Pennsylvania’s Nutrient Management Act
Nutrient Management Orientation
March 18, 2021

NUTRIENT MANAGEMENT CERTIFICATION PROGRAM
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Nutrient Management Specialist Certification Program
• All Act 38 plans must be written and reviewed by a certified specialist
• The Department of Agriculture through State Conservation Commission Staff conducts the certification program to certify specialists

Certification Categories & Reciprocity
• Categories
  − Individual (Farmers)
  − Commercial (Private Consultants)
  − Public Review (Conservation Districts & State staff)
  − Public Dual (Conservation Districts & State staff)
• Certification must be renewed every 3 years
• Reciprocity with other state certification programs is available for Maryland and Virginia but is only for the State Exam

Certification Competencies
• Soil science and soil fertility
• Nutrient application and management
• Crop production
• Soil and manure testing and interpretation
• Fertilizer materials
Certification Competencies

- BMPs for nutrient and water management
- Economic & environmental impacts of nutrient management
- Applicable laws and regulations
- Nutrient management plan development
- Knowledge of different livestock operations

Certification Requirements

- Provisional status requires:
  - Examination
  - Required course work
  - Final status requires
    - Commercial
      - 3 developed plans
    - Public Review
      - 1 developed; 2 reviews
      - Public Dual
        - 2 developed; 2 reviews

**The first plans you develop or review must be completed for final certification before you can continue to develop or review more.**

Certification Course Work

- Mandatory
  - Nutrient Management Orientation
  - Managing Manure Nutrients Workshop
    - Prerequisite for Plan Writing & Plan Review
  - Plan Writing Workshop
  - ACA & Manure Storage Workshop
  - Stormwater & Soil Loss Workshop
  - P Index Workshop
  - Plan Review (Public Categories Only)
  - Examination

Background Trainings

- Non-Mandatory Background Workshops
  - Introduction to Livestock Production Systems Workshop
    - Offered once annually
  - Soils, Hydrology and Liquid Manure Workshop
    - Offered bi-annually

- Non-Mandatory Background Online Workinars
  - Ag 101: Understanding PA Farm Operations
  - Understanding Horse Farms

Understanding PA Farm Operations

- Ag 101: Understanding PA Farm Operations
- 10 online sessions
  - Introduction to Pennsylvania Farms
  - The Pennsylvania Farmer
  - Livestock Production Systems
  - Equine and Specialty Species
  - Visiting a Farm
  - Field, Forage, and Grains
  - Pest Management
  - Specialty Crops – Fruits and Vegetables
  - Forests and Agroforestry
  - Special Topics for Pennsylvania Producers

Understanding Horse Farms

- [https://extension.psu.edu/programs/nutrient-management/educational/background-trainings-materials/understanding-horse-farms-webinar-series](https://extension.psu.edu/programs/nutrient-management/educational/background-trainings-materials/understanding-horse-farms-webinar-series)
  - Introduction to Horses and the Horse Industry
  - Grazing and Horse Health, Forage Biology and Grazing Management
  - Forage Species, Pasture Renovation and Soil Fertility
  - Weed Management, Toxic Plants and Manure Management
  - NRCS Technical Training: BMPs for Horse Farms
Course Registration & Attendance

- All registrations must be made through PAPlants
  - Walk-ins will not be accepted!
  - Registration closes one week prior to the training date
- All courses have a maximum participant cap
- Registrants who decide not to attend must contact Mike Aucoin immediately to withdraw registration
  - Others may be waiting to fill that slot

Certification Registration

- Web-based (on the internet)
- View personal certification information.
- Register for trainings.
- Search for continuing education courses
- View ‘Service Area’ listing
- User guide available

PAPlants website: [https://www.paplants.pa.gov/](https://www.paplants.pa.gov/)

PAPlants Register/Logon Page

Specialist Information

Coursework Information

Continuing Education Credits

- Must be Final Certified
- Commercial and both Public categories need 20 every 3 years with 5 of those 20 credits in PDA or SCC sponsored courses.
Training & Certification Resources

- Comprehensive Source
  - Pennsylvania Nutrient Management Program website
    - https://extension.psu.edu/programs/nutrient-management

- Nutrient Management Education Program Resource List
  - Technical Manual: Supplement 18

- Two Reference Lists
  - Training & Certification Resources
  - Nutrient Management Examination Competency Areas
    - Commercial & Public Specialists
Key Program Resources

- Nutrient Management Rules & Regulations
- Pennsylvania Nutrient Management Act Program Technical Manual
- Penn State Agronomy Guide
- Excel Spreadsheet & Word Planning Tools
- Electronic Field Office Technical Guide (FOTG)
- PAOneStop - Farm Mapping and E&S Planning System

Website Overview

Current Info & Work Resources
- What’s New
- Planning Tools
- Planning Resources

Certification Process
- Specialist Certification
- Upcoming Training and Events
- NPInPlants Link
- Act 38 Law and Regulations
- Educational Materials

Non-Act 38 Program
- Manure Management Manual Program

Program Agencies
- SCC Program Information
- Cooperating Agency Logo Links
- Nutrient & Manure Management
- Related Programs
- Nutrient Management Program Team
  - Directory
  - Conservation District Offices
  - Nutrient Management Specialists Listing

Planning Resources

These references and tools are used consistently in the development and review of Act 38 nutrient management plans and balance sheets.
NUTRIENT MANAGEMENT ACT
OVERVIEW

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Act 38 of 2005 (old NMA)

• NMA Legislation (Act 6) initially passed – June 1993
• Revised Nutrient and Odor Management Act (NOMA) legislation passed July 2005 (Act 38)
• Administered by the State Conservation Commission (SCC)
• Act 38 revisions require the SCC to regulate both nutrients (nitrogen and phosphorus) and odor management

Major Provisions of the Act

• Regulates high density animal farms
• Requires development & implementation of approved nutrient management plans
• Provides a certification program
• Provides financial assistance for participants
• Provides limited liability protection
• Directs local ordinances
• Local administration delegated to county conservation districts
Who Must Comply

- Livestock Operations defined as a Concentrated Animal Operation (CAO):
  - Animal density exceeds 2,000 lbs. of live weight per acre available for manure application
  - Referred to as 2 Animal Equivalent Units per acre (AEUs/acre)
    - Includes all livestock, including: Dairy - Beef - Veal - Swine - Poultry - Horses
  - The operation must also have more than 8 AEUs of total animal units (AU) on the farm

All Farmers Encouraged To Participate

- All other operations are encouraged to voluntarily comply with the Act:
  - Seeking limited liability protection
  - Receiving financial assistance funding
  - Neighbor relations
  - NRCS compliance

Required Plan Elements

- Cover Page
- Table of Contents
- NMP Summary
- Appendix #1: NMP Agreement & Responsibilities
- Appendix #2: Operation Information
- Appendix #3: Manure Group Information

Cover Page

- Crop Year(s)
- Prepared For:
  - Operator Name
  - Operator Address & Telephone Number
  - Operator's Location Address (if not the same)
- Prepared By:
  - Nutrient Management Specialist Name
  - Specialist may insert company logo
  - Nutrient Management Specialist Certification Number
  - NMS Address & Telephone Number
- Administratively Complete Date
- Plan Approval Date
- Date of Plan Update Submissions
Appendix 2: Operator Information

- Operation Description
  - Animal types & numbers
  - Cropland, hayland, pastureland acreage
  - Farmstead acreage
  - Crop rotation
    - Crops
    - Sequence of crops
    - Number of years for each crop
  - Manure group management (including atypical manure)
    - Contributing animal groups
    - Collection, storage and handling procedures
    - Mortality composting management
- County(s)
- Name of Receiving Streams/Watersheds (EV or HQ)

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Calculation of AEUs per Acre

- Step 1: Calculate AUs
  - Use average number of animals
  - Typical day on the operation
  - Multiply times the average weight
    - Standard Weights
      - Agronomy Facts 54 or Supplement 5 (NM Tech Manual)
      - Actual Weights
    - Divide by 1,000 = AUs

- Example continued:
  - Total = 35 acres
    - Farmstead = 2 acres
    - Woodland = 3 acres
    - Cropland = 30 acres

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Calculation of AEUs per Acre

- Step 2: Calculate AEUs
  - Multiply the AUs by the days on the operation/year
  - Divide by 365 = AEUs

- Example:
  - 120 beef calves x 300 lbs/animal = 36,000 lbs
  - 36,000 lbs ÷ 1,000 = 36 AUs
  - 36 AUs x 240 days on farm ÷ 365 = 23.67 AEUs

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Calculation of AEUs per Acre

- Step 3: Determine Available Acres
  - Includes cropland, hayland and pastureland
  - Includes owned and rented land
  - That is or will be used for manure application

- Example continued:
  - Total = 35 acres

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Calculation of AEUs per Acre

- Step 4: Calculation of AEUs per Acre
  - Divide AEUs (step 2) by the number of acres (step 3) = AEUs/Acre
  - CAOs are those operations with greater than 2.00 AEUs/Acre

- Example continued:
  - 23.67 AEUs ÷ 30 acres = 0.79 AEUs/Acre

- This is NOT a CAO!
  - Is a VAO
Manure Generation & Nutrient Application Calculations

APPENDICES 3-5

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Technical Manual: Appendices 3, 4 & 5

General Requirements

• Address each type of nutrient source
  – Generated or used on the operation
  – Manure, biosolids, compost, fertilizers and other sources
• Only nutrients "of concern" to be addressed by BMPs in the plan
  – Nitrogen
  – Phosphorus
• Other nutrient to be listed for crop production goals
  – Potassium

Amount of Manure Generated

• Plan must document (identify and label) each manure group on the operation
  – Amount
  – Nutrient content
• Document the amount of manure generated in each manure group
  – If records are not available, manure production is estimated by calculation
    – Average number of animals with average weight (AUs)
    – Capacity of manure storage facilities
    – Calculations and variables used must be included in the plan
• Document when the manure group is available for land application (season)
  – Or for export off the operation or other planned uses

Nutrient Content of Manure

• Document the nutrient content of each manure group
  – Analytical manure testing results
    – Total N, ammonium N, total phosphate, total potash, % solids
  – Annual manure sampling and testing is required for each manure group
• Manure sampling and chemical analysis methods must be used that accurately represent the contents of the manure
  – Described in the Penn State Agronomy Guide
  – Or other methods approved by the Commission

Manure Sampling Exemptions

• Initial plan development
  – Newly proposed operations
  – Manure groups on existing operations where sampling not possible prior to initial plan development
• Initial plan development scenarios must use:
  – Standard book values or analytical values from a similar facility
    – Penn State Agronomy Guide values or other Commission approved values
    – Similar facility: same animal housing, animal groups, feeding practices, and wastewater management
• Manure group must be sampled and analyzed within 1 year of plan approval

• Sampling prohibited
  – Uncollected manure on pastures
    – Penn State Agronomy Guide values or other Commission approved values
• Sampling optional
  – Manure groups with less than 5 AEUs
    – Penn State Agronomy Guide values or other Commission approved values
• Option to combine manure groups
  – Two or more manure groups on the same operation
    – Produced by the same animal type
    – Managed in a similar manner
Nitrogen Availability & Residual Values

- Plan must include:
  - Nitrogen available from manure
  - Planned manure incorporation time
  - Nitrogen availability factors
  - Residual nitrogen from:
    - Previous manure applications
    - Previous legume crops
  - Nitrogen availability factors and residual values must be obtained from:
    - Penn State Agriculture Guide or other Commission approved values

Nutrients Needed For Crop Production

- Identify crop management units (CMU)
  - Field, portion of field, or group of fields
  - Unique management history and managed uniformly as distinct unit
- For each CMU (field) the plan must include:
  - Acreage
  - Realistic expected crop yield
    - Soil type and climatic conditions
    - Operation yield records
    - Soil test results for each CMU (field)
    - Levels of phosphorus, potassium and pH
  - Nutrient recommendations for realistic expected crop yields
    - Nitrogen, phosphorus, potassium

Soil Test Requirements

- Must use soil sampling and testing procedures recommended by:
  - Penn State University
  - Bulletin 493: Recommended Soil Testing Procedures for the Northeastern United States
  - Or other procedures approved by the Commission
- Soil tests must be within the previous 3 years for initial plan development
- Plan must include a summary of the soil test results
  - Name of lab performing tests
  - Date of test
  - Levels of phosphorus in ppm
  - Levels of potassium in ppm
  - pH levels

Phosphorus Index Guidance

- Application of manure and other nutrient sources must be managed to minimize the effect of phosphorus loss
  - From all cropland, hayland and pasture fields
- Determination of the risk of phosphorus loss and water quality impact must be based on the following factors:
  - Soil phosphorus levels
  - Method, rate and timing of phosphorus application
  - Manure and fertilizer
  - Runoff and soil loss potential of the application area
  - Distance to surface water
  - The type of phosphorus used

Nutrient Application Rates

- Planned manure application rates must be equal to or less than balanced manure rate for each CMU (field)
  - Calculations and variables must be included in plan
- Nitrogen-Based Balanced Manure Rate (all fields)
  - Based on Net Nitrogen Need
    - N Recommendation – Starter Fertilizer – Residual N
    - Divide by available nitrogen content of manure
    - Nitrogen availability factor
- Phosphorus-Removal Balanced Manure Rate
  - Some fields as required by Phosphorus Index guidance
  - Based on Net Phosphorus Removal Need
    - Divide by phosphorus content of manure
Phosphorus Index Guidance

- Manure management options based on the above determination of phosphorus loss risks and impacts
  - Manure application limited to crop nitrogen requirements
    - No risk from phosphorus application
      - N-based rates
  - Manure application limited to crop phosphorus removal
    - Immediate risk from phosphorus application that can be managed
      - P-removal rates
  - Phosphorus application completely restricted
    - Immediate risk from phosphorus application that cannot be managed

Nutrient Application Rates

- Plan must include calculations for each CMU (field)
  - Planned manure application rates
    - Less than or equal to balanced manure rate
      - N-based rate (or)
      - P-crop removal rate
  - Difference between recommendations & nutrients applied from all nutrient sources
    - Nitrogen, phosphorus, potassium
- A nitrogen availability test may be used to determine supplemental nitrogen needs

Nutrient Application Procedures

- Nutrients must be applied to fields during times, conditions and procedures described in the plan
  - The plan must include:
    - Target spreading periods
    - Statement of equipment calibration
    - Irrigated manure guidance (if applicable)
    - Limits on liquid manure application rates (if applicable)
    - Setbacks and buffers
    - Winter application guidance (if applicable)
    - In-field stacking of manure guidance (if applicable)
    - Commercial manure hauler guidance
    - Pastures requiring phosphorus restrictions guidance

Nutrient Application Procedures

- Irrigation of manure
  - Application rates must be based on lesser of:
    - Planned application rates (gallons)
    - Combination of the following:
      - Liquid rate in inches per hour
      - Liquid application depth not to exceed the soil's water holding capacity
    - Consistent with:
      - Penn State Factsheets F254 – F257 (Combined into F254)
      - Liquid Manure Application System Design Manual (NRAES-89)
  - Liquid rates greater than 9000 gallons/acre
    - Limited based on infiltration rate & water holding capacity

Nutrient Application Procedures

- Manure application setbacks and buffers
  - Within 100’ of streams, lakes, ponds
    - Unless 35’ permanent vegetated buffer
  - Within 100’ of existing open sinkhole
    - Unless 35’ permanent vegetated buffer
  - Within 100’ of active private drinking water source
  - Within 100’ of active public drinking water source
    - Unless State or Federal regulations require greater distance
Nutrient Application Procedures

– On CMUs having less than 25% plant cover or crop residue
  • Fall application
    – Cover crop with adequate growth to control runoff (or)
    – Injected or mechanically incorporated within 5 days (low disturbance)
  • Spring or summer application
    – Planted to a crop that growing season

Nutrient Application Procedures

– Winter application
  – Site specific procedures must be described in the plan and must list:
    • All CMUs where winter application is planned or restricted
    • Application procedures that will be utilized on those CMUs
    • Field conditions that must exist for winter application
  – In addition to setbacks in 83.294(f) the following shall apply:
    • Within 100’ of above-ground inlet to agricultural drainage system where surface flow is toward the inlet
    • Within 100’ of wetlands (National Wetlands Inventory) if:
      – Within 100-year floodplain of exceptional value stream
      – Surface flow is toward the wetland
  – Must have at least 25% residue or established cover crop

Nutrient Application Procedures

• In-field stacking of dry manure
  – Manure must be land applied within 120 days
  – Stacks must be constructed using appropriate BMPs
    • Soil type, soil slope, stack shape and slopes, stack size, setbacks, and stack rotations
  – Stacks longer than 120 days
    • Stacks must be covered or
    • Waste stacking and handling pad constructed
  – Stack locations must be noted on farm maps

Nutrient Application Procedures

• Commercial manure haulers
  – Must meet the certification requirements of Act 49
• Pastures requiring total P restrictions (P-Index)
  – Grazing is permitted with the following BMPs:
    • No grazing within 50’ of stream, lake or pond
    • Prescribed grazing system must be used
    • Stocking rate must be limited to balance manure phosphorus deposition to phosphorus removal levels

Managing Manure Nutrients Workshop

• Provides a basic introduction to:
  – Nutrient cycles, behavior and management
  – Soil testing and developing crop nutrient recommendations
• Introduces key manure-related concepts and calculations used in planning
  – AEU calculation and density implications
  – Manure types, analysis, and production
  – Crop nutrient requirements
  – Balanced and planned manure rates
  – Manure allocation considerations
Plan Writing Workshop

- Uses a step-by-step approach to complete a sample NMP in the NMP Spreadsheet
  - Combination of hand exercises and spreadsheet data entry
- Review concepts and calculations introduced in Managing Manure Nutrients Workshop
  - Reinforced using paper calculation exercises
- Complete introduction and overview of the NMP Spreadsheet
  - Enter the data in the NMP Spreadsheet to complete the sample NMP

Remote Learning Changes

- Trainings will be a combination of:
  - Live Zoom meetings
  - Pre-recorded sessions
  - Required exercises that must be submitted by email
    - Will be reviewed by instructors
    - Instructors will provide feedback via email and phone
    - Resubmission until exercise answers are correct

Manure Management Appendix 6

- Section 83.311 of manure management (Act 38 Nutrient Management Regulations)
- Requires a site visit
- Should consider a review in conjunction with NRCS, CD, consultants, especially when manure storages are involved

Specifically Check for...

- Manure Handling and Storage
  - Storages, stacking, composting, mortality
  - In field and emergency stacking areas
  - Milking center waste
  - Transfer pipes, Reception pits, perimeter drains
- Animal Concentration Areas
  - Barnyards, feedlots, loafing areas, or other confinement areas that will not maintain a growing crop
  - Could also be other areas that cause a direct flow of manure contaminated water to surface or groundwater.
- Silage and Feed Storage Areas
  - Silos, trenches, ag bags, commodity storages, mixing areas

APPENDIX 6

Manure Management

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Purpose and Scope of Your On-Site Evaluation

- Prevention of surface water pollution
  - Streams, lakes and ponds
- Prevention of groundwater pollution
  - Wells, springs, open sinkholes & bedrock outcroppings
- Storm events up to and including 25 yr, 24 hr
- Commingling of stormwater and manure to runoff into water bodies without adequate treatment
Manure Storage Facilities

• The following areas are not considered manure storage facilities under Act 38:
  – Animal confinement areas of:
    • poultry houses
    • horse stalls
    • bedded packs

• Thus no review

Review Facility Design

• Site specific design based on:
  – field investigation
  – regulations
  – PA Tech Guide

• Storage period and volume per NMP

• Approved & certified by PE if liquid or semi-solid manure

• Verify design & QA inspection plan 2 weeks before construction

• Construction certification:
  – by Engineer & contractor
  – Submitted to SCC or CD

• Contingency plan as part of O&M plan

• Still requires visual inspection

Review Existing Storage Facilities

No Design

• Determine existing capacity to match NMP
  – Example calculations in manual

• Look for evidence of water quality concerns
  – overflows or too full
  – leaks in walls, piping, or instability of slope
  – Drain outlets with tainted flow
  – Structural defects, severe corrosion, etc.
  – Upslope storm water

• O&M and contingency plan

Storage Setbacks for Existing Operations

• Installation requirements before October 1, 1997; not including reception pits or transfer lines

• 100 ft from:
  – Perennial and intermittent streams
  – NWI identified wetlands adjacent to EV streams
  – Open sinkholes
  – Private water wells
  – Public water wells (unless stricter by fed/state)
  – Property lines

• 200 ft if “flowable” manure is:
  – Stored on slope >8%
  – Or volume > 1,500,000 gallons

Storage Setback Exception

• Installation requirements

• Reception pits & transfer pipes exempt

• Waivers available
  – SCC/Conservation District
    • On existing operations except public wells
    • Technical & economic criteria
  – Neighbors
    • Property line on existing or new operations

• Existing storage facilities exempt from setback requirements

• Expanded facilities must meet setbacks
Disputed Determinations

- Only for leakage or structural issues
- Applicable when owner does not agree with your call
- Owner to get Professional Engineer to make determination and solution, if needed

Typical BMPS

- Decommission Existing Storage
- Waste Storage Facility
- Vegetated Treatment Area
- Heavy Use Area Protection
- Waste Transfer
- Roof Runoff Management
- Structure for Water Control

https://efotg.sc.egov.usda.gov/#/
Animal Concentration Areas

- Eliminate direct discharge of commingled runoff to surface & groundwater
  - BMPs to collect and store or treat
  - Minimize clean water entering ACA
  - Appropriately sized ACA (PA Tech Guide)
  - Location & management
  - Collect manure from non-vegetated ACAs
  - Livestock stream access at crossings only

BMPs to Handle ACAs

- Eliminate by changing management
- Use temporary concentrated livestock areas under Prescribed Grazing (528)
- Plan various practices
  - Heavy Use Area Protection (561)
  - Waste Storage Facility (313)
  - Vegetated Treatment Strip
  - Use Exclusion
  - Animal Trails and Walkways
  - Diversions
  - Roof Runoff Structure
Silage and Feed Storage Areas

- Look for leachate discharge
- Site stability for Ag Bags
- Location relative to stream/sensitive areas
- Method of handling low-flow
- Location of high-flow discharge
- See Heavy Use Area Protection (561)

Typical BMPs for Leachate

- Heavy Use Area Protection
- Structure For Water Control
- Underground Outlet
- Pumping Plant
- Waste Transfer
- Waste Storage Facility
- Vegetated Treatment Areas
Animal Mortality

• No off-site water
• Plenty of bulking material
• Piled to shed water
• Good filter area around facility
• Positive drainage

Manure Management

• Emergency stacking areas
  – Unforeseen circumstances only
  – Outside of concentrated flow & manure application setbacks & winter restrictions
  – Appropriate soils and slopes
  – Place & shape to minimize absorption
  – Notify CD 24 hours before using
  – Remove stacks within 60 days
    • Extension from SCC or CD

Act 38 Regulations: Section 02.311
Organization of Your Report

- Date of the site visit
- Statement describing areas evaluated
- Identification of problem areas
- Listing of recommended BMPs
  - Listed in FOTG (web site)
  - Must meet FOTG
  - Designs come later
- If you are not sure, ask for help!

Example Plan

- Show fields
- Existing features
- Location of issues
- Location of stacking area
- Location of planned BMPs

Show Details on Map

ACA & Manure Storage Workshop

- Mandatory field oriented session

  - Focuses on:
    - Identifying ACAs
    - Solving runoff problems

- Next sessions:
  - Register with PDA

APPENDIX 7

Stormwater Control

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Stormwater Runoff Control

- **Objective**: To assure that Critical Runoff Problem Areas (CRPAs) are identified and addressed in the nutrient management plan (NMP)

- **What are CRPAs?**
  - CRPAs are non-vegetated concentrated water flow areas (gullies, ditches, etc.) with a direct discharge to surface water or groundwater

Identify and Address CRPAs

- **The Problem**: CRPAs channel nutrient-laden sediment from croplands, haylands, and pastures to surface or ground water causing pollution

- **What planner must do**: Conduct a site visit to evaluate adequacy of existing stormwater control practices, identify CRPAs, and list specific stormwater control BMPs to address the CRPAs identified

Addressing CRPAs

- **Procedures during the required site visit**:
  - Evaluate existing stormwater control BMPs on all cropland, hayland, and pastures
  - Identify and document CRPAs
  - List BMPs to address CRPAs

- **You must walk the fields, especially the stream corridors!**

Link with Chapter 102 (Ag E&S Plan)

- **Each producer must have current Agricultural Erosion and Sediment Control Plan (as required by Chap 102)**

- **NMP will only be approved for operations that include verification of a current Ag E&S Plan**

Chapter 102 Agricultural Erosion & Sedimentation Control Plans

- **Under PA Clean Streams Law (1972 amendment)**
  - Current Ag E&S Plans are required under Chapter 102 requirements for all operations
  - A Conservation Plan may meet this requirement

- **Stormwater Control BMPs listed in the NMP to address CRPAs for must be consistent with those in the Ag E&S Plan or the Conservation Plan**

NMP/Ag E&S Plan Consistency

- **BMPs in the NMP may not conflict with BMPs in the Ag E&S Plan or Conservation Plan cropland system**
  - Crop rotation (crop sequence and acreage)
    - Crops and acreage impacts amount and season of manure application
    - Sequence of crop impacts soil erosion
  - Tillage
    - Manure incorporation impacts N availability for crops
    - Tillage and crop residue management impacts soil erosion
Preparing for the Site Visit

- Know the most common management and structural BMPs
  - Understand the purpose of the BMP
  - Know BMP Standards and Specifications
  - How BMPs fit into a system of practices & managements

- Determine the existence of an Ag E&S Plan or Conservation Plan for the operation
  - Will be found through producer, NRCS, or CD
  - Is the plan “current”?

The Site Visit Activities and Procedures

- You will learn and practice these concepts in the field at the Stormwater Management Course!

- Observe/evaluate general field conditions that create stormwater control problems
  - Topography
  - Uniform or Rolling
  - Slope
  - Drainage area
  - Vegetative Cover
  - Proximity to water bodies or direct groundwater conduits
  - Existing BMPs (adequacy & maintenance)
  - Observance of any gully-like formations on the operation

- How to document existence/non-existence of CRPAs

Site Visit Activities and Procedures

- When addressing CRPAs select BMPs based upon:
  - Nature of the problem
  - Purpose of the practice
  - Economics and simplicity of BMP
  - Consistency with the system of practices
  - Consistency with producer objectives
    - Planners propose alternatives
    - Producers select alternatives

- Don’t be afraid to ask for assistance!

Producer Objectives & Management Style

- Producer objectives – What are their…?
  - Goals
  - Motivations
  - Flexibility

- How do they manage?
  - Level of management
  - Dedication to management

- Your observations while planning with the producer
  - are critical to NMP implementation!

Appendix 7: Stormwater Control

- NMP Plan must:
  - Document site visit and include date and areas evaluated
  - Identify and document Critical Runoff Problem Areas (CRPAs)
  - List BMPs and installation timeframes to treat CRPAs

- A systems approach for addressing soil and water resource problems is provided by Ag E&S
  - Ag E&S plans are required for approval of Act 38 plan

- Critical elements of Ag E&S plans and nutrient management plans must be coordinated:
  - Crop rotations & tillage/planting methods
  - Planned and existing conservation practices (BMPs)

Stormwater & Soil Loss Workshop

- Act 38 mandatory course

- Field-specific training in Act 38 Stormwater Control requirements, runoff, and basic soil erosion prediction concepts

- Topics include:
  - Understanding Sheet Flow and Concentrated Flow
  - Evaluating and addressing runoff/erosion problems
  - Identifying CRPAs
  - Gathering field data for evaluating runoff and erosion
  - Identifying existing and potential erosion situations
  - Evaluating and selecting BMPs
  - Combining BMPs into conservation systems

- Hands-on training – online and field
NRCS 590 Standard & Comprehensive Nutrient Management Planning (CNMP)

- All acres in Appendix 4 of an approved Act 38 plan will meet 590 practice standard
- A certified Act 38 plan or an Act 38-equivalent plan developed by an NRCS-certified TSP meets NRCS’s requirements for the nutrient management element of a CNMP

Importer/Broker Agreements & Nutrient Balance Sheets (NBSs)

- If to known landowners for ag land application:
  - Signed agreement & Nutrient Balance Sheet (or NMP)
  - Importer responsible unless CAO/VAO applying manure
- If to Brokers (meeting Act 49 requirements):
  - Signed agreement
  - No NBSs in exporter’s plan
  - Broker ensure NBS (or NMP) completed if land applied
- If to known landowners for non-agricultural use:
  - Signed agreement
  - Name, location, description, amount, season

Exceptions to Detailed Export Documentation

- Not required to follow the exporting requirements (NBS, agreements, etc.) if importing less than:
  - 5 tons of poultry manure
  - 25 tons of non-poultry solid manure
  - 10,000 gallons of manure

Operation Maps

- Topo Map (to scale) with operation boundaries
- Soil types and slopes
  - Field identification and boundaries with soil legend
Supporting Info & Documentation

- Document any calculations not shown throughout the plan
  - Documentation of non-standard animal weights
  - Irrigation calculations
  - Manure residual calculations if using Table 1.2-15
  - Bedding calculations
  - Storage volume based on dimensions of the facility (while maintaining required freeboard)
  - Soil test conversions
  - Winter matrix when relevant
  - Rainfall additions worksheet
  - Manure storage setback waivers

Technical Manual: Section II, Appendix 8
Act 38 Regulations: 83.272 135

NUTRIENT MANAGEMENT PLAN SUMMARY

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Nutrient Management Plan Summary

- Key implementation tool for the farmer
- Nutrient Application Summary
  - Planned by crop year
  - Detail information supplied in appendices
- Nutrient Application Summary includes:
  - AEU and AEU/Acre notation
  - Crop Management Unit (CMU) = Planned acres & crop type
  - Planned manure group & application period
  - Planned manure application rate & incorporation time.
  - Starter fertilizer applied regardless of manure
  - Other nutrient applied as chemical fertilizer or organic nutrient sources.
  - Nutrient balance for CMU
  - Other comments

Technical Manual: Sect II - NMP Summary  Act 38 Regulations: 83.281(a); 83.282 (a) –(b) 135

Nutrient Management Plan Summary Notes

- Provides additional explanation or clarification to the operator on aspects of the NMP
- Manure application setbacks & buffers
  - Very descriptive – includes footage and landscape
- Pasture management information
- Winter manure spreading procedures (if applicable)
  - ID’s CMU & manure management procedures features
  - Manure Spreader Calibration Notes table
- Other special notes for farmer pertaining to manure application
  - "Whole Farm" Notes

Technical Manual: Sect II - NMP Summary  Act 38 Regulations: 83.282 (a) –(b); 83.294 (f) & (g) 136

Additional NMP Requirements

- Manure Management BMPs
  - ID of planned manure storage
    - Type of proposed facility & location (on farm map)
    - Basic dimensions, volume
  - ID of Alternative Manure Technology BMPs (i.e. composting, separation)
- Stormwater BMP Implementation
  - Types of BMP planned
  - Location and schedule for implementation
- In-field Manure Stacking Procedures
  - Stacking management & application time frame
  - Should note if no stacking is to occur

Technical Manual: Sect II - NMP Summary  Act 38 Regulations: 83.294 (h); 83.311 & 83.321 137

Additional NMP Requirements

- Additional CAFO Requirements
  - Relates to DEP CAFO permit
  - Manure stacking or manure storage issues (i.e. winter capacity)
- Exported Manure
  - Description of utilization procedures other than land application
  - Concise summary of information from Appendix 8

**Additional NMP Requirements**

- Operator Management Map
  - “easy-access’ map for the farmer
- Operator Management Map includes:
  - Farm & field boundaries
  - Road names adjacent to the operation
  - Field ID and acreage
  - Landscape features (streams, sinkholes, wells etc.)
  - Manure application setbacks & buffers (include legend)
  - Location of existing or planned structural BMPs
  - Any emergency or planned ‘in-field’ stacking areas

**Appendix 1: NMP Agreement & Responsibilities**

- NMP Implementation
  - ID’s what programs supported by NMP
    - Act 38, CAFO, USDA/NRCS 590 (NM Standard) or CNMP
  - Planning time frame (1 year or 3 year)
  - Verifies existence of Emergency Response Plan (ERP)
  - Verifies landowner acknowledgment of NMP
    - Where rented/leased lands utilized for manure application
- Signature requirements
  - Certified Nutrient Management Specialist
    - Attests information contained in NMP is accurate and current.
  - Operator
    - Reinforces implementation & record keeping responsibilities.
    - Title required for corporations (Documentation of signature assignment is required)

**Plan Submission**

- NMP must be developed by a certified NMS
  - NMS must use the CURRENT approved NMP or NBS spreadsheet
- Submitted to conservation district or SCC
  - Electronic submission is allowable
    - Paper copy of:
      - Cover Page, Plan Summary, Appendix #1, Appendix #2 and Maps
    - Final submission for action must be paper copy
- See ‘NMP Submission’ section in the Act 38 Technical Manual for more detailed information on NMP submission requirements (hard copy or e-submission)

**Plan Submission**

- CAFO NMP for DEP permit review
  - CAFO NMPs must be approved prior to the beginning of the intended agronomic crop year (October 1st)
    - General Rule: submit plans 5 -6 months prior to the intended crop year
  - Submitted by Planner to DEP regional office for concurrent review
  - After district determines plan administratively complete
- Plan Elements for the Farmer (approved plan)
  - Provide separately for NMP implementation
    - Cover Page
    - Plan Summary (with maps)
    - Appendix 1 (NMP Agreement & Responsibilities)
    - Appendix 8 (Importer/Broker Agreement)
    - Remaining Appendices (2-7, 9 and 10) may be provided separately as reference
Plan Review

- NMP reviewed by delegated Conservation District
  - Conservation District must have a certified NMS on staff
  - State Conservation Commission and/or PDA staff will review NMPs in non-delegated districts
- A NMP may not be reviewed by the same person that prepared the plan
  - NMP developed by district staff cannot be reviewed by staff in the same district office, or the same multi-county delegation

Plan Review Period

- 10 Day Completeness Review
  - Preliminary review performed by district reviewer
  - Objective – Verify NMP contains all required plan elements
  - District notifies Operator of result of this review
- 90 Day Technical Review
  - Technical review of components of the complete NMP
  - District or SCC must take action on a complete plan or amendment within 90 days
    - Formal action of the district Board of directors, not by staff
    - If no action within 90 days
      - Plan can be implemented
      - Deemed approved after 180 days

Public Access/Notice of NMPs

- Act 38 NMPs
  - Available to public when plan is administratively complete
- Public Access Policy
  - Developed by conservation district or may follow SCC public access policy
- CAFO NMPs “noticed” in Pa Bulletin
  - “noticed” under State Conservation Commission.
  - standard form submitted by district
  - No action on NMP until after 30 days notice in PA Bulletin

Plan Resubmission

- Disapproval & Resubmission
  - If an existing CAO plan disapproved
    - Must be resubmitted within 90 days
  - If proposed CAO
    - Must be resubmitted to be approved prior to commencement
  - If volunteer
    - Operator can choose to resubmit or not

Plan Review Workshop

- Hands on review of a sample nutrient management plan
- Use program references to complete plan reviews
  - Agronomy Guide
  - Nutrient Management Regulations
Plan Implementation

- Plans must be implemented within 3 years
  - Immediately for manure management practices
  - Within 3 years for structural practices
    - Amendment required if > 3 years to implement practices
- Plan assessment for consistency:
  - Annually by the operator
  - Every 3 years by a certified specialist
    - CD needs to receive amendment or update at least every 3 years
  - P-Index, using new soil tests, rerun every 3 years

On-Site Status Reviews

- Status reviews are conducted by district or SCC staff on operations with approved NMPs
  - These reviews are done at least:
    - Every year for CAOs and CAFOs
    - Every 2 years for volunteers accepting NMA implementation funding
    - Every 3 years for other volunteers

Record Keeping Requirements

- General record keeping requirements:
  - Records retained for a minimum of 3 years on farm
    - No submission to district required
  - Results of soil and manure tests:
    - Manure testing is required annually for each manure group, except:
      - < 5 AEU groups
      - Pasture groups
      - One test can represent more than one group if expected to be similar (i.e. spring and fall under building hog barns)
    - Soil testing required once every 3 years

Manure Export Package

- Provide to the importer:
  - Completed ‘Manure Export Sheets’
  - NBSs developed for the importer
Plan Amendeds

- Developed by certified specialists
- Submitted to conservation districts or Commission for approval

Standard Plan Amendment Guidelines

- Plan amendments are needed when:
  - Agronomic Changes
    - Change in crop management - 20% reduction in N
    - Crop yields (in 3 years), less than 80% of expected
  - Management Changes
    - 10% increase in AEUs/acre
    - Change in planned BMP
    - Change in alternative manure utilization arrangements
      - Not if loss does not impair ability to manage manure
      - For new importers, only during 3-yr review
        » Submit NBS & signed agreements to CD by export time

Standard Plan Amendment Guidelines

- Plan amendments are needed when:
  - Management Changes
    - If the new P-Index requires a change in manure application rates
    - If alternative organic sources will replace some or all nutrient sources listed in plan
    - If additional lands (bought or rented) & brought into the operation
    - If a change in manure management system is expected to change the nutrient content of the manure & requires a change in manure application rates

Standard Plan Update Guidelines

- Plan updates are needed when:
  - Changes made on the operation that do not trigger plan amendment criteria above
    - Example, revising Nutrient Plan Summary to reflect a new crop year due to field rotations
  - Updates Do Not Require Board Approval

Plan Amendments

“Unforeseen Circumstances Guidelines”

- Circumstances where immediate formal approval is not feasible
- Must be:
  - Developed by certified specialist
  - Submitted to conservation district or SCC
  - No Approval Necessary
  - Submitted within 30 days of implementation
- Unforeseen circumstances include:
  - Failures or malfunctions of equipment or storage
  - Significant changes in management of nutrients
  - Outbreak of contagious disease requiring a quarantine
Quarantine Situation

• Must comply with PDA issued quarantine order
• Certified specialist must develop amended plan
• Submit plan within 30 days of implementation
• May apply nutrients in excess of crop utilization; but:
  – Soil test annually for 3 years
  – Encourage N pre-side dress testing
  – Encourage cover cropping

FINANCIAL ASSISTANCE PROGRAMS

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Plan Development – APRP

• Agricultural Planning Reimbursement Program (APRP)
  – DEP funded.
  – Reimbursement incentive for resource management plan development – Range $200 - $1,500 per plan
  – Application through regional agents – ChesBay watershed
  – Eligible Plans:
    • Manure Management Plans (Chapter 91)
    • Agricultural Erosion and Sediment Control Plans (Chapter 102)
    • Act 38 Nutrient Management Plans
    • Act 38 Nutrient Balance Sheets
    • Conservation Plans (must meet Chapter 102 requirements)

Plan Development – APRP

• APRP Regional Coordinators for eligible counties:
  – Joshua Glace, Larson Design Group, (Northeast and Northcentral counties)
    • jglace@larsondesigngroup.com
  – Amy Zerbe, TeamAg Inc., (Southeast and Southcentral counties)
    • amyz@teamaginc.com

Resource Enhancement and Protection Program (REAP)

• REAP allows farmers and businesses to earn tax credits for:
  – implementation of conservation or manure management “Best Management Practices” (BMPs)
  – purchase of conservation tillage equipment (e.g. no till equipment) for use on agricultural operations
• Development costs for Act 38 nutrient management plans, manure management plans and Ag E&S plans (i.e. conservation plans) qualify for REAP tax credits
• Eligible applicants may receive between 25% and 75% of “out of pocket” project costs - up to $250,000 per agricultural operation
  – Tax credit available to a recipient is dependent on the type of BMP implemented
  – Certain BMPs in approved TMDL watersheds maybe be eligible for 90% tax credit

REAP

• $10 - $13 million in tax credits is allocated annually to the program
• Applications are available on line or hardcopy
  – https://www.agriculture.pa.gov/Plants_Land_Water/StateConservationCommission/REAP/Pages/default.aspx
• Submitted to the State Conservation Commission
  – Contact Joel Semke, SCC
    • jsemke@pa.gov
Conservation Excellence Grant Program (CEG Program)

- Provides financial and technical assistance for the implementation of best management practices (BMPs) on agricultural operations in high-priority locations within the Commonwealth - Pa Ches Bay Phase III WIP
  - Tier 1 counties - Lancaster & York
  - Tier 2 counties – Cumberland & Franklin
- Financial assistance is available through GRANTS under the CEG Program
  - Loans and tax credits (e.g. REAP) may be used in combination with a grant.
- A single grant awarded to an eligible applicant may not exceed $250,000

CEG Program

- Small grants are also available for any BMP project under $25,000
- The State Conservation Commission is partnering with the Cumberland, Franklin, Lancaster and York county conservation districts for local implementation of the pilot start-up for the CEG Program
- Applicants can apply for a CEG Program grant at the local county conservation district
- Note: Funding is only available for agricultural operations in the participating counties!
- Contact Eric Cromer, SCC – ecromer@pa.gov

Learning Objectives

- Obtain a basic understanding of other water quality laws as they relate to the Act 38 Nutrient Management Program
  - The Commonwealth’s legal obligations and authority
  - Protected resources
  - Who is regulated
  - What is required

Legal Obligation & Authority

- Federal Clean Water Act
  - Establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters
  - NPDES CAFO Permits – Concentrated Animal Feeding Operations (CAFOs)
  - Construction Stormwater Permits greater than or equal to 1 acre of disturbance

- Pennsylvania’s Clean Streams Law
  - Regulates any discharge which may cause or contribute to pollution of waters of the Commonwealth of Pennsylvania
    - Chapter 83: CAO – Concentrated Animal Operations
    - Chapter 102: Erosion & Sediment Control
    - Chapter 91: Polluted Runoff (Manure)
    - Chapter 105: Water Obstructions and Encroachments
    - Chapter 287: Residual Waste Management
    - Chapter 275: Biosolids
### Concentrated Animal Feeding Operations

- Concentrated Animal Feeding Operations (CAFO) – Chapter 92a.29
  - Farms that are over 1,000 AUs,
  - CAOs that are over 300 AUs,
  - Meet or exceed EPA's head numbers
- Requires National Pollutant Discharge Elimination System (NPDES) Permit from DEP
  - Individual or General
  - Permit reviewed by DEP
  - Publicly Noted
- Additional requirements for manure storages, recordkeeping, and reporting
- Requires an approved Act 38 Nutrient Management Plan and Ag E&S Plan
- CAFO inspections are conducted at least once every 5 years by DEP
- Nutrient Management Status Review conducted annually by delegated CCDs (or SCC)

### Erosion & Sediment Control

- Minimize Accelerated Erosion and Sedimentation – Chapter 102.4
- Construction activities regulated by Chapter 102.4(b)
  - http://www.depgreenport.state.pa.us/elibrary/GetDocument?docId=1504839&DocName=SOIL%20EROSION%20AND%20SEDIMENT%20CONTROL%20MANUAL%20FOR%20AGRICULTURAL%20OPERATIONS.PDF

### Water Obstructions and Encroachments

- Dam Safety and Water Management – Chapter 105
  - To prevent unreasonable interference with water flow from in-stream construction activities
- Many activities can qualify under a General Permit (GP)

### Food Processing Residuals (FPR) and Biosolids

- Food Processing Residuals (FPRs)
  - Agricultural utilization of FPRs can be conducted without a permit as long as the guidance in the Food Processing Residual Manual is followed.
  - The Food Processing Residual Management Manual (254-5400-100)

- Biosolids (Chapter 275)
  - Regulates land application of sewage sludge (biosolids)
  - Monitored and enforced by PA DEP
  - Applied by permit at agronomic rates according to a nutrient/manure management plan
  - Online information:

### Conclusion

- All animal farms (AOs)
  - Manure Management Plan (MMP)
    - MMP also required for non-animal farms that import and land apply manure
    - Agricultural E&S plan / Conservation Plan
  - NOTE: Manure Management Plans can always be replaced by Nutrient Management Plans (higher level of planning)
- Higher density animal farms (CAOs)
  - Nutrient Management Plan (NMP)
    - Agricultural E&S plan / Conservation Plan
  - Larger animal farms (CAFOs)
    - Nutrient Management Plan (NMP)
    - NPDES, CAFO Permit
    - Agricultural E&S Plan / Conservation Plan
Other Water Quality Laws and Regulations to Consider

- NPDES Construction Stormwater Permits
- Water Obstructions and Encroachments
- FPRs
- Biosolids

“Right-To-Farm” Law

- Limits the development of ag nuisance suits and ordinances
- Excludes farms from public nuisance ordinances
- Protects farms from nuisance actions
- Does not restrict rights to recover damages

Preemption of Local Nutrient Management Ordinances

- NM ordinance = a municipal water quality regulation that restricts:
  - Storage, handling or use of manure/fertilizer
  - Location, construction or operation of manure storage facilities
- Must be consistent with and not more stringent than Act 38
- Non-nutrient management ordinances are not affected
- Farmers can challenge local ordinances through a request to the Attorney General’s Office

PA Facility Odor Management Program

- Administered by SCC under Act 38
- Requires select farms to get odor management plan
  - CAOs and CAFOs, BUT ONLY if they are building new or expanding existing manure storage facilities or barns
    - Existing facilities not effected, nor is application.
    - Plans developed by certified odor specialists
      - Plans reviewed and approved by SCC
      - Plan approval required prior to start of construction
      - Plan implementation check required prior to use of facility