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USDA Natural Resources Conservation Service
Science and Technology

2015 Conservation Webinars

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Date	2015 Conservation Webinars Topics
Aug 11	Using the National Air Quality Site Assessment Tool for Air Quality Conservation Planning at Dairies
Aug 12	**Using the National Air Quality Site Assessment Tool for Air Quality Conservation Planning at Swine Operations**
Aug 13	Using the National Air Quality Site Assessment Tool for Air Quality Conservation Planning at Poultry Operations

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SREF

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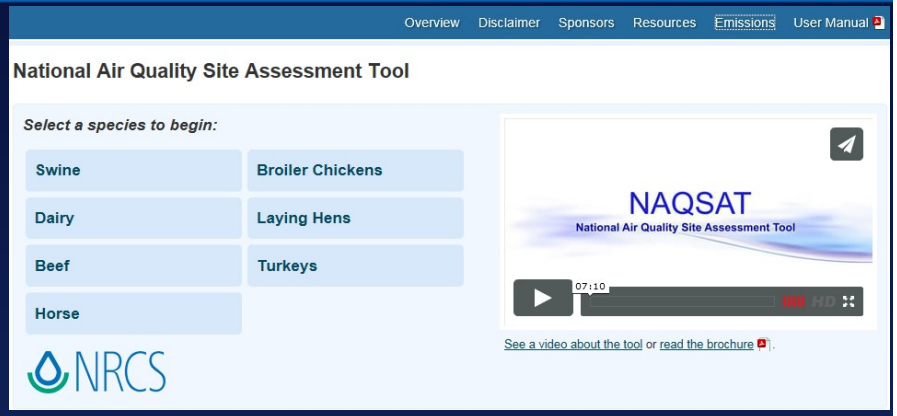
Natural Resources Conservation Service



NAQSAT Overview

August 11-13, 2015

Greg Zwicke, Air Quality Engineer – NRCS AQAC Team
Shawn Archibeque, Associate Professor – Colorado State University

What is NAQSAT?

- **N**ational **A**ir **Q**uality **S**ite **A**ssessment **T**ool
- http://naqsat.tamu.edu
- Developed for:
  - Livestock producers at confined animal operations
  - Advisors for these producers
  - Conservation planners
- Intended to provide assistance in identifying areas at confined animal operations where there are opportunities to address air emissions

Who Developed NAQSAT?

- Developed and enhanced under two CIG projects
  - "Development of a National Air Quality Site Assessment Tool (NAQSAT)"
    - Michigan State University – CIG 69-3A75-7-118
  - "Enhancement of a National Air Quality Site Assessment Tool (NAQSAT) for Livestock Producers"
    - Colorado State University – CIG 69-3A75-11-220

Who Developed NAQSAT?

- University partners
  - Colorado State University
  - Iowa State University
  - Michigan State University
  - Oregon State University
  - Penn State University
  - Purdue University
  - Texas A&M University
  - University of California – Davis
  - University of Georgia
  - University of Maryland
  - University of Minnesota
  - University of Nebraska
- Industry Partners
  - Colorado Livestock Association
  - Iowa Turkey Federation
  - Iowa Pork Producers Association
  - Iowa Pork Industry Center
  - La Luna Dairy
  - Michigan Milk Producers Association
  - Michigan Pork Producers Association
  - National Pork Board
  - Nebraska Environmental Trust
  - Western United Dairymen

How Will NRCS Use NAQSAT?

- See updated NRCS National Instructions 190-309 (July 2015)
- Required for confined livestock and poultry operations with >= 300 AU
  - Swine
  - Dairy
  - Beef
  - Horse
  - Broiler chickens
  - Laying hens
  - Turkeys

How Will NRCS Use NAQSAT?

- Prepare a baseline NAQSAT report
  - Represents current management of the operation
- Use baseline results to help inform air quality resource concern identification
  - NAQSAT will not give you the answer – it will only point you in the right direction
- Continue through the planning process to formulate alternatives
- Evaluate alternatives by changing baseline NAQSAT run

United States Department of Agriculture
Natural Resources Conservation Service

NAQSAT Demo - Swine

August 12, 2015

Animals and Housing

Note to User: Many farms may use more than one of the listed choices below. In order to allow the use of NAQSAT as a "What If" tool only one of the choices can be selected at a time. The user can click on "Get Results" for that selection and see how changing the answer will affect their results. **See user's manual for more information.** If only a general overview is desired, identifying the predominant practice will accomplish that result.

Housing type:

- (•) Confined total slat

  Ventilation:

  - ( ) Natural
  - (•) Mechanical

    Select all that are used in your housing system:

    - [ ] Oil sprinkling
    - [ ] Pelleted feeds
    - [ ] Biofilters
    - [ ] Curtain walls (air dam, windbreak wall, VEB proximate to building)
    - [x] Not applicable

  - ( ) Combination (Natural ventilation with tunnel ventilation available in warm weather or natural ventilation with pit fans)

  Animal cleanliness - which best depicts typical animal appearance? *(Click on an image below; your selection will highlight in green.)*

  Dirty - mostly soiled hides

  Moderately dirty - some hides soiled

  Clean - few if any soiled hides

- ( ) Confined partial slat
- ( ) Open front
- ( ) Hoop or deep-bedded

Save Progress

Feed and Water

Number of phases, including split-sex feeding formulations:

- ○ < 3
- ◉ 3-5
- ○ > 5
- ○ I don't know

How many supplemental amino acids included?

- ○ 1
- ◉ 2
- ○ 3 or more
- ○ I don't know

Is your feed pelleted?

- ○ Yes
- ◉ No

How often are feed ingredients analyzed?

- ○ Weekly
- ○ Twice monthly
- ◉ Monthly or less frequently
- ○ Never
- ○ I don't know

Use B-agonists, such as ractopamine or zilpaterol?

- ◉ Yes
- ○ No
- ○ I don't know

What percent of distillers grains are fed (including dry and wet sources as a % of diet on dry basis)?

- ○ 0
- ◉ 1-10%
- ○ 10-20%
- ○ > 20%

Do you notice a sulfur odor (rotten eggs) in your water?

- ○ Yes
- ◉ No

Do you have 1% or more added fat it the diet?

- ◉ Yes
- ○ No
- ○ I don't know

- ○ Never
- ○ I don't know

Use B-agonists, such as ractopamine or zilpaterol?

- ◉ Yes
- ○ No
- ○ I don't know

What percent of distillers grains are fed (including dry and wet sources as a % of diet on dry basis)?

- ○ 0
- ◉ 1-10%
- ○ 10-20%
- ○ > 20%

Do you notice a sulfur odor (rotten eggs) in your water?

- ○ Yes
- ◉ No

Do you have 1% or more added fat it the diet?

- ◉ Yes
- ○ No
- ○ I don't know

Do you make your own feed or process your feed onsite?

- ○ Yes
- ◉ No

How is water supplied to your animals in the confined total slat facility?

- ○ Liquid feed
- ○ Wet-dry feeders
- ◉ Nipple drinkers (swinging or stationary)
- ○ Cups, bowls, or bells

How often are all waterers checked then repaired for leaks?

- ◉ Daily
- ○ At least weekly
- ○ Weekly or less frequently

Collection and Transfer

Note to User: Many farms may use more than one of the listed choices below. In order to allow the use of NAQSAT as a "What If" tool only one of the choices can be selected at a time. The user can click on "Get Results" for that selection and see how changing the answer will affect their results. **See user's manual for more information.** If only a general overview is desired, identifying the predominant practice will accomplish that result.

Which best describes your manure handling system? (Check all that apply)

- [x] Flush

  Do you notice an odor burst when you flush?

  - ○ No
  - ◉ Yes

    How often do you flush? Assumes no drying between flushes.

    - ○ Every other week or less often
    - ○ Weekly
    - ○ 2-3 times per week
    - ◉ Once daily
    - ○ 2-3 times per day
    - ○ More than 3 times per day

- [ ] Drain/pull plug
- [ ] Scrape/vacuum
- [ ] Gutter
- [ ] Deep pit
- [ ] Solid Removal

Is the majority of liquid manure typically loaded into the storage above or below the surface?

- ◉ Above
- ○ Below

What method is used to transfer the majority of manure from storage to the field?

- ◉ Pipe, closed channel, hose or drag hose
- ○ Open channel
- ○ Tank-type spreader or tanker
- ○ Open spreader or truck
- ○ Does not apply

Is the manure spilled at the loading station/area?

- ◉ Yes

  Is it tracked offsite?

  - ◉ Yes
  - ○ No

- ○ No

Manure Storage

Note to User: Many farms may use more than one of the listed choices below. In order to allow the use of NAQSAT as a "What If" tool only one of the choices can be selected at a time. The user can click on "Get Results" for that selection and see how changing the answer will affect their results. **See user's manual for more information.** If only a general overview is desired, identifying the predominant practice will accomplish that result.

What percent of your farm's manure is stored as a liquid or slurry (does not stack) in your predominant housing type?

Please slide to change value:

66%

Do any of these processes occur onsite? (Check all that apply)

- ☐ Storage/stockpile
- ☑ Composting

How often is seepage noticed?

- ◉ Rarely
- ○ Commonly

Does water pond around the base of compost piles (from rainfall events or leachate) for greater than 24 hours?

- ◉ Ponding or standing water is not present more than 24 hr after a rainfall event
- ○ Ponding or standing water is present more than 24 hr after a rainfall event

Are you following a specific recipe?

- ◉ Yes
  - **What is your recipe?**
    - ◉ 3:1 or greater carbon source (stalks, sawdust, straw, etc):manure
    - ○ < 3:1 carbon source (stalks, sawdust, straw, etc):manure
- ○ No

What is average of the highest two consecutive weekly temperature readings of your compost pile?

- ◉ I don't know
- ○ < 120F
- ○ 120F to 140F
- ○ > 140F

How often is compost cover added?

- ◉ With each manure addition
- ○ At least once daily
- ○ Less frequently than each manure addition

How often are maggots noticed?

- ◉ Rarely
- ○ Commonly

How often are maggots noticed?

- (•) Rarely
- ( ) Commonly

How often are flies noticed?

- (•) Rarely
- ( ) Commonly

- ☐ Pelletizing
- ☐ Gasification
- ☐ Incineration/burn

For each stage of manure storage you have, click the "Add Stage" button below and complete the questions for each stage. For example, if you have a 3-stage manure storage system, you will need to complete the first stage below, and then add 2 stages (click the "Add stage" button twice).

Stage 1

Does your manure contain greater or less than 5 lb of nitrogen per 1000 gallons (600 mg/kg) or less than 4% solids?

- ( ) Less than 5 lbs/1000 gallons or 600 mg/kg and be less than 4% total solids
- ( ) Greater than 5 lb N / 1000 gal and greater than 4% total solids
- (•) I don't know

Which best describes the consistency of your liquid?

- ( ) Water
- (•) Motor oil

What percent of the surface is exposed or uncovered?

- (•) < 25%
- ( ) 26-40%
- ( ) 41-60%
- ( ) 61-85%
- ( ) > 86%

Regarding your manure storage structure, describe the material for any cover that you may have on it.

- ( ) Natural crust
- ( ) Permeable cover (such as straw, stalks, geotextile material)
- ( ) Impermeable cover (such as plastic)
- (•) Building (for slatted or deep pit buildings)
- ( ) No cover

Stage 2

Does your manure contain greater or less than 5 lb of nitrogen per 1000 gallons (600 mg/kg) or less than 4% solids?

Stage 2

Does your manure contain greater or less than 5 lb of nitrogen per 1000 gallons (600 mg/kg) or less than 4% solids?

- ○ Less than 5 lbs/1000 gallons or 600 mg/kg and be less than 4% total solids
- ○ Greater than 5 lb N / 1000 gal and greater than 4% total solids
- ◉ I don't know

Which best describes the consistency of your liquid?

- ◉ Water

Pick the color that best describes your storage:

- ◉ Black or brown

Regarding your manure storage structure, describe the material for any cover that you may have on it.

- ○ Natural crust
- ○ Permeable cover (such as straw, stalks, geotextile material)
- ○ Impermeable cover (such as plastic)
- ◉ No cover

What percent of the surface is exposed or uncovered?

- ○ < 25%
- ○ 26-40%
- ○ 41-60%
- ○ 61-85%
- ◉ > 86%

- ○ Red/maroon to purple
- ○ Motor oil

Add Stage

Save Progress

Land Application

Where does manure go?

- [ ] Moved offsite (sold or given away) directly from the housing
- [x] Composted or stockpiled, then sold or given away
- [x] Land applied

What form of manure is land applied? (Check all that apply)

- [x] Solid

  How long are solids piled, or staged, on the field prior to application?

  - ( ) < 3 days
  - (•) >= 3 days

    Are solids covered?

    - ( ) Yes
    - (•) No

    Is there ponded leachate?

    - ( ) Yes
    - (•) No

  - ( ) Directly land applied; not piled or staged

  Are the majority of your solids composted prior to land application?

  - (•) Yes
  - ( ) No

- [x] Liquid

  Do you typically... (Select the predominant practice)

  - ( ) inject?
  - ( ) incorporate within 24 hours?
  - ( ) incorporate 24 hours or greater following application?
  - (•) irrigate?

    Choose your irrigation method

    - ( ) Flood or furrow irrigation
    - ( ) High pressure sprinkler or gun
    - (•) Low pressure sprinkler (drop drag line)
    - ( ) Low pressure sprinkler (low canopy system)

    Does ponding occur following irrigation?

    - (•) Yes
    - ( ) No

    Is freshwater added?

    - (•) Yes
    - ( ) No

  - ( ) Surface applied and not incorporated

Mortalities

Other than during freezing weather, how long before carcasses are picked up or put into the disposal system?

- (●) Within 24 hours of death
- ( ) Within a week of death
- ( ) Less frequently

How is mortality handled? (Check all that apply)

- [ ] Managed offsite (such as rendered or landfilled, or offsite composting)
- [ ] Buried onsite
- [x] Composted onsite

How often is seepage noticed?

- (●) Rarely
- ( ) Commonly

Does water pond around the base of compost piles (from rainfall events or leachate) for greater than 24 hours?

- (●) Ponding or standing water is not present more than 24 hr after a rainfall event
- ( ) Ponding or standing water is present more than 24 hr after a rainfall event

Are you following a specific compost recipe?

- (●) Yes

  What is your recipe?

  - (●) 3:1 or greater carbon source (stalks, sawdust, straw, etc):mortality
  - ( ) < 3:1 carbon source (stalks, sawdust, straw, etc):mortality

- ( ) No

What is average of the highest two consecutive weekly temperature readings of your compost pile?

- (●) I don't know
- ( ) < 120F
- ( ) 120F to 140F
- ( ) > 140F

How often are maggots noticed?

- (●) Rarely
- ( ) Commonly

How often are flies noticed?

- (●) Rarely
- ( ) Commonly

How often are uncovered carcass parts visible or noticed?

○ Commonly

Does water pond around the base of compost piles (from rainfall events or leachate) for greater than 24 hours?

◉ Ponding or standing water is not present more than 24 hr after a rainfall event
○ Ponding or standing water is present more than 24 hr after a rainfall event

Are you following a specific compost recipe?

◉ Yes

What is your recipe?

◉ 3:1 or greater carbon source (stalks, sawdust, straw, etc):mortality
○ < 3:1 carbon source (stalks, sawdust, straw, etc):mortality

○ No

What is average of the highest two consecutive weekly temperature readings of your compost pile?

◉ I don't know
○ < 120F
○ 120F to 140F
○ > 140F

How often are maggots noticed?

◉ Rarely
○ Commonly

How often are flies noticed?

◉ Rarely
○ Commonly

How often are uncovered carcass parts visible or noticed?

◉ Rarely
○ Commonly

How often is compost cover added?

◉ Immediately after each carcass addition
○ At least once daily
○ Less frequently than each carcass addition

☐ Contained (in-vessel) incinerated onsite

Save Progress

On-farm Roads

Are unpaved roads used for any of the following activities? (check all that apply)

- [x] Routine service traffic (feed delivery, milk truck, renderer)
- [x] Less frequent service traffic (manure handling)
- [x] General transportation (veterinarians, maintenance, nutritionists, managers, employees, farm tours)
- [ ] Does not apply

Unpaved roads are surfaced with: (Check all that apply)

- [ ] Caliche/limestone
- [x] Unimproved dirt road
- [ ] Washed gravel
- [ ] Gravel

Which is the predominant road-surface treatment used?

- ( ) Petroleum products, resins, emulsions as per manufacturer recommendations
- ( ) Salts or hygroscopic materials (e. g., magnesium chloride)
- ( ) Fresh water
- ( ) Holding pond wastewater
- (•) None

Are speed limits strictly enforced, or is speed controlled by passive means (e. g., speed bumps)?

- (•) Speed limits are not present or are not enforced by management
- ( ) Speed limits are enforced by management
- ( ) Speed is controlled by speed bumps or other passive means

Do you restrict public access to private roads?

- (•) Yes
- ( ) No

Are most roads lined with windbreaks or shelterbelts?

- (•) No
- ( ) Some or all roads are lined with vegetation

Save Progress

Perception

Do you employ the following to reduce nuisance issues?

- [x] Property line vegetative buffers
- [ ] Cleaning up spilled manure from roads
- [ ] None of the above

Do you practice "track-out control" (manure on tires) of manure or mud on vehicles leaving the property? (Do you have a means of controlling how much manure/mud leaves your property on the tires of all vehicles leaving your property?)

- ( ) Yes
- (•) No

Are most roads lined with windbreaks or shelterbelts?

- (•) No
- ( ) Some or all roads are lined with vegetation

Are you mindful of neighbors when timing manure removal from housing or storage?

- ( ) Yes
- (•) No

Do you consider how the following impact nuisance conditions when planning manure applications?

- [ ] Timing relative to neighbor activities
- [ ] Time of day
- [x] Season
- [ ] Weather forecasts (wind direction relative to neighbor location)
- [ ] None of the above

Are compost piles, mortalities, or manure storage visible from public roads?

- ( ) Yes
- (•) No

Are efforts made to ensure a pleasing roadside appearance?

- (•) Yes
- ( ) No

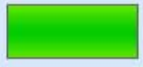
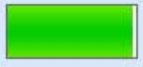
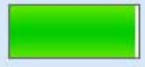
*This is the last section of questions. Use the **Get Results** button below to see your score.*

Effectiveness Results:

(Close / Go Back)

Width of white box identifies room for improvement to reduce emissions within each constituent of concern.
More white area signifies greater opportunities to make changes and reduce air emissions.
Click the box to view practice standards applicable to your scores.

Click on a management category to quickly modify your answers.

Management Category	Odor	Particulate Matter (Dust)	Ammonia (NH_3)	Hydrogen sulfide (H_2S)	Methane (CH_4)	Volatile organic compounds (VOCs)	Nitrous Oxide (N_2O)
Animals and Housing							N/A
Feed and Water							N/A
Collection and Transfer							N/A
Manure Storage							
Land Application							N/A
Mortalities		N/A					N/A
On-farm Roads				N/A	N/A		N/A
Perception			N/A	N/A	N/A	N/A	N/A

Print My Report *View a print version of your results, questions, and answers.*

Take a survey *Did you find this tool useful? Help us improve by taking a short survey.*

Saved Session Information:

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Create a bookmark to this page in your browser

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Select a new species and start over

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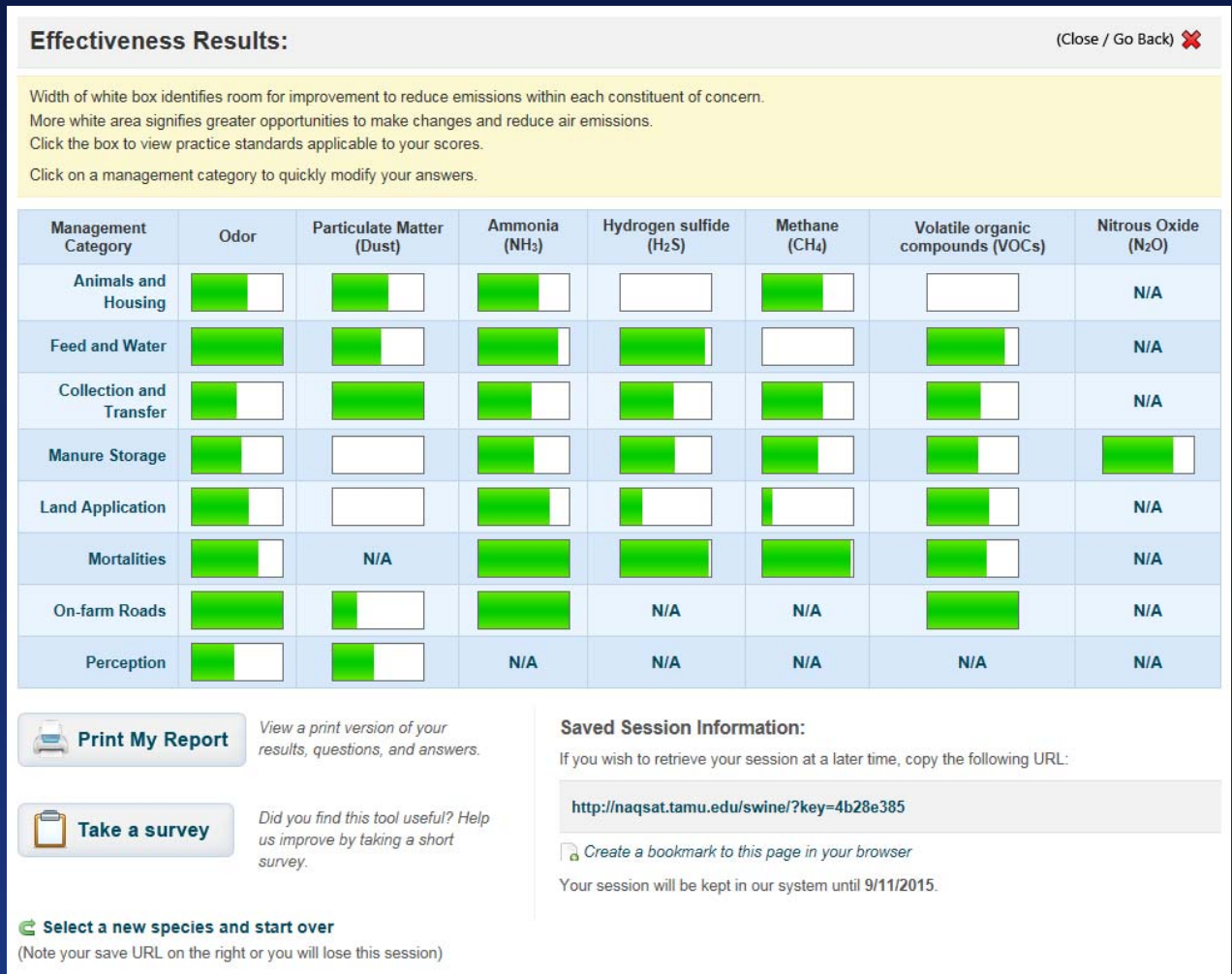
United States Department of Agriculture
Natural Resources Conservation Service

Using NAQSAT Results

August 12, 2015

Where Do We Start?



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Animals and Housing							N/A
Feed and Water							N/A
Collection and Transfer							N/A
Manure Storage							
Land Application							N/A
Mortalities		N/A					N/A
On-farm Roads				N/A	N/A		N/A
Perception			N/A	N/A	N/A	N/A	N/A

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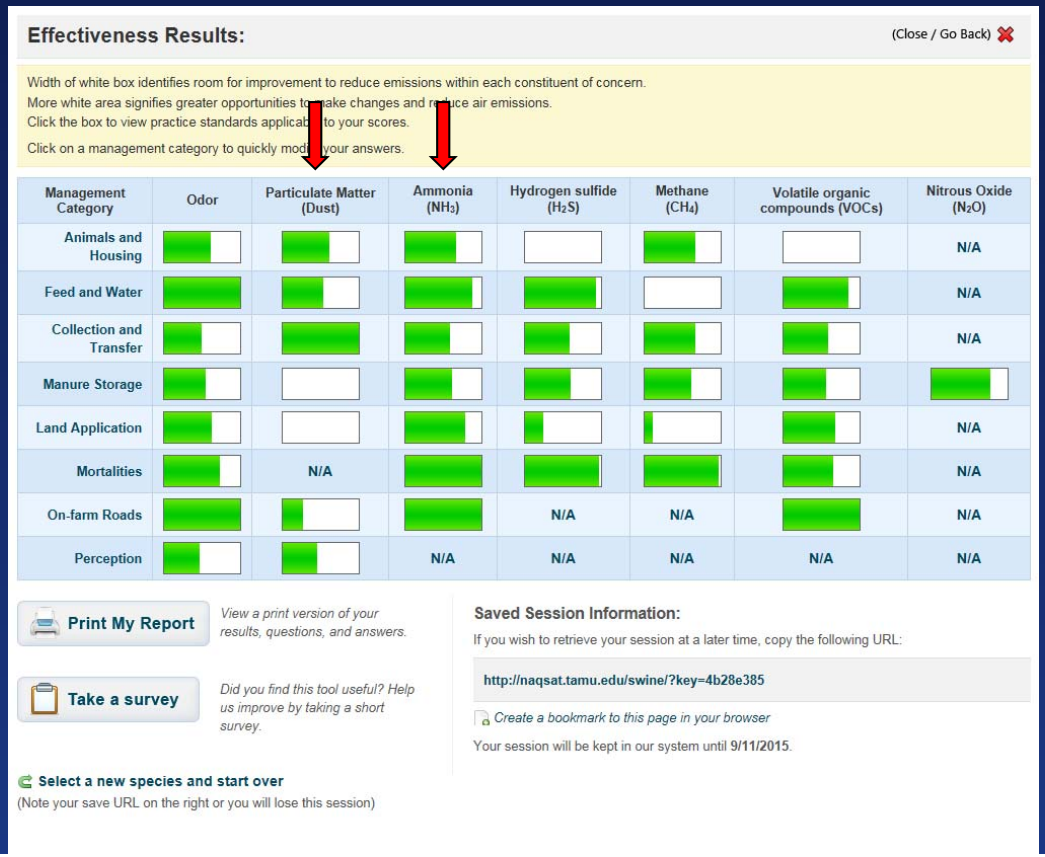
Where Do We Start?

- Look at each AQ resource concern
  - Emissions of Particulate Matter (PM) and PM Precursors
  - Emissions of Ozone Precursors
  - Objectionable Odors
  - Emissions of Greenhouse Gases

  - Some may be more important for your site than others

Particulate Matter Resource Concern

- Focus on score bars for:
  - Particulate matter
  - Ammonia



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Manure Storage							
Land Application							N/A
Mortalities		N/A					N/A
On-farm Roads				N/A	N/A		N/A
Perception			N/A	N/A	N/A	N/A	N/A

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Particulate Matter

- Focus on score bars for:
  - Animals and Housing
  - Onfarm Roads
  - Manure Storage – if dry manure is managed
  - Land Application – if dry manure is managed
  - Feed and Water – if dry feed ingredients are stored or mixed onsite

Ammonia

- Focus on score bars for:
  - Feed and Water
  - Manure Storage
  - Land Application
  - Animals and Housing
  - Collection and Transfer

Particulate Matter Resource Concern

Effectiveness Results: (Close / Go Back)

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Collection and Transfer							N/A
Manure Storage							
Land Application							N/A
Mortalities		N/A					N/A
On-farm Roads				N/A	N/A		N/A
Perception			N/A	N/A	N/A	N/A	N/A

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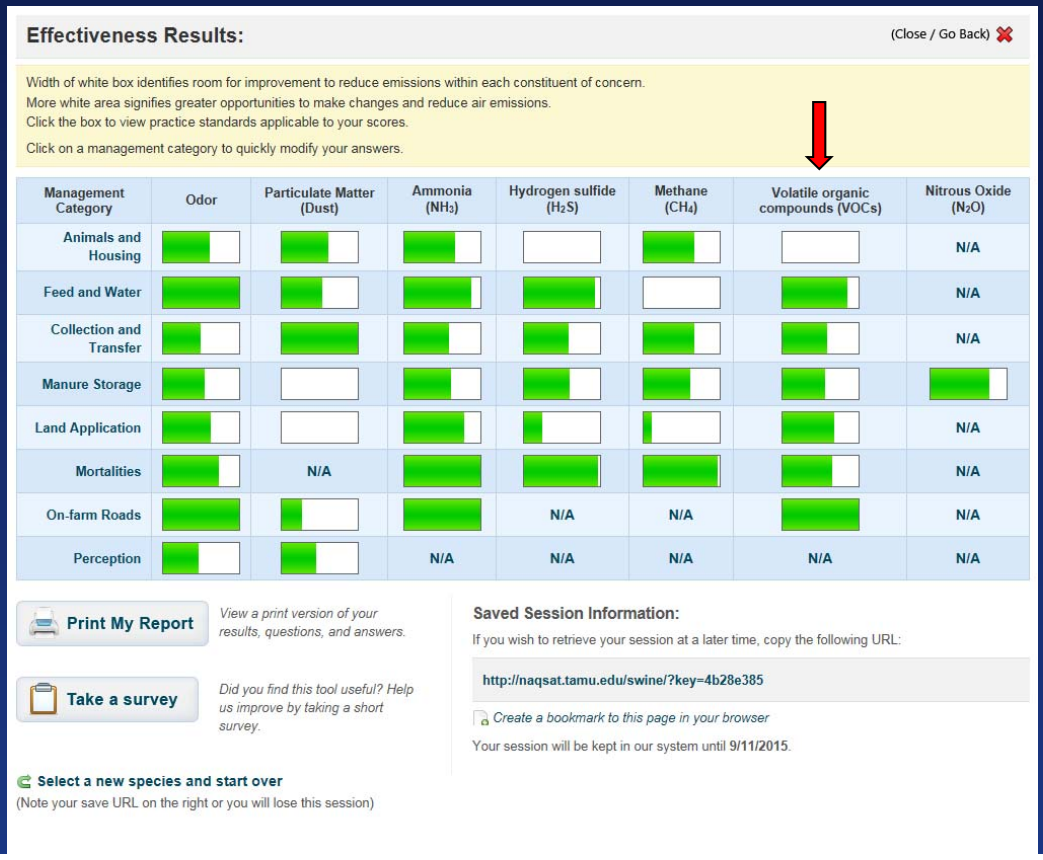
Ozone Precursors Resource Concern

- Focus on score bar for:
  - Volatile organic compounds



Effectiveness Results: (Close / Go Back)

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More white area signifies greater opportunities to make changes and reduce air emissions.
Click the box to view practice standards applicable to your scores.
Click on a management category to quickly modify your answers.

Management Category	Odor	Particulate Matter (Dust)	Ammonia (NH_3)	Hydrogen sulfide (H_2S)	Methane (CH_4)	Volatile organic compounds (VOCs)	Nitrous Oxide (N_2O)
Animals and Housing							N/A
Feed and Water							N/A
Collection and Transfer							N/A
Manure Storage							
Land Application							N/A
Mortalities		N/A					N/A
On-farm Roads				N/A	N/A		N/A
Perception			N/A	N/A	N/A	N/A	N/A

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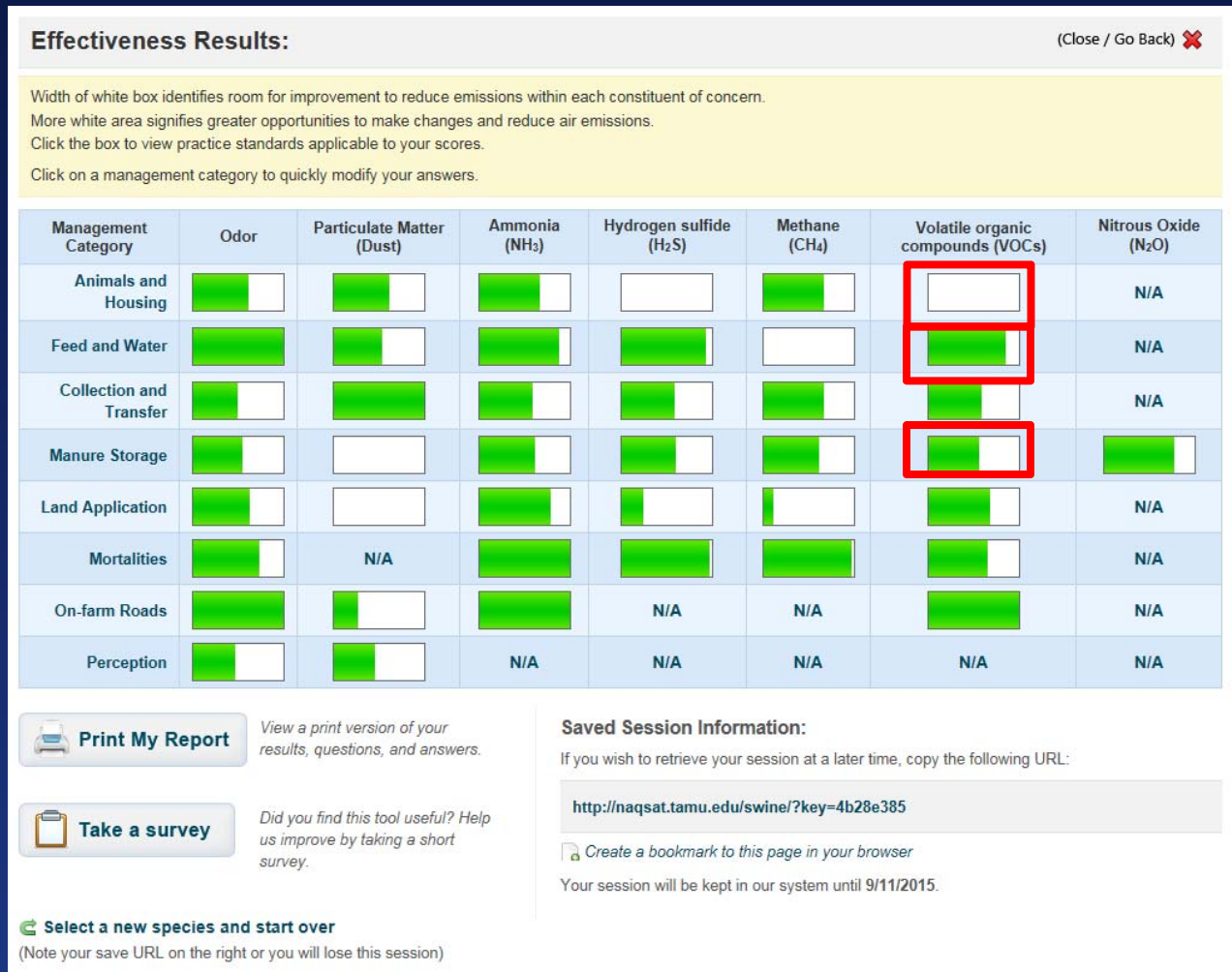
Volatile Organic Compounds

- Focus on score bars for:
  - Manure Storage
  - Feed and Water
  - Animals and Housing

Ozone Precursors Resource Concern



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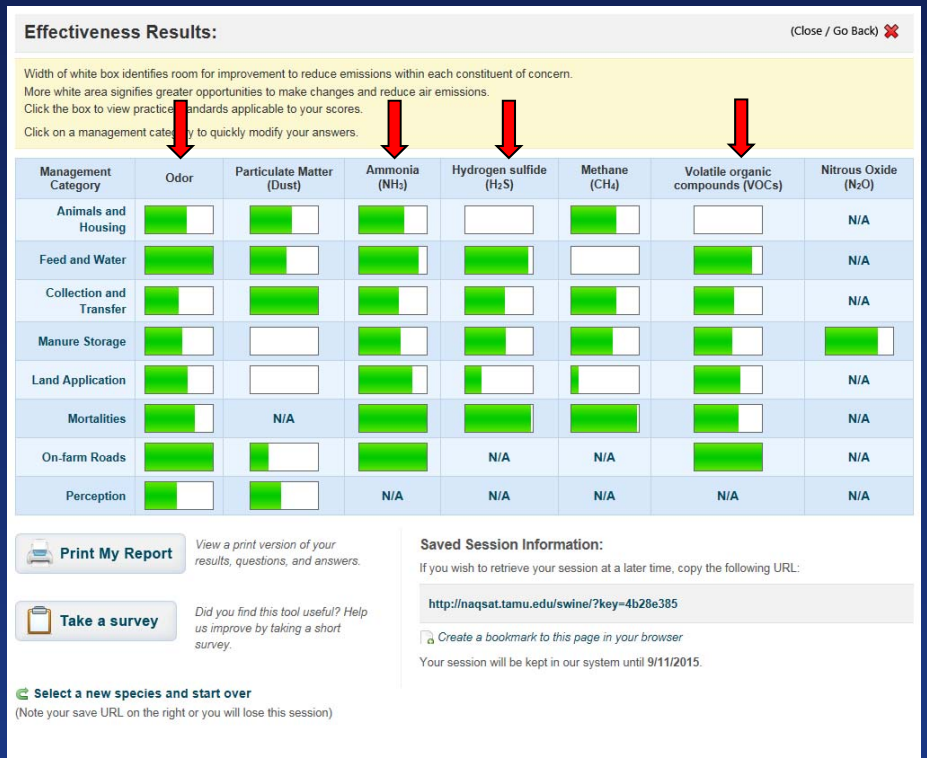
Odors Resource Concern

- Focus on score bars for:
  - Odor
  - Volatile organic compounds
  - Hydrogen sulfide
  - Ammonia



Odor

- Focus on score bars for:
  - Mortalities
  - Manure Storage
  - Feed and Water
  - Land Application
  - Animals and Housing

Volatile Organic Compounds

- Focus on score bars for:
  - Manure Storage
  - Feed and Water
  - Animals and Housing

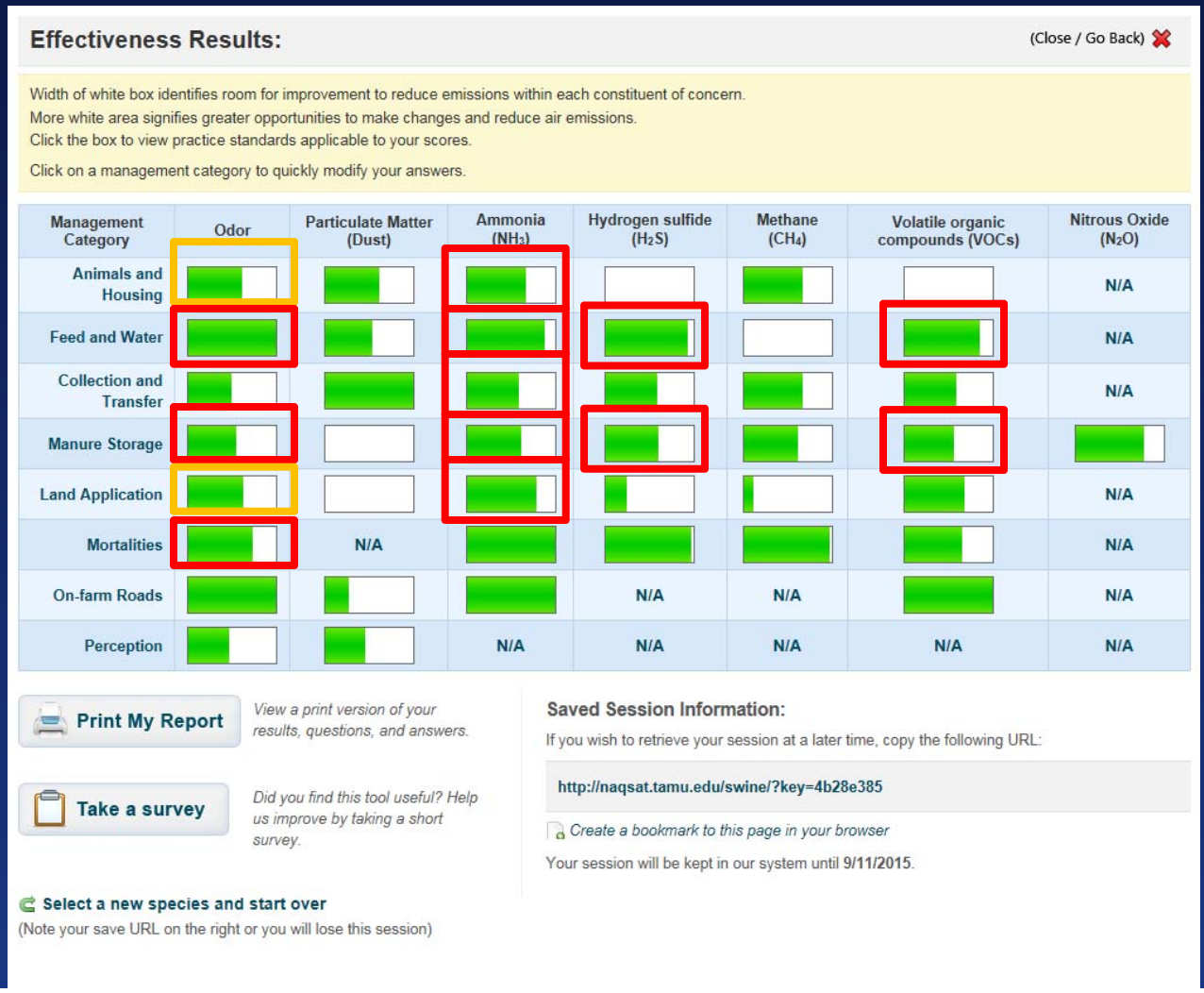
Hydrogen Sulfide

- Focus on score bars for:
  - Manure Storage
  - Feed and Water

Ammonia

- Focus on score bars for:
  - Feed and Water
  - Manure Storage
  - Land Application
  - Animals and Housing
  - Collection and Transfer

Odors Resource Concern



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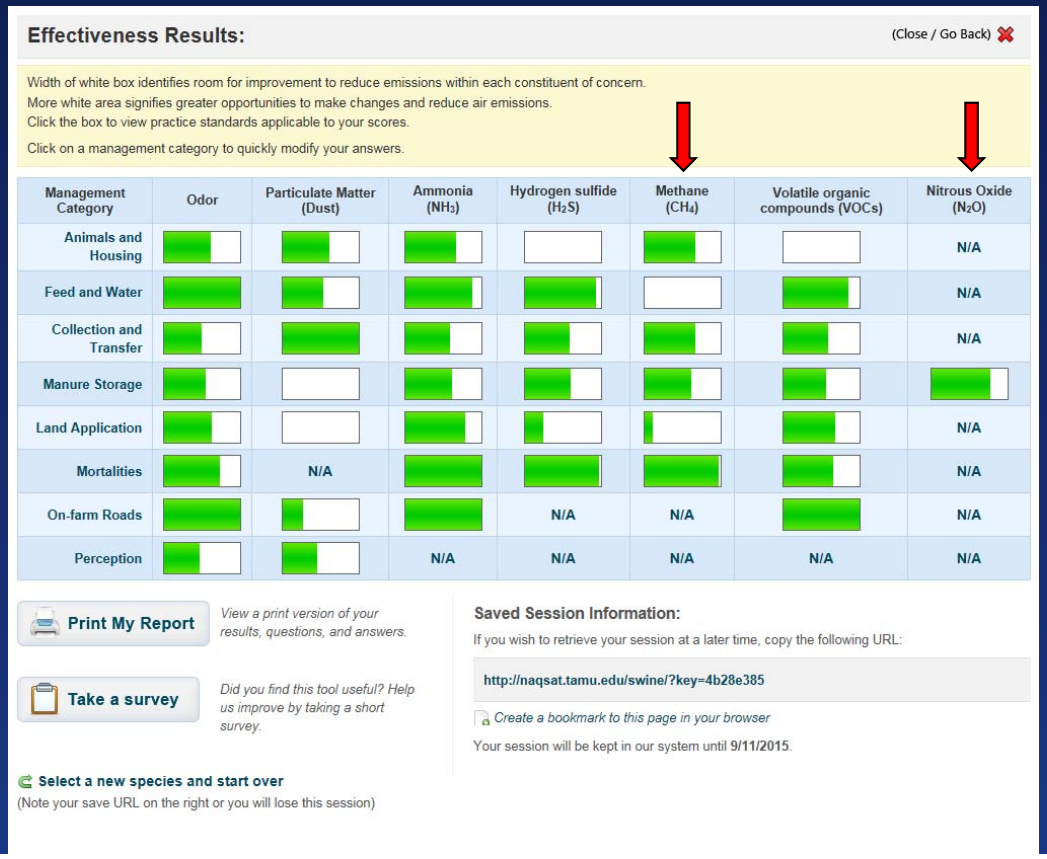
GHG Resource Concern

- Focus on score bars for:
  - Methane
  - Nitrous oxide



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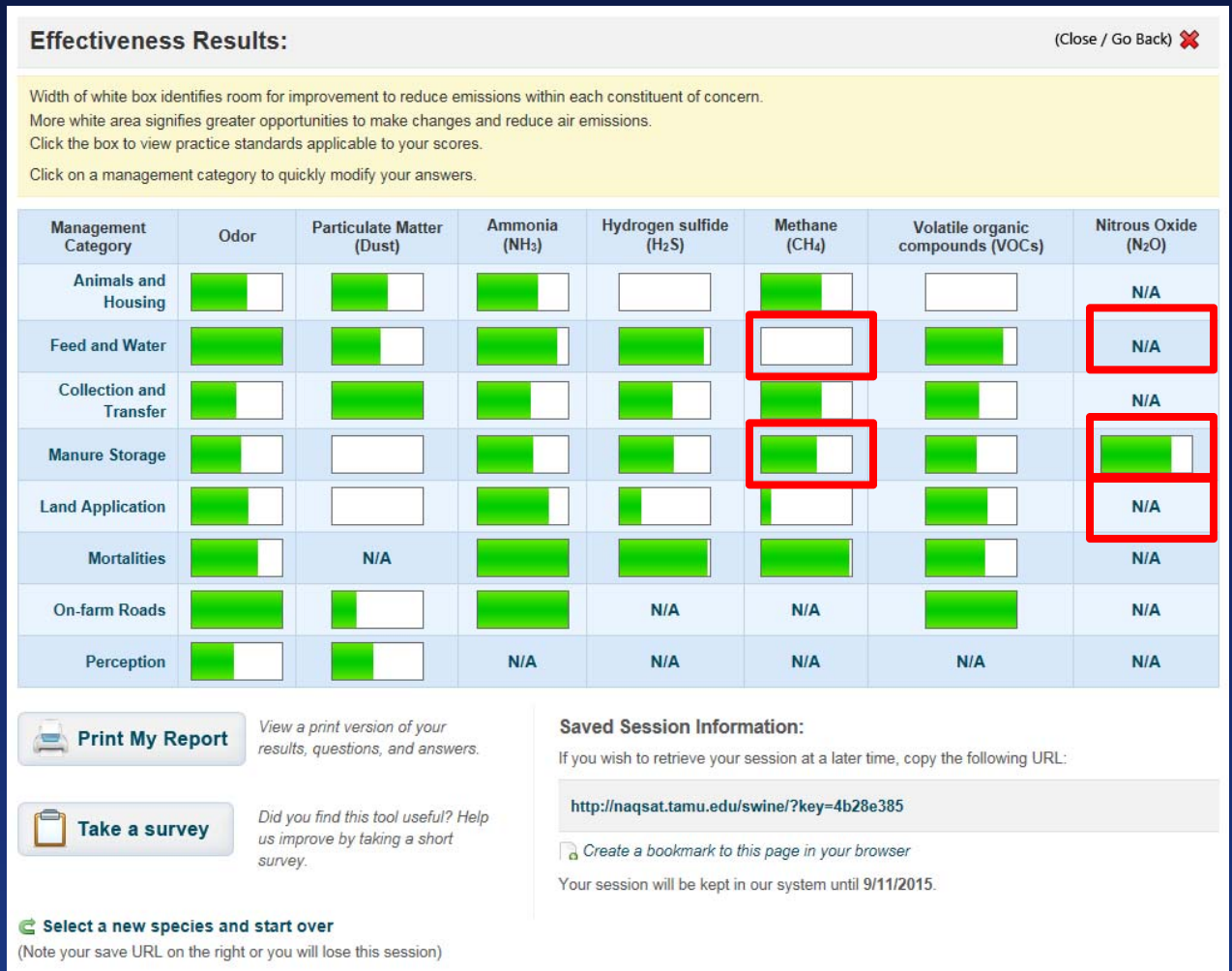
Methane

- Focus on score bars for:
  - Manure Storage
  - Feed and Water

Nitrous Oxide

- Focus on score bars for:
  - Feed and Water
  - Manure Storage
  - Land Application

GHG Resource Concern



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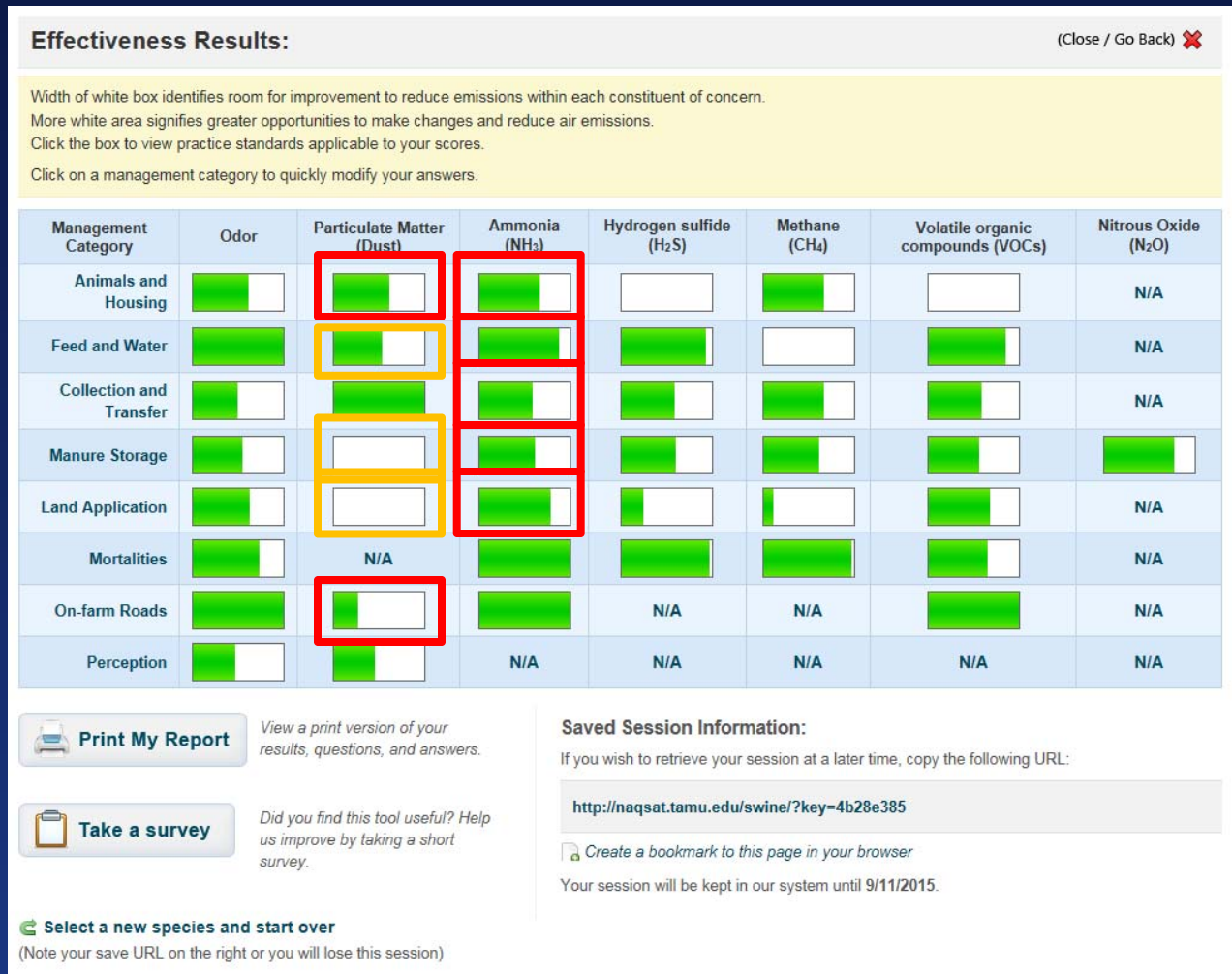
Example

- Franklin County, MO – $PM_{2.5}$ nonattainment
- No other issues identified

Particulate Matter Resource Concern



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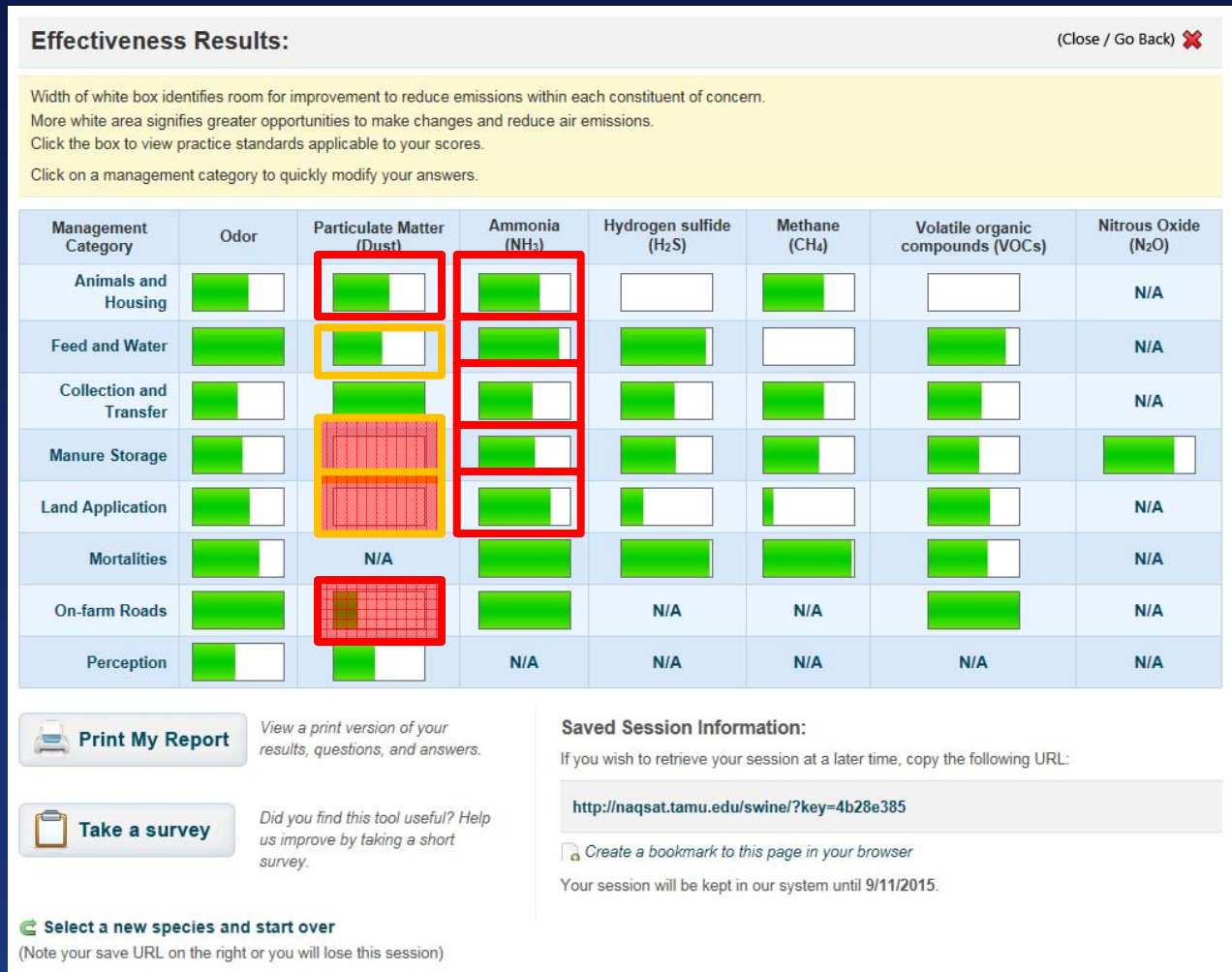

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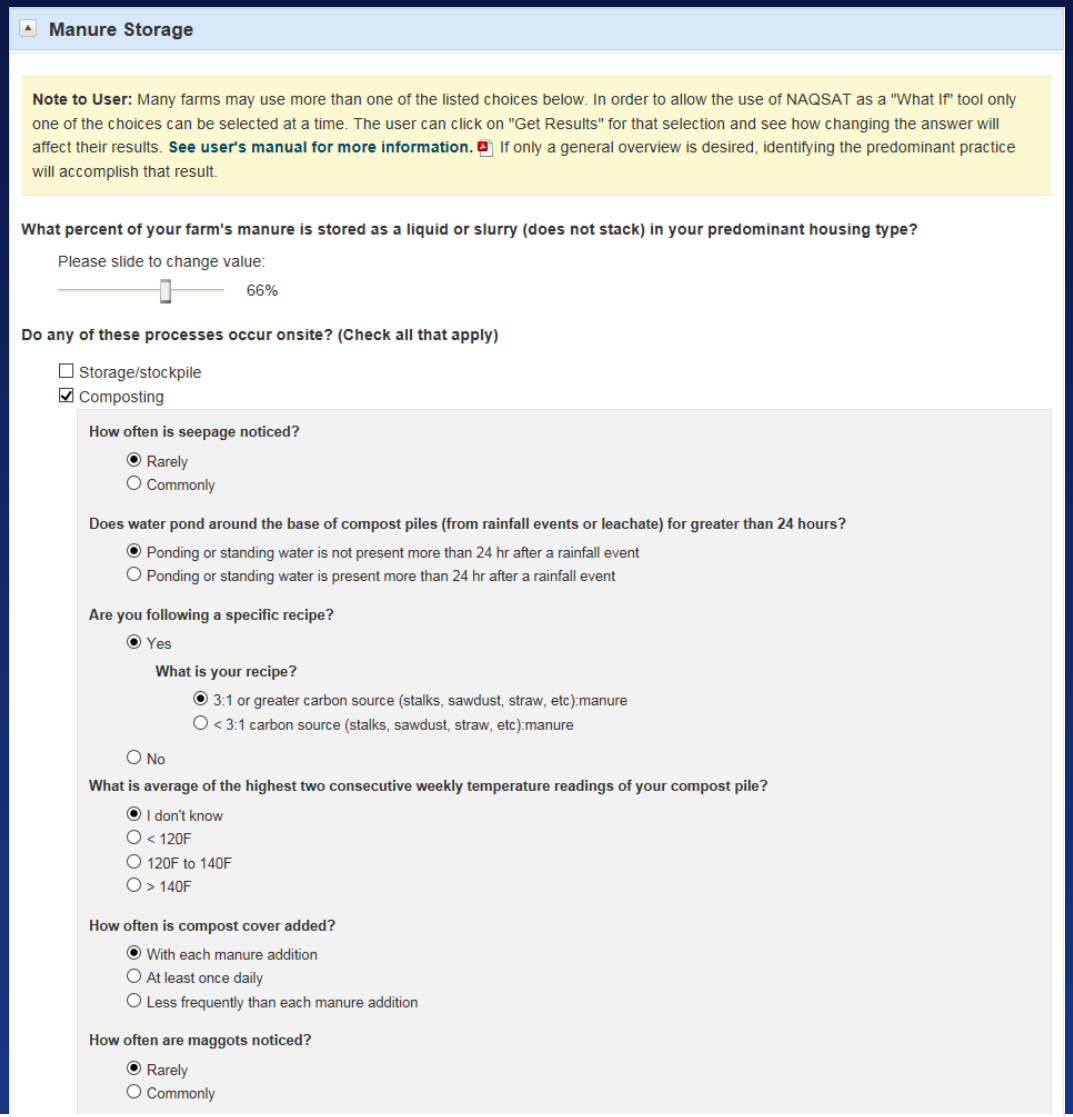
Manure Storage



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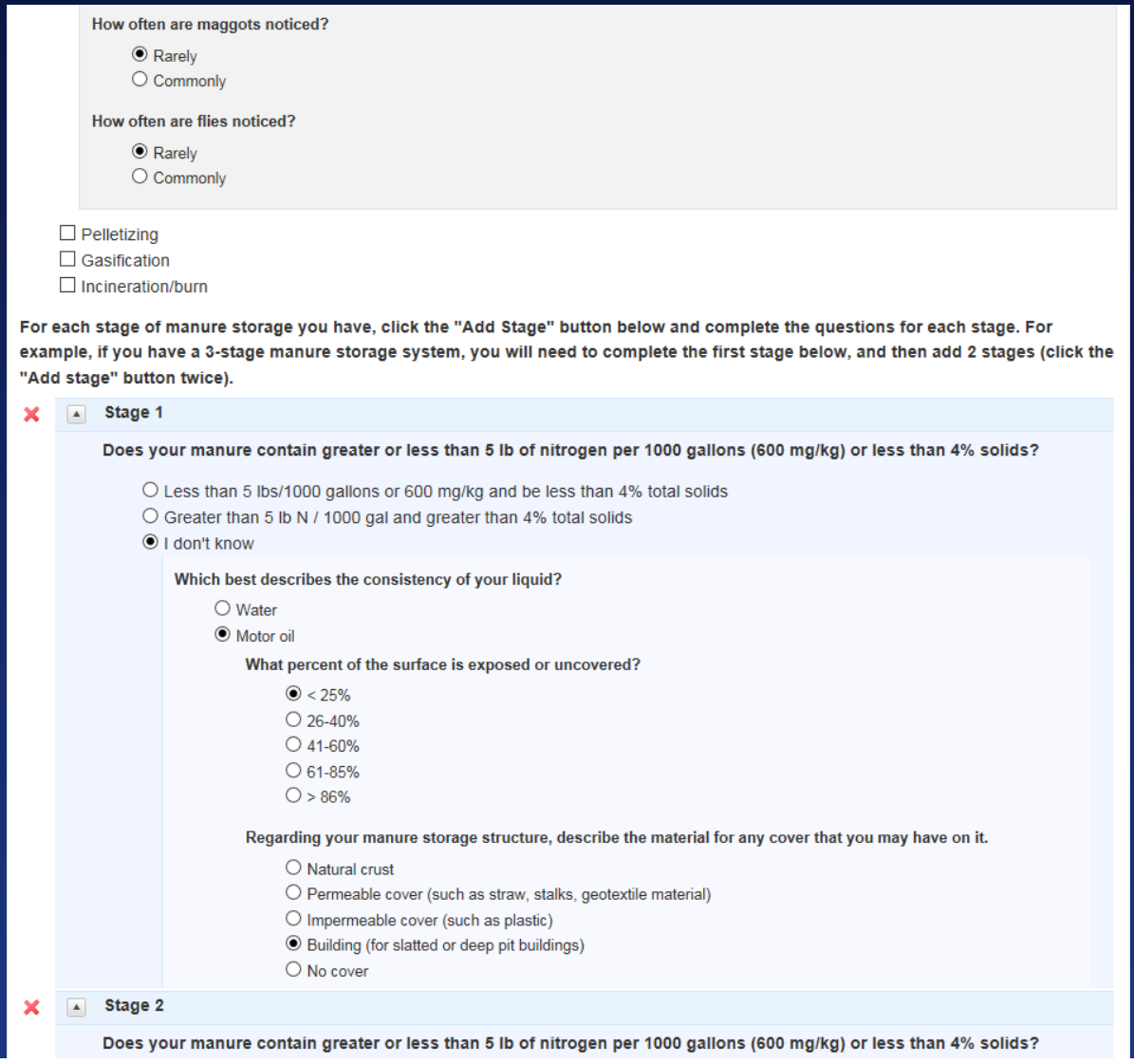


How often are maggots noticed?

- (•) Rarely
- ( ) Commonly

How often are flies noticed?

- (•) Rarely
- ( ) Commonly

- [ ] Pelletizing
- [ ] Gasification
- [ ] Incineration/burn

For each stage of manure storage you have, click the "Add Stage" button below and complete the questions for each stage. For example, if you have a 3-stage manure storage system, you will need to complete the first stage below, and then add 2 stages (click the "Add stage" button twice).

Stage 1

Does your manure contain greater or less than 5 lb of nitrogen per 1000 gallons (600 mg/kg) or less than 4% solids?

- ( ) Less than 5 lbs/1000 gallons or 600 mg/kg and be less than 4% total solids
- ( ) Greater than 5 lb N / 1000 gal and greater than 4% total solids
- (•) I don't know

Which best describes the consistency of your liquid?

- ( ) Water
- (•) Motor oil

What percent of the surface is exposed or uncovered?

- (•) < 25%
- ( ) 26-40%
- ( ) 41-60%
- ( ) 61-85%
- ( ) > 86%

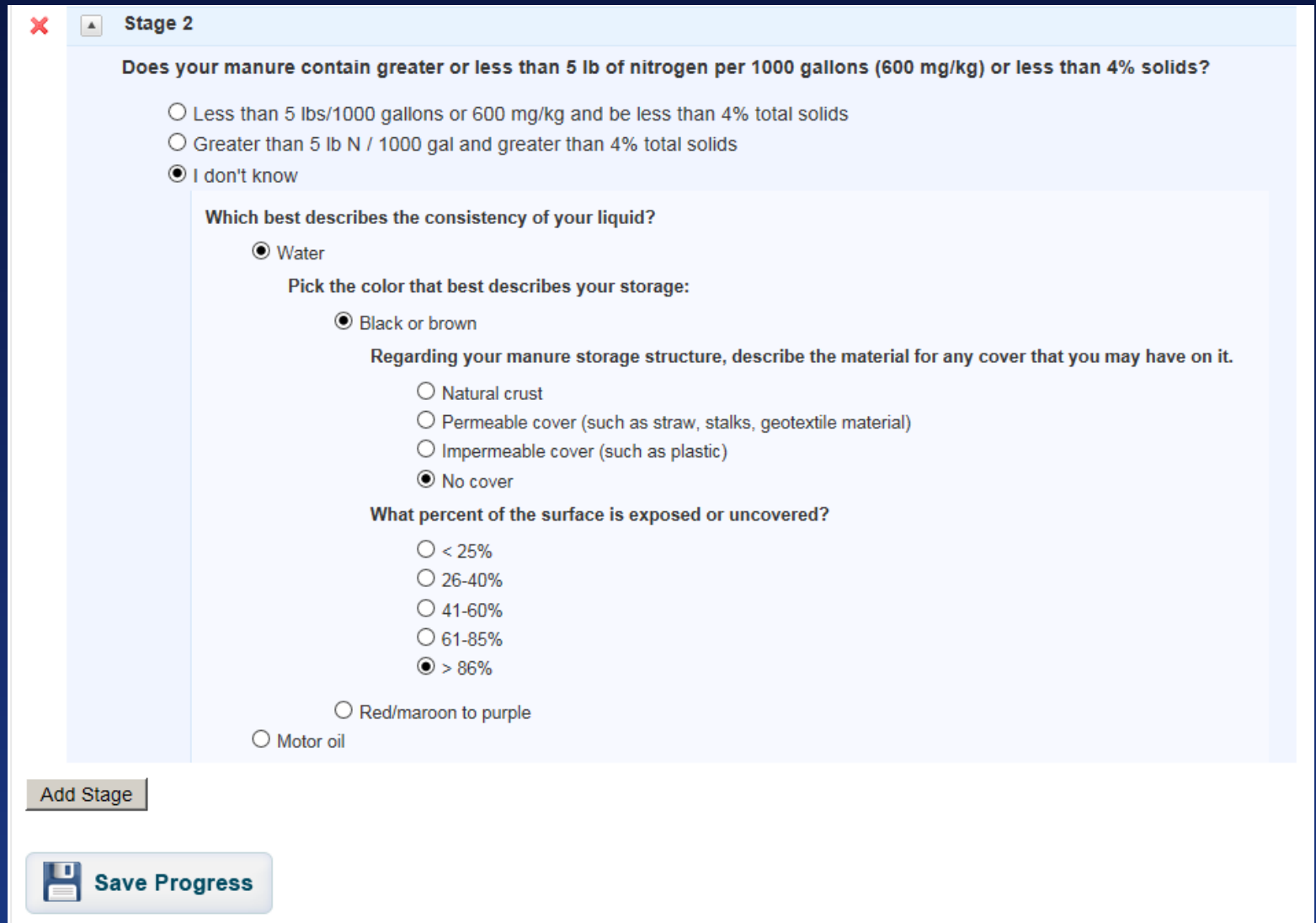
Regarding your manure storage structure, describe the material for any cover that you may have on it.

- ( ) Natural crust
- ( ) Permeable cover (such as straw, stalks, geotextile material)
- ( ) Impermeable cover (such as plastic)
- (•) Building (for slatted or deep pit buildings)
- ( ) No cover

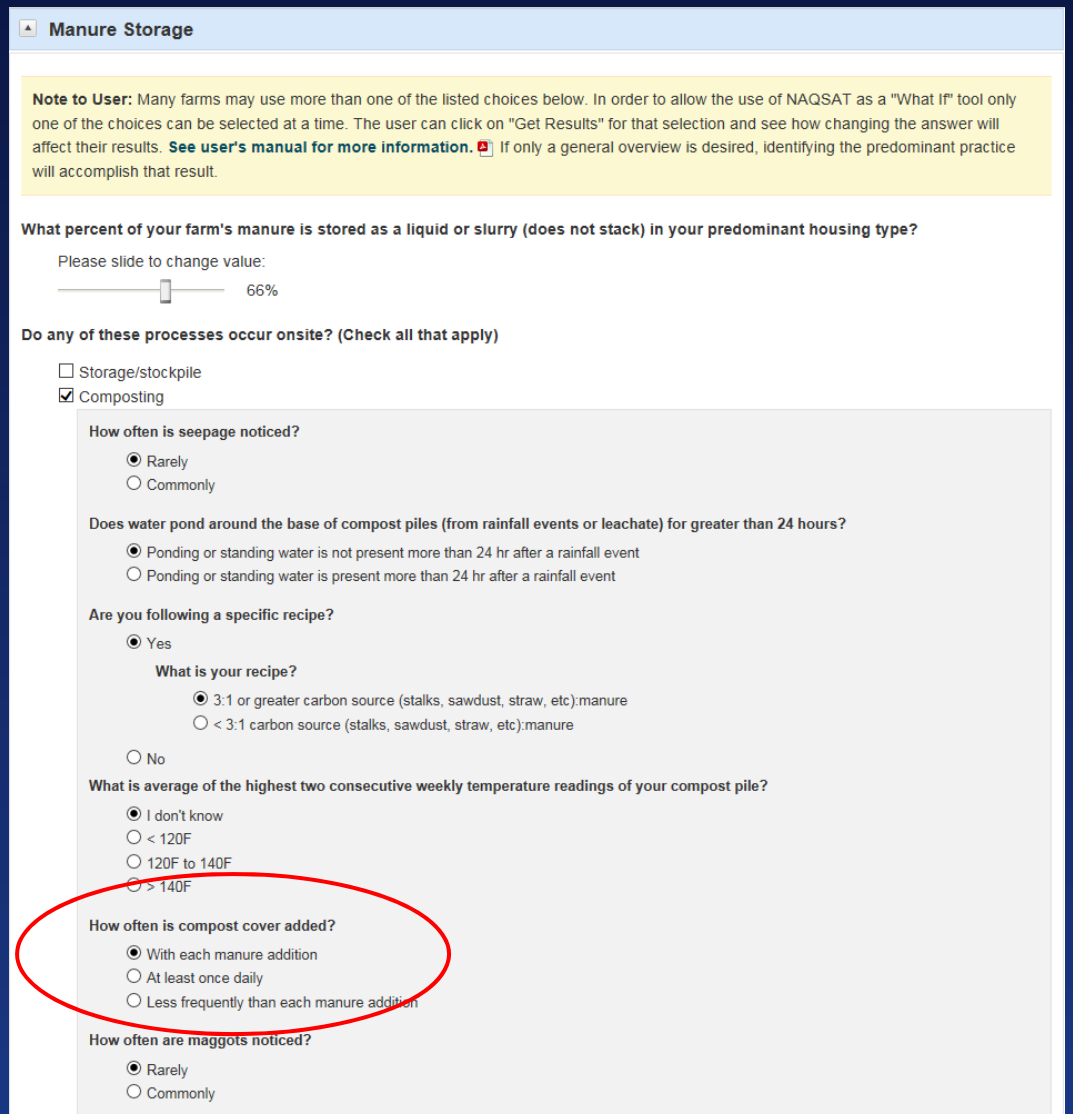
Stage 2

Does your manure contain greater or less than 5 lb of nitrogen per 1000 gallons (600 mg/kg) or less than 4% solids?

Manure Storage



Manure Storage



Manure Storage

Note to User: Many farms may use more than one of the listed choices below. In order to allow the use of NAQSAT as a "What If" tool only one of the choices can be selected at a time. The user can click on "Get Results" for that selection and see how changing the answer will affect their results. **See user's manual for more information.** If only a general overview is desired, identifying the predominant practice will accomplish that result.

What percent of your farm's manure is stored as a liquid or slurry (does not stack) in your predominant housing type?

Please slide to change value: 66%

Do any of these processes occur onsite? (Check all that apply)

- ☐ Storage/stockpile
- ☑ Composting

How often is seepage noticed?

- ◉ Rarely
- ○ Commonly

Does water pond around the base of compost piles (from rainfall events or leachate) for greater than 24 hours?

- ◉ Ponding or standing water is not present more than 24 hr after a rainfall event
- ○ Ponding or standing water is present more than 24 hr after a rainfall event

Are you following a specific recipe?

- ◉ Yes
  - **What is your recipe?**
    - ◉ 3:1 or greater carbon source (stalks, sawdust, straw, etc):manure
    - ○ < 3:1 carbon source (stalks, sawdust, straw, etc):manure
- ○ No

What is average of the highest two consecutive weekly temperature readings of your compost pile?

- ◉ I don't know
- ○ < 120F
- ○ 120F to 140F
- ○ > 140F

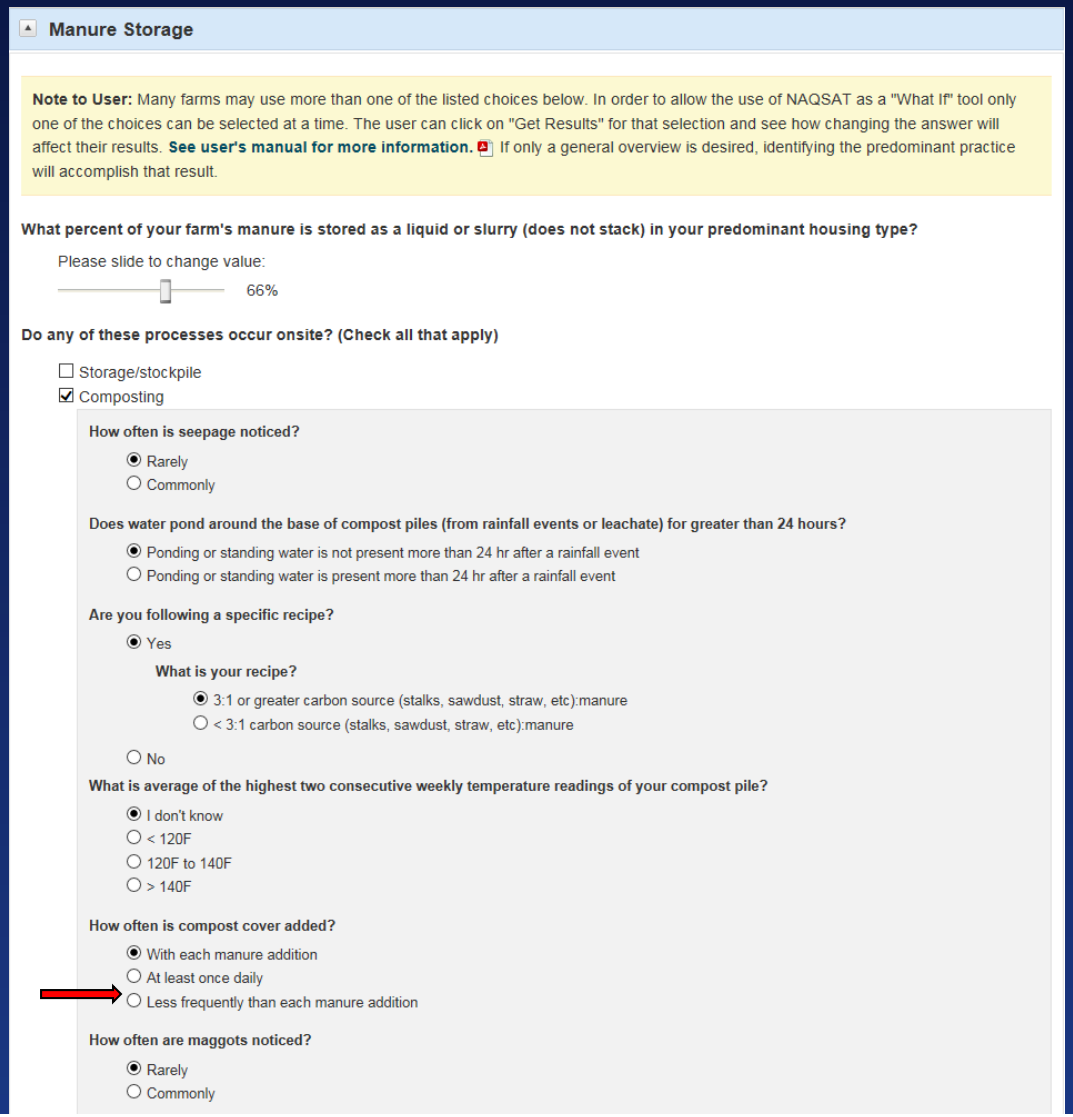
How often is compost cover added?

- ◉ With each manure addition
- ○ At least once daily
- ○ Less frequently than each manure addition

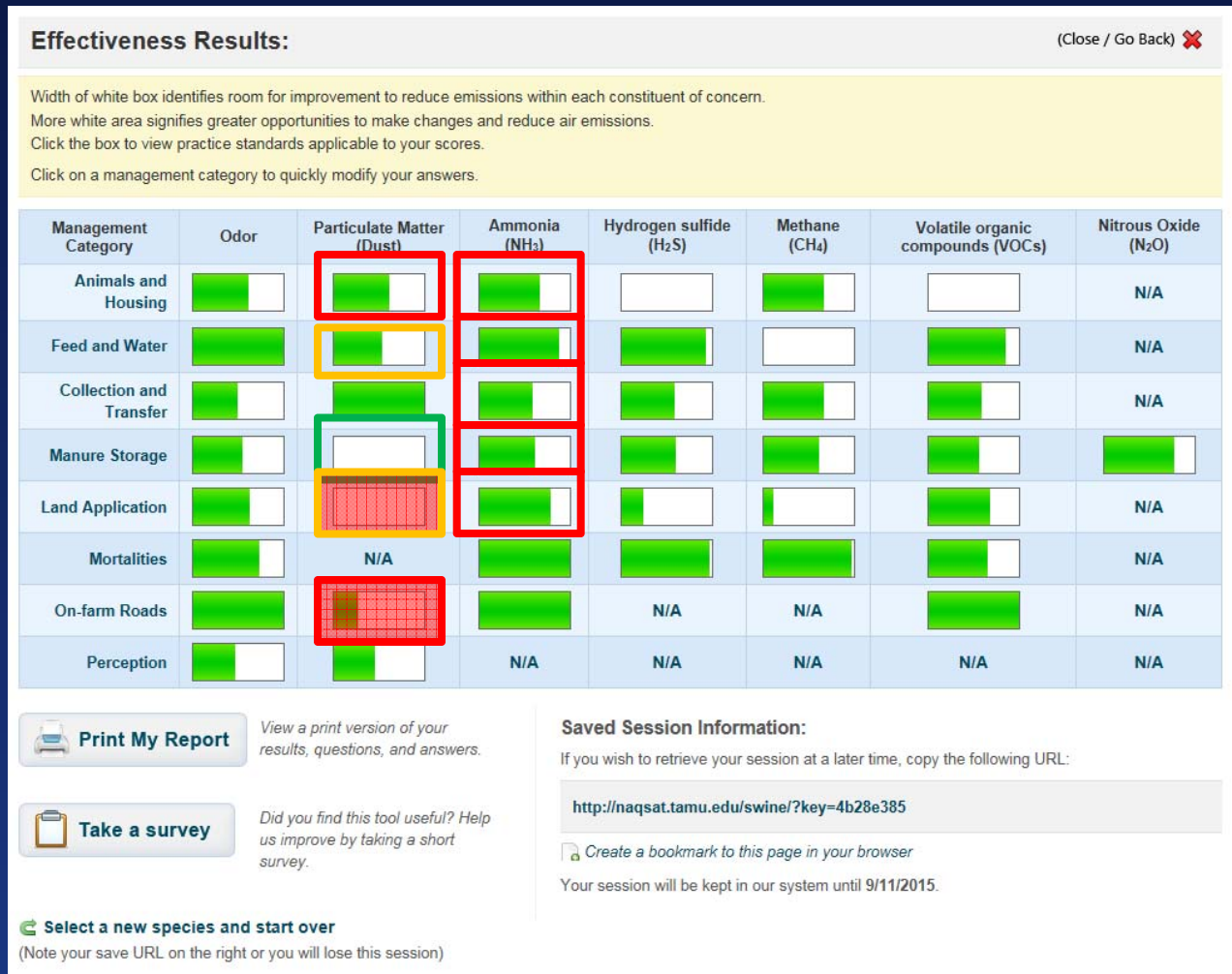
How often are maggots noticed?

- ◉ Rarely
- ○ Commonly

Manure Storage



Particulate Matter Resource Concern



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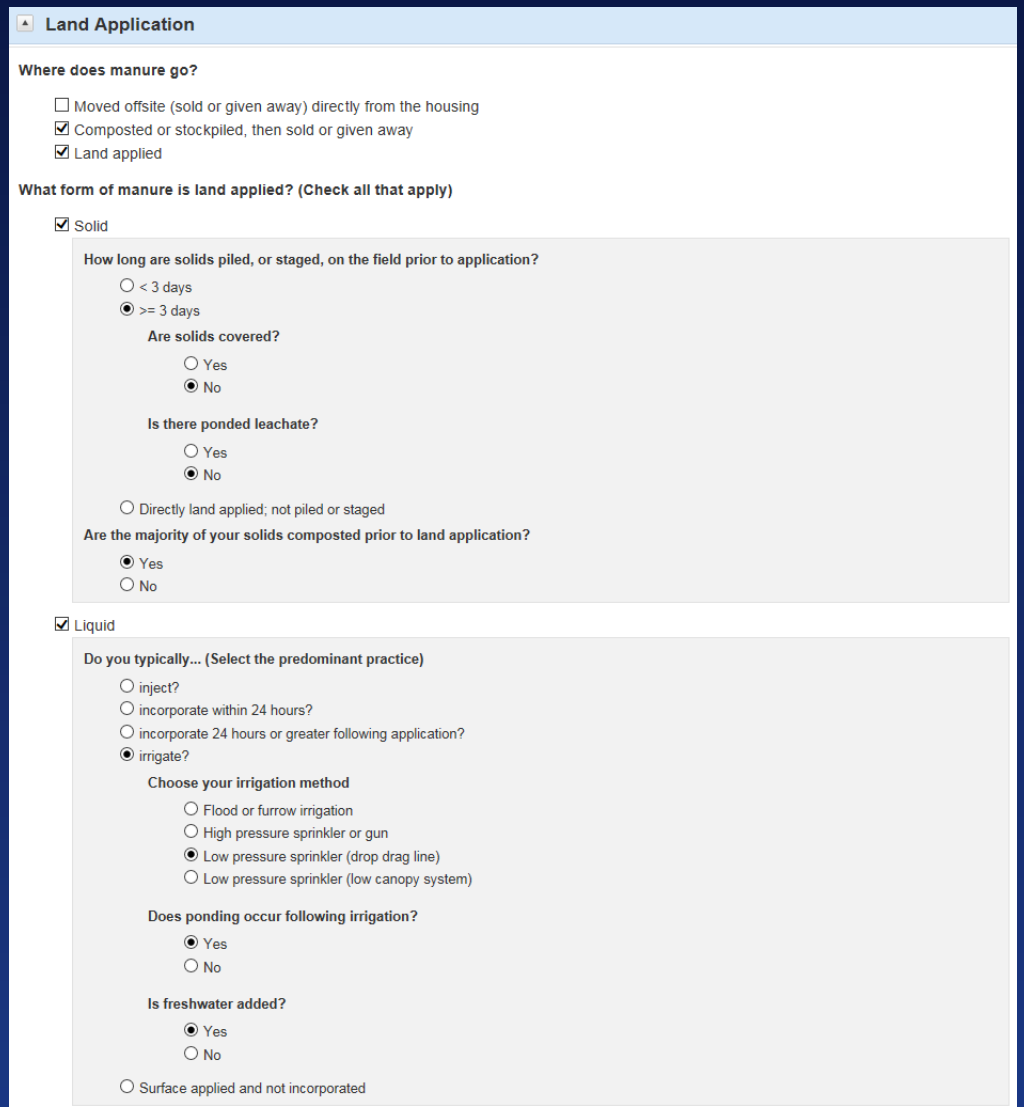
Land Application



Land Application

Where does manure go?

- ☐ Moved offsite (sold or given away) directly from the housing
- ☑ Composted or stockpiled, then sold or given away
- ☑ Land applied

What form of manure is land applied? (Check all that apply)

☑ Solid

How long are solids piled, or staged, on the field prior to application?

- ○ < 3 days
- ◉ >= 3 days

Are solids covered?

- ○ Yes
- ◉ No

Is there ponded leachate?

- ○ Yes
- ◉ No

- ○ Directly land applied; not piled or staged

Are the majority of your solids composted prior to land application?

- ◉ Yes
- ○ No

☑ Liquid

Do you typically... (Select the predominant practice)

- ○ inject?
- ○ incorporate within 24 hours?
- ○ incorporate 24 hours or greater following application?
- ◉ irrigate?

Choose your irrigation method

- ○ Flood or furrow irrigation
- ○ High pressure sprinkler or gun
- ◉ Low pressure sprinkler (drop drag line)
- ○ Low pressure sprinkler (low canopy system)

Does ponding occur following irrigation?

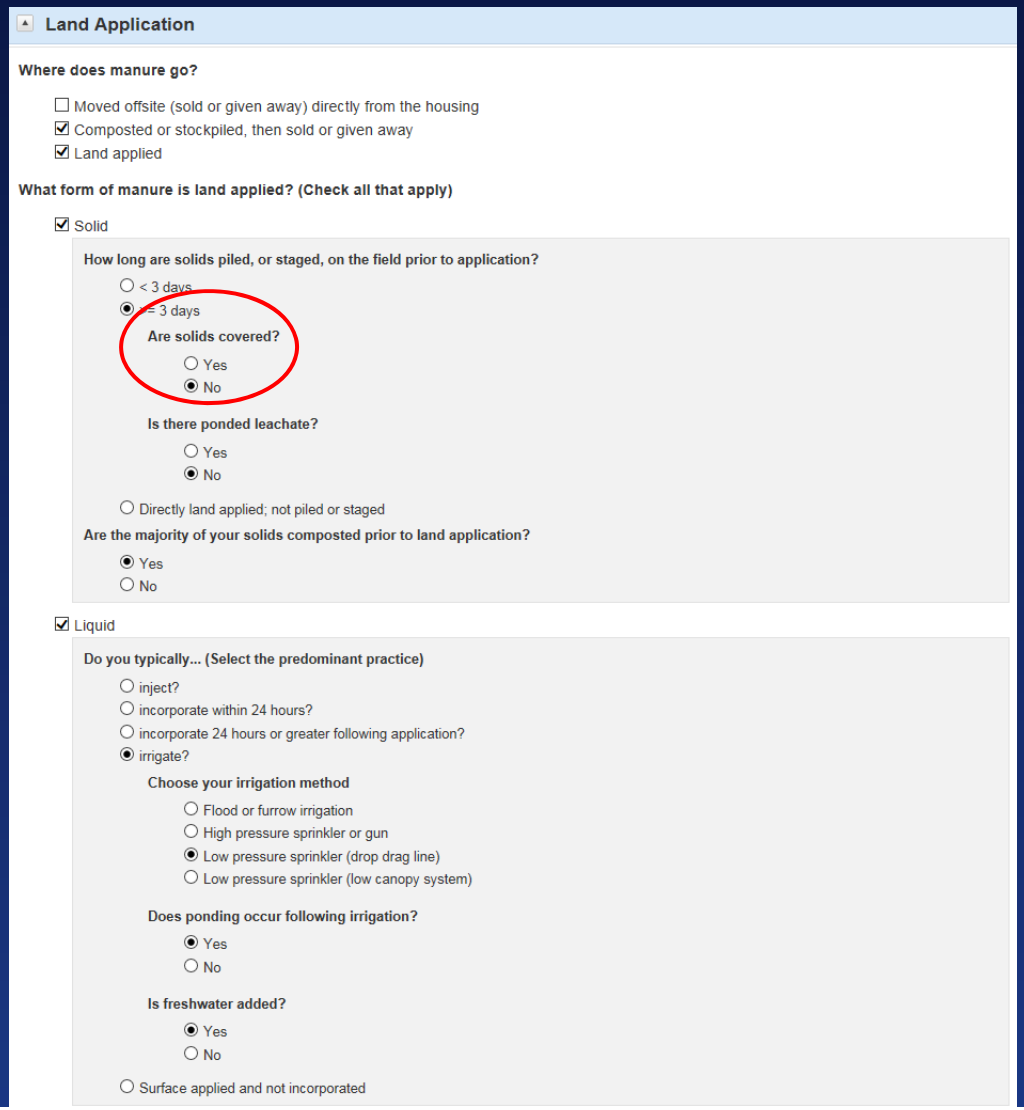
- ◉ Yes
- ○ No

Is freshwater added?

- ◉ Yes
- ○ No

- ○ Surface applied and not incorporated

Land Application



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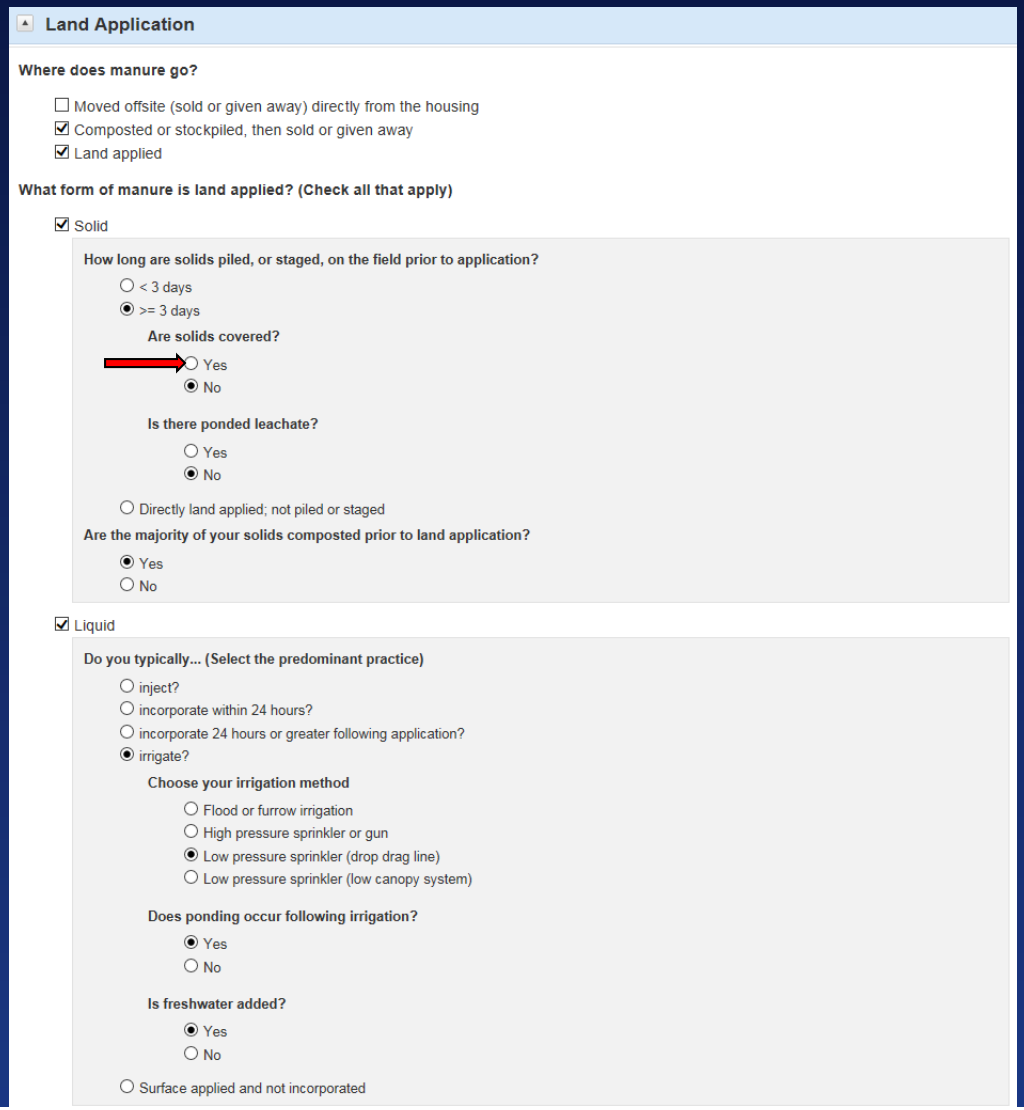

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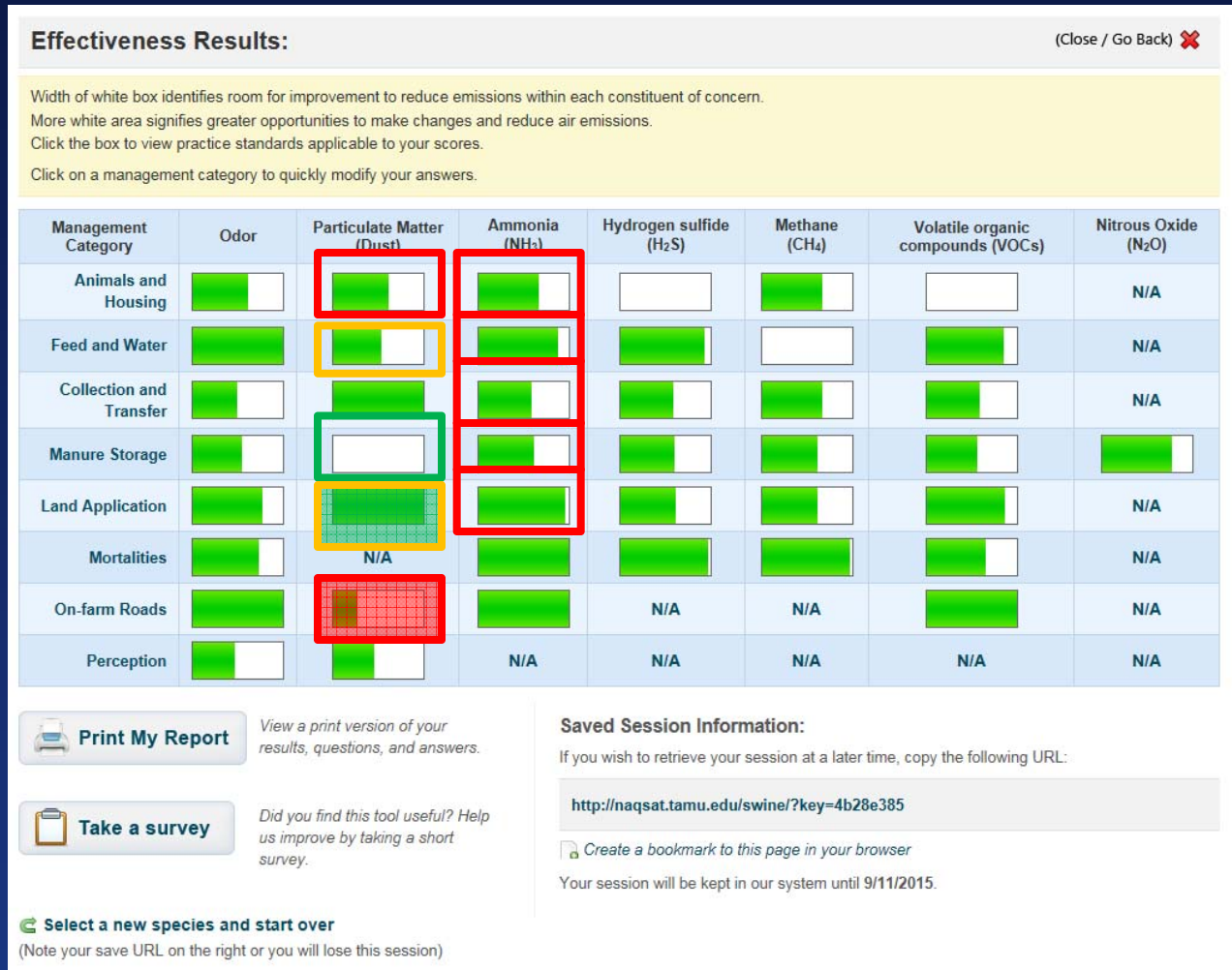

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On-farm Roads

On-farm Roads

Are unpaved roads used for any of the following activities? (check all that apply)

- [x] Routine service traffic (feed delivery, milk truck, renderer)
- [x] Less frequent service traffic (manure handling)
- [x] General transportation (veterinarians, maintenance, nutritionists, managers, employees, farm tours)
- [ ] Does not apply

Unpaved roads are surfaced with: (Check all that apply)

- [ ] Caliche/limestone
- [x] Unimproved dirt road
- [ ] Washed gravel
- [ ] Gravel

Which is the predominant road-surface treatment used?

- ○ Petroleum products, resins, emulsions as per manufacturer recommendations
- ○ Salts or hygroscopic materials (e. g., magnesium chloride)
- ○ Fresh water
- ○ Holding pond wastewater
- ◉ None

Are speed limits strictly enforced, or is speed controlled by passive means (e. g., speed bumps)?

- ◉ Speed limits are not present or are not enforced by management
- ○ Speed limits are enforced by management
- ○ Speed is controlled by speed bumps or other passive means

Do you restrict public access to private roads?

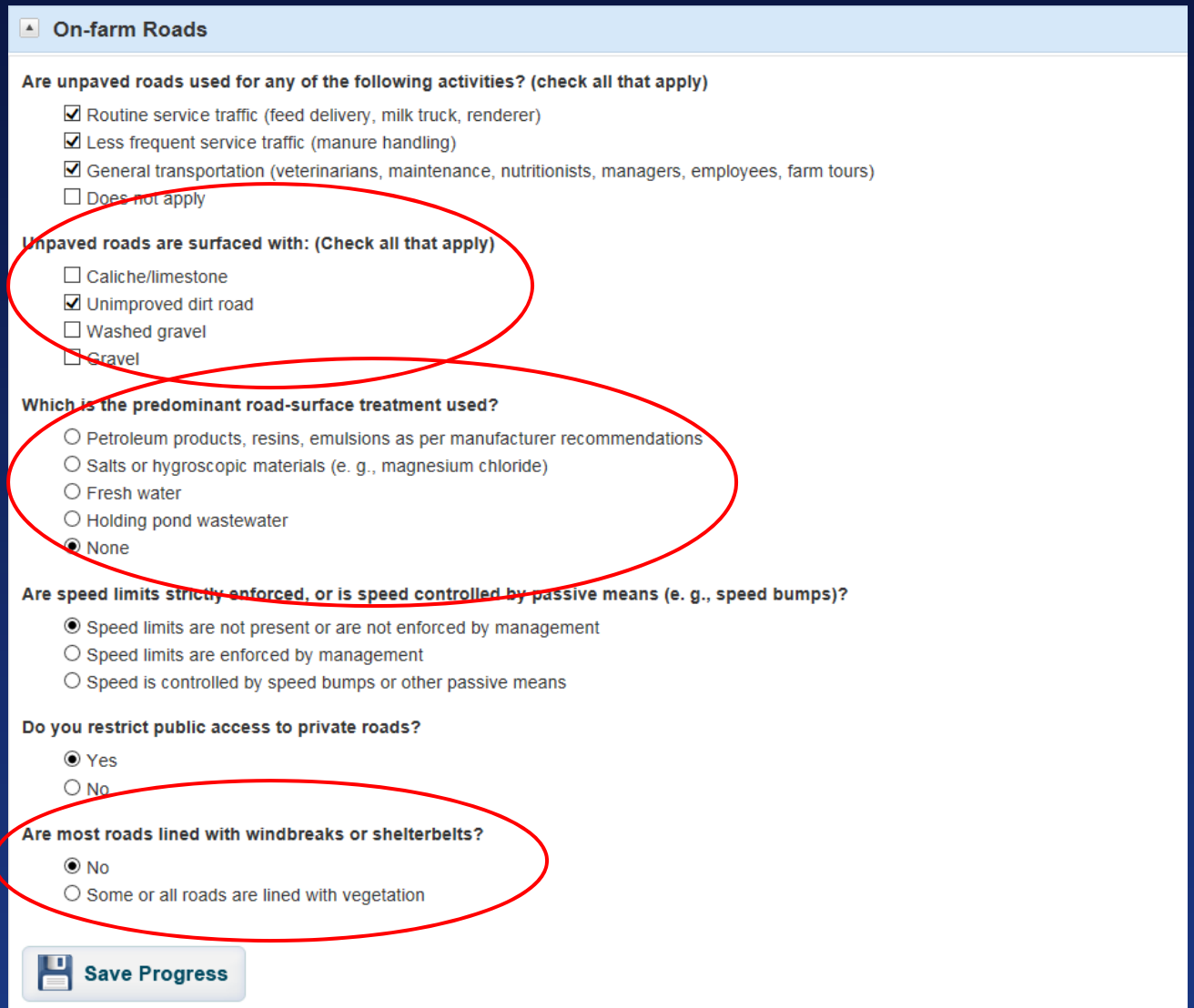
- ◉ Yes
- ○ No

Are most roads lined with windbreaks or shelterbelts?

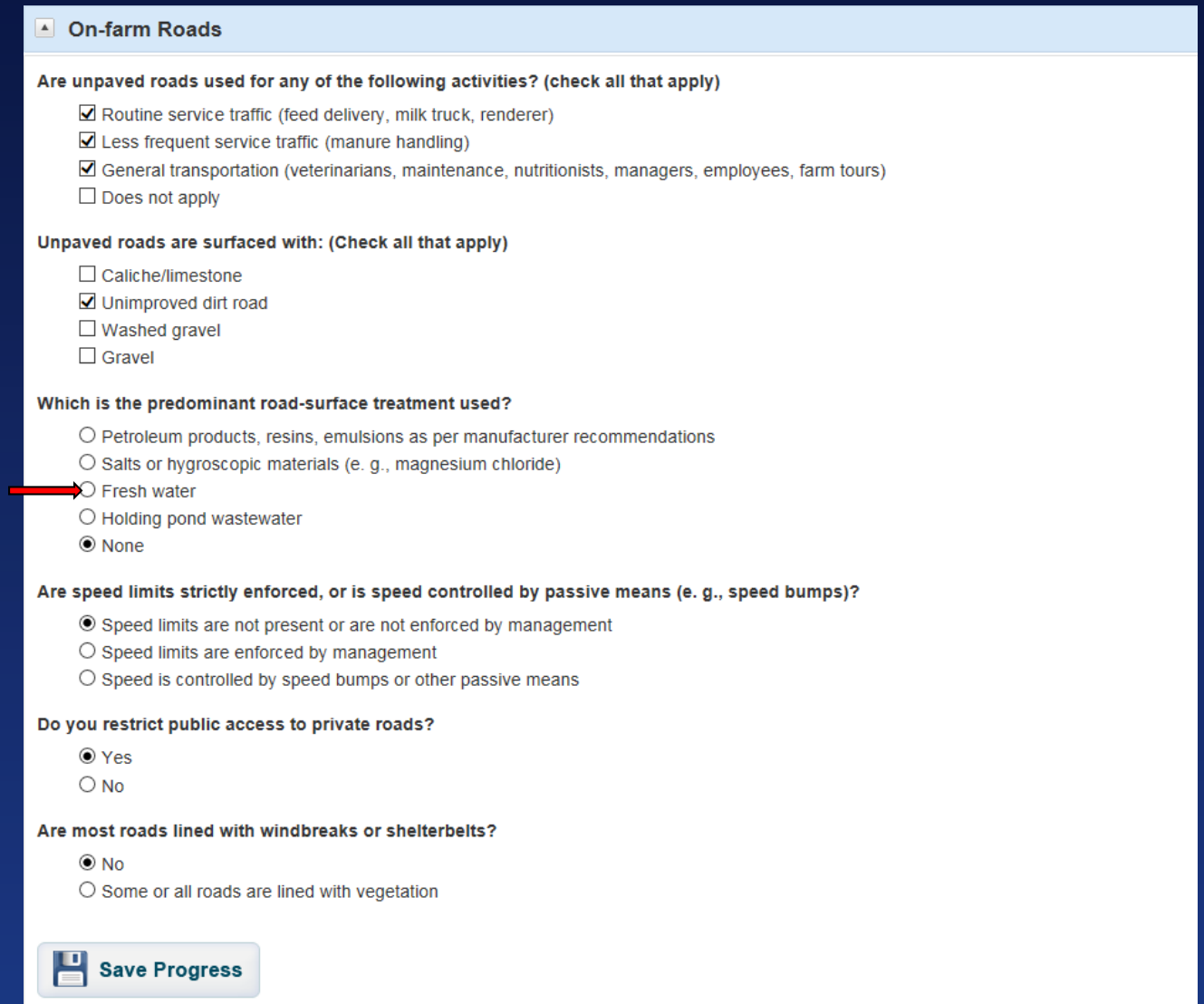
- ◉ No
- ○ Some or all roads are lined with vegetation

Save Progress

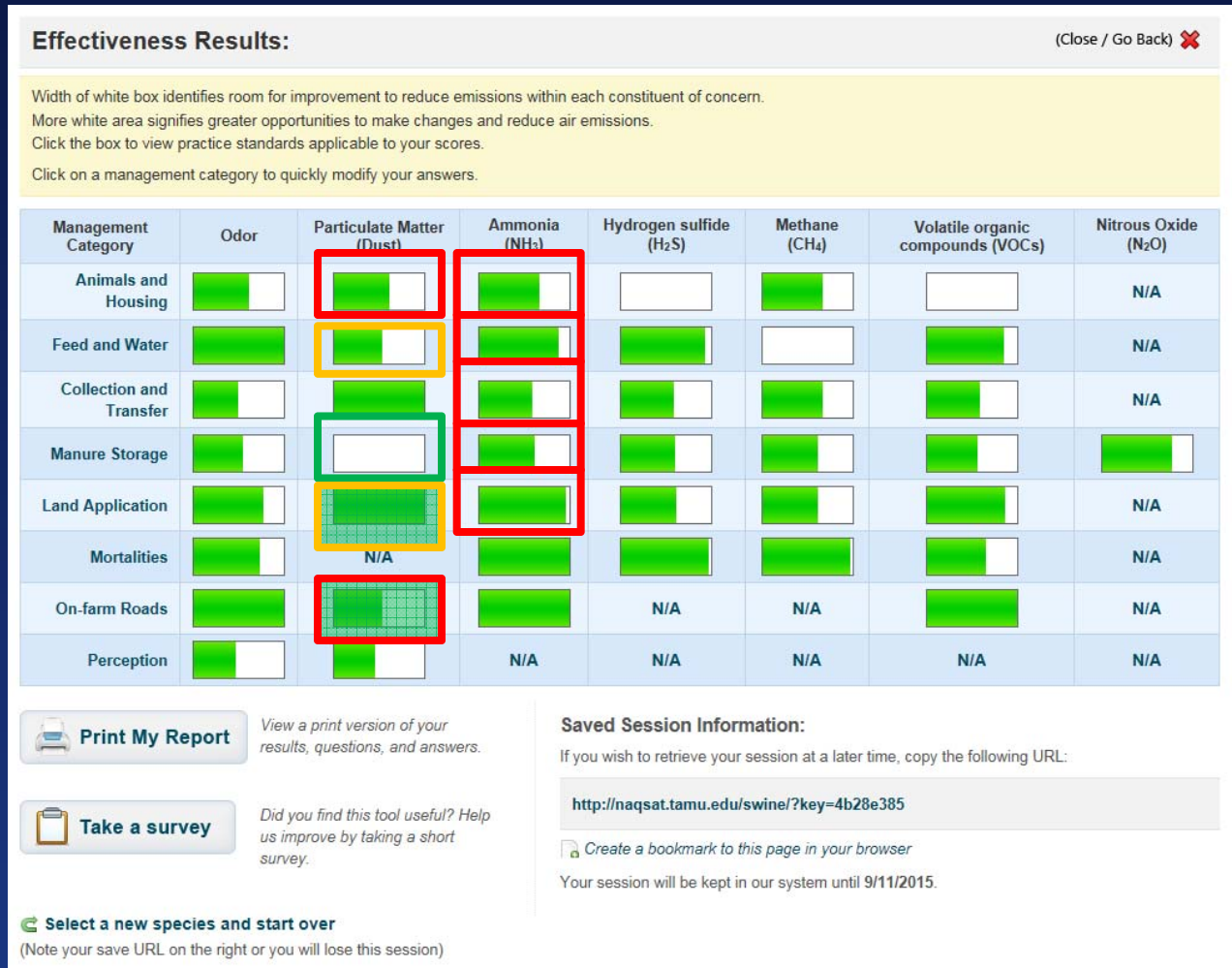
On-farm Roads



On-farm Roads



Particulate Matter Resource Concern



Effectiveness Results: (Close / Go Back)

Width of white box identifies room for improvement to reduce emissions within each constituent of concern.
More white area signifies greater opportunities to make changes and reduce air emissions.
Click the box to view practice standards applicable to your scores.

Click on a management category to quickly modify your answers.

Management Category	Odor	Particulate Matter (Dust)	Ammonia (NH_3)	Hydrogen sulfide (H_2S)	Methane (CH_4)	Volatile organic compounds (VOCs)	Nitrous Oxide (N_2O)
Animals and Housing							N/A
Feed and Water							N/A
Collection and Transfer							N/A
Manure Storage							
Land Application							N/A
Mortalities		N/A					N/A
On-farm Roads				N/A	N/A		N/A
Perception			N/A	N/A	N/A	N/A	N/A

Print My Report — *View a print version of your results, questions, and answers.*

Take a survey — *Did you find this tool useful? Help us improve by taking a short survey.*

Select a new species and start over
(Note your save URL on the right or you will lose this session)

Saved Session Information:

If you wish to retrieve your session at a later time, copy the following URL:

http://naqsat.tamu.edu/swine/?key=4b28e385

Create a bookmark to this page in your browser

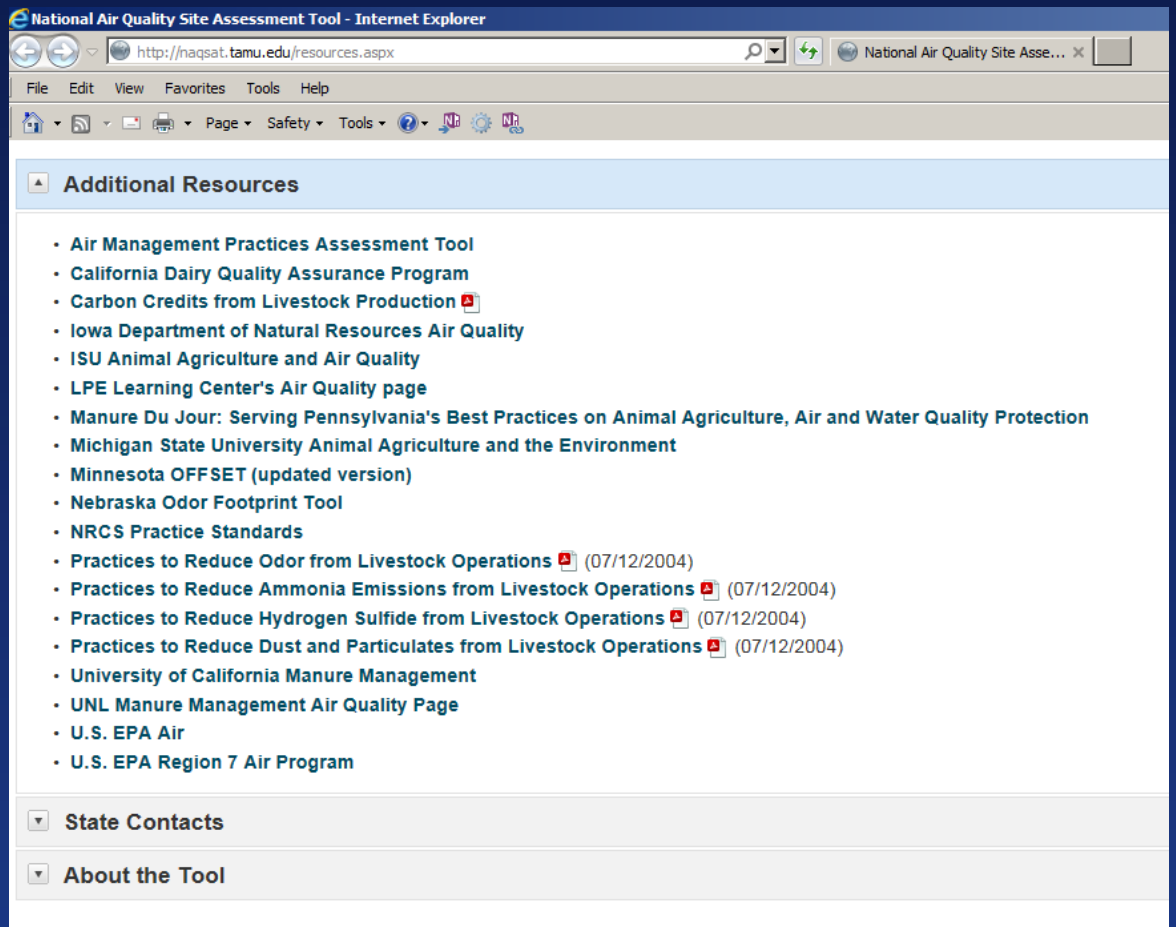
Your session will be kept in our system until **9/11/2015**.

Possible Solutions

- Manure Storage
  - Probably don't need to change – PM not significant here
- Land application
  - Cover piled solids
- On-farm Roads
  - Surface with gravel
  - Apply water or other dust suppressant
  - Install windbreaks along roadways

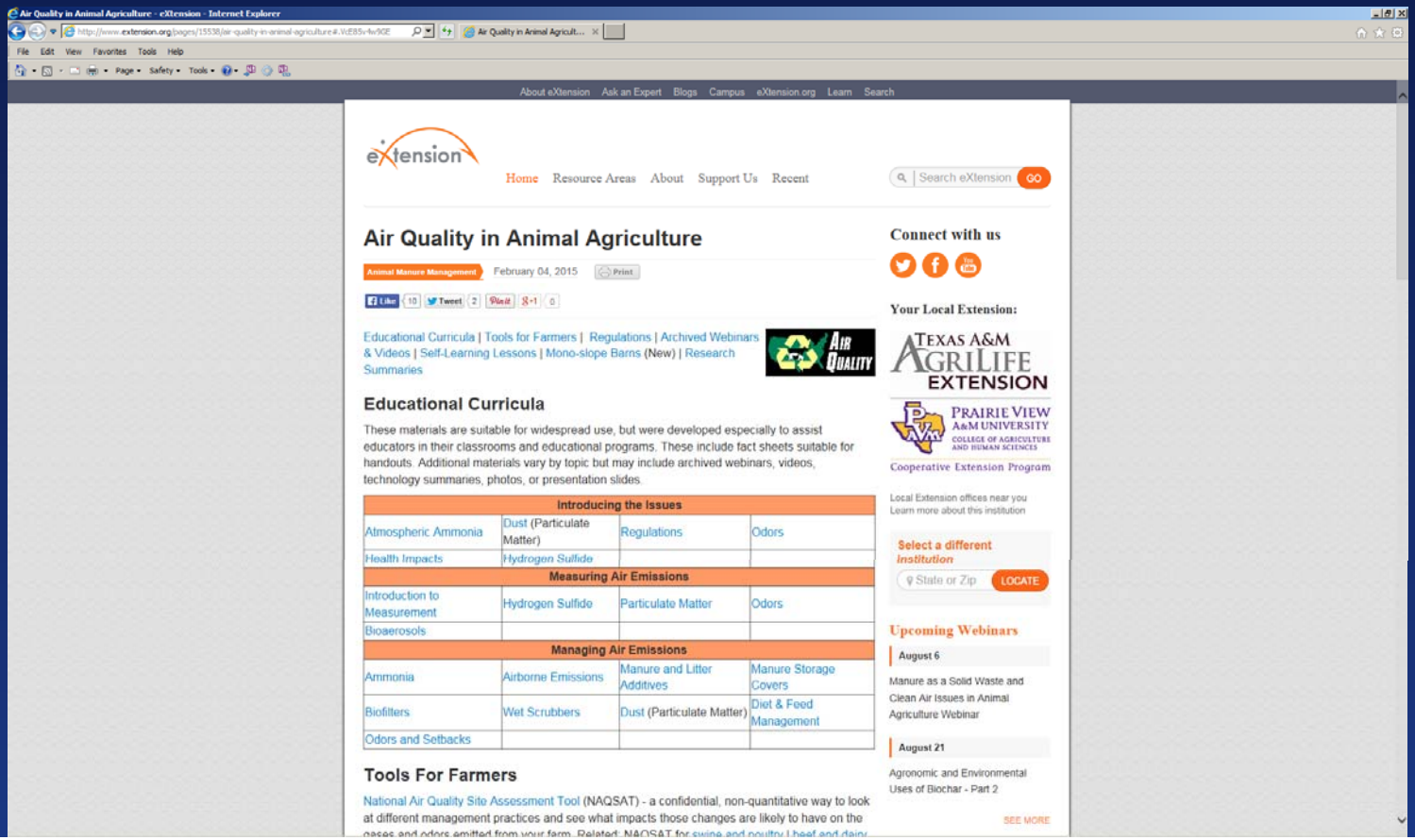
NAQSAT Resources Page

- http://naqsat.tamu.edu/resources.aspx



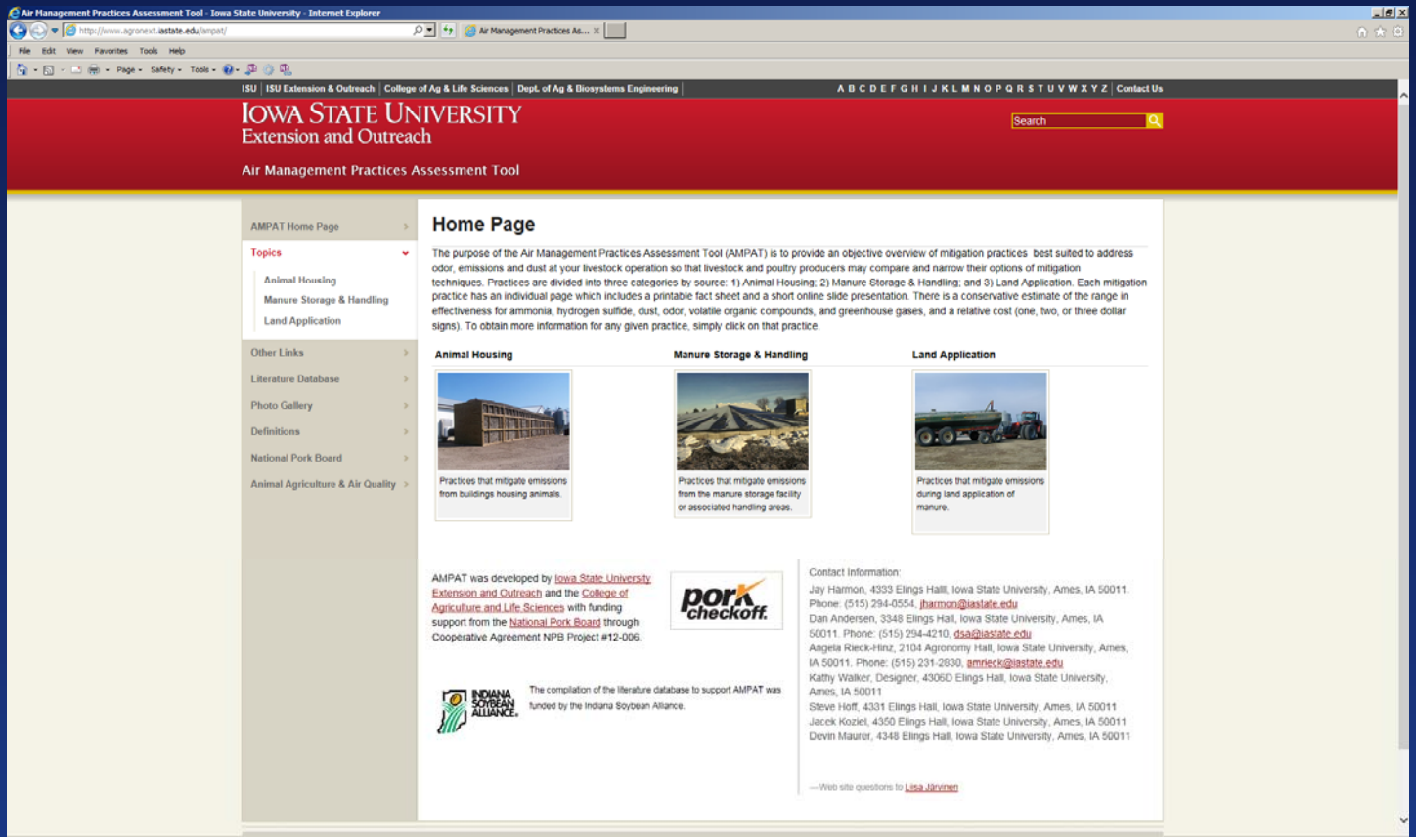
LPE Learning Center

- Air Quality in Animal Agriculture on eXtension.org
- http://www.extension.org/pages/15538/air-quality-in-animal-agriculture#.VcE85v4w9GE



AMPAT

- Air Management Practices Assessment Tool
- http://www.agronext.iastate.edu/ampat/



Questions?

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