Issues of Common Concern: Regulation of Septage Haulers

WCCA

October 24, 2014

Frederick J. Hegeman, P.E.

Statewide Residuals Coordinator

LAND APPLICATION

Essentially….

→Reuse of Nutrients

→Soil Amendment or Conditioner

Can also be…

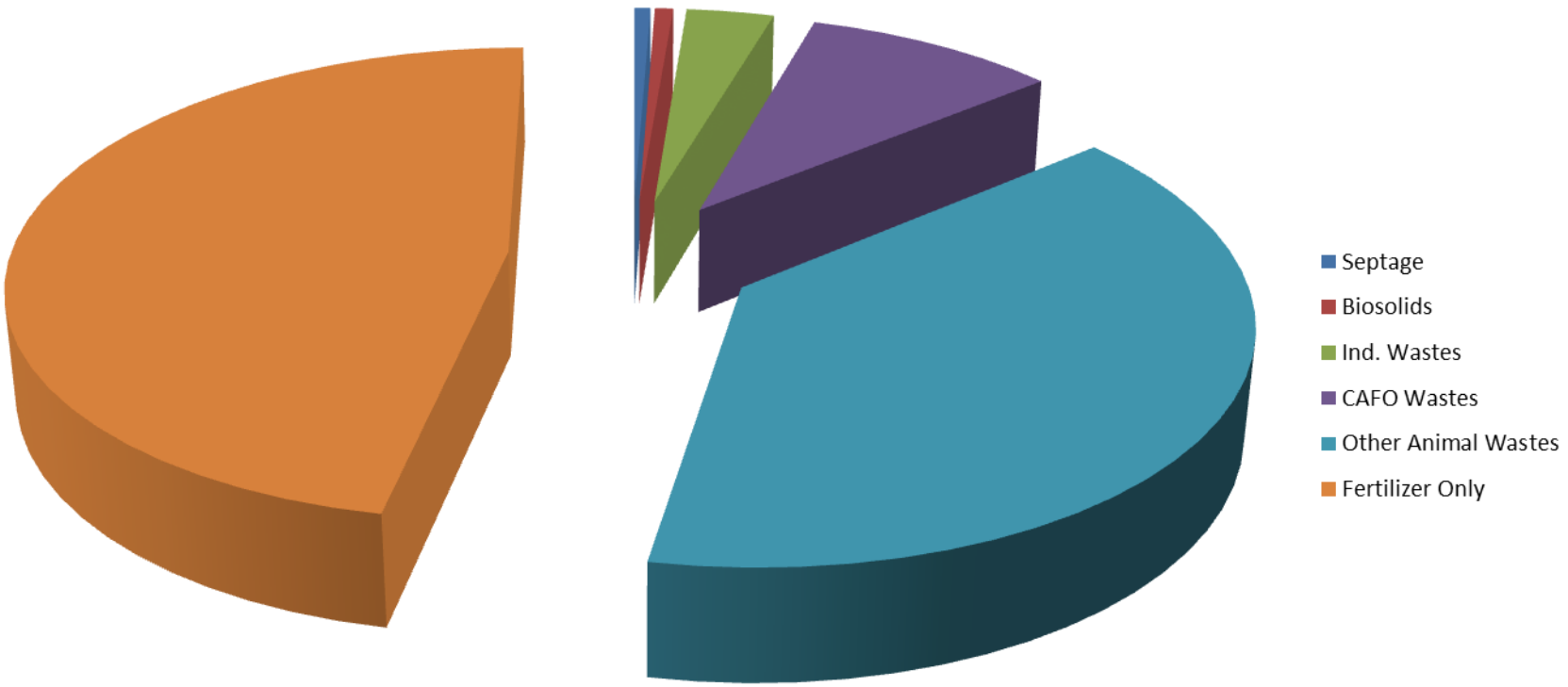
→“Disposal”

DNR LAND APPLIC CODES

- NR 113: SEPTAGE
  - Wis. Stats. 281.48 & 281.17 & 40 CFR 503
- NR 204: DOMESTIC SEWAGE SLUDGE MANAGEMENT
  - Wis. Stats 283 & 40 CFR 503
- NR 214: LAND TREATMENT OF INDUSTRIAL LIQUID WASTES, BY−PRODUCT SOLIDS AND SLUDGES
  - Wis. Stats 283 & 40 CFR 257

- NR 518: Land Application of By-Product Solid Wastes
- NR 243: CAFOs
- NR 151: Run Off Management

SOURCES OF FERTILIZER



NR 113, 204 & 214

- Non-Agricultural Wastes**
- Domestic vs. Non-Domestic Wastes
- Industrial vs. Municipal Wastes
- Human Pathogens
- Animal Pathogens (*Slaughterhouses)
- Vector Requirements
- Exemptions
- Nitrogen Based Crop Planning

SURFACE APPLICATION

INCORPORATION

INJECTION

DEFINITIONS

"Septage" means the wastewater or contents of septic or holding tanks, dosing chambers, grease interceptors, seepage beds, seepage pits, seepage trenches, privies or portable restrooms.

DEFINITIONS

"Sewage sludge" or "sludge" or "biosolids" means the solid, semi−solid or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes scum or solids removed in primary, secondary or advanced wastewater treatment processes and material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of a sewage sludge incinerator or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

DEFINITIONS

"Land Treatment System" means a system that utilizes the physical, chemical & biological abilities of the soil to decompose pollutants in the wastes. Land treatment systems include:

DEFINITIONS

Land Treatment System (cont)

(a) Absorption/Seepage Ponds systems

(b) Ridge & Furrow systems

(c) Spray Irrigation systems

(d) Overland flow systems

(e) Subsurface absorption field systems

(f) Landspreading systems for Liquid Wastes or By-product solids

(g) Sludge Spreading

(h) Other land area receiving above wastes

DEFINITIONS

"Liquid waste" means process wastewater and waste liquid products, including silage leachate, whey, whey permeate, whey filtrate, contact cooling water, cooling or boiler water containing water treatment additives, and wash water generated in industrial, commercial and agricultural operations which result in a point source discharge to a land treatment system.

DEFINITIONS

"By−product solids" means waste materials from the animal product or food processing industry including, but not limited to: remains of butchered animals, paunch manure and vegetable waste materials such as leaves, cuttings, peelings and actively fermenting sweet corn silage.

DEFINITIONS

"Sludge" means the accumulated solids generated during the biological, physical or chemical treatment, coagulation or sedimentation of water or wastewater.

HISTORY

- Clean Water Act (1972)
- WPDES Permit Requirements
  - Solid Waste Regulations (by-products)
  - Industrial Wastewater
  - Biosolids/Septage 40 CFR 503 (1987)
  - Nitrogen Issues (Nitrates in Groundwater)
- TMDLs—Phosphorus—Water Quality
  - Nutrient Management
  - Phosphorus Effluent Rules/Runoff Mgmnt

HISTORY

Implementation of NR 214

- Industrial Wastewater – part of Wastewater
- Sludges, By-product Solids – part of Solid Waste
- Can be Applied if NOT HARMFUL

HISTORY

40 CFR 503

- NR 113 vs NR 204
  - NR 113: Health Code NR 204: Solid Waste Code til 1993
- Nitrate Concerns
- Pathogen Concerns
- Vector Attraction
- Tracking vs. Planning
  - Communication
  - Limits
- Septage vs Biosolids
- Delegated vs Non-Delegated Programs
- RISK BASED REGULATIONS

SEPTAGE

- Pathogen Control
  - Limitations between last application and Crop to be Harvested
    - Public Access
    - Below ground crops
    - Touch surface crops
    - Not likely to touch surface crops
    - Animal Feed Crops
    - Turf or Sod
  - Differences if pH to 12 or applied without pH
    - Environmental Protection (i.e., sunlight, exposure to elements)

SEPTAGE

- Vector Attraction Reduction
  - Injection
    - No ponding
    - Nitrogen Availability
  - Incorporation
    - 6 hours
    - Nitrogen Availability
  - pH Control (lime)
    - pH 12 for 30 minutes
    - Significant Record Keeping

SEPTAGE

- Application Rates
  - 13,000 gal/acre/week (0.5” of water)
  - 39,000 gal/acre/year (1.5” of water)
    - 100# of nitrogen (EPA formula)
- Factor of Safety
  - Septage vs. Biosolids
  - Testing each batch?
  - Variability
  - Nitrogen—40-60% of actual
    - Nitrate concerns
  - Phosphorus—EPA (1982) estimates 145 lbs/acre
    - Recently measure: ~45 lbs per year

WHAT IS pH?

- pH means the logarithm of the reciprocal of the hydrogen ion concentration measured at 25^{o} Centigrade or measured at another temperature and then converted to an equivalent value at 25^{o} Centigrade.
  - Essentially, pH measures the acidity of a substance.

CORRECTION FORMULA

- Federal regulations require pH data at 25°C.
- Your options:
  - Heat each sample to 25°C (77°F)
  - Correct data to match to 25°C

CORRECTING pH

$$pH_{meas} + pH_{cor} = pH_{25°C}$$

$$pH_{cor} = \frac{0.03 \text{ pH units}}{1.0°C} \times (Temp_{°Cmeas} - 25°C)$$

USE THIS CHART TO CORRECT pH FOR TEMPERATURE

Temp C	Temp F	pH Correction Factor		Meas pH req'd to meet pH of 12 @ 25 deg C	Apparent pH for Lime Saturation @ Meas Temp
0	32	-0.75		12.75	13.204
1	33.8	-0.72		12.72	13.174
2	35.6	-0.69		12.69	13.144
3	37.4	-0.66		12.66	13.114
4	39.2	-0.63		12.63	13.084
5	41	-0.6		12.60	13.054
6	42.8	-0.57		12.57	13.024
7	44.6	-0.54		12.54	12.994
8	46.4	-0.51		12.51	12.964
9	48.2	-0.48		12.48	12.934
10	50	-0.45		12.45	12.904
11	51.8	-0.42		12.42	12.874
12	53.6	-0.39		12.39	12.844
13	55.4	-0.36		12.36	12.814
14	57.2	-0.33		12.33	12.784
15	59	-0.3		12.30	12.754
16	60.8	-0.27		12.27	12.724
17	62.6	-0.24		12.24	12.694
18	64.4	-0.21		12.21	12.664
19	66.2	-0.18		12.18	12.634

SO WHAT DOES THIS REALLY MEAN?

- The pH scale ranges from 0-14.
- Septage commonly has a pH of 6-7; you will need to reach a pH of 12 in order to achieve pathogen reduction.
  - This is achieved by adding sufficient lime and ensuring proper pH measurement.
- A change of 1 pH unit implies a tenfold change in strength.
- Hydrated Lime—Haz Waste? Apparent Saturation?

BIOSOLIDS

3 Classes of Biosolids

1. Exceptional Quality (“Class A”)
2. “Class B”
3. Non-Land Applicable Biosolids

   --LAND FILL or INCINERATE

3 Criteria

- Metals
- Pathogen Control
- Vector Attraction Reduction

BIOSOLIDS

METALS (and other) TESTING

- Arsenic, Cadmium, Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Zinc
- PCB
- Priority Pollutant Scan (Once per permit term if deemed necessary)
- Nutrients: N as nitrites and TKN, P and WEP, K,
- % Solids, etc

BIOSOLIDS

PATHGEN CONTROL

- Class A vs Class B
  - B: Fecal Coliform: MPN /gram: Limit 1000
  - B: Salmonella: MPN / 4 gram: Limit 3
  - A: Fecal Coliform: MPN / gram: Limit 2,000,000
- Must be a Process
- Class A requires Add'l Process to "further reduce"
- Example of Class A: Milorganite

BIOSOLIDS

Class B & Septage CROP RESTRICTIONS:

- 38 Months: below ground
  - Carrots, beets, onions, etc.
- 14 Months: touch ground surface
  - Strawberries, beans, peas, etc.
- 30 Days: Above ground & Feed Crops
  - Sweet Corn, Silage, Hay, Field Corn

From last application date to harvest date!!!

BIOSOLIDS

VECTOR ATTRACTION REDUCTION

- 11 options
- 3 Most Common
  - 38% Volatile Solids Reduction
  - Incorporation
  - Injection

BIOSOLIDS

- NUTRIENT APPLICATION
  - Tested and applied at appropriate rates (Nitrogen)
    - Mineralized—25%, 12%, 6% Rates
  - Phosphorus higher
    - Requires 3 to 4 year rotations
    - Differences in available phosphorus
      - Biological Removal
      - Ferric Removal (iron salts)
      - Alum Removal (aluminum)

INDUSTRIAL WASTES

LAND TREATMENT SYSTEMS

- Absorption pond systems.
- Ridge and furrow systems.
- Spray irrigation systems.
- Overland flow systems.
- Subsurface absorption systems.
- Landspreading systems for liquid wastes and by−product solids.
- Sludge spreading systems.

INDUSTRIAL WASTES

Liquid Wastes:

- Cheese Wastes, typically high chlorides

Industrial Sludges

- Papermill sludges, industrial wastewater treatment sludges, cakes & liquids

- By-Product Solids
  - Vegetable parts, Slaughterhouse Waste (Paunch Manure), etc.
- NR 214.17 & NR 214.18

OTHER CODES

ATCP 50:

- ATCP 50.04 Nutrient Management
  - Requires all nutrients that are applied through mechanical means to be included into a nutrient management plan
  - Exemption: Primary nutrients from:
    - NR113, NR 204 and/or NR 214
  - Interpreted to mean that exempted during the year applied—NOT over ROTATION!
  - When Cost Share is provided!!

OTHER CODES

NR 151

Nutrient Management:

- All nutrients (even pastures up to 8 animals)
- Exemption for NR 113, NR 204 and NR 214 Wastes on a year basis
  - NOT on a rotation basis

CURRENT DISCONNECT

- DATCP—Nutrient Management
  - Agriculture Focus
- DNR—Existing Programs
  - Ground and Surface Water Focus
- DNR—Changing Programs
  - NR 243: CAFO regs
  - NR 151: Runoff Management
  - Phosphorus Issues
    - Pink Sheets for NR 113, NR 204 and NR 214

STORAGE ISSUES

- NR 113 Storage
  - Difficult to obtain and Expensive for competitive industry
- NR 204 Storage
- NR 214 Storage
  - Few Contractors
  - Prefer to Commingle
    - Multiple Codes, WPDES facilities
- Mix into Manure Pits

MANURE Storage Facilities

SEPTIC TANK WASTE (Thresholds)

- Up to 10% Septage of contents in pit or up to 25,000 gallons—Easy
- Over: WPDES Permit, P/S Approvals, Land apply all waste per NR 113

INDUSTRIAL WASTES

- Up to 10% of volume, NRCS 313
- Over 10%, NR 213

BIOSOLIDS

- All mixtures→becomes Biosolids. NR 204

#1) YOUR TURN

Find the potential problems on the next slide.

Application Issues…

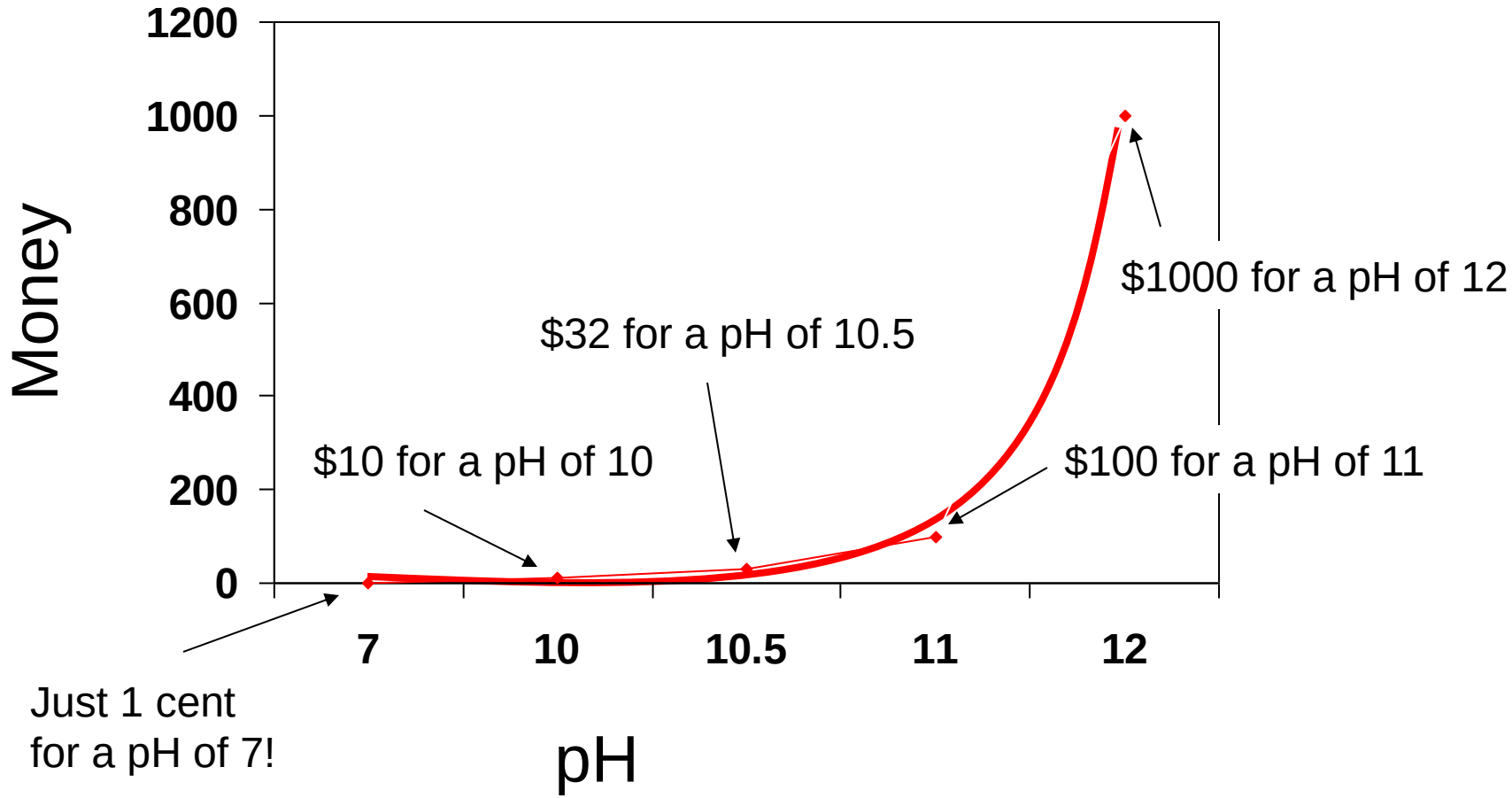
- Spray vs. Splash Plate
- Uniform Application: Standing Still
- Separation Distance Issues
  - Property Boundary
  - Wetland
  - Waterway
  - Approval for Ditch Application

SEPTAGE SPRAYING IS NOT ALLOWED!
Wetland?
Water Body?
Uniform Application?
Prop Line?
Person?
Drippage into Ditch?
Is truck moving forward?
Bridge?
Waterway?

#2) Talking in Dollars

- Remember: A change of 1 pH unit implies a tenfold change in strength.
- This means that if a contract (based on the same scale) that resulted in a $1000 payment to you required a pH of 12, how much would you receive for:
  - pH of 12? 11? 10.5? 10? 7?

THE pH SCALE (cont.)



#3) Do the Temp Correction

- $pH_{meas} + pH_{cor} = pH_{25°C}$

- $pH_{cor} = \frac{0.03 \text{ pH units}}{1.0°C} \times (Temp_{°Cmeas} - 25°C)$

Given Information:

Time: 1230hrs pH_{meas} = 12.45, Temp=50°F

Next: 1310hrs pH_{meas}= 12.33, Temp=20°C

#3) Doing Temp Correction

1. Temp Corrected pH (initial)?
2. Temp Corrected pH (next)?
3. Can this batch be land applied?
4. Why or why not?

1. Corrected pH initial = 12.00
2. Corrected pH (next) = 12.18
3. Yes
4. Meets time & temp of pH 12 for $\geq$30 min

COMPLIANCE PROGRAM

Three Legged Stool Concept:

1. Compliance
2. Education
3. Enforcement

SEPTAGE PROGRAM

Make up 2.1 FTE Statewide

- 0.1 FTE Coordinator
- 0.5 FTE Licensing (Needs 0.5 more)
- 1.5 FTE Field Staff

Industry:

~460 businesses

~1200 certifications

SEPTAGE PROGRAM

ENFORCEMENT SUPPORT:

- Conservation Wardens
  - New Staff are better trained in Environmental Regulations
  - Citations
- Environmental Enforcement Specialists
  - More than 1.0 FTE
- Environmental Wardens (Criminal)

COMPLIANCE INSPECTIONS

- Group Audits
  - Statewide Consistency
    - Program Staff
  - Cost Effective
  - Consistent w/in Area(s) Audited
  - Assisted by Conservation Wardens
- Complaint follow up

COMPLIANCE PROGRAM

Three Legged Stool Concept:

1. Compliance
2. Education
3. Enforcement

EDUCATIONAL

- Additional Compliance Training
  - 3 Credits specific to compliance
  - DNR training credits
- More DNR Training Opportunities
  - Specific to Compliance Activities
- Hands on
  - Uniform Application
  - Liming procedures/pH test equipment
  - Spill Plans/SOP Development

COMPLIANCE PROGRAM

Three Legged Stool Concept:

1. Compliance
2. Education
3. Enforcement

ENFORCEMENT

STEPPED Enforcement

- Audit reviews
- Notices of Non-compliance (NON)
- Notices of Violation (NOV)
- Enforcement Conferences
- Citations
- Orders (revocations)
- Referrals to Dept. of Justice

ENFORCEMENT CASES

East District:

- Backwoods Treatment Plant
- $75/septage/load
  - undercut the competition
  - Couldn’t pay for a pump replacement

Result

- 30 Days in Jail, $30K Fines
- Revocations: Bus Lic-1 Year, Cert-2 Years

J.B. VAN HOLLEN
ATTORNEY GENERAL

NEWS RELEASE

For Immediate Release
February 19, 2010

For More Information Contact:
Bill Cosh 608/266-1221

WASTE HAULER SENTENCED TO 30 DAYS IN JAIL

ENFORCEMENT CASES

East District:

- Farmer/Hauler with Manure Pit, Approved for Ind. Waste at 10% Vol
- Dumped in: His manure, Others manure, Ind. Waste, Car Wash Waste, Catch Basin Waste, Grease Trap Waste,

Result:

- Citations by DNR, Manure Pit Restoration, Forfeitures to County, Remediation of Pit

ENFORCEMENT CASES

West District:

- Septage Hauler Discharging to a “barn” w/ a Septic Tank
- Outlet of Tank led to creek

Result:

- $29,997 Fine
- Lic/Certification Revocation

J.B. VAN HOLLEN
ATTORNEY GENERAL

NEWS RELEASE

ATTORNEY GENERAL J.B. VAN HOLLEN ANNOUNCES A CRIMINAL ENVIRONMENTAL JUDGMENT AGAINST A CLARK COUNTY BUSINESS OWNER

ENFORCEMENT CASES

West District:

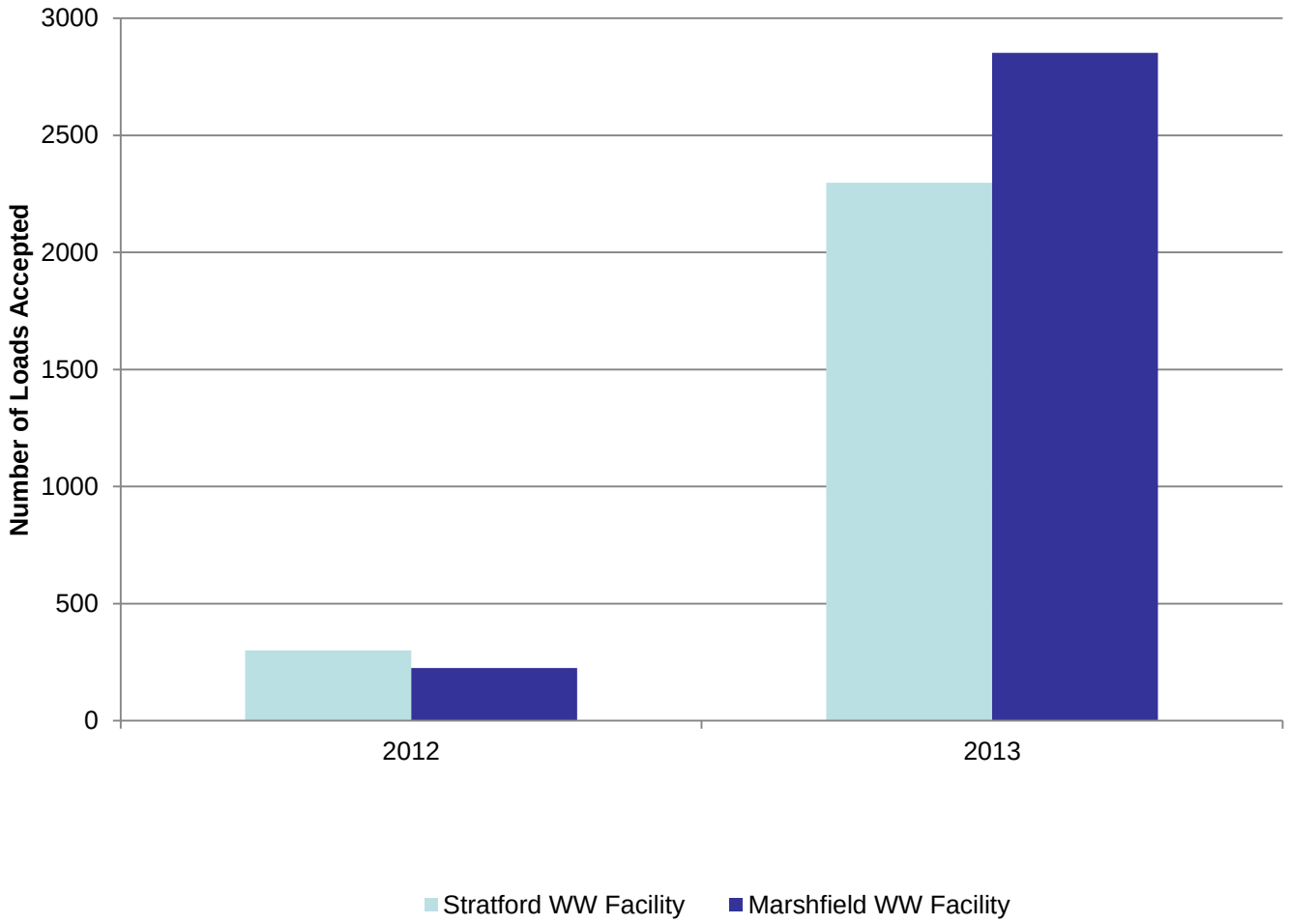
- 2 Cons. Wardens make traffic stops (4 businesses)
- No Caps, No Lime, Sat Conditions, etc.

Result:

- Enf. Confs, 10 citations, Local Pact
- 1600% disposal increase over 12 months @ local POTWS (5)

SANITARY LICENSEE
LICENSE NO. 2

WWTP DISPOSAL RESULTS



ENFORCEMENT CASES

South District:

- Campground Owner
- Land applying to overflow camping area
- No VAR (Lime), No splash plate

Result:

- Six Citations/Convictions—Plead to $2800
- All Land Application Sites Revoked
- Attorney Fees

ENFORCEMENT CASES

South District:

- Farmer/Septage Hauler
- Grew corn to “hide” Land Applic. activities
- No VAR (Lime), Over-application, litter

Result:

- Four Citations/Convictions ~$2500
- Two Additional Citations ~$1500
- DNR News Release—Front Page News

ENFORCEMENT CASES

North District:

- Over-application, unapproved fields, littering
- Town Chairman

Result:

- 5 Citations/Convictions ~$2500 Forfeitures
- Sold Business, Faced Recall, TV Investigation

NEWS RELEASE

Wisconsin Department of Natural Resources
Northern Region
810 W Maple St., Spooner, WI 54801
Phone: 715-635-2101 TDD: 711
dnr.wi.gov www.wisconsin.gov

DATE: Thursday, Feb. 21, 2013

CONTACTS: Alison Canniff, DNR wastewater specialist, Park Falls, 715-762-1361
Fred Hegeman, DNR wastewater engineer, Madison, 608-267-7611
Kevin Harter, DNR communications, Spooner, 715-635-4242

SUBJECT: **Iron County septage hauler fined for multiple violations**

ENFORCEMENT CASES

North District:

- Application to Hunting Camp Roads
- No Lime…ever, Largest Invoice Amounts

Result:

- Negotiated—4 Citations….3 if he got out of business
- Sold Business in <3 months

PENDING ENFORCEMENT

- Multiple investigations on-going
  - Criminal
  - Civil
  - Warden Involvement
- Follow up investigations on-going

SERVICING REPORTING

- Daily Logs
- Annual Reports
  - Land Application/Treatment Plant Disposal
- Septic System Maintenance (Counties)
- All Servicing Events (SPS 383.55)
  - DNR Message to Haulers:
    - If your county wants the information, then provide it
    - Read the Maintenance & Management Plans
    - Consider reporting all events regardless

QUESTIONS?

Fred Hegeman, P.E.

(608) 267-7611

Frederick.Hegeman@wisconsin.gov

<u>Northeast District Staff</u>

Heidi Schmitt Marquez

(920) 662-5145