

# Biosolids in Minnesota

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**COME TO MINNESOTA, THEY SAID**



memegenerator.net

What do Minnasota Vikings fans do after they win the Super Bowl?




They shut off the Xbox and go to bed.

**ROTTENeCARDS**



# Minnesota's Biosolids Universe

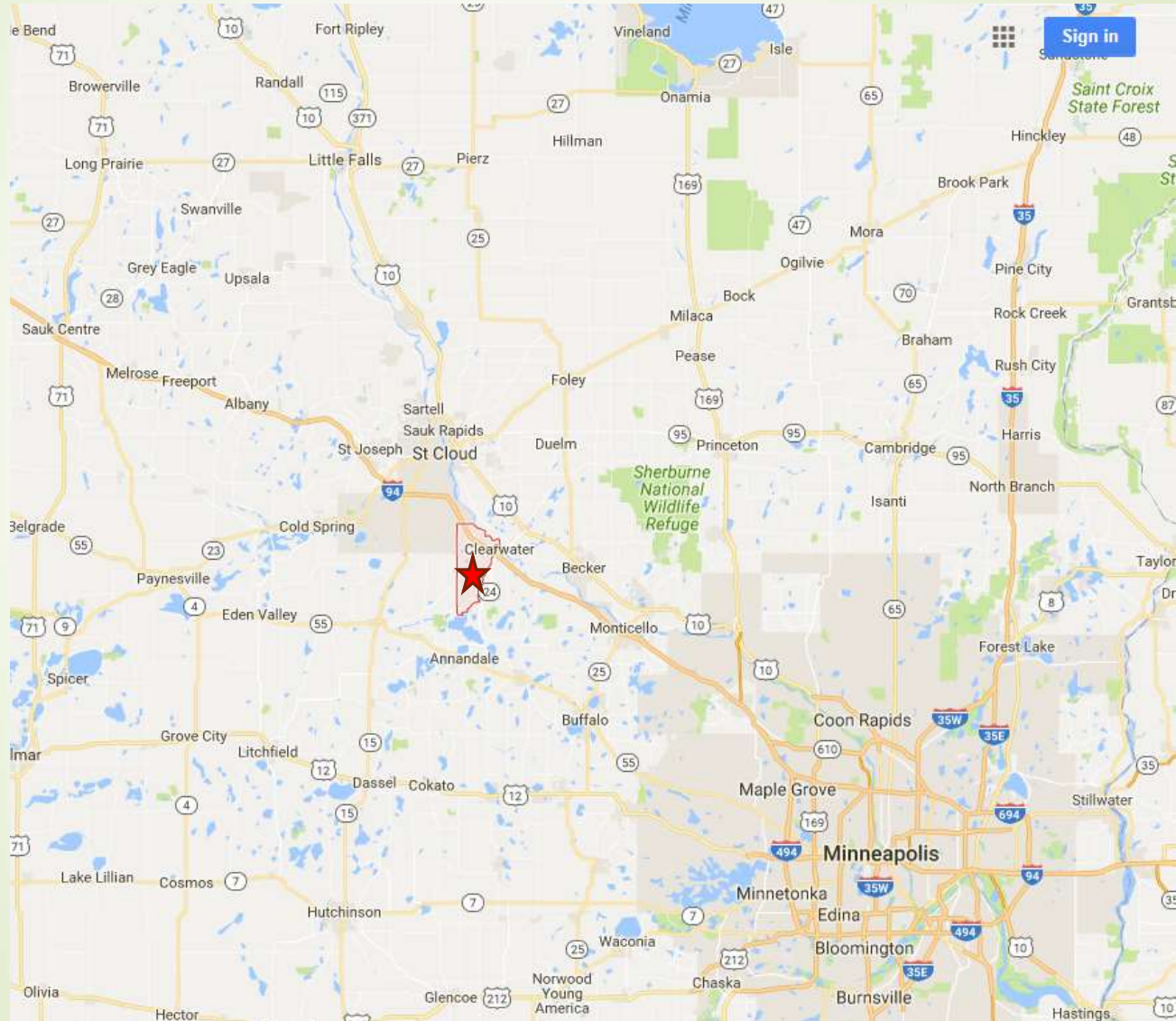
- Regulated under MN 7041
  - 680 plus Type IV certified operators
  - 3 Permittees incinerate - 86,519 dry tons
  - 133 Permittees land apply - 33,924 dry tons
  - 10 Permittees land filled - 25,225 dry tons
  - 73 Permittees transferred their biosolids
  - 16 Permittees stored in reed beds
- 



# Hot Topics/Challenges

- EPA Reporting this past year
    - MN is not a delegated state
    - Cropping year vs. calendar year
  - “New” internal database
  - Revamping training
  - Phragmites (non-native reeds)
  - Biosolids “In the News”
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# Lynden Township



# Samples

**Table 1: Sample results and applicable health based drinking water criteria (in µg/L)**

Parameter	Sample 143K	Sample 208J	Health Based Drinking Water Criteria	Criteria Source
Aluminum	83,100	11,400		
Antimony	ND*	ND*	6	HRL
Arsenic	26	ND*	10	MCL
Barium	579	114	2,000	HRL
Beryllium	ND*	ND*	0.08	HRL
Boron	167	ND	1,000	RAA
Cadmium	ND*	ND*	0.5	HRL
Calcium	26,300	5,260		
Chromium	107	11.5	100	MCL
Cobalt	15.9	ND		
Copper	74.7	11.0	1.3	EPA Action Level
Iron	71,400	9,630		
Lead	34.4	ND	15	EPA Action Level
Magnesium	18,100	2,560		
Manganese	1,180	460	100 (infant)/300(child-adult)	RAA
Molybdenum	ND	ND		
Nickel	83.3	ND	100	HRL
Potassium	14,200	4,620		
Selenium	ND	ND	30	HRL
Silver	ND	ND	30	HRL
Sodium	1,440	ND		
Thallium	ND*	ND*	0.6	HRL
Tin	ND	ND	4,000	HRL
Titanium	731	219		
Vanadium	262	19.4	50	HRL
Zinc	415	409	2,000	HRL

\*Detection limit exceeded drinking water criteria

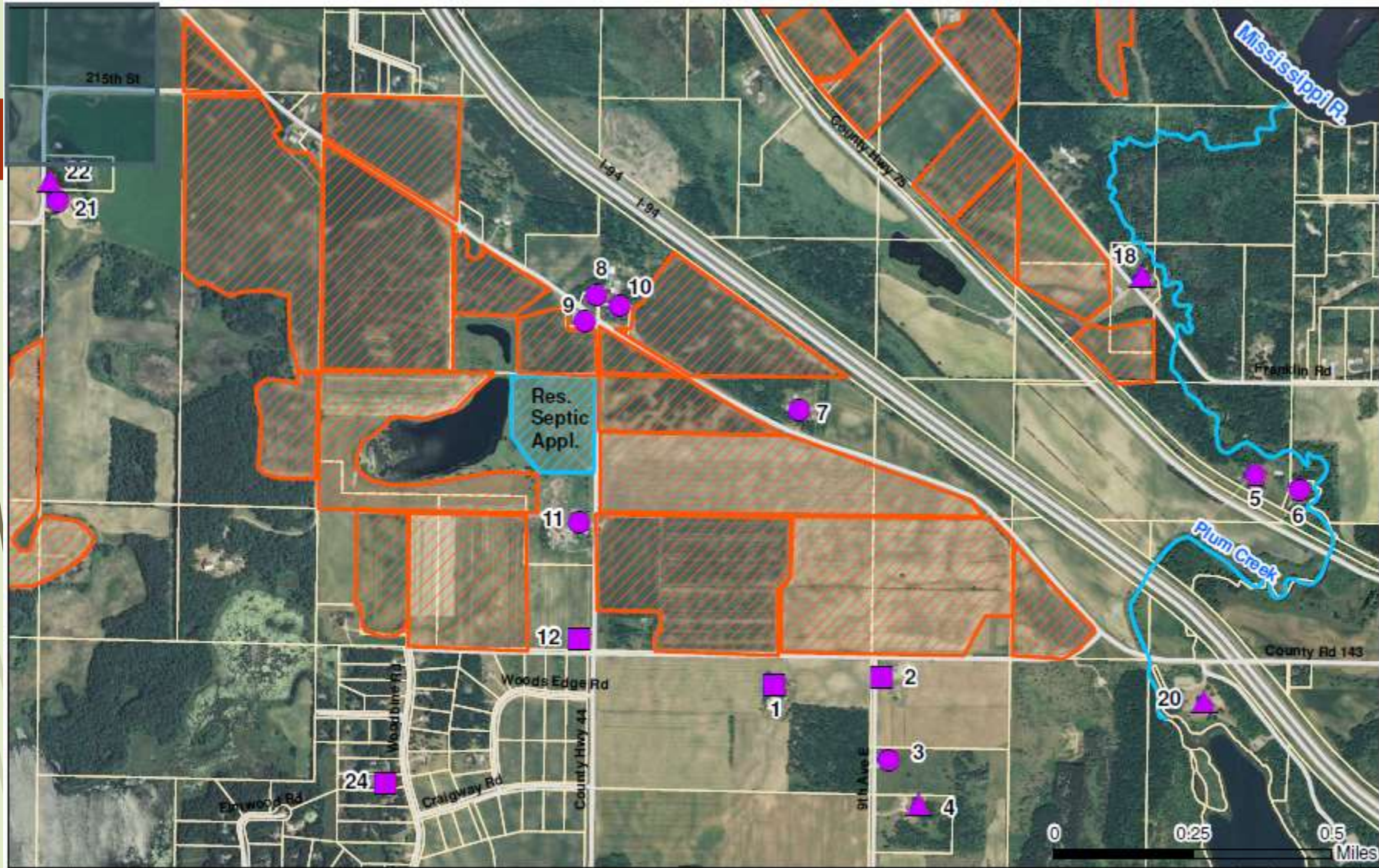
Shaded results exceed applicable drinking water criteria

µg/L = microgram per liter (or parts per billion)

HRL = Health Risk Limit (set by Minnesota Department of Health)

RAA = Risk Assessment Advice (derived by Minnesota Department of Health)

MCL = Maximum Contaminant Level (set by U.S. Environmental Protection Agency)



MDH - 4/15/2016

**Figure 1 - Lynden Township Well Sample Locations and Aquifer**

**Aquifer Symbols**

◆ Quaternary Water Table Aquifer (QWTA)

■ Quaternary Buried Artesian Aquifer (QBAA)

▨ Bio-solids land application areas

▲ Quaternary Buried Unconfined Aquifer (QBUA)

● Unknown (UNK)

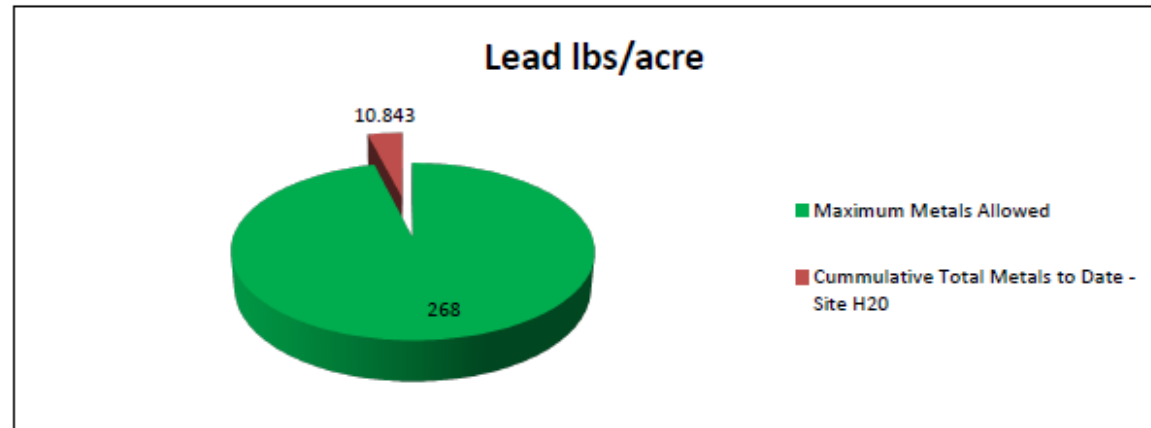
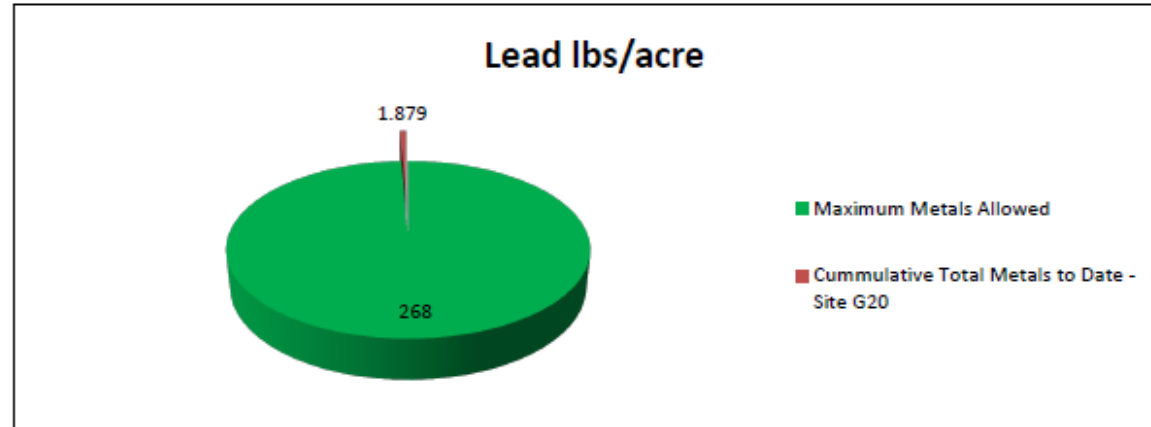
▭ Septic tank land application area

Note: Sample location numbers correspond to "Sample ID" in Table 1



## Cumulative Metals Applied Sites G20 & H20

Lynden Township – St. Cloud Biosolids Land Application Sites







# In the End/Lessons Learned

- All results were within the ranges detected in Quaternary wells in and near Stearns County
- “There is no evidence that groundwater in Lynden Township has been contaminated by a release of chemicals to the environment.”
- You can't control others actions (how long samples were not shared)
- You can't control the media
- Could have/should have tried to get a follow-up story with the news