2018?
LCR Long Term Revisions (projected)

Modified from EPA OCCT Guidance., March 2016.

1. STATUS OF LEAD AND COPPER

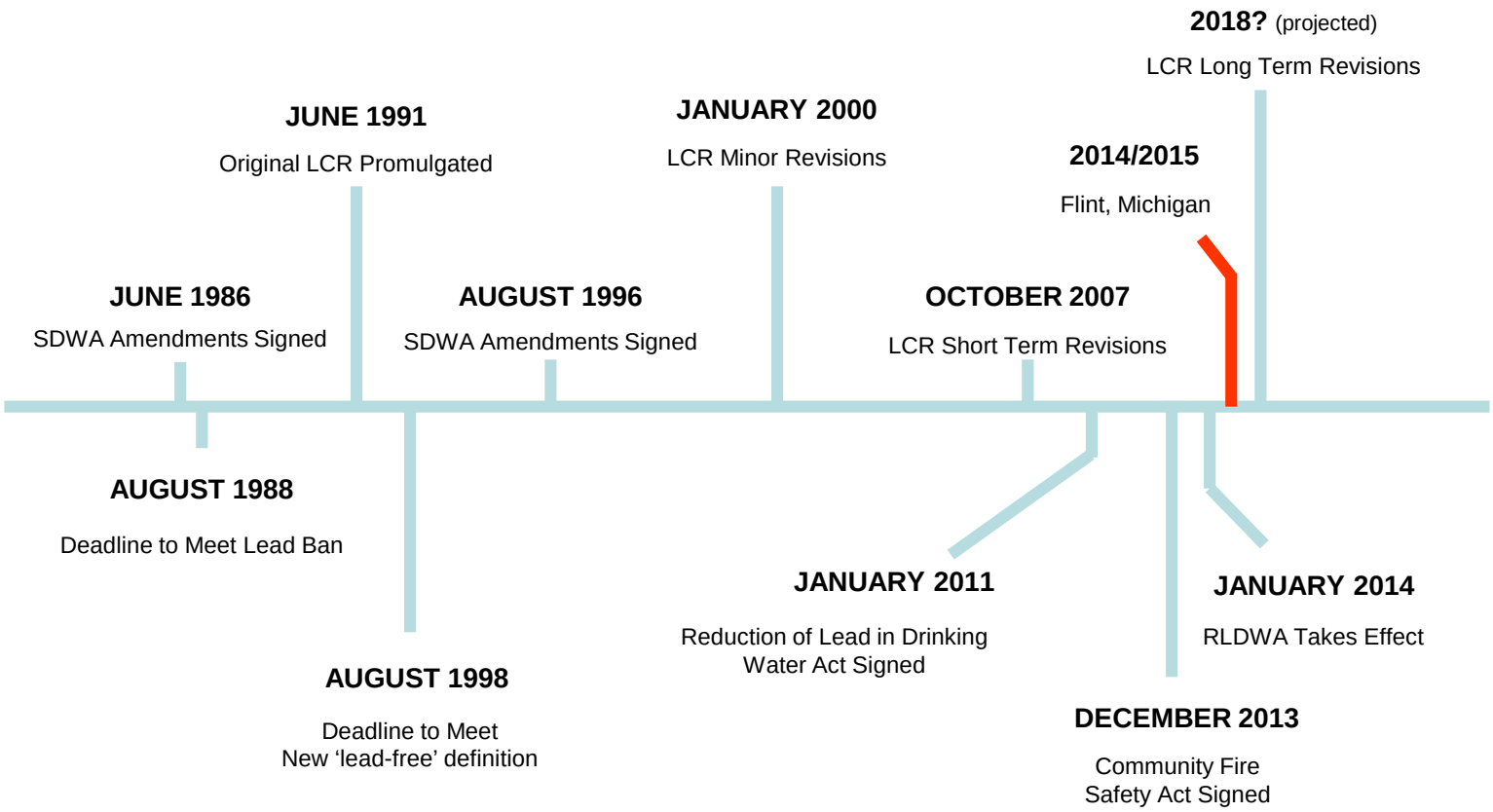
Lead and Copper Rule Action Level Exceedances



Data: 2012-2015

1. STATUS OF LEAD AND COPPER

Lead and Copper Rule



Modified from EPA OCCT Guidance., March 2016.

2. WHAT'S HAPPENED IN THE LAST SEVERAL YEARS?

Great Challenges in Managing PWS under the existing rule:

- Lead and Copper Rule offers two pathways for reduction of lead and copper in drinking water……neither are easy solutions.

Two Paths to Reduce / Remove Lead Under LCR	
1. Optimize Treatment	2. Remove Sources of Lead

2. WHAT'S HAPPENED IN THE LAST SEVERAL YEARS?

What we've learned about Sampling Site Selection:

- Intent of sample site selection is to capture worst-case sites (i.e. sites expected to yield highest lead levels)
  - Tier 2 and Tier 3 sites chosen over Tier 1 sites
  - Inadequate records of LSL infrastructure

PSC Annual Report			No. of Monitoring Sites			
PWS	**No. LSLs**	**Req No Samples**	**Tier 1**	**Tier 2**	**Tier 3**	**Tier E**
PWS A	600	30	10	1	26	9
PWS B	2000	30	4	0	11	1
PWS C	2000	20	12	3	6	0
PWS D	2500	20	0	21	0	0
PWS E	111	10	0	0	10	0

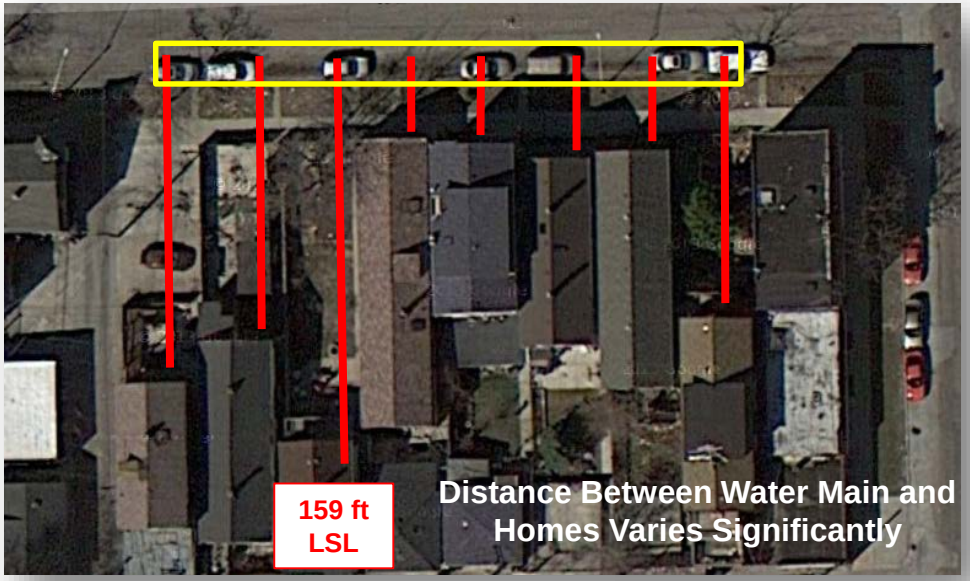
Lead and Copper Rule Sample Site Criteria:

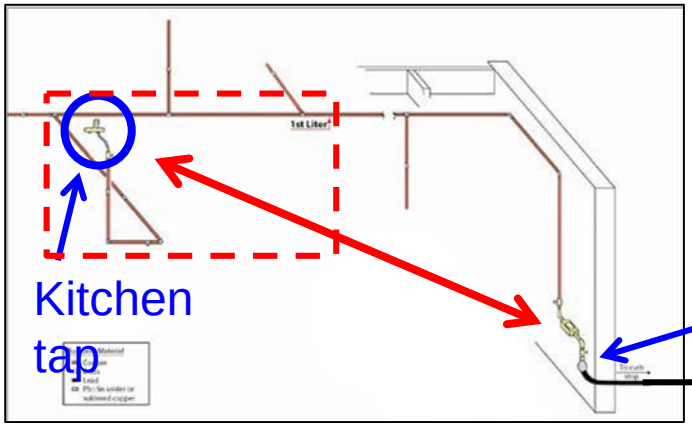
Tier 1 Site: Single Family Structures with:	Tier 2 Site: Multi-family Structures or other buildings with:	Tier 3 Site: Single Family Structure with:	Exceptional Site: Sites where plumbing materials are representative of water system:
i) Full or partial lead service lines; or ii) Lead gooseneck; or iii) Lead plumbing within the home; or iv) Copper plumbing with lead solder; constructed between Jan 1983 and Sept 1984	i) Full or partial lead service lines; or ii) Lead gooseneck; or iii) Lead plumbing within the home; or iv) Copper plumbing with lead solder; constructed between Jan 1983 and Sept 1984	i) Copper Plumbing with lead solder; constructed before January 1983	i) Copper plumbing without lead solder; constructed after 1984 ii) Tier 1, 2, or 3 sites with whole-house water softeners iii) Other, non-metallic plumbing materials (PVC, galvanized)

2. WHAT'S HAPPENED IN THE LAST SEVERAL YEARS?

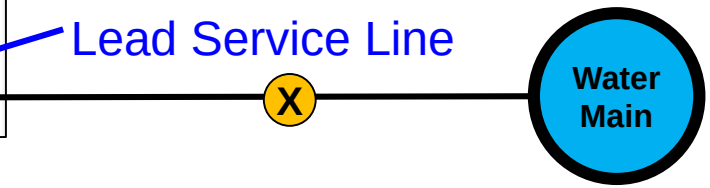
What we have learned about Sampling Procedures:

- Testing programs under LCR lead to variable results
  - First draw sampling inadequate in assessing lead
- Site selection for LCR sampling
  - Tier 2 and Tier 3 sites chosen over Tier 1 sites
  - Inadequate records of LSL infrastructure





The red dashed box approximates what is captured by one 1-liter sample

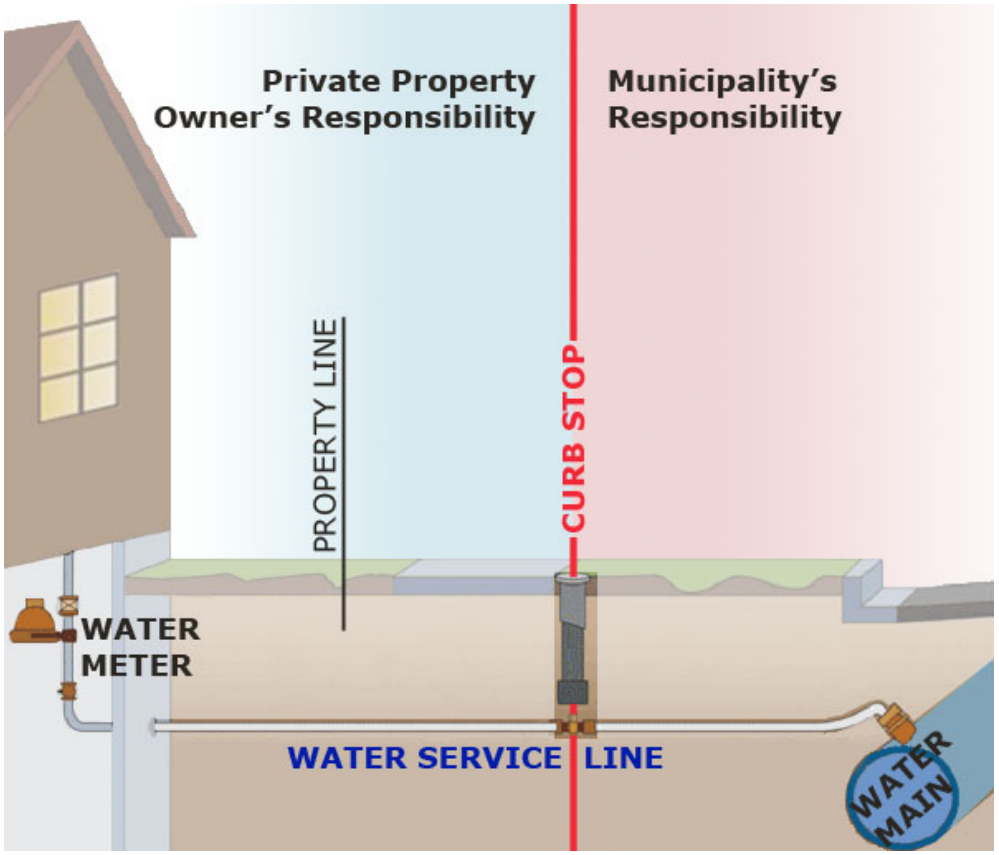


Figures courtesy MDT, EPA, Dec 2017

2. WHAT'S HAPPENED IN THE LAST SEVERAL YEARS?

What we have learned about Partial Lead Service Line Replacement:

- Rule requirement only requires a partial replacement - significant legal and financial impediments to replacement on the private side
- Partial LSL replacement can increase exposure to lead
  - Disturbance of pipe scales containing lead
  - Galvanic corrosion
- CDC - Partial lead service line replacements correlate to increased BLLs in children



https://www.cdc.gov/nceh/lead/waterlines.htm

https://dnr.wi.gov/Aid/documents/EIF/leadServiceLineFunding.html

2. WHAT'S HAPPENED IN THE LAST SEVERAL YEARS?

Great Challenges in Managing PWS under the existing rule:

- Lead and Copper Rule offers two pathways for reduction of lead and copper in drinking water……neither are easy solutions.

Two Paths to Reduce / Remove Lead Under LCR	
1. Optimize Treatment	2. Remove Sources of Lead
Lead sources typically not system-wide; difficult to ascertain degree of lead/copper in water systems **(low levels CCT inhibitors)**	Unknown location of buried infrastructure
Difficult to optimize alongside other treatments **(fluoride – pH - orthophosphate)**	Significant numbers of LSLs = significant time frames for removals **(decades in some instances)**
Phosphate based CCT inhibitors: Phosphorous discharge - WWT	Private side LSLs = private property owner's responsibility (ordinance + funding required)
Lead results can be highly variable and unpredictable – is vulnerable population protected? **(optimized treatment levels can be difficult to pinpoint)**	Expensive –limited funding – difficult to manage under the current rule **(7 % annually)** (rule doesn't account for proactive measures that communities are doing to remove lead)

***Best practice to ensure lead exposure is minimized is removal of lead!**

3. MOVING FORWARD – INCENTIVIZING LEAD REMOVAL

I. DNR Private Lead Service Replacement Program

II. LCR Variance – DNR.EPA.PWS Agreements

III. DNR Green Tier Charters – Legacy Communities Charter

3. MOVING FORWARD – INCENTIVIZING LEAD REMOVAL

I. Private Lead Service Line Replacement:

- Get communities committed to getting the lead out
- Assist municipalities in replacing lead service lines on private property for projects that result in full lead service line (LSL) replacements.
- Addresses partial lead service line replacement – not allowed under this program
- SFY 2017 and SFY 2018
- ~38 PWS each year ($30 Ma over two years)

So where does that leave us….

- Still PWS under existing LCR that can conduct partial LSLs
- Legislation moving – doesn’t solve all problems

II. Lead Copper Rule Variance:

- Agreement between PWS – DNR – EPA where the PWS would no longer be regulated under LCR, but instead would have a separate regulatory framework

- Most basic framework: reduction in phosphate based treatment along with simultaneous removal of lead services
  - Full lead service line replacements
  - Lead service line replacement system-wide

Why? Addresses challenges discussed earlier….

- Most CWS do not have universal lead service lines, yet treatment must be applied centrally - *Variance would allow systems to decide what course of action is best*

- Provides *adequate time* for systems to fully remove the largest sources of lead in water

- Eliminates many complexities associated with *compliance across all drinking water regulations*

- Provides more immediate public health protection – *targeted protection - filters*

3. MOVING FORWARD – INCENTIVIZING LEAD REMOVAL

III. Green Tier:

GREEN TIER

3. MOVING FORWARD – INCENTIVIZING LEAD REMOVAL

Highlights:

LCR Variance

1. Agreement between EPA – DNR – **Single PWS**
2. Plan for removal of all lead service lines within utilities distribution system
3. **Enforceable Practices** as defined in each Variance Agreement
4. Plan for reduction in phosphate based treatments
5. Provide filters with residents with LSLs during removal periods
6. Transparency – identify location of LSLs
7. Applicability – **systems with relatively small # of LSLs**

Green Tier Charters

1. Agreement EPA – DNR and **any number of PWS** (still under rule)
2. Plan to **minimize lead exposure** through highlighting entities efforts to remove lead and through public education
3. **Best Management Practices** as defined in Charter Documents
4. Working towards health based standards for water quality (HIAP)
5. Partnerships – between PWS and schools to remove sources of lead
6. Transparency – disclose locations of LSLs (real estate)
7. Applicability - **PWS and WWT, and any other community organization**

4. WRAP-UP

Questions? Comments?

Contact Information

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Lead and Copper Updates

Steve Elmore – Program Director
Adam DeWeese – Public Water Supply Section Chief
Cathy Wunderlich – Public Water Engineering Section Chief

Lead and Copper Rule Update

- LCR consultation period open 1/8/18
- 60 day comment period
- 5 areas of input identified by EPA
  - Lead Service Line Replacement
  - Corrosion Control Treatment
  - Transparency and Public Education
  - Tap sampling
  - Copper

Lead Service Line Replacement

- LSL inventory
- Limit partial replacement
- Temporary filters
- Replacement schedule (e.g., 10, 15, 25, 35 years)

Corrosion Control Treatment

- Corrosion control treatment required for more systems, not just large systems
- POU treatment for homes with LSL
- Prescribed level of CCT
- CCT regulatory evaluations
- Find and fix approach for CCT

Transparency and Public Education

- Ongoing education requirements
- 24 hour notification of homeowners
- All results available (tap and WQP)

Tap Sampling Procedures

- Change where samples are collected
- Change number of samples
- Change how collected
- Household action level that would involve health department

Copper

- Copper corrosiveness screening
- Additional CCT for copper
- Separate copper sampling sites

Comments due to EPA March 8, 2018

Submit to: LCRConsultation@epa.gov

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Break

Well Driller Viewer
Overview and Demo

Liesa Lehmann – Private Water Section Chief

Well Driller Viewer

What is it?

- Map-based tool
- Current data from various DNR sources
- Available online via internet – computer, tablet, smartphone…

Well Driller Viewer

Why?

- Assist drillers in planning construction projects
- Replace outdated Well CD technology
- Reduce agency costs
- Provide most current data

Well Driller Viewer - Welcome

WELL DRILLER VIEWER

Tools | Measuring & Drawing

Home | Layers | Legend | Full Extent | Pan | Zoom In | Zoom Out | Identify | Plot Coordinates | Print | Export | Share | Feedback

Basic Tools | Navigation | Other Tools & Actions

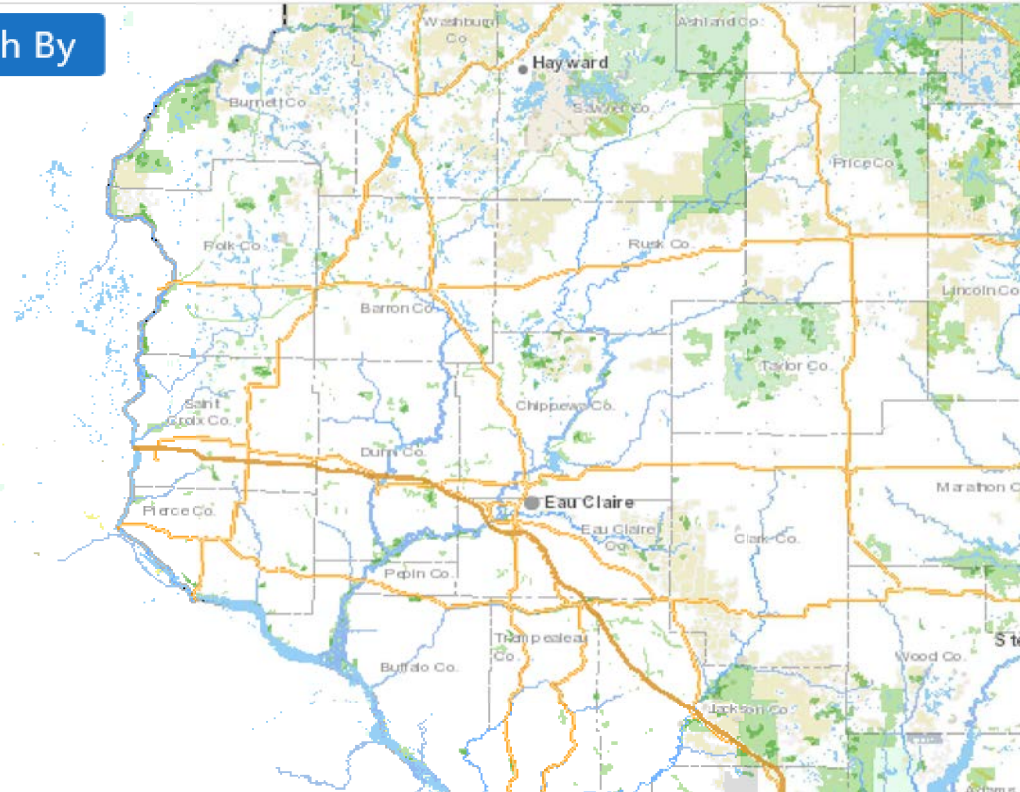
Well Driller Viewer

Search By

Welcome to the Well Driller Viewer

The Well Driller Viewer provides a visual map view of specific setback, construction and approval information to assist well drillers in planning projects and meeting requirements of NR 812, Wis. Adm. Code.

1. Zoom in to your specific location of interest by any of the following methods:
   - Double-click on the map OR
   - Click on the blue Search By button OR
   - Choose the Zoom In+ tool bar button and draw a box OR
   - Zoom in with your fingers on a tablet or phone.
2. Learn about potential issues such as nearby landfills, remediation sites, dual aquifer or special casing areas. Read the results that pop-up in the middle of the screen to understand construction requirements, and click on links to get application forms or more information



Well Driller Viewer - Zoom In

WELL DRILLER VIEWER

Tools | Measuring & Drawing

Basic Tools: Home, Layers, Legend

Navigation: Full Extent, Pan, Zoom In, Zoom Out

Other Tools & Actions: Identify, Plot Coordinates, Print, Export, Share, Feedback

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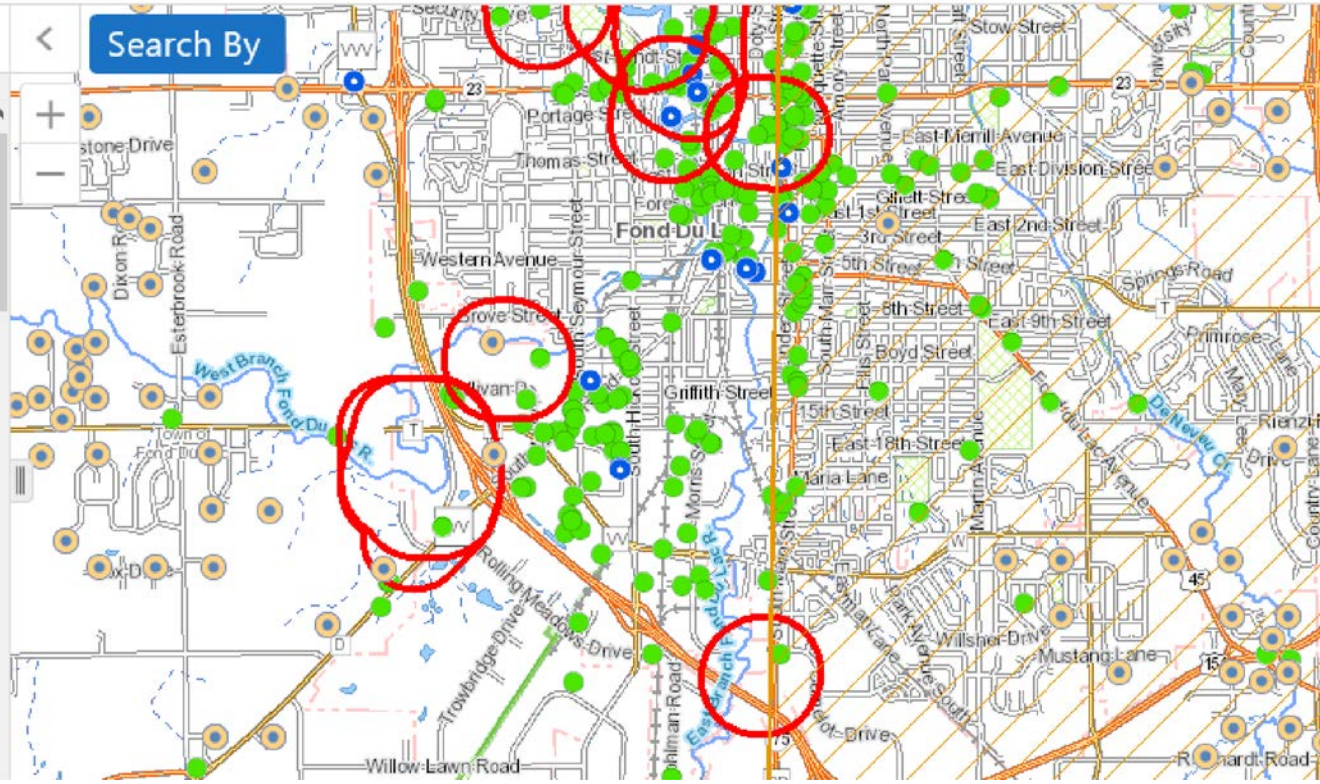


Well Driller Viewer - Results

WELL DRILLER VIEWER

Tools | Measuring & Drawing

Home | Layers | Legend | Full Extent | Pan | Zoom In | Zoom Out | Identify | Enable buffering | Identifiable Layers | Plot Coordinates | Print | Export | Share | Feedback

Basic Tools | Navigation | Other Tools & Actions

Identify Results (3)

Dual Aquifer

Location is in area of dual aquifers – well must meet casing and grouting requirements of NR 812.14(1)(j).

NR 812.14(1)(j), Wisconsin Administrative Code

Remediation Site: FONDY FUEL MART

Location is on a property that is listed on the GIS Registry of closed remediation sites – NR 812 approval required prior to well construction or reconstruction.

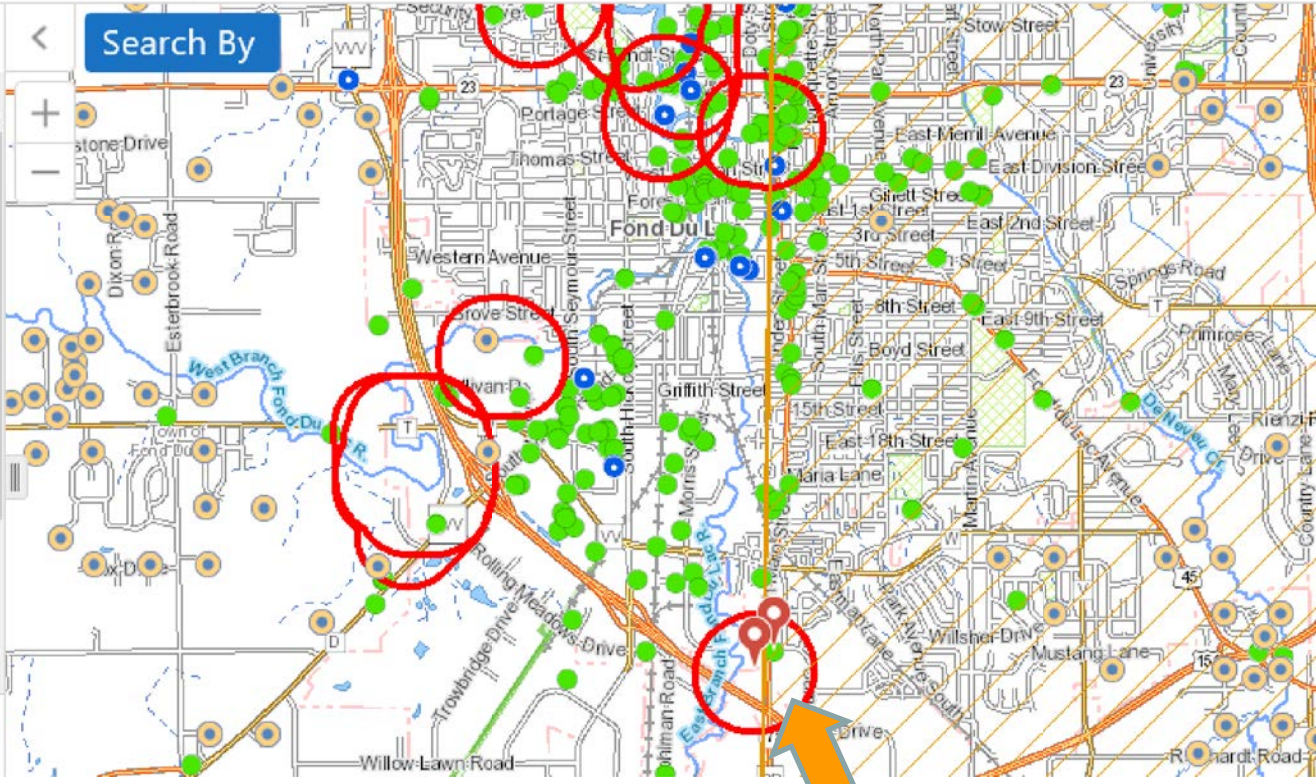
GIS Registry Site Well Approval Application

Landfill: TOM BAKER PROPERTY

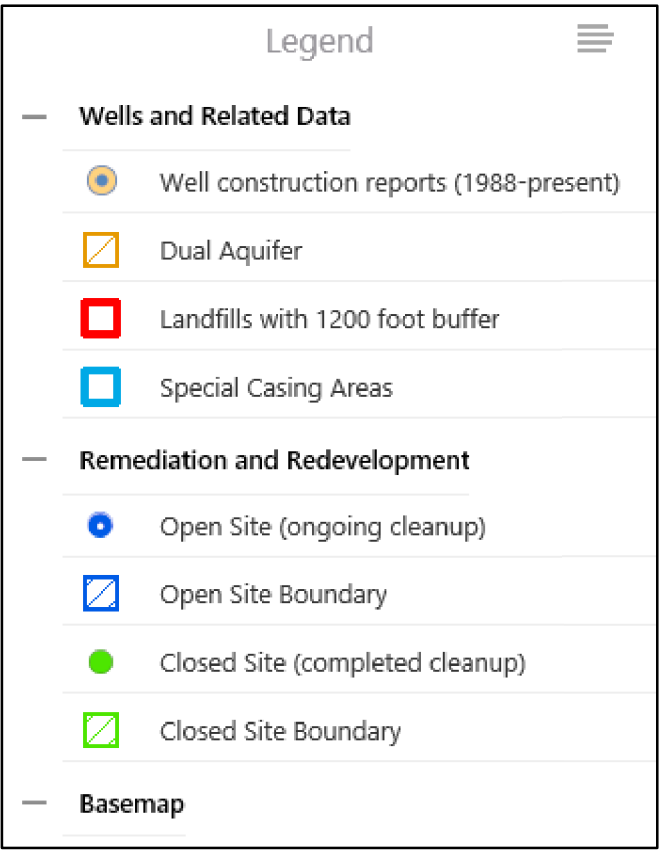
Location is within 1200 feet of a landfill boundary

Displaying 1 - 3 (Total: 3)

Search By



Well Driller Viewer – Data Layers



- Special Well Casing Depth Areas
- Landfills + 1200 buffer
- Dual Aquifer Areas
- RR Contaminated Sites
- Private Well Construction Reports *(1988 to present)*

Well Driller Viewer – Demonstration

dnr.wi.gov

search Well Driller Viewer

Well Driller Viewer

Status

- January 18 Launch
  - annual Water Well Association conference
  - email to all drillers and installers

Well Driller Viewer

Next steps

- Evaluate
  - Feedback
  - Survey
- Enhance
  - More data layers
  - Additional functions
  - Similar tools for different audiences

Contact Information

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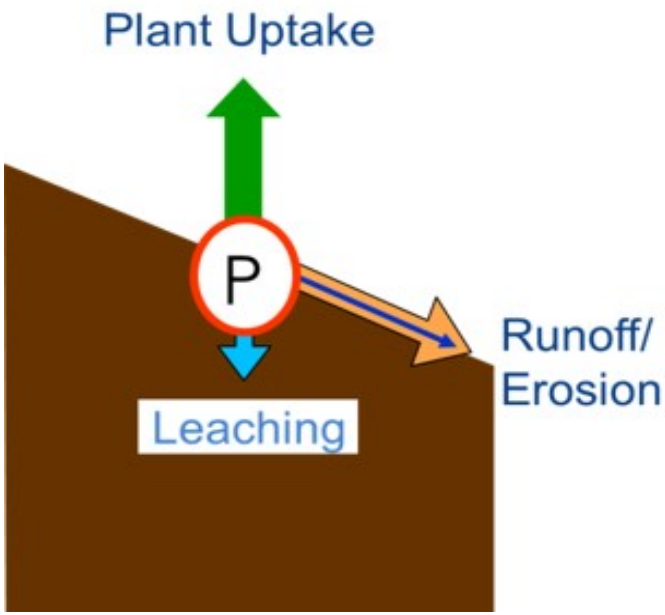
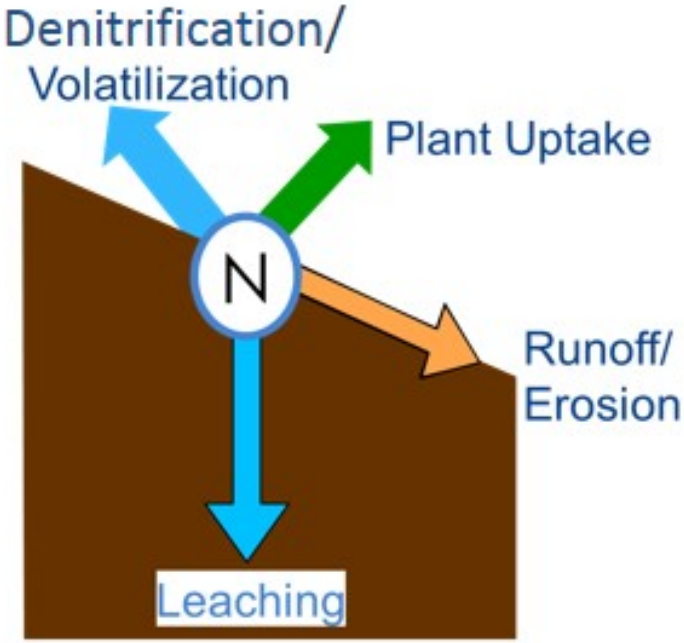
WI Nitrate Initiative – Developing Decision Support Tools

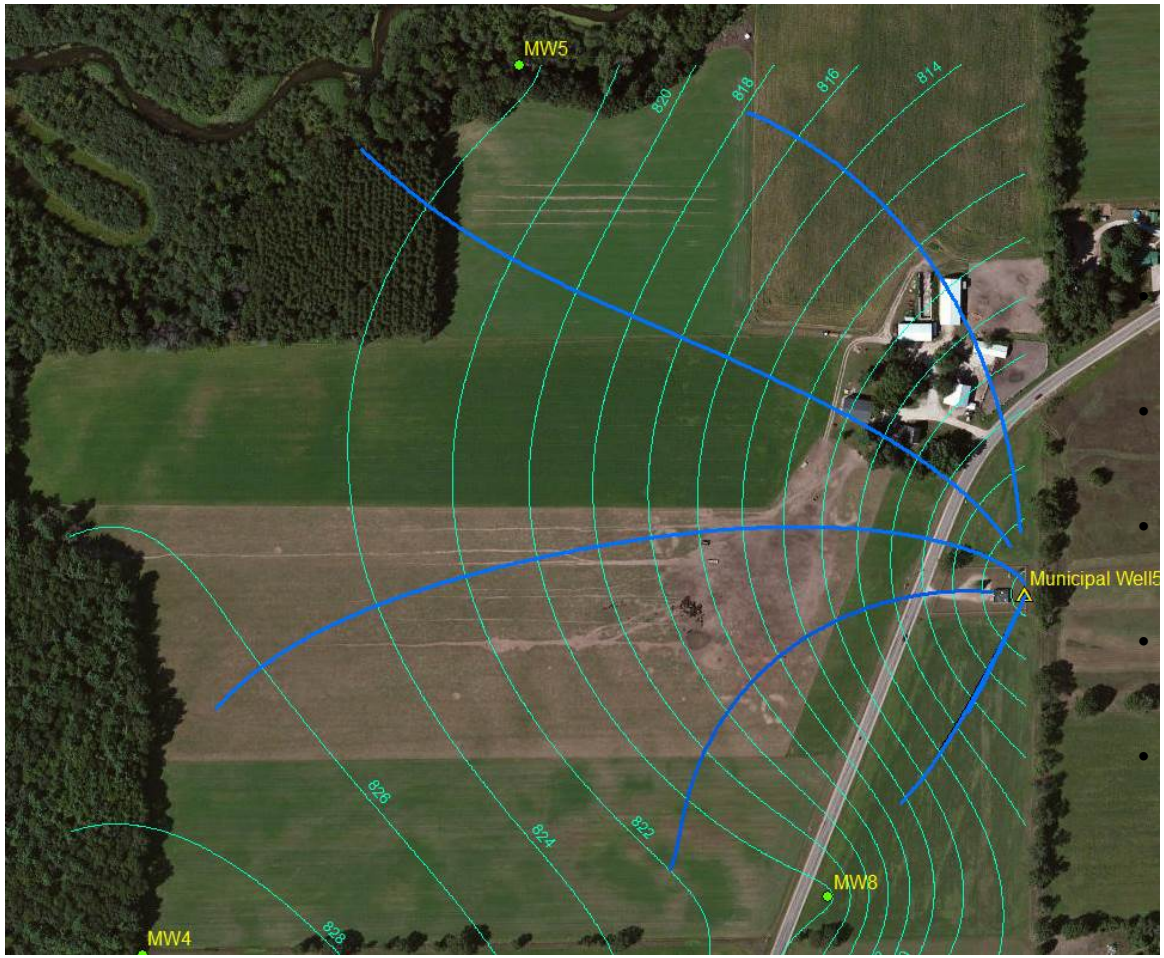
Brian Austin - DNR

Purpose and Applications





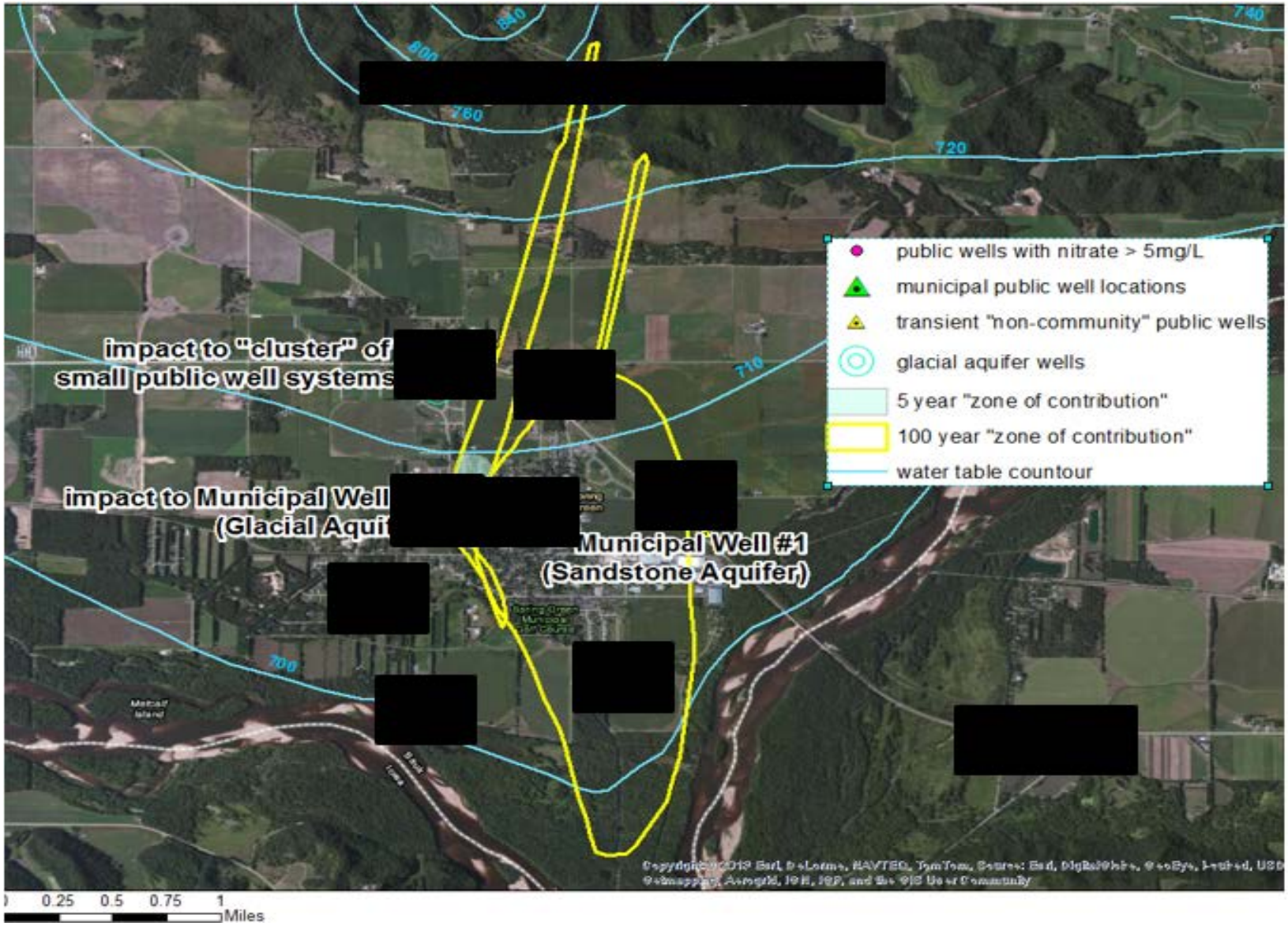
Purpose and Applications



Calculation of Achievable Reductions at a Public Well

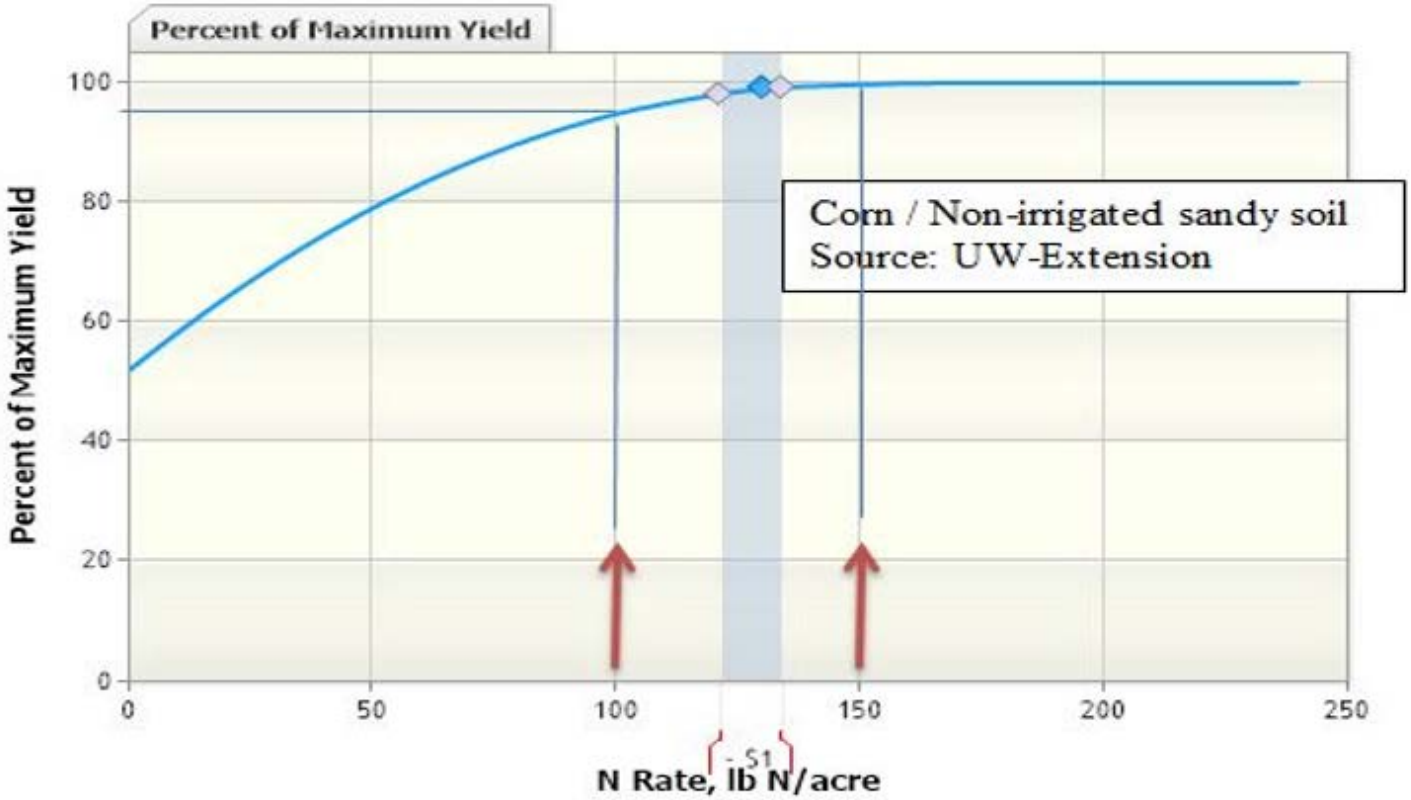
- **Area Contributing recharge: 1000 acres (the 5 YR "zone of capture" ZOC)**
- **Well pumps 900k gallons/day or 324M gallons/year**
- **Average Nitrate Concentration produced at well: 8.0 mg/L**
- **Annual Nitrate Mass Flux captured by well is 21,600 lbs. nitrate-N**
- **Wellhead Protection Strategy: based on land use, the highest potential nitrogen loading areas are the <u>200 acres closest to the well (1 yr "zone of capture")</u>**

Purpose and Applications



Purpose and Applications

- **Based on the applicable Corn Yield vs. N Rate curve:**



Purpose and Applications

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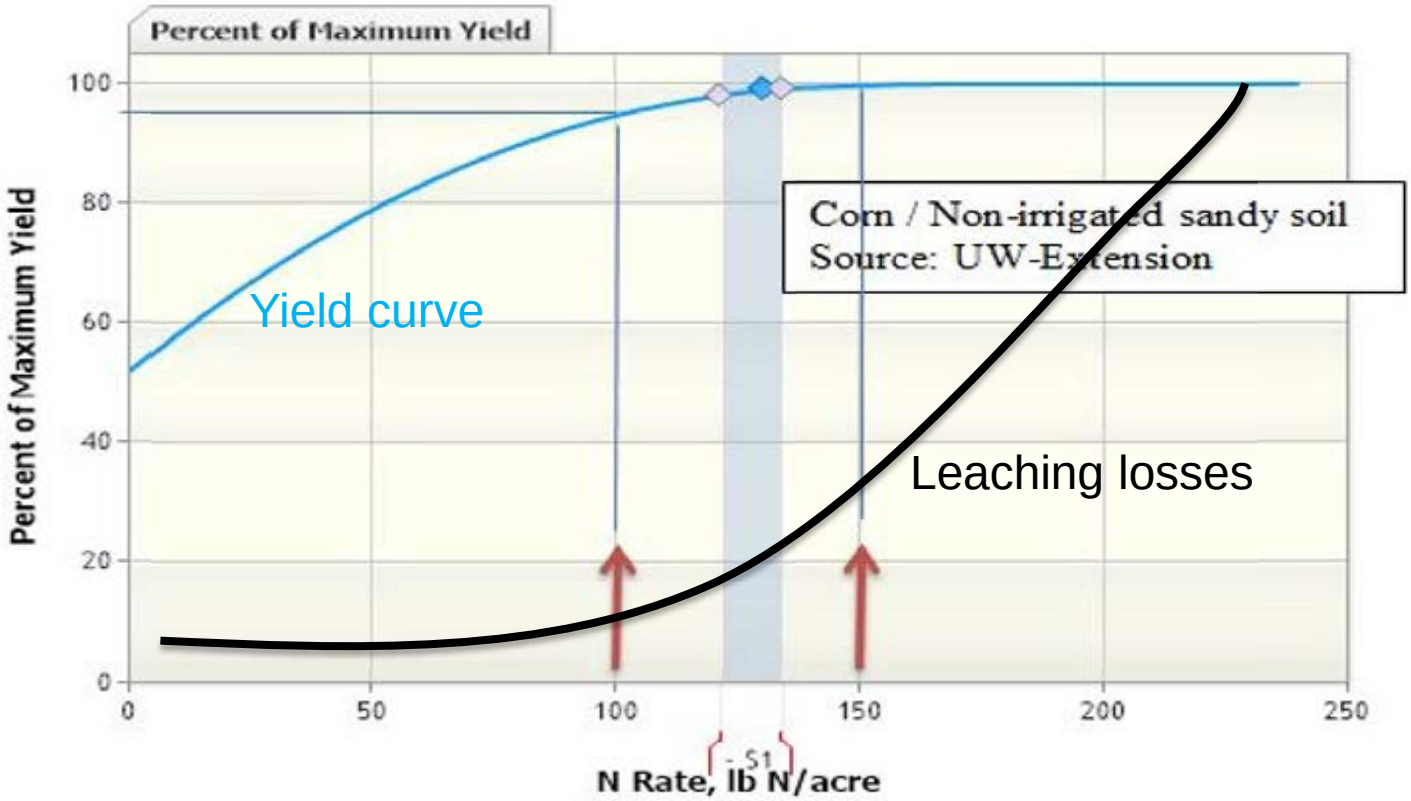


Approx. 25 lbs lost to groundwater vs. 50 lbs

Purpose and Applications

A way for communities to implement SWP for small water systems or private wells

Integrating GW into watershed plans

Opens up CWA funding opportunities

County Land and Water Resource Management Plans and the 9 Key Elements

Watershed scale planning to help focus efforts and increase funding opportunities

What are 9 Key Element Plans?

The EPA has identified nine key planning elements that are critical for protecting and improving water quality. Plans that reflect the nine key elements help assess the contributing causes and sources of nonpoint source pollution within a defined watershed area and then prioritize pollutant reduction strategies to restore or protect water quality. Nine key element watershed plans can be used to restore impaired waters or help protect unimpaired waters. In order to be eligible for Clean Water Act (CWA) Section 319 and Great Lakes Restoration Initiative (GLRI) funding from US EPA, the following nine elements must be addressed in a watershed plan:

1. **Identify the causes and sources** that need to be controlled to achieve pollutant load reductions. This includes quantifying significant sources and background levels using maps and tables.
2. **Estimate the pollutant load reductions** expected from selected management measures.
3. **Describe management measures** that need to be implemented to achieve load reductions. Map priority areas for implementing practices.
4. **Estimate amounts of technical and financial assistance needed**, associated costs, and/or the sources and authorities that will be relied upon, to implement the Plan.
5. **Develop an information & education component** to encourage participation and Plan implementation.
6. **Develop a schedule** for implementing the management measures identified in the Plan.
7. **Describe interim, measurable milestones** to assess if the Plan is being implemented.
8. **Identify a set of criteria** to determine whether Plan objectives are or are not being achieved over time. Outline how and when the Plan will be revised if progress is not being made.
9. **Develop a monitoring component** to evaluate the effectiveness of the implementation efforts over time using criteria from elements 6, 7 and 8.

Many LWRM Plan requirements are consistent with the nine key elements.
See Page 4 for a comparison of LWRM Plan components to the nine key elements.

Decision Support Tool

Development Partners

- UW Agronomy
- UW Nutrient and Pest Management
- UW Soils
- DATCP
- USGS
- WGNHS
- WDNR (cross program support)

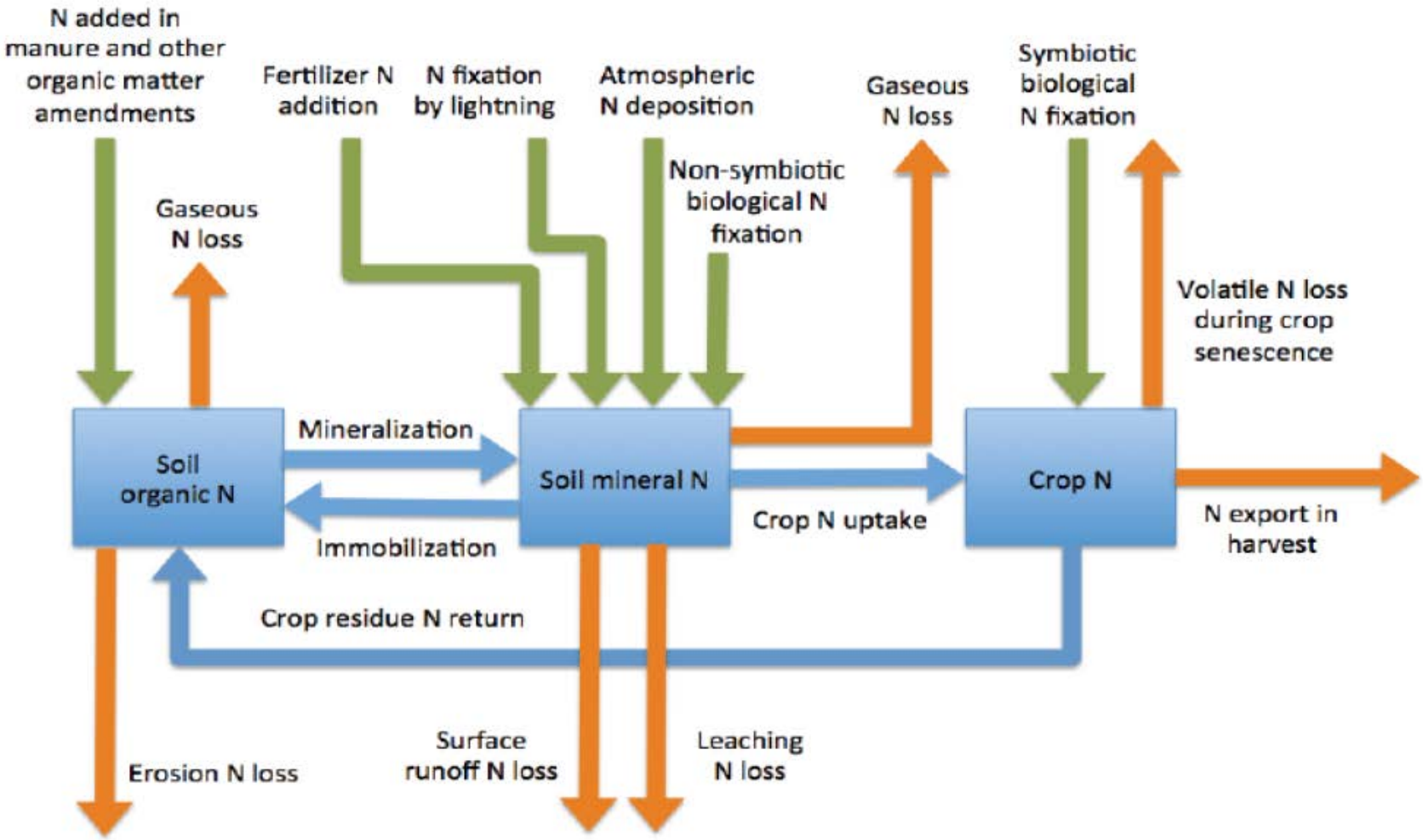
Decision Support Tool

Design Objectives

- ❑ Leverage Existing Tools and Data
- ❑ Accessibility for intended users
- ❑ Continuous Improvement Process
- ❑ Updatable Geospatial Database
- ❑ Modularity (options to apply alternative models and subroutines)
- ❑ Connection to transport models (estimate water quality improvements at wells, including timeframe)

Decision Support Tool

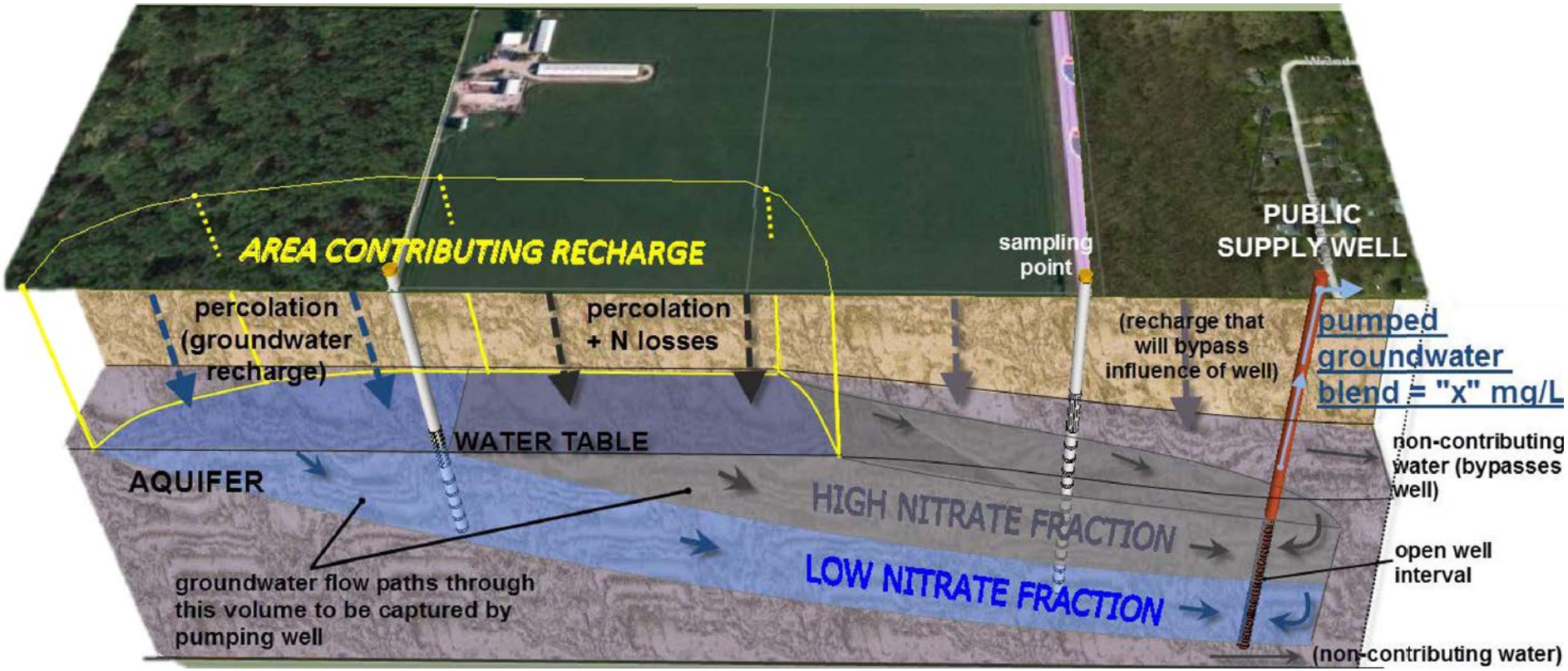
- Modularity (options to apply alternative models and subroutines)



Decision Support Tool

- Connection to transport models

Proportional Recharge Assessment



Questions?
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Hot topics

Wrap – up and adjourn

Adjourn

Next Meeting Date:

April 5, 2018

GEF 2, State Natural Resources Building, Madison, 9:30a.m. – 12:30 p.m.

Meeting minutes will be posted on the Drinking Water & Groundwater Study Group website