

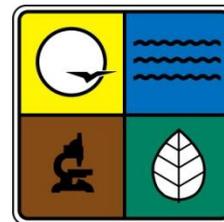
# Missouri Closed Landfill Technical Assistance Project

---

Presenter:

Laurie A. Bobbitt, Technical Environmental Specialist,  
Compliance/Enforcement Section, Solid Waste Management Program

June 28, 2012



**MISSOURI**  
DEPARTMENT OF  
NATURAL RESOURCES

# USDA Grant Acknowledgement

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture.

# History

- 1970 – EPA mandated the closure of town dumps
- 1970-1975 – more than 550 town dumps & disposal sites were closed in Missouri
- 1972 – Missouri Solid Waste Management Law was passed
- 1974 – MDNR was created & took over the regulation of landfills
- 1987 – MDNR regulations were amended to require post-closure care & FAIs

# Need for Project

- Moving from dumps to landfills required a paradigm shift
- Poor site selection in cases
- First regulations required no FAIs or post-closure period, & few environmental control systems
- Lack of filed documentation
- Change of site ownership
- Abandoned sites; sites sold at tax sales, sometimes to unaware buyers

## Bottom Line

- For all these reasons, we believed it was prudent to evaluate the condition of these early landfills.

# Grant Background

- Focus is on old, closed landfills in sparsely populated areas in Missouri
- Applied for in December 2009
- Awarded in Spring 2010
- Work on the project began October 1, 2010

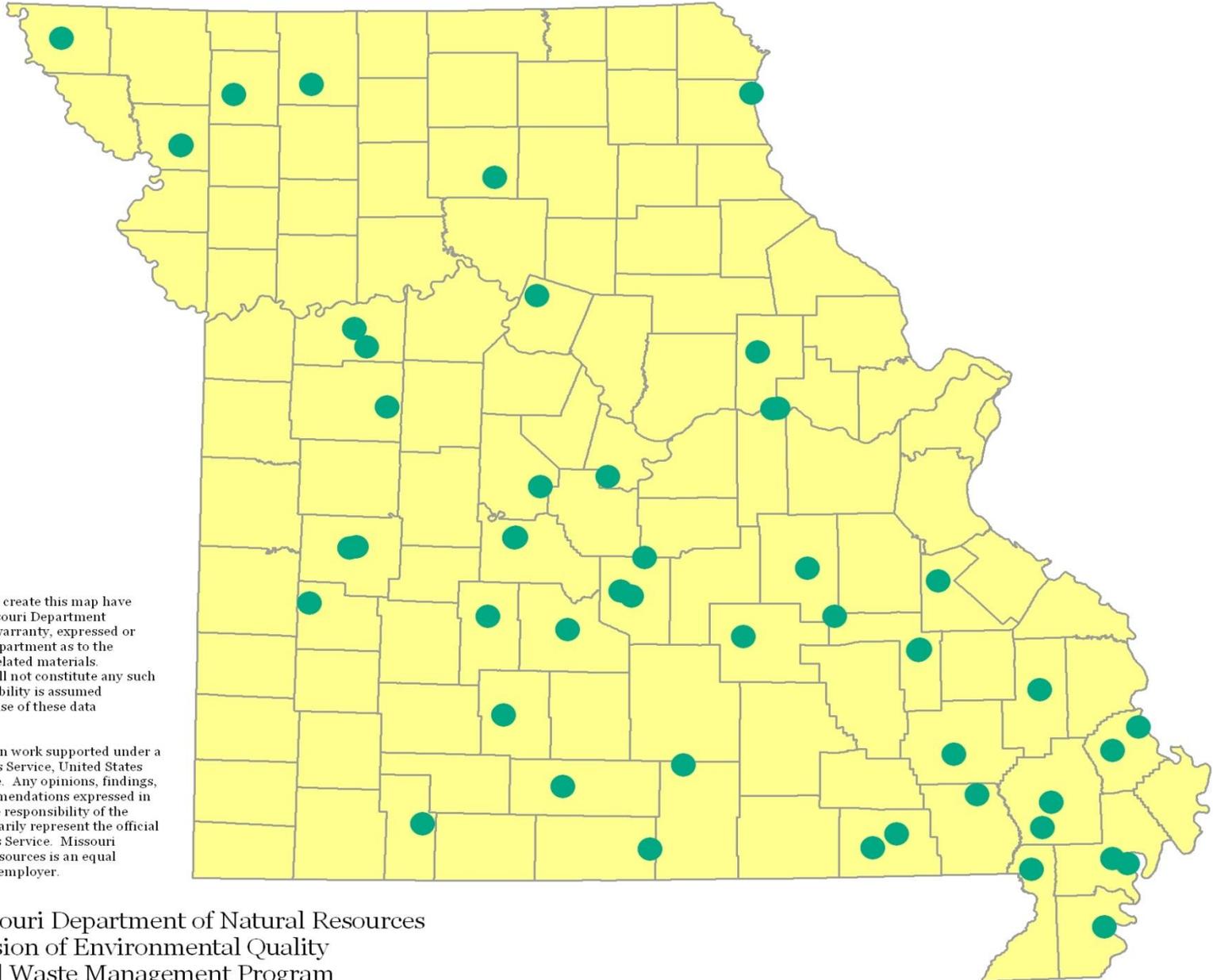
# Purpose of the Grant

- Assess the condition of closed rural landfills
- Work with owners and counties to:
  - Discuss the findings
  - Explain the regulatory requirements
  - Provide education, technical assistance & guidance

## Specifics of the Study

- Selected 58 of Missouri's oldest permitted & rural landfills
- Conducted file reviews & site assessments
- Updated & created guidance & educational materials
- Compiled results & wrote site reports
- Sent reports & guidance documents to owners
- Sent information packets to county collectors
- Wrote Final Report & submitted to USDA

# All 58 Landfills Assessed



Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture. Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of the Rural Utilities Service. Missouri Department of Natural Resources is an equal opportunity provider and employer.



Missouri Department of Natural Resources  
Division of Environmental Quality  
Solid Waste Management Program

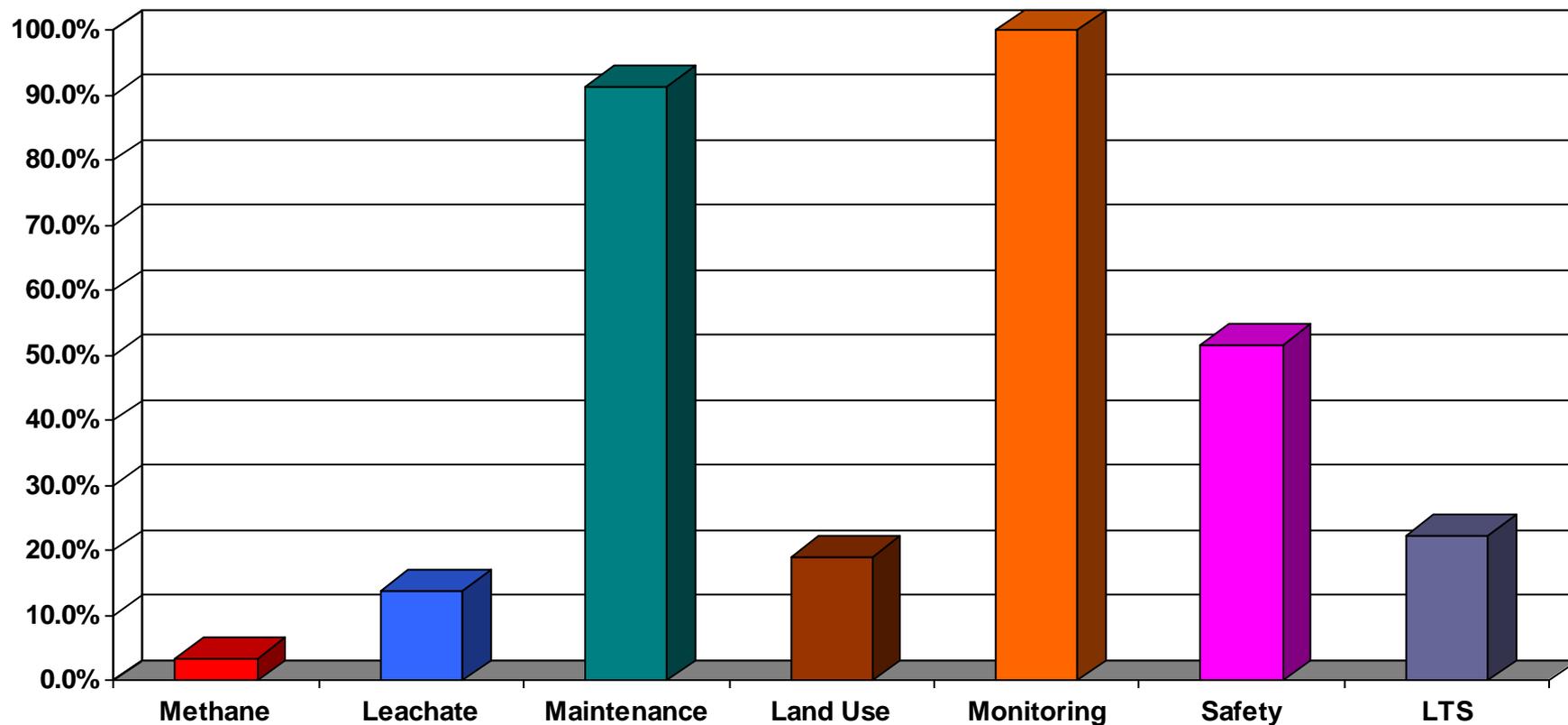
Last Revision 6/17/11 DFN

# What the Study Found

## The common issues:

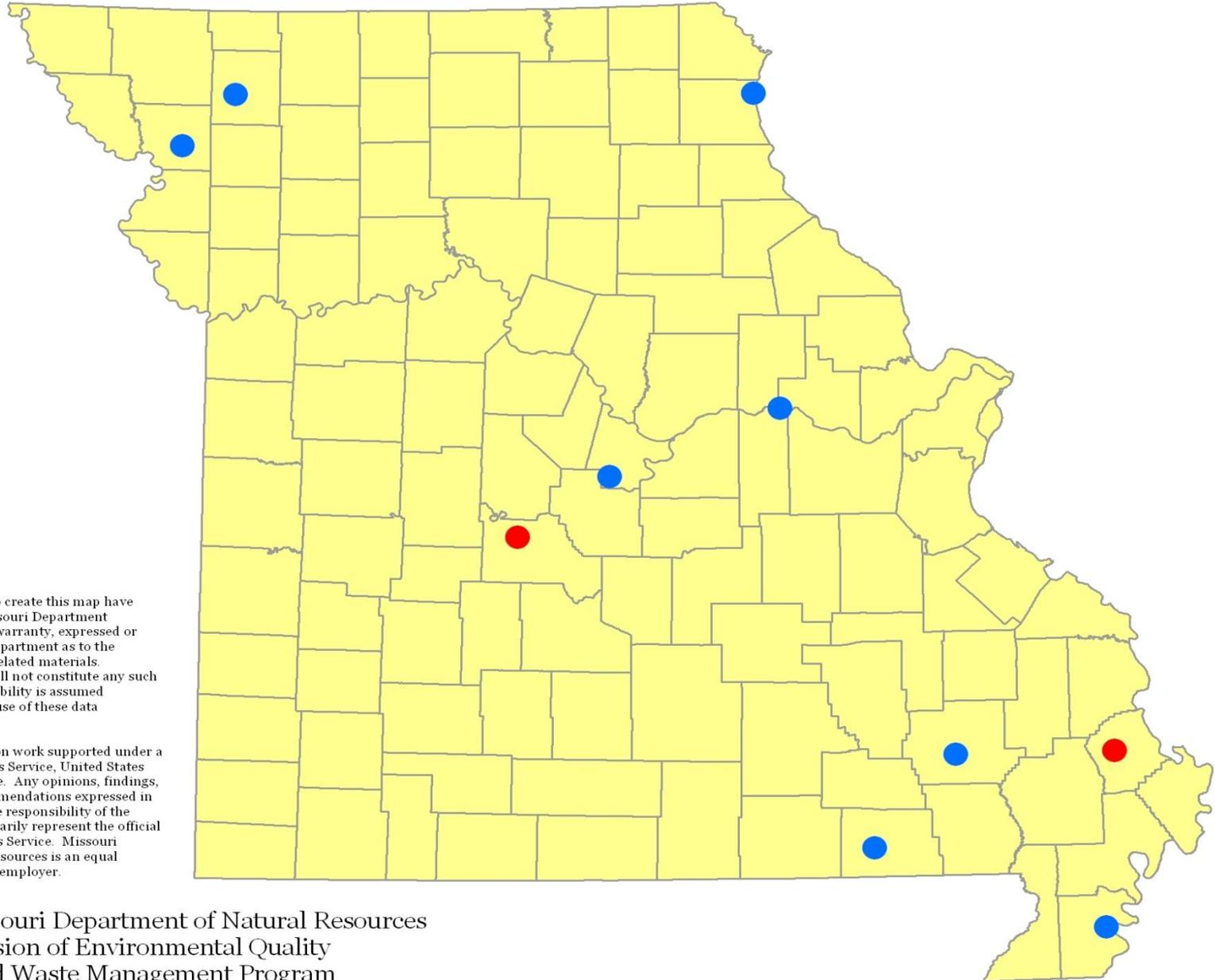
- Off-Site Concerns
  - Methane Gas
  - Leachate
- On-Site Challenges
  - Maintenance
  - Land Use
  - Monitoring
  - Public Safety
  - Long-Term Stewardship

# Percent of Landfills with Deficiencies by Category



# Off-Site Problems

**Methane 3.4% of Assessed Landfills, Leachate 13.8% of Assessed Landfills**



Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture. Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of the Rural Utilities Service. Missouri Department of Natural Resources is an equal opportunity provider and employer.



Missouri Department of Natural Resources  
Division of Environmental Quality  
Solid Waste Management Program

Last Revision 6/17/11 DFN

# Methane Gas Migration

- This is the most dangerous problem at a landfill
- Occupied structures are the biggest concern



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**









# Leachate

- What it is: water that has come become contaminated from contact with waste & seeps out of the landfill
- Threatens:
  - Surface water
  - Groundwater
  - Domestic wells



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**

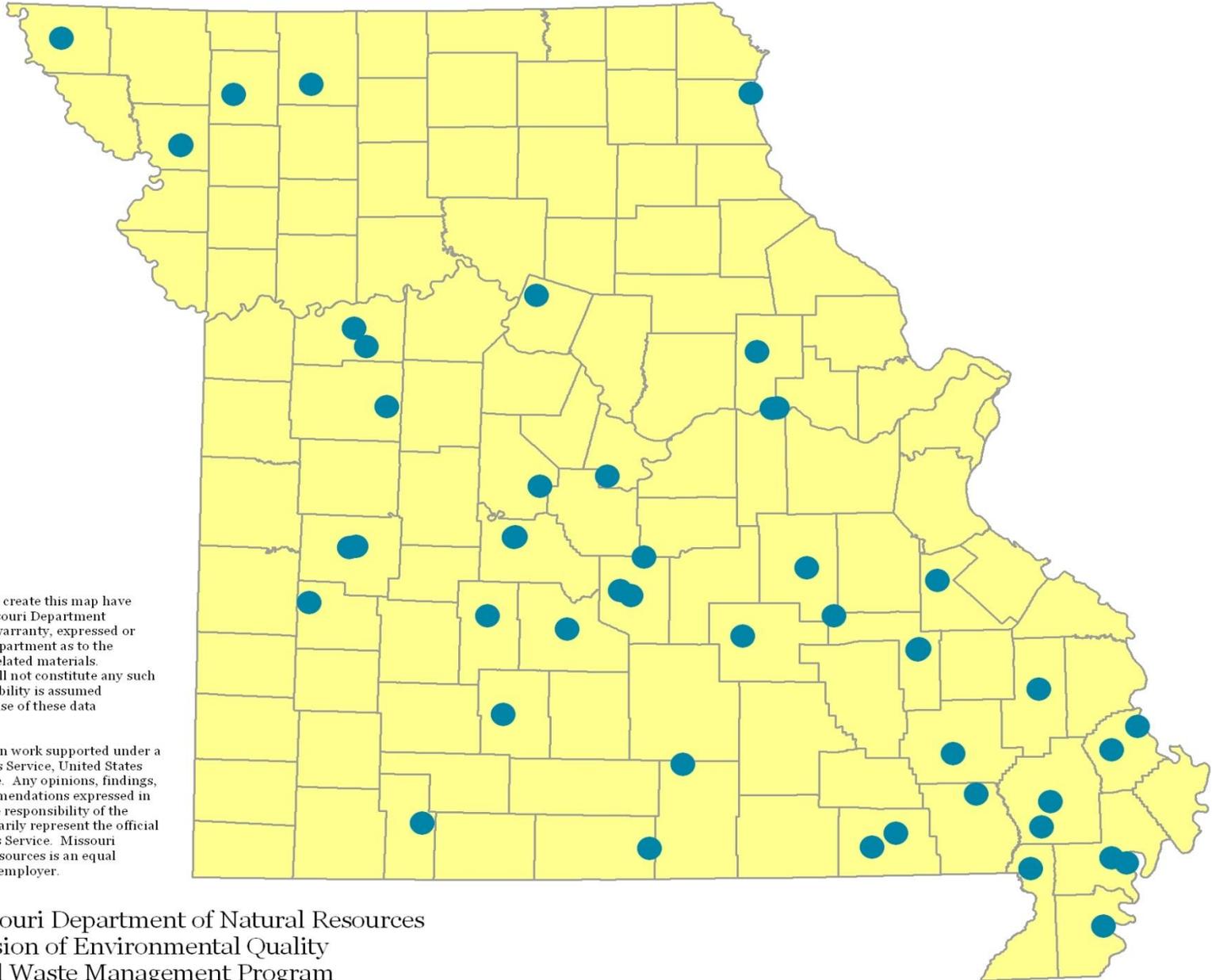


Missouri Department of  
**Natural Resources**



# Lack of Maintenance

## 91.4% of Assessed Landfills



Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture. Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of the Rural Utilities Service. Missouri Department of Natural Resources is an equal opportunity provider and employer.



Missouri Department of Natural Resources  
Division of Environmental Quality  
Solid Waste Management Program

Last Revision 6/17/11 DFN

## Lack of Maintenance

- Overgrown by Trees and Brush from Failure to Mow
- Subsidence & Ponding
- Erosion
- Poor Soil Cap
- Poor Vegetation
- Burning of Vegetative Cover

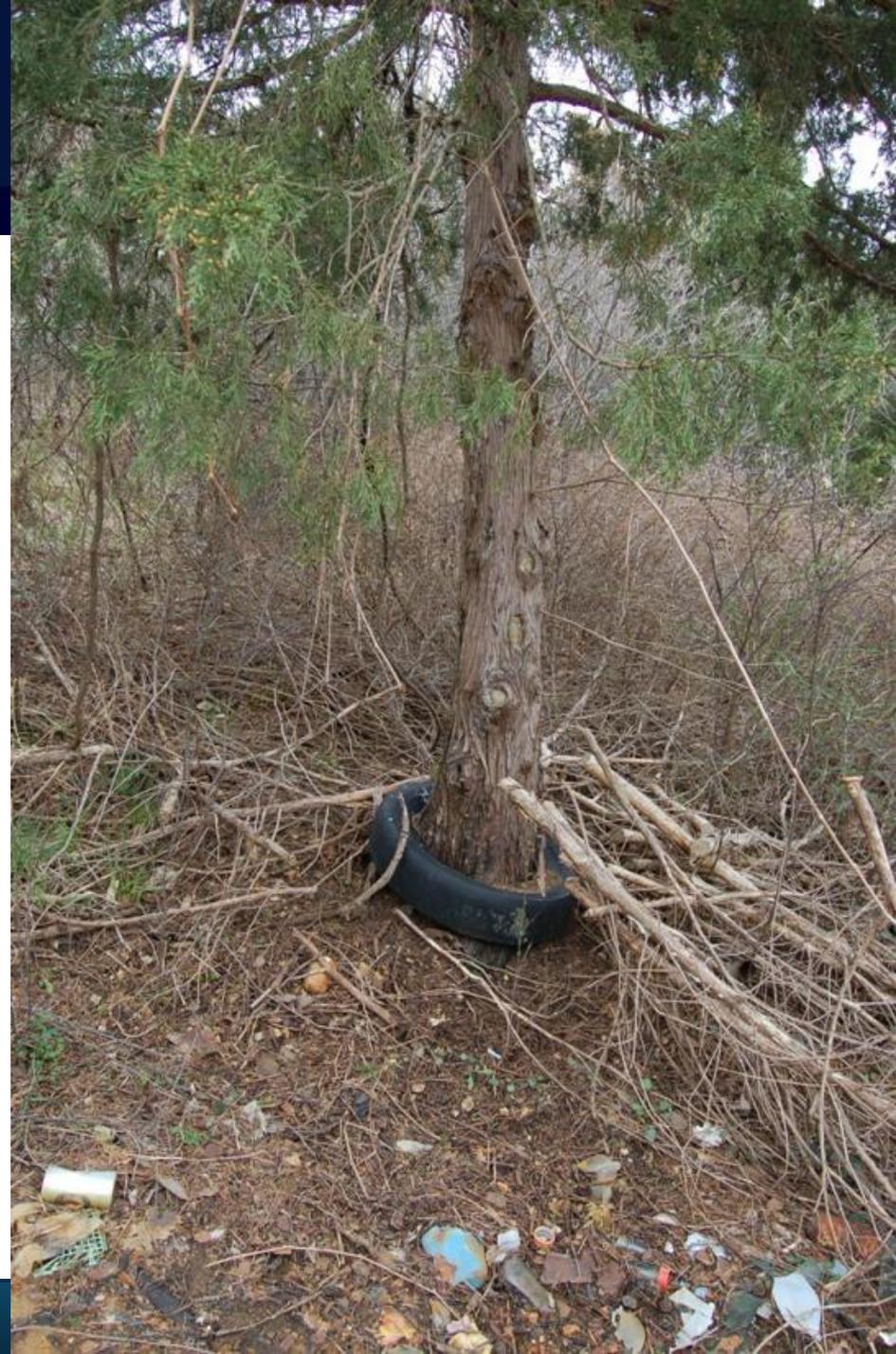




Missouri Department of  
**Natural Resources**



**Mowed  
lately??**





Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**







Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**





## Lack of Maintenance (cont.)

- Leachate Outbreaks
- Failure to Maintain Environmental Control Systems
- Wells Not Properly Abandoned
- Damage by Owners
- Damage by Trespassers



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**





Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**



Missouri Department of  
**Natural Resources**

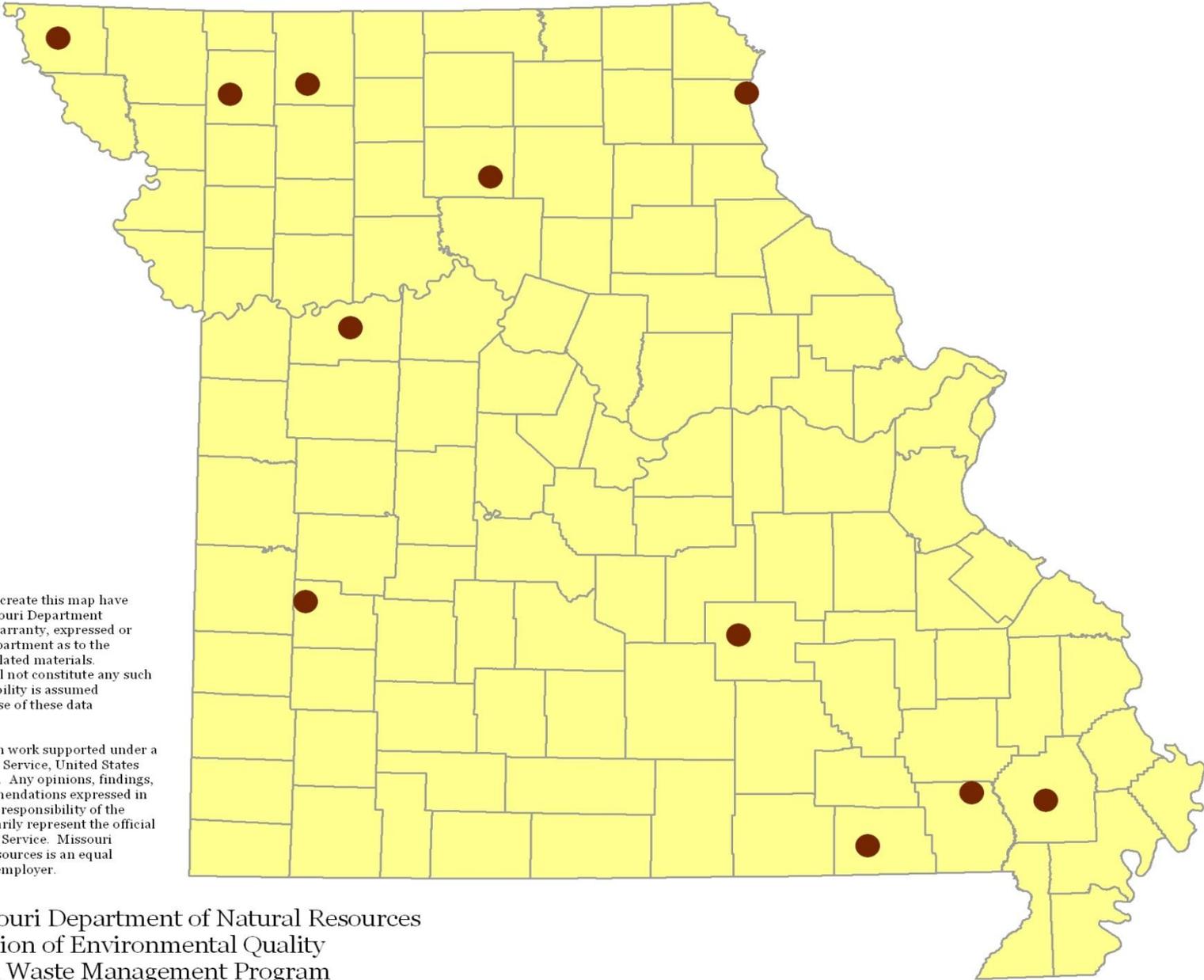


Missouri Department of  
**Natural Resources**



# Land Use Impacts

## 19.0% of Assessed Landfills



Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture. Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of the Rural Utilities Service. Missouri Department of Natural Resources is an equal opportunity provider and employer.



Missouri Department of Natural Resources  
Division of Environmental Quality  
Solid Waste Management Program

Last Revision 6/17/11 DFN



# Grazing - cattle



# Grazing - horses



Plowing  
- row  
crops

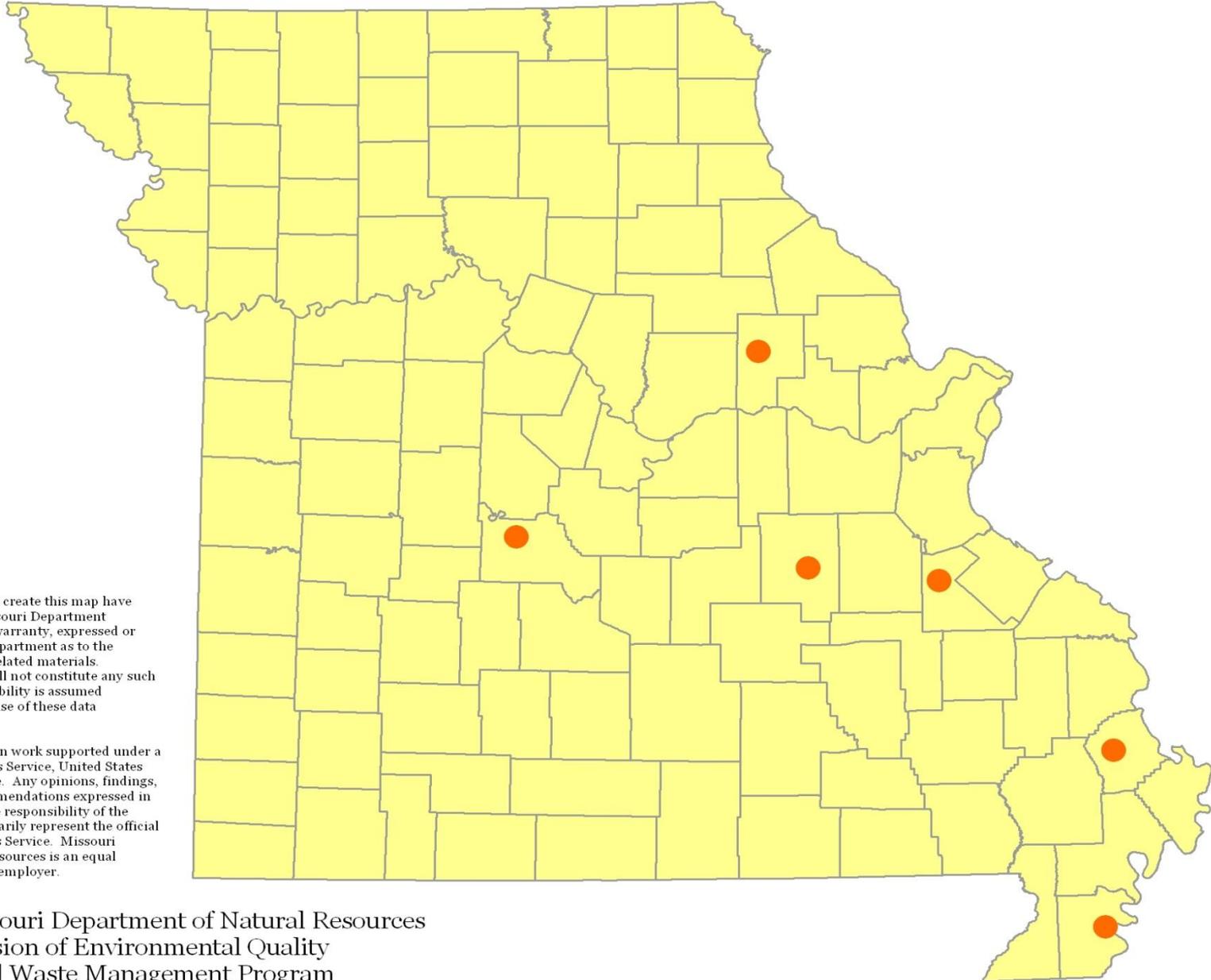


Permitted area sold to utility for substation



# Monitoring Deficiencies

## 100% of Assessed Landfills Required to Monitor



Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture. Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of the Rural Utilities Service. Missouri Department of Natural Resources is an equal opportunity provider and employer.



Missouri Department of Natural Resources  
Division of Environmental Quality  
Solid Waste Management Program

Last Revision 6/17/11 DFN

# Monitoring Deficiencies

- Gas Wells
- Groundwater  
Monitoring Wells







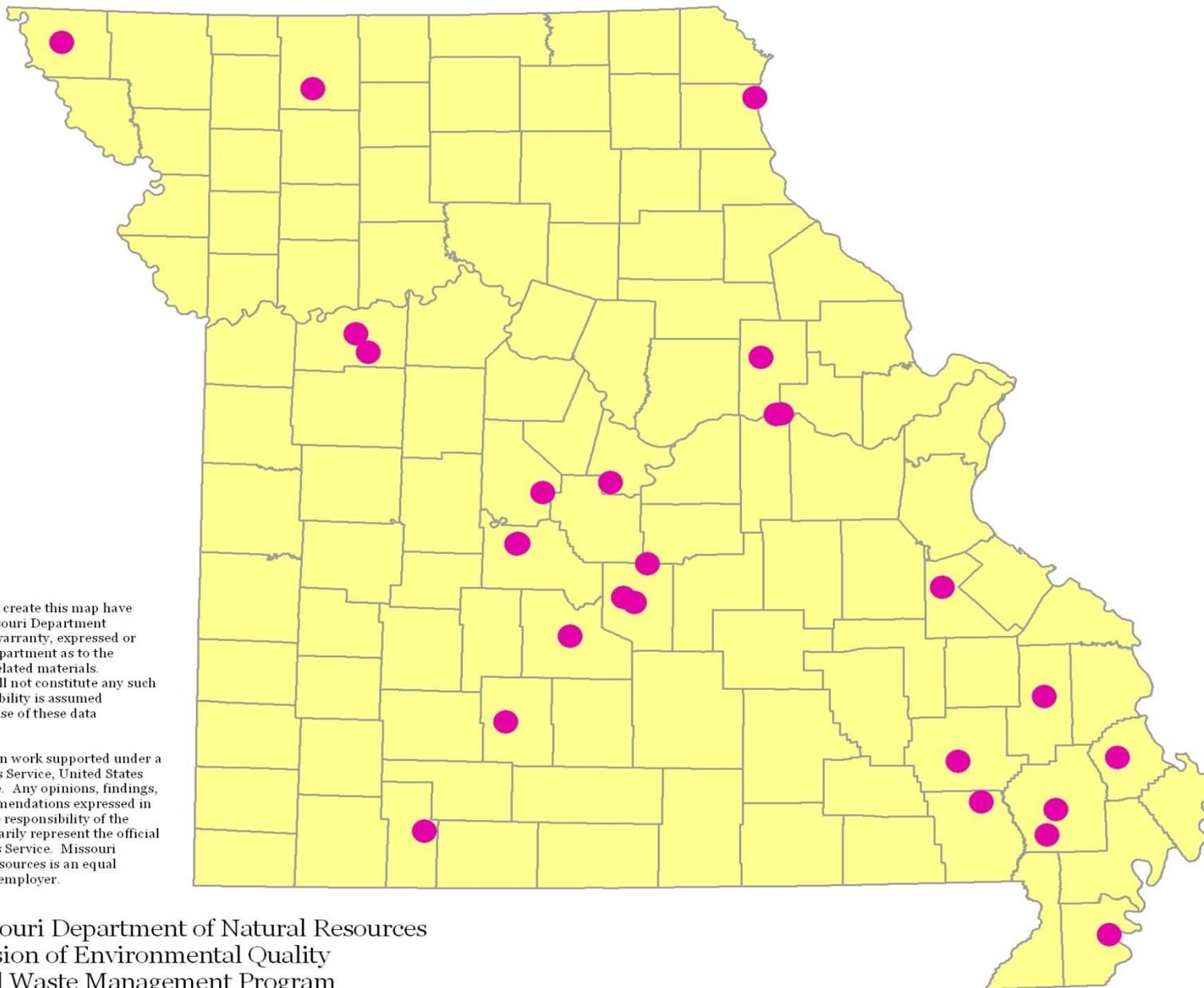
Ø

**NO  
DATA!!**



# Public Safety Concerns

51.7% of Assessed Landfills



Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture. Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of the Rural Utilities Service. Missouri Department of Natural Resources is an equal opportunity provider and employer.



Missouri Department of Natural Resources  
Division of Environmental Quality  
Solid Waste Management Program

Last Revision 6/17/11 DFN

- Methane Gas Migration





- Domestic wells within 300 feet of a landfill





# Long-Term Stewardship Issues

- Plat not filed
- Easement, notice & covenant not filed
- Site modified without prior approval
- Landfill sold without MDNR notification



# Selling a Landfill

The Missouri Solid Waste Management Law requires sellers to disclose early in the negotiation process:

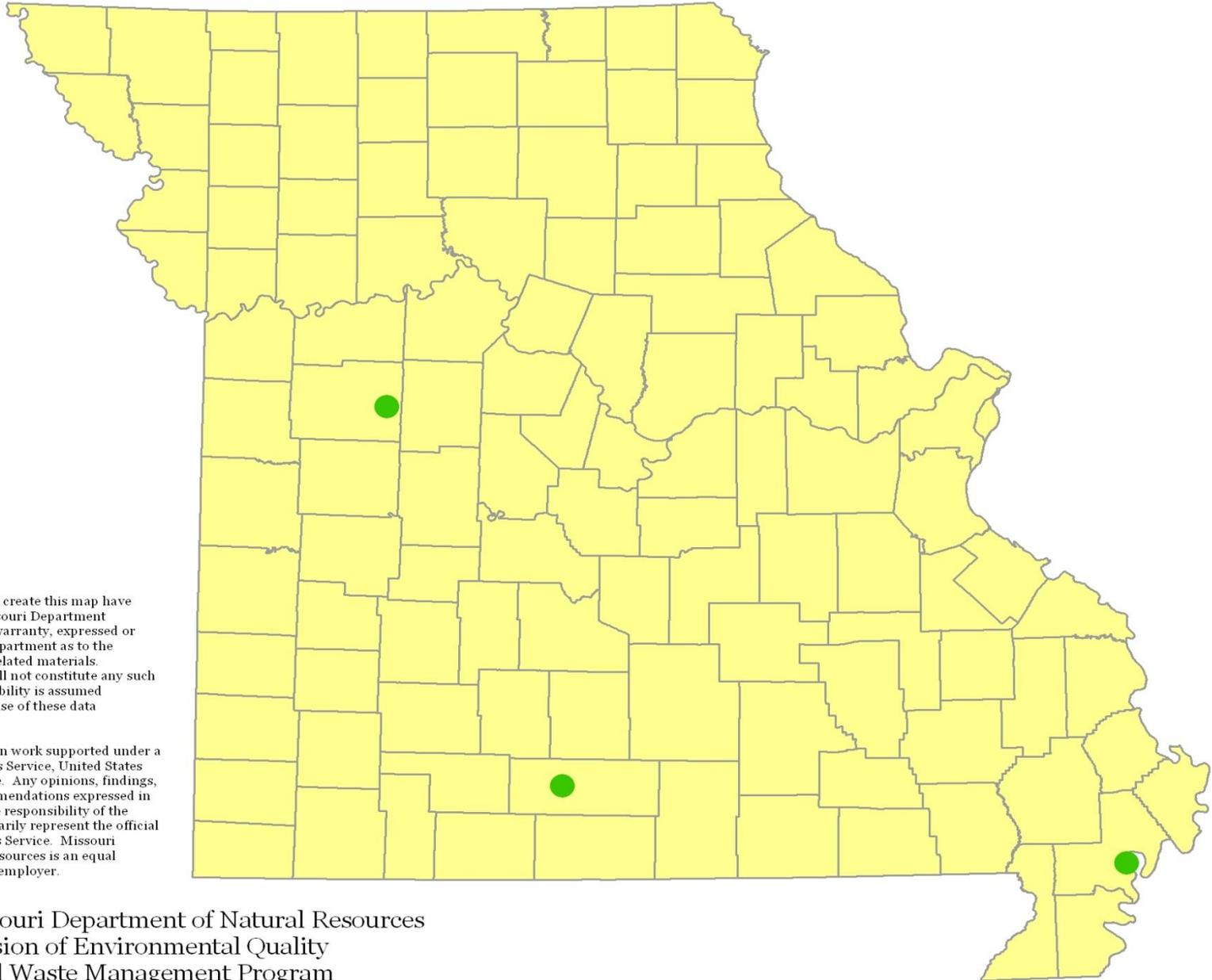
- the presence of a landfill on the property
- maintenance requirements
- owner liabilities

# Buying a Landfill

- Contact the Solid Waste Management Program prior to any sale
- Learn:
  - potential liabilities
  - regulatory requirements
  - maintenance & care guidelines

# No Significant Site Deficiencies

## 6.9% of Assessed Landfills



Although data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.

This material is based upon work supported under a grant by the Rural Utilities Service, United States Department of Agriculture. Any opinions, findings, and conclusions or recommendations expressed in this material are solely the responsibility of the authors and do not necessarily represent the official views of the Rural Utilities Service. Missouri Department of Natural Resources is an equal opportunity provider and employer.



Missouri Department of Natural Resources  
Division of Environmental Quality  
Solid Waste Management Program

Last Revision 6/17/11 DFN

Missouri Department of  
**Natural Resources**





Missouri Department of  
**Natural Resources**



# Results Demonstrated

The need for:

- landfill owners to be informed
- landfills to be maintained
- activities on landfills to be controlled
- information to be passed to successive owners
- awareness of potential for landfill impacts to nearby properties

## Post Grant Follow-up

- Monitor compliance with:
  - Corrective Action &/or Long Term Stewardship needs identified in report
- Informational letters to nearby residents
  - Regarding structures & domestic wells
- Disseminate results of study
  - Conferences, articles & webpage
- Increase educational outreach

## Conclusions

- Landfill age may or may not decrease on- or off-site impacts
- Size of the landfills may differ, but the issues/problems are similar
- When a landfill is “closed” it does not mean the owner can “walk away”
- Landfill upkeep and maintenance must continue until public safety concerns & environmental impacts are gone

# What Remains after Post-Closure

- Waste – metals, glass, plastics
- 10 CSR 80-2.030(3) – no person may excavate, disrupt or remove any deposited material from any...discontinued solid waste disposal area without prior approval from MDNR

## What Remains after Post-Closure (cont.)

- The responsibility to disclose the presence of a landfill during a sale
- The requirements of the Federal Clean Water Act & the Missouri Clean Water Law
- The civil liability for off-site impacts to people & properties

# Fact Sheets

- Maintaining a Closed Landfill – PUB 2431
- Acceptable Uses of a Closed Landfill – PUB 2430
- Requirements & Considerations When Selling or Buying a Landfill – PUB 2429

SWMP webpage: <http://dnr.mo.gov/env/swmp/>

# For Additional Information

Laurie A. Bobbitt

573-751-5401

[laurie.bobbitt@dnr.mo.gov](mailto:laurie.bobbitt@dnr.mo.gov)

# Questions