

**USDA-NRCS**  
**Nutrient Management Planning Proficiency Areas**  
**and Performance Objectives**  
**for**  
**Certified Crop Advisers (CCAs)**  
**Certified Professional Agronomists (CPAg)**  
**Certified Professional Soil Scientist (CPSS)**  
**Who Want To Be**  
**Technical Service Providers (TSP)**  
**for**  
**USDA-NRCS**

Note: You must show your certification card.  
NRCS will verify your certification status

December 2006

## INTRODUCTION

Providing clear guidance to Technical Service Providers (TSP's) for their role in protecting natural resources is one duty of the Natural Resources Conservation Service. The TSP's provide vital service to the producer, and must be competent in all phases of nutrient management planning. Because there are many components of nutrient management planning, it is imperative that the necessary knowledge and skills be clearly stated in an easily located and understood document.

Listed below are the Proficiency Areas that outline the subject matter areas of Nutrient Management Planning. Within each Proficiency Area are specific, measurable objectives that state the performances required in order to demonstrate competence in Nutrient Management Planning.

In order to demonstrate proficiency, the TSP must be able to perform the tasks listed under each Proficiency Area.

### **Instructions:**

#### **CCA/CPAg/CPSS:**

- You must read each area and check the box next to each Proficiency Area if you agree that you can satisfactorily complete each objective listed under the proficiency area.
- At the end of the document you must sign your name and provide your certification number. Signing your name indicates that you are able to satisfactorily complete each of the proficiencies.
- You will be required to perform one nutrient management plan for an existing grower that will be reviewed by NRCS personnel.
- If your plan meets the NRCS standards you will be certified as a technical service nutrient management planner for NRCS.
- If the plan does not meet NRCS standards, the necessary corrections or edits will be identified in writing and you will be requested to revise the plan and resubmit to NRCS. In addition you will also submit a second plan for a different farm that will be reviewed. If the second plan also meets the NRCS nutrient management plan standards then you will be certified.
- If the second plan submitted does not meet the NRCS nutrient management plan standard, the certification office will be notified and the applicant will be advised to register for and successfully complete modules 1-7 of the Nutrient track of the NRCS course – Nutrient and Pest Management Considerations in Conservation Planning.
- Please do not sign this document if you do not feel confident that you can complete all proficiencies. Signing and not performing to the standard may be considered a violation of the code of ethics. Seek training first if necessary.

Read each area and check the box only if you can perform the standards listed.

## **PROFICIENCY AREAS AND PERFORMANCE OBJECTIVES for NUTRIENT MANAGEMENT PLANNING**

### **☐ PROFICIENCY AREA 1. Introduction to Nutrient Management Planning**

1. List NRCS roles and responsibilities in nutrient management planning as described in the following documents
  - a. NRCS General Manual 190-402
  - b. Nutrient Management Standards 590
  - c. Field Office Technical Guide (eFOTG) Section IV
2. List national, state-specific, and local-specific policies that relate to nutrient management planning
3. Describe your state's nutrient management certification process
4. Explain why nutrient management is important to the environment and public health
5. Explain the responsibility of nutrient management planners
6. Describe the role of nutrient management in:
  - a. cash crop agricultural systems
  - b. crop and livestock agricultural systems
  - c. intensive livestock agricultural systems
  - d. specialty crop systems
7. Identify professional risks involved for the planner in nutrient management planning
8. Describe the roles and responsibilities of private entities and agencies other than the NRCS in nutrient management planning
9. Use Sections I through V of the Field Office Technical Guide (FOTG) in nutrient management planning
10. Incorporate national, state, and local water quality regulations into the nutrient management components of a conservation plan

### **☐ PROFICIENCY AREA 2. The Science of Nutrient Management Planning**

1. Describe how the following chemical, biological and physical processes affect nutrient management planning:
  - a. oxidation
  - b. reduction
  - c. leaching
  - d. immobilization
  - e. volatilization
  - f. mineralization
  - g. denitrification
  - h. atmospheric deposition
  - i. erosion

- j. runoff
2. Outline nutrient cycles for C, N, P, K, and S
  3. Explain how soil test nutrient levels relate to crop yield response and potential environmental impacts
  4. State the environmental risk of applying nutrients above economic optimums
  5. Describe how nutrient availability, detachment, and transport affect nutrient movement
  6. Describe processes that affect the fate of nutrients in the environment
  7. Describe how erosion, runoff, leaching, and volatilization affect nutrient movement in the environment
  8. Explain how C, N, P, and S move in the environment
  9. List negative impacts of C, N, P, K, and S on the environment
  10. List the negative impact of excess salts in soils
  11. Describe the role of soil quality in nutrient management planning
  12. Define eutrophication
  13. Describe how eutrophication occurs
  14. List consequences of eutrophication
  15. List sources of heavy metals in soils
  16. Explain why heavy metals are hazardous in the environment

**PROFICIENCY AREA 3. The Influence of Climate, Irrigation, and Drainage on Nutrient Management Planning**

CLIMATE AND WEATHER

1. Explain how climate and weather affect nutrient management planning
2. Explain the importance of the following climate and weather phenomena on nutrient management planning:
  - a. intensity, type, and duration of precipitation
  - b. temperature
  - c. humidity
  - d. wind
3. Locate climatological data for a given site

IRRIGATION

4. List irrigation factors that may increase nutrient leaching, volatilization, runoff, and erosion
5. Explain how irrigation affects nutrient management planning

6. Describe how nutrient contamination of ground and surface water can occur from irrigation
7. Construct an irrigation frequency schedule to minimize leaching and surface runoff potential and reduce irrigation-induced erosion
8. Use a soil survey to determine the available water-holding capacity and intake rate of a soil to be irrigated
9. Use NRCS irrigation guide or local weather data to determine daily/monthly consumptive use values
10. Calculate nitrogen credits from irrigation water application
11. Describe the role of fertigation in nutrient management planning

#### DRAINAGE

12. List drainage factors that may increase nutrient leaching, volatilization, and runoff from the soil
13. Explain how drainage affects nutrient management planning
14. Describe how nutrient contamination of surface water can occur from tile drainage
15. Describe how to use drainage management to reduce nutrient losses to surface water

#### **PROFICIENCY AREA 4. Environmental Risk Analysis**

1. Explain why environmental risk analysis is an important component of nutrient management planning
2. Explain why the following may be environmentally sensitive:
  - a. perennial water bodies
  - b. surface inlets
  - c. areas of concentrated flow
  - d. shallow depth to groundwater
  - e. coarse textured soils
  - f. working or abandoned wells
  - g. Karst terrain and sink holes
  - h. public water supply wellheads
  - i. public water supply watersheds
  - j. lakes, ponds, and reservoirs
  - k. areas prone to flooding, leaching, and runoff
  - l. stream corridors
3. Explain environmental risks associated with improper nutrient management
4. Describe how to use water quality vulnerability assessment tools in conservation planning
5. Define risks involved in nutrient management due to:
  - a. sediments

- b. pathogens
  - c. N
  - d. P
  - e. K
6. Describe how to use soil test results in environmental risk analysis
  7. Describe the risks to livestock from forages grown on high soil test K soils
  8. Use individual site characteristics for the Phosphorus Index to characterize the vulnerability of a site for P loss
  9. Describe methods of reducing site vulnerability to soluble and sediment-bound phosphorus transport
  10. Use individual site characteristics for the Leaching Index to characterize the vulnerability of a site for nitrate leaching
  11. Describe methods of reducing site vulnerability to nitrogen leaching
  12. Use the Revised Universal Soil Loss Equation (RUSLE) and Wind Erosion Equation (WEQ) to evaluate the risk of soil transport by erosion from a site
  13. Describe methods of reducing site vulnerability to soil erosion
  14. Describe how the following soil properties impact nutrient movement to surface or groundwater:
    - a. texture
    - b. organic matter
    - c. structure
    - d. degree of erosion
    - e. slope steepness
    - f. slope length
    - g. soil test levels for N, P, K, and pH
    - h. vegetation
    - i. land use
  15. Define TMDL
  16. Locate a TMDL list for a watershed in a state
  17. Describe how TMDLs impact a nutrient management plan in a watershed

## PROFICIENCY AREA 5. Nutrient Application Management

1. Describe how and when to use the following methods of monitoring nutrients in agricultural systems:
  - a. whole-field sampling
  - b. grid sampling
  - c. management unit sampling
  - d. tissue analysis
  - e. remote sensing

- f. Pre-Sidedress Nitrogen Test (PSNT)
  - g. chlorophyll meters
2. Describe how the following nutrient sources affect nutrient application:
    - a. commercial fertilizer
    - b. animal manures
    - c. industrial and municipal biosolids
    - d. compost
    - e. sludge
    - f. irrigation water
  3. Describe how the following affect nutrient application:
    - a. timing
    - b. application rate
    - c. method of application
    - d. placement
    - e. form
  4. Utilize soil test results and state fertilizer recommendations in developing a nutrient management plan
  5. List factors to consider when making a fertilizer recommendation
  6. Describe how to use the following precision agriculture techniques in nutrient management planning:
    - a. remote sensing
    - b. yield monitoring
    - c. GIS/GPS
    - d. site specific soil testing
  7. Describe how to use soil test results in a nutrient management plan

**PROFICIENCY AREA 6. Components of Nutrient Management Planning**

1. Use the following components to construct an economically and environmentally sound nutrient management plan:
  - a. maps of facilities, fields, landscapes, and soils
  - b. environmentally sensitive areas
  - c. cropping system rotation
  - d. expected yields
  - e. results of soil, plant, water, and manure analyses
  - f. quantification of nutrients from all sources available to the farm
  - g. nutrient budget for each field
  - h. recommendations of nutrient rate, timing, form, and method of application
  - i. review and modification of plan as needed
  - j. operation and maintenance of the plan
2. Describe conservation practices that reduce negative impacts of nutrients to surface and ground water, soil, air, and plants

3. Incorporate federal, state, and local water quality laws and regulations into nutrient management planning

**PROFICIENCY AREA 7. Implementing the Nutrient Management Plan**

1. Identify parties responsible for implementing a nutrient management plan
2. Describe procedures to identify and track changes in soil test nutrient levels over time
3. Explain consequences of increasing soil nutrient levels after implementing a nutrient management plan
4. Identify changes in a farm operation that require updates/adjustments to a nutrient management plan
5. Identify implementation, follow-up, and recordkeeping components of a nutrient management plan as identified in the 590 Standard
6. Complete a "Nutrient Management Job Sheet"

I, the undersigned CCA/CPAg/CPSS, have read and fully understand each of the proficiency areas listed in this document. I can perform the proficiencies and their objectives necessary to meet NRCS procedures and assist the producer in meeting the criteria in the conservation practice standard. I will develop and deliver to NRCS staff for review one nutrient management plan for an existing grower. I also understand that if I do not perform to the stated standard, my certification request will be referred to the certification office and I will be required to successfully complete modules 1-7 of the Nutrient Track of the NRCS Course, Nutrient and Pest Management Considerations in Conservation Planning prior to reapplication.

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Print Name

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Sign Name

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Certification Number

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Date

Note: Please do not sign this document if you can not perform the proficiencies and their objectives. Instead, seek the appropriate training prior to completing this form. NRCS TSP NMP training will be listed on the CCA Web site: [www.certifiedcropadviser.org](http://www.certifiedcropadviser.org), CPAg Web site: [www.agronomy.org/certification](http://www.agronomy.org/certification), and the CPSS Web site: [www.soils.org/certification](http://www.soils.org/certification).