# Agriculture Partnerships

Public Water Systems Watershed Inspectors
Sept 19, 2017

Jim Hyde
USDA – NRCS
Tolland, CT

# There are quite a few organizations involved in Agriculture or the Environment...

- USDA
  - Natural Resources Conservation Service
  - Farm Service Agency
  - Rural Development
  - National Institute of Food and Agriculture
    - Sustainable Ag Research and Education
- US EPA
  - Clean Water Act

- State Department of Agriculture
- State Department of Energy & Environmental Protection
  - Water Permitting
  - Watershed Planning
- CT Resource Conservation & Development
- Conservation Districts – (5) in CT
- University of Connecticut

# ... Lots of Organizations to Partner with

- Local Schools
  - Science class water quality monitoring
- Local Towns
  - Ag Commissions
- Nature Conservancy
- Farm Bureau
- National Park Service
  - Last Green Valley
- Land Trusts
  - Connecticut Farmland Trust
  - Joshua's Tract
  - Northern Connecticut Land Trust
  - (many others in state)
- Watershed Associations
  - Scantic River Watershed Association
  - (and many others....)

# The Partnerships develop out of common needs

- Often start with environmental problems
- Seeking common solutions
- In need of financial assistance

# Example 1: Feed Storage area and Water Quality

EPA NRCS DEEP
Eastern Connecticut Conservation District

Combined efforts (Time/$) to design and install
Feed Area Silage Bunker Walls, Floors, & drainage system

Store Feed and capture high strength organic liquid (high BOD) as the pile is compressed and cures

# Example 2: Compost Area and Water Quality

CT RC&D NRCS UConn CT DEEP CT DoAg Private Sector

Review Board for Farm applicants
Provided Project Description & Justification
Planning
Operation & Maintenance for site stormwater
Site Survey and elevations

Transitioning from turned windrows...

to static, aerated pile
(with heat recovery)

# Example 3: Farmland Preservation with conservation plans

NRCS CT DoAg Towns Land Trusts
Connecticut Farmland Trust
American Farmland Trust
Working Lands Alliance

Pools resources ($) to preserve farmland and limit development
Maintains the farmland soils as generally available for farming
Develops a conservation plan to address any resource concerns
typically erosion, wildlife conservation, ag waste, remediation

DoAg statewide goal of preserving 130,000 acres
as of Dec 2015 had 41,500 acres
and several additional successes in 2016-2017

# How do we identify a resource concern?

Several different tools are available online and within states and offices

Instructions: National Engineering Handbook
Part 651: Ag Waste Management

Checklist: CDSI
February 22, 2016
National Bulletin 180-16-2:
Resource Concern Checklist for Optional Use

Tools: Resource Concerns and Quality Criteria

# USDA NRCS
## National Engineering Handbook, Part 651: Ag Waste Management

**651.0106 (d) NRCS conservation planning policy**
General Manual (GM), title 180, Part 409, establishes NRCS policy for providing conservation planning assistance to clients. The **objective** in conservation planning is to help each client attain **sustainable use** and **sound management** of soil, water, air, plant, and animal resources. The **purpose** is to **prevent** the **degradation** of resources and to ensure their **sustained** use and **productivity**, while considering the client's **economic** and **social** needs.

# Inventory of Resources
# 651.0202 (c)

| | |
|---|---|
| 1. Type of operation | 11. Labor availability |
| 2. Size of operation | 12. Equipment on site |
| 3. Location of operation | 13. Management type |
| 4. Infrastructure on site | 14. Adjacent land uses |
| 5. Land Availability | 15. Travel routes/accessibility |
| 6. Soil types/limitations | 16. Laws/Regulations |
| 7. Topography | 17. Water Quality |
| 8. Climate | 18. Utilities |
| 9. Geology | 19. Landscape resources |
| 10. Crops | 20. Expansion plans |
| | 21. Flexibility in plans/time/components |

# National Engineering Handbook, Part 651: Ag Waste Management

**651.0106(i) NRCS agricultural waste management conservation practice standards**

A portion of common practices used in Ag Waste Management Systems:

| | |
|---|---|
| Waste Storage Facility (313) | Amendments for the Treatment of Agricultural Wastes (591) |
| Animal Mortality Facility (316) | Feed Management (592) |
| Composting Facility (317) | Waste Treatment (629) |
| Waste Treatment Lagoon (359) | Solid/Liquid Waste Separation Facility (632) |
| Closure of Waste Impoundments (360 | Waste Utilization (633) |
| Anaerobic Digester (366) | Waste Transfer (634) |
| Roofs and Covers (367) | Vegetated Treatment Area (635) |
| Roof Runoff Management (558) | Constructed Wetland (656) |
| Nutrient Management (590) | |

# Common Items on a farm needing containment

- Animal production area
  Barn/Barnyard
- Animal Feeding area
- Feed storage area
  (silage, waste feed)
- Milkhouse
  Line Wash, Floor wash
  Rinses, Waste milk
- Animal Laneways

# Common areas on a farm needing Retention

- Stormwater runoff
  - Roofs
  - Access Roads
  - Work yards/areas
- Feed Storage Area
  - CAFOs will need 25 yr/24 hr storm retention
- Runoff with relatively clean water
  - Generally speaking: sediments only, relatively little to no nutrients from manure

Can you keep clean water clean?

- Diversions
- Gutters
- Pipes
- Catchbasins

And keep the dirty water contained?

- In-ground lagoons
- In-ground tanks
- Above-ground tanks
- Shelters:  roofed and/or contained solids

Can you reduce the storage volume?

- diverting the clean water
- squeezing the materials
- other secondary dewatering treatments

# How is the resource concern identified?

Follow the Water.....

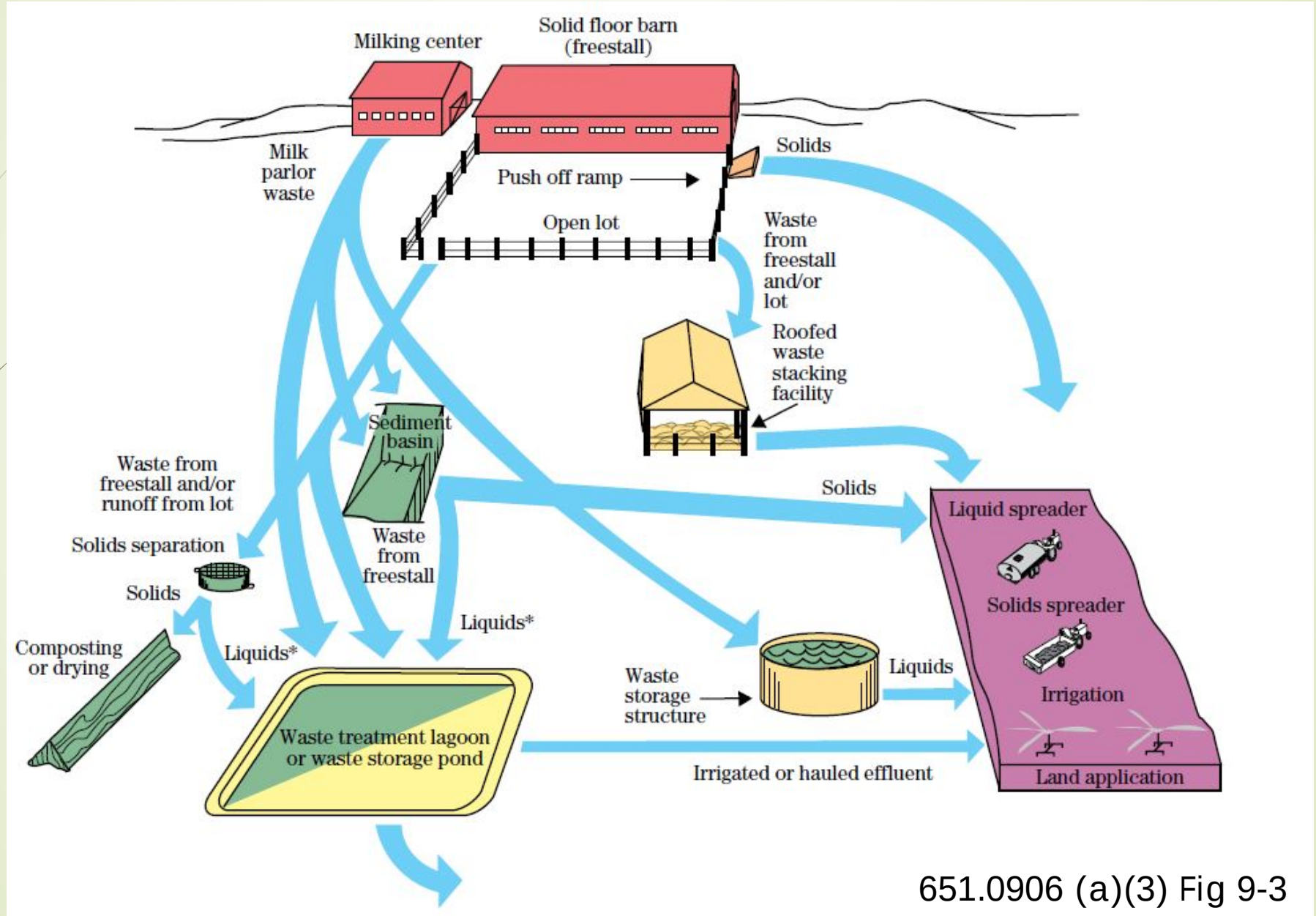
- If a raindrop hits the farm where will it go?
- Will it stay clean or pick up materials along the way?

- If water used on the farm leaves a faucet, where will it go?
- Will it stay clean or pick up materials along the way?

Common On-Farm water uses:

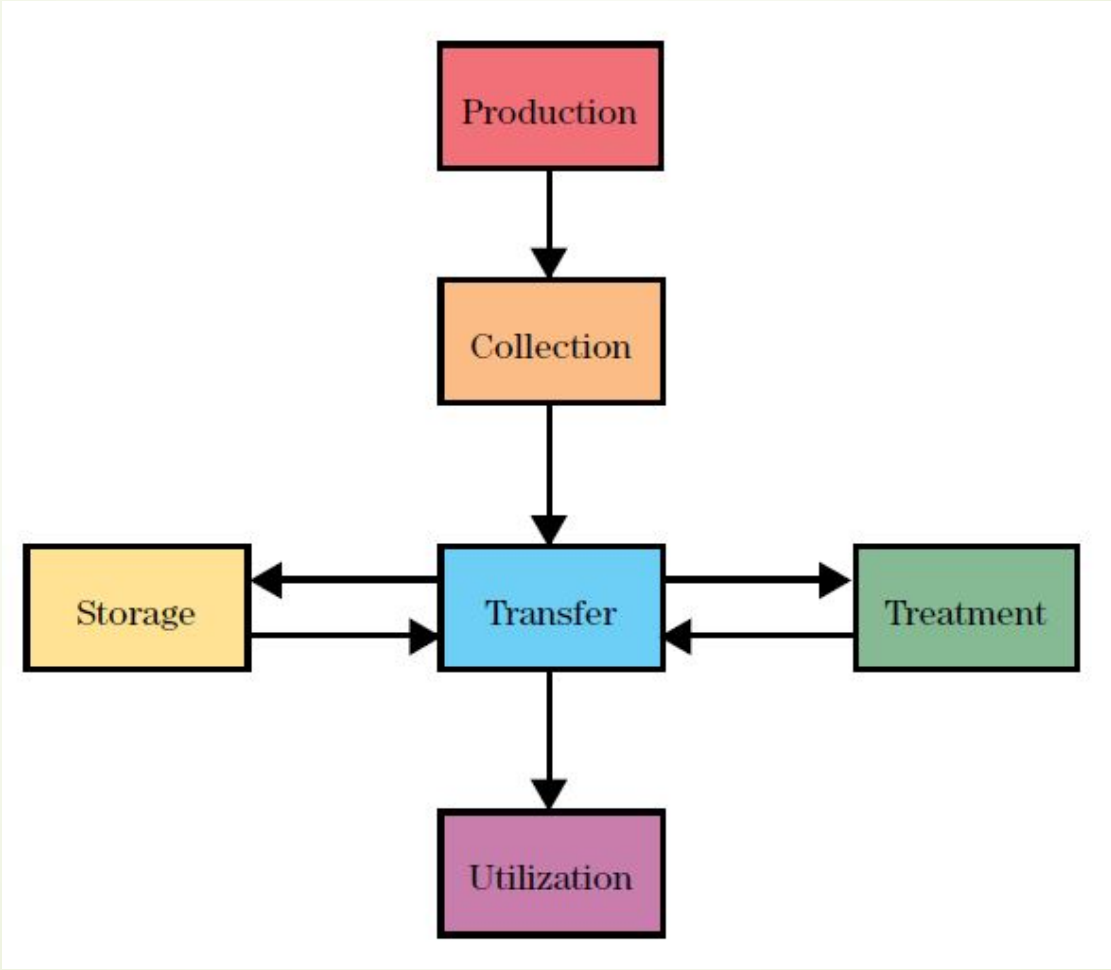
irrigation of row crops
nursery stock
greenhouses
Vegetables
watering animals
cleaning production areas:
milkhouse
tractors/equipment

# Follow the water ….




651.0906 (a)(3) Fig 9-3

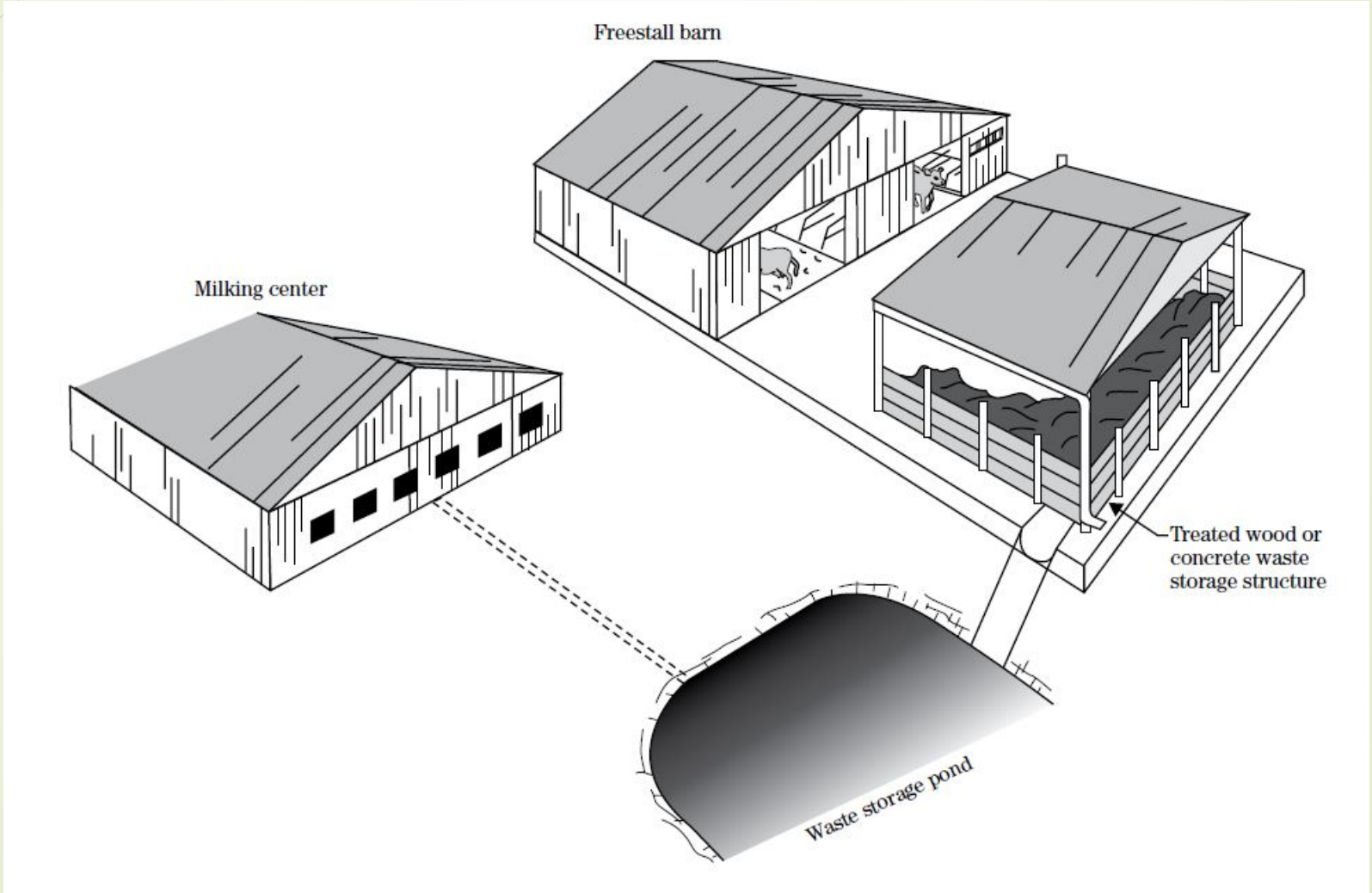
# Goal in waste management systems



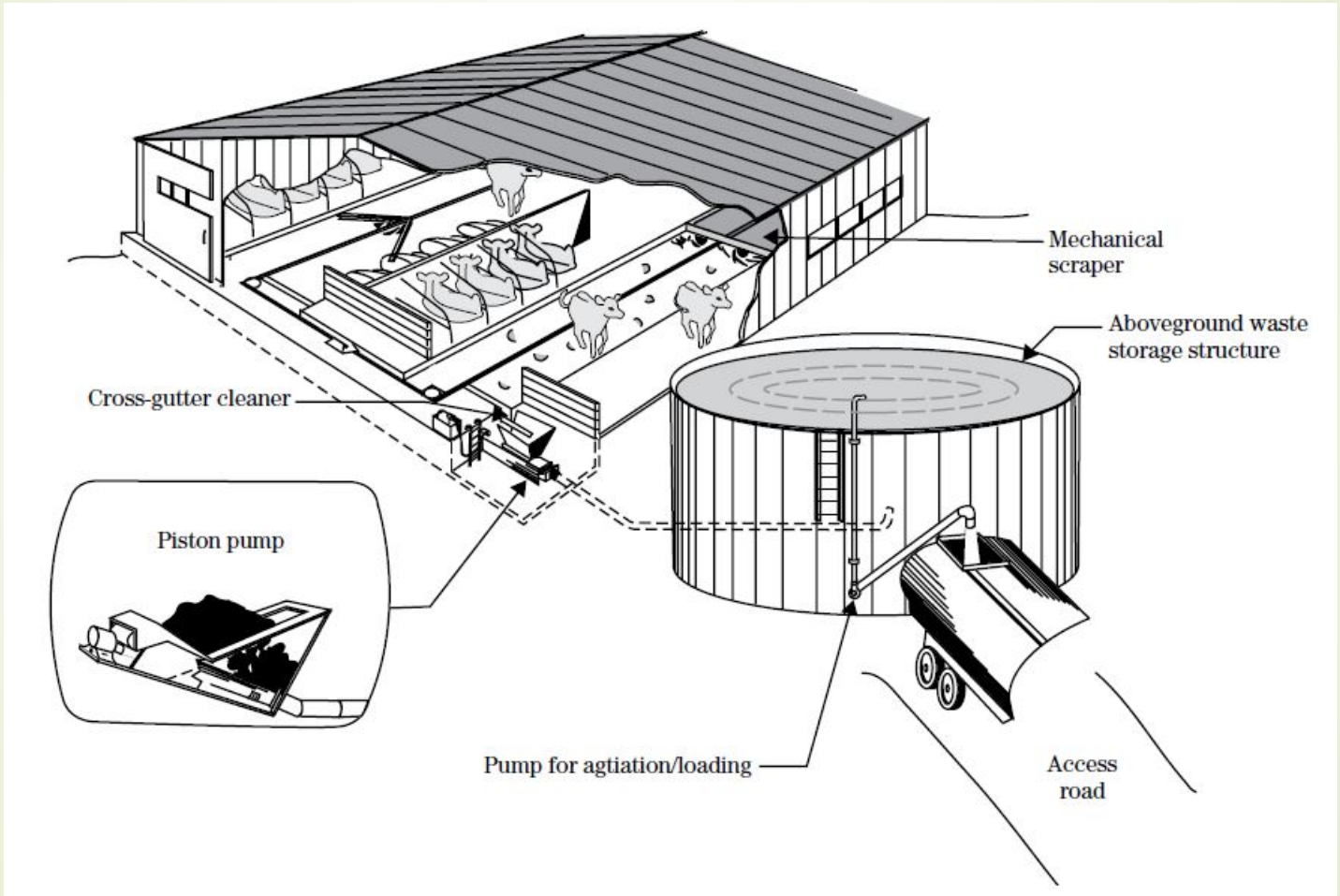

651.0904 (a) Fig 9-2

Be able to explain all the waste produced and where it goes

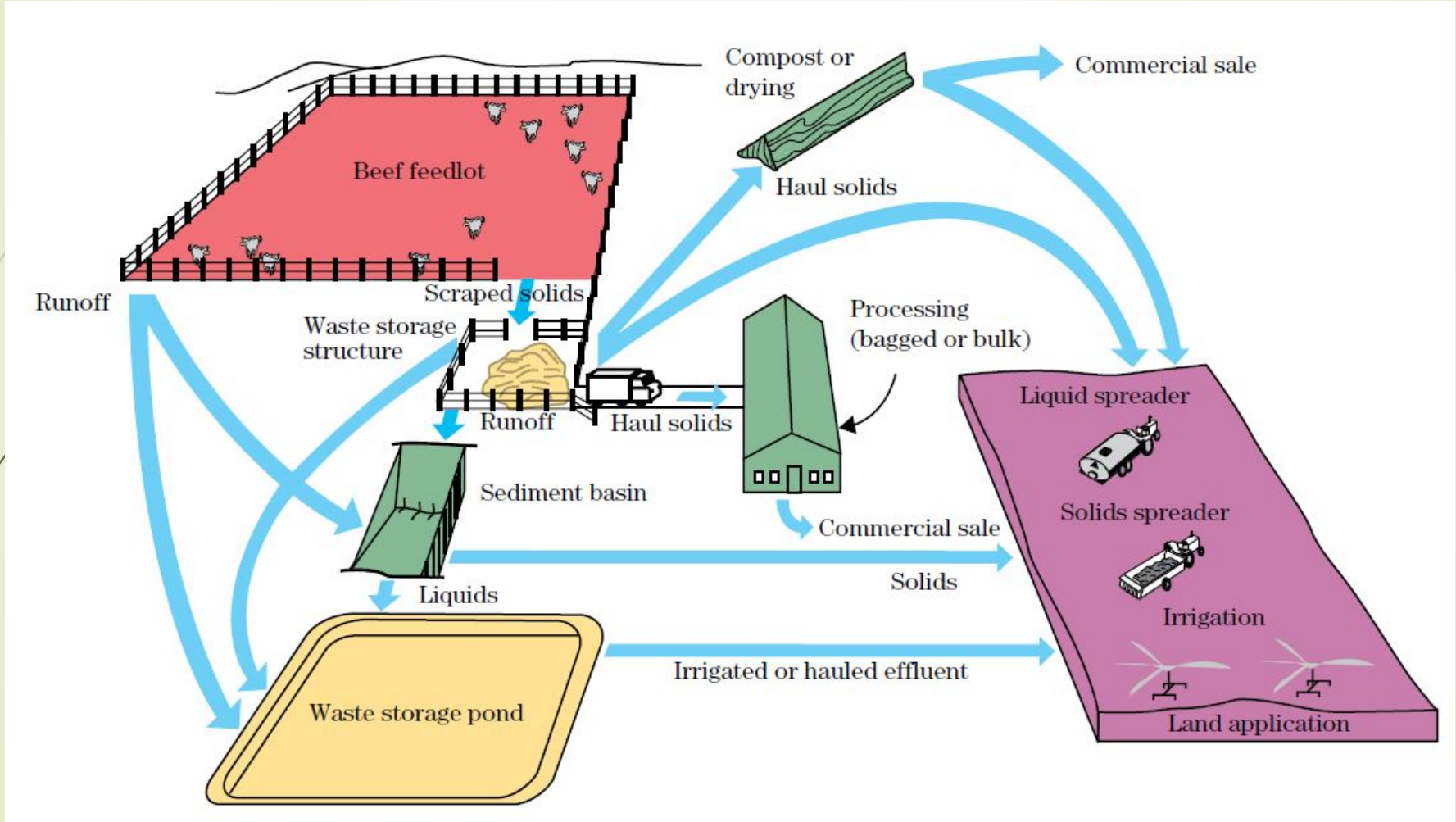
# Dairy farm: Liquid & Solid systems



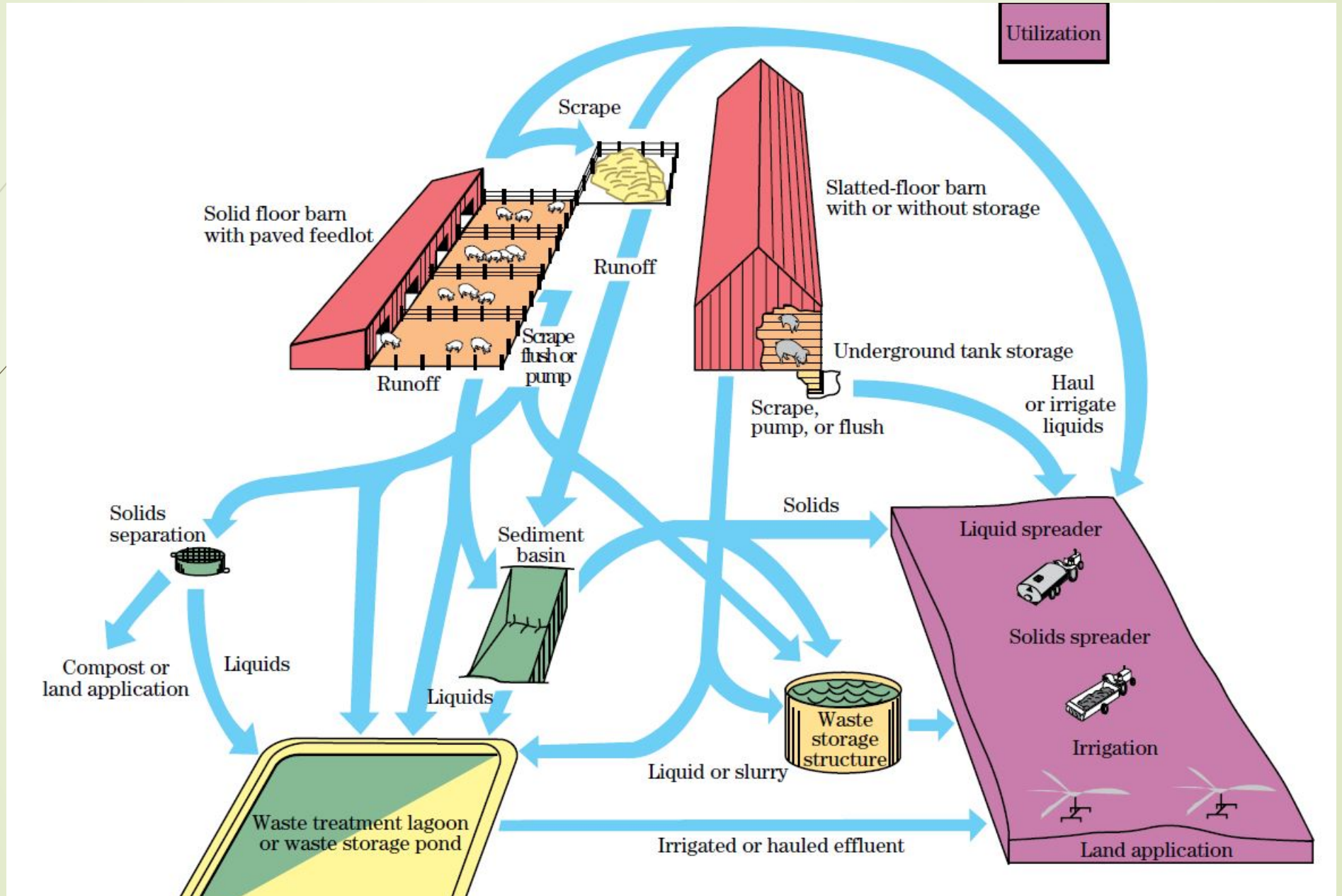
# Dairy farm: Slurry system



# Beef farm: Liquid & Solid systems



# Swine farm: Liquid & Solid system



# Checklist: Resource Concerns

Walk through the farm, check off (and take notes/photos) areas of concern

## Identified Resource Concerns

Client: Location

Land Units

Required Optional Not Applicable

Enter Y (yes) or N (no) for each applicable land use to show presence or absence of Concern.

| Resource Concern | Crop | Pasture | Range | Forest | Farmstead | Assoc Ag Land | Designated Protected Area | Developed Land | Water | Other Rural Land |
|---|---|---|---|---|---|---|---|---|---|---|
| SOIL EROSION - Sheet & rill erosion | | | | | | | | | ■ | |
| SOIL EROSION - Wind erosion | | | | | | | | | ■ | |
| SOIL EROSION – Concentrated flow erosion, ephemeral gullies | | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| SOIL EROSION – Concentrated flow erosion, classic gullies | | | | | | | | | ■ | |
| SOIL EROSION– Excessive bank erosion from streams shorelines or water conveyance channels | | | | ▒ | | | | | | |
| SOIL QUALITY DEGRADATION - Subsidence | ▒ | ▒ | ■ | ▒ | ■ | ▒ | ▒ | | ■ | ■ |
| SOIL QUALITY DEGRADATION – Compaction | ▒ | ▒ | ▒ | ▒ | ■ | ▒ | ▒ | ■ | ■ | ▒ |
| SOIL QUALITY DEGRADATION – Organic matter depletion | | ▒ | ▒ | ▒ | ■ | ▒ | ▒ | ■ | ■ | ■ |
| SOIL QUALITY DEGRADATION – Concentration of salts or other chemicals | ▒ | ▒ | ▒ | ■ | ▒ | ▒ | ■ | ■ | ■ | ■ |
| EXCESS WATER – Ponding and flooding | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ■ | ▒ |
| EXCESS WATER –Seasonal high water table | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ■ | ▒ |
| EXCESS WATER –Seeps | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ■ | ▒ |
| EXCESS WATER –Drifted snow | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ▒ | ■ | ▒ |
| INSUFFICIENT WATER – Inefficient moisture management | ▒ | ▒ | | | ■ | | | | ■ | ■ |
| INSUFFICIENT WATER – Inefficient use of irrigation water | | | | | | | | | | |
| WATER QUALITY DEGRADATION: Excess nutrients in surface and ground waters | | | ▒ | ▒ | | ▒ | ▒ | ▒ | ▒ | ▒ |

# Checklist: Resource Concerns

## How do you know if it's a Resource Concern?

| Resource Concern | Land Use *Required | Component | Screening True not a concern, False or no question go to assessment | ☑ T | ☑ F | Assessment Level True not a concern, False is a resource concern | ☑ T | ☑ F | ☑ Resource Concern? | ☑ Client Objective? | Tract/Land Unit with concern |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **WATER QUALITY DEGRADATION: Excess nutrients in surface and ground waters** | • Crop* | Excess nutrients in surface water | Organic or inorganic nutrients are not applied **AND** PLU is not grazed | ☐ | ☐ | Nutrient and amendment applications are based on soil or tissue tests and nutrient budgets for realistic yields **AND** Conservation practices and managements are in place to minimize surface water impacts | ☐ | ☐ | ☐ | ☐ | |
| | | Excess nutrients in groundwater | | ☐ | ☐ | Nutrient and amendment applications are based on soil or tissue tests and nutrient budgets for realistic yields AND Conservation practices and managements are in place to minimize groundwater impacts | ☐ | ☐ | ☐ | ☐ | |
| | • Pasture* | Excess nutrients in surface water | | | | PCS - streambank / shoreline erosion element score ≥ 4 **AND** PCS - livestock concentration areas element score ≥ 4 **AND** Nutrients are applied and based on a soil test, tissue tests or nutrient budget | ☐ | ☐ | ☐ | ☐ | |
| | | Excess nutrients in groundwater | | | | | | | | | |
| | • Farmsteads* | Excess nutrients in surface water | Organic or inorganic nutrients are not applied **AND** PLU is not grazed **AND** There are no confined livestock areas | ☐ | ☐ | Conservation practices and managements are in place to minimize surface water impacts **AND** Surface waters are protected from contamination due to runoff and leaching from storage sites, spill and other concentrated sources | ☐ | ☐ | ☐ | ☐ | |
| | | Excess nutrients in groundwater | | ☐ | ☐ | Conservation practices and managements are in place to minimize groundwater impacts **AND** Groundwater is protected from contamination due to runoff and leaching from storage sites, spill and other concentrated sources | ☐ | ☐ | ☐ | ☐ | |

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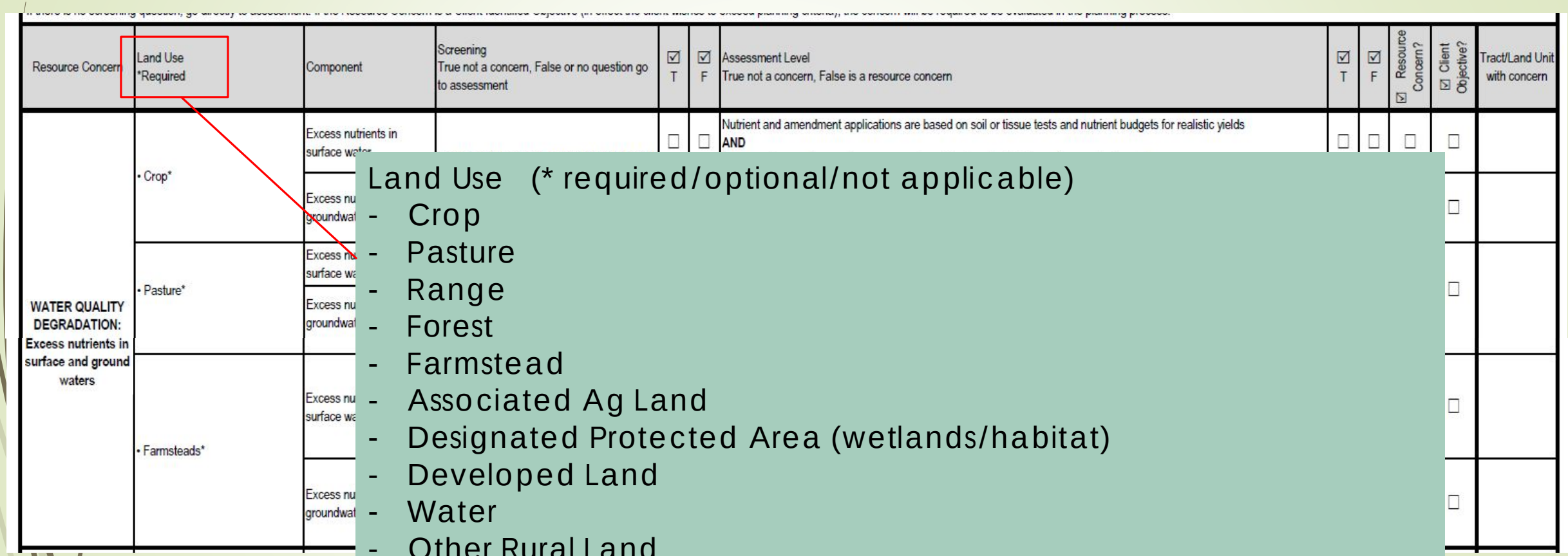
## Resource Concern - Cause

- A resource concern (RC) is a degradation of the soil, water, air, plant, or animal resource to an extent that the sustainability or intended use is impaired. The "Cause" is the specific reason or threat to the resource that results in the resource concern.

# Checklist: Resource Concerns



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| | | Excess nu… groundwat… | | | | | | | | ☐ | |
| | • Pasture* | Excess nu… surface wa… | | | | | | | | | |
| | | Excess nu… groundwat… | | | | | | | | ☐ | |
| | • Farmsteads* | Excess nu… surface wa… | | | | | | | | ☐ | |
| | | Excess nu… groundwat… | | | | | | | | ☐ | |

Land Use (* required/optional/not applicable)

- Crop
- Pasture
- Range
- Forest
- Farmstead
- Associated Ag Land
- Designated Protected Area (wetlands/habitat)
- Developed Land
- Water
- Other Rural Land

# Checklist: Resource Concerns

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## Component

- A descriptive portion or specific item of the resource concern
  - Water Quality: Nutrients, Pesticides, Pathogens
  - Erosion: Sheet, Rill, Ephemeral, Classic, Wind
  - Excess Water: Storm ponding, Seasonal, Seeps, Snow drifts

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Screening:
- Farm **does** meet the written criteria - True or False

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| | | Excess nutrients in groundwater | | ☐ | ☐ | **AND** Groundwater is protected from contamination due to runoff and leaching from storage sites, spill and other concentrated sources | ☐ | ☐ | ☐ | ☐ | |

Assessment Level

- Qualifies the minimum level of treatment needed to manage a resource
- If a Screening item is blank, or is a concern (False), then Assessment Level must be completed (False = farm does not meet the criteria)

# Checklist: CDSI Resource Concerns

| Resource Concern | Land Use *Required | Component | Screening True not a concern, False or no question go to assessment | ☑ T | ☑ F | Assessment Level True not a concern, False is a resource concern | ☑ T | ☑ F | ☑ Resource Concern? | ☑ Client Objective? | Tract/Land Unit with concern |
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## Resource Concern

- If the Assessment Level (minimum level of treatment) is not being met (False), then a Resource Concern is present

# Old Checklist (2002)
## Highlights some of the specifics on the Headquarters

### Resource Concerns Checklist

Client Name _____ NRCS ID _____ Town _____ Phone _____

Land Location: HU _____ Farm # _____ Tract # _____ Town _____ Air Photo Flight # _____ Soil Survey Sheet # _____ Topo Quad _____

Surrounding Land Uses _____ Enterprises _____

| Resource Concern | Notes on Conditions | Action Needed |
|---|---|---|

**Water Quality**

_____ **Wells**
location of all wells
Type (drilled, point, dug) and age
Drainage around wells
Backflow prevention
Well testing program
Existing problems (turbidity, bacteria, odor)

_____ **Septic Systems**
location of all systems
type (house, runoff, milkhouse)
drainage
existing problems

_____ **Wetlands/Waterbodies**
Location and type of all water/wetlands
Distance from sources of pollution
Existing problems

_____ **Agricultural Waste**
location of all storage structures
type (stack, structure, daily spread) and storage period
# animals, types, weight, location
composting
milkhouse waste
existing problems
mortality

# How do you determine which Farmstead Conservation Practices are needed?

- Listen to the farmer
- Look for opportunities

# How do you determine which Farmstead Conservation Practices are needed?

Look for opportunities

- Walk the farmstead with the producer
- Listen to their ideas, interests, priorities, goals
- Use checklists to make sure you've seen all the potential resources and concerns

Develop a Farm plan

Describe the current management and infrastructure

Develop lists of the:

- problem areas & resource concerns (soil, water, air, plants, animals)
- recommendations
- most immediate projects the farm can agree to tackle

In the past, this was referred to as an Ag Waste Management Plan,

Today current regulations call it a Comprehensive Nutrient Management Plan or CNMP

Current Regulations refer to Clean Water Act (CWA)
Mention AFO/CAFO [CWA 502(14)]

Animal Feeding Operation /
Concentrated Animal Feeding Operation

Where animals are confined to a particular area
45 days or more of a year, and
The area they are confined cannot support
plant growth (bare soil/mud)

All animal farms can be an AFO, but only those AFO's with high animal numbers or regulatory designation are CAFO's

Animal numbers determine the CAFO classification

| | |
|---|---|
| Beef | 1,000 |
| Dairy | 700 |
| Horses | 500 |
| Chickens | 82,000 |

Regulatory authority (EPA via DEEP) can designate smaller AFO farms as CAFO's if water pollution problems are identified

EQIP & EPA 319 funds

NWQI watersheds with plans

One Resource available to farms to help come up to environmental compliance

USDA Farm Bill
EQIP – Environmental Quality Incentive Program
Farm:Producer:Land must meet eligibility
- Income less than current threshold ($750,000)
- Erosion plan
- Wetlands protection

Can be an effective program for farms planning to make changes (budget)

Provides planning, some design, and reimbursement...
- if all requirements are met

Provides planning, some design, and reimbursement…
if all requirements are met

All projects have standards and criteria
May be associated practices with certain systems

Grazing infrastructure + Grazing Plan & Management

Manure Storage + Farm Plan & Manure Spreading Plan

Not always a ‘Quick Fix’
Process of planning, eligibility (paperwork), contracting, design, construction (payment), then reimbursement

The ‘Fix’ begins with

- Identifying the problems
- Developing options or recommendations
- Communicating with the producer
  - Learn from them
  - Listen to their concerns and needs

Many times – once a producer understands the problem,

- They often come up with the best solutions.

# **THE** fastest way to get booted off a farm and shut down conversation.....

Tell a farmer he isn't taking care of his land


In Summary:

- Prepare before you visit the farm (checklists, research)
- Get to know the farm and the producer
- Follow the path of water, both clean and dirty
- Generate a list of possibilities for the farm
- Discuss with the farm and use the farms decisions to generate a plan to help the farm.

In simple terms –
A good plan will benefit both the environment and the farmer