





Natural Resources Conservation Service  
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February 27, 2004

**NATIONAL OPERATION AND MAINTENANCE MANUAL  
MO180-V  
MISSOURI SUPPLEMENT MO1 (Part 500)**

Subject: Missouri supplement to National Operation and Maintenance Manual (NOMM)

Purpose: Update O&M inspection reporting policy

Effective Date: This amendment is effective upon receipt.

Explanation of Update: The new Missouri supplements to this manual cover O&M inspection reporting policy and procedures. Discard the old National O&M Manual and Missouri Amendments and maintain the new National Manual and Missouri Supplement MO1.

Forms used in this amendment are current as of this date.

Filing Instructions:

**Replace**

Contents (undated)

**Insert**

Missouri Directive Tabulation Sheet (NRCS-ADS-1) in front of the NOMM

Supplement MO1, Table of Contents behind the NOMM Table of Contents (page i)

MO 500.21 and 500.22 behind page 500-C.2 of the NOMM

MO 500.41 behind page 500-E.2 of the NOMM

MO 500.43 behind page MO 500-E.2 (1) in the NOMM

Exhibits MO 1 through 5, O&M Inspection Report forms and checklists, behind 500.65.5 Sample Inspection Checklists – Waste Treatment Lagoon, in the NOMM

A handwritten signature in cursive script that reads "Roger A. Hansen".

ROGER A. HANSEN  
State Conservationist

Attachments

Distribution: O

# Part 500 – Operation and Maintenance

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## **Part 500 – Operation and Maintenance**

### **Subpart C – Operation and Maintenance Agreement**

#### **MO 500.21 Content**

- A. The state conservation engineer will provide the leadership for the development of the Operation, Maintenance, and Replacement (OM&R) Agreement and Plan for projects with structural and nonstructural measures. It is acceptable to develop one OM&R Agreement and Plan for similar project measures in a watershed when a single sponsor has OM&R responsibilities. Prior to signing the project agreement, the designated district conservationist will be responsible for reviewing the OM&R Agreement and Plan with the local sponsors.
- B. With the exception of the vegetative component, the sponsor's operation and maintenance responsibilities begins once a project measure is accepted from the construction contractor. Refer to NWSM Part 507, Subpart 507A, MO507.01(h) Construction, MO507-2a (page 6) for the policy on establishing the vegetative component of a structural measure.

#### **MO 500.22 Financial Plan**

In addition to annual operation and maintenance expenditures, sponsors are encouraged to establish a reserve or sinking fund to be used for unexpected maintenance items or the replacement of structural components during the life of the project measure. Guidance for estimating an amount for these funds can be found in the watershed plan. In the establishment of O&M tax assessment rates it is recommended that the legal impact of the Hancock Amendment to the Missouri Constitution be considered.

# Part 500 – Operation and Maintenance

## Subpart E - Inspections

### MO 500.41 Inspection Types and Frequency

**Special** inspections shall be performed immediately following a significant occurrence. The district conservationist is responsible for the inspection of NRCS assisted project dams following a significant event. As a general rule, dams will be inspected following any storm event that may cause auxiliary (emergency) spillway flow. Form MO-AS-39, Exhibit MO-500.65 (5), should be used to record pertinent information including the condition of the dam. Copies of completed Form MO-AS-39 should be provided to the state conservationist and assistant state conservationist for field operations.

**Annual** inspections will be conducted by an NRCS engineer to assist the local sponsors in conducting annual maintenance inspection for the first three years following construction and every fifth year thereafter for all NRCS assisted project dams over 35 feet in total height. The NRCS district conservationist or their representative will assist the sponsor where appropriate and when time permits in the inspection of all other dams.

**Formal** inspections will be conducted under the direction of the state conservation engineer for all NRCS assisted project dams over 35 feet in total height. The inspection will be coordinated with the Missouri Dam and Reservoir Safety program to insure compliance with all state permitting requirements. Dams that are Missouri Environmental Class I, NRCS hazard classification - high (c), or Environmental Class II, NRCS hazard classification - significant (b) and some low hazard (a) dams, require inspection every 3 years. Dams that are Missouri Environmental Class III and over 35 feet in total height, NRCS hazard classification (a), require inspection every 5 years. A copy of the formal inspection report will be maintained in the OM&R files of the local NRCS office and a copy will be provided to the sponsor or landowner so they can submit the report to the Missouri dam safety program. At the discretion of the state conservation engineer, an engineer employed by the Missouri Dam and Reservoir Safety Program may conduct the formal inspection.

## Part 500 – Operation and Maintenance

### MO 500.43                    Inspection Documentation

- A.     The district conservationist (DC) will use form MO-AS-37 Status of Operation and Maintenance, Exhibit MO 500.65 (1), to summarize inspection reports.
- \*     A copy of this report will be furnished to the State Conservationist (STC) and the Area Conservationist (AC) prior to November 30 each year.
- \*     When reports indicate maintenance deficiencies, the DC will provide a follow up report to the STC and AC within six months of the initial report. The follow up report will describe action taken or the lack of action.
- \*     The DC is responsible for keeping the Area Conservationist informed of maintenance deficiency items that are not being properly addressed in a timely manner. The Area Conservationist is to report any apparent OM&R violations to the STC.

The DC is responsible for maintaining an OM&R file for each NRCS assisted project measure. Suggested items to be included in the file are:

- Correspondence and conservation planning notes with pertinent information (i.e. contacts with landowner, other agencies, etc.);
- As built plans, including any associated measures such as wildlife mitigation areas;
- Land rights instruments such as easements, permits, real property assurance certifications, attorney's opinions, and aerial photographs and/or maps of the structure showing property lines and landowners names;
- Conservation plan maps, land use maps, and land treatment inventory and certifications;
- Maintenance inspection records including annual, special, and formal reports;
- Records of repairs and correspondence pertaining to measure operations; and
- Copy of the OM&R agreement with OM&R plan (note: if the agreement or plan covers multiple structures they can be referenced and filed separately).

- B.     Inspection report forms MO-AS-38a, b, and c, or MO-AS-39, Exhibit MO 500.65 (3 through 9) or a similar form should be used to record conditions. These forms are available on the Missouri NRCS web site at <http://www.mo.nrcs.usda.gov/technical/OMforms.html>
- C.     An inspection checklist is included on the back page of O&M Inspection Record forms MO-AS-38a, b, and c.

**STATUS OF OPERATION AND MAINTENANCE INSPECTION  
REPORTS**

Watershed Project \_\_\_\_\_ Area \_\_\_\_\_

Measures Installed:<sup>1</sup> Dams \_\_\_\_\_ Floodplain Easements/Recreation \_\_\_\_\_ Channels \_\_\_\_\_

Completed By: \_\_\_\_\_ Initial Date \_\_\_\_\_

Follow-up Date \_\_\_\_\_

Name/Number	Inspection Date	*Maintenance Follow-up Needed	Comments (vegetative, fence, replacement, etc.)

<sup>1</sup> Show number of measures installed

\* Show maintenance needs with “Y” or “N.” “Y” requires a follow-up report showing repairs completed.

Sheet \_\_\_\_ of \_\_\_\_

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## O&M INSPECTION RECORD (DAMS) CHECKLIST

The items to be checked at time of inspection may include, but are not limited to the following: See O&M Manual Subpart F, Section 500.53 for a more complete checklist.

1. Vegetation
  - a. Need for cutting or spraying
  - b. Need for reseeding
  - c. Need for fertilizing
  - d. Evidence of overgrazing
2. Fences
  - a. Loose or damaged posts
  - b. Loose or broken wire
  - c. Accumulated debris in fence
  - d. Condition of gates
3. Principal Spillway
  - a. Obstructions in spillway
  - b. Condition of outlet and riser
    - (1) Signs of seepage
    - (2) Separation of joints
    - (3) Cracks, breaks, or deterioration of concrete, CMP or steel pipe
    - (4) Differential settlement
  - c. Sediment level in relation to top of riser
  - d. Scour at outlet
  - e. Condition of trash racks
  - f. Outlet channel open
4. Auxiliary (Emergency) Spillway
  - a. Erosion
  - b. Sedimentation
  - c. Weeds, logs, or other obstructions reducing channel capacity
  - d. Deposits or sloughing
5. Embankment
  - a. Settlement or cracking
  - b. Erosion
  - c. Leakage
  - d. Rodent, wildlife, or livestock damage
  - e. Wave damage
6. Reservoir Area
  - a. Undesirable vegetative growth
  - b. Cut of fallen trees
  - c. Slash and other debris
7. Gate or Valves
  - a. Damage by debris, ice or freezing
8. Channels
  - a. Sedimentation
  - b. Bank cutting
  - c. Debris accumulation
  - d. Condition of riprap or other works of improvement
    - (1) Undermining
    - (2) Damage of deterioration
    - (3) Adjacent channel scouring
  - e. Adjacent property damage
9. Structure Drainage Outlets
  - a. Drainage outlet pipes
    - (1) Clean or dirty water
    - (2) Rodent guard attached and functioning
    - (3) Pipes free-flowing
    - (4) Evidence of seepage
      - (a) Adjacent to pipes
      - (b) Lower 1/3 downstream toe and floodplain
  - b. Rock toe drains
    - (1) Free draining into stilling basin or collection channel
    - (2) Clean or dirty water
10. Riprap
  - a. Design thickness in place
11. Hazard Classification
  - a. New development downstream



## O&M INSPECTION RECORD (FLOODPLAIN EASEMENT-RECREATION) CHECKLIST

The items to be checked at time of inspection may include, but are not limited to the following: See O&M Manual Subpart F, Section 500.53 for a more complete checklist.

1. Vegetation
  - a. Need for cutting or spraying
  - b. Need for reseeding
  - c. Need for fertilizing
2. Buyout Area
  - a. No new development in buyout area
  - b. Erosion by surface runoff
  - c. Use of buyout area consistent with watershed plan
3. Recreation Equipment
  - a. Picnic Tables
    - (1) All mechanical fasteners tight
    - (2) Surface coating/sealer intact
    - (3) No exposed sharp corners or edges
  - b. Benches
    - (1) All mechanical fasteners tight
    - (2) Surface coating/sealer intact
    - (3) No exposed sharp corners or edges
  - c. Playground Equipment
    - (1) All equipment functioning as designed
    - (2) All mechanical fasteners tight
    - (3) Surface coating/sealer intact
    - (4) No exposed sharp corners or edges
  - d. Playground Surface
    - (1) Surface adequately covered and protected from erosion
    - (2) Area free of harmful debris (i.e., glass, nails)
    - (3) Surface area is reasonable level and free of standing water
    - (4) Surface functioning as designed
4. Recreation Facilities
  - a. Restrooms
    - (1) Plumbing
      - (a) Drains open
      - (b) Fixtures intact and functioning
      - (c) Valves and connections watertight and functional
    - (2) Structure
      - (a) Surface coating/sealer intact
      - (b) Roof
      - (c) Guttering and surface drainage
      - (d) Lighting
      - (e) Doors and latches
    - (3) Cleanliness
      - (a) Ventilation
      - (b) Sanitary
      - (c) Aesthetic appearance
  - b. Shelter/Pavilion
    - (1) Structure
      - (a) Surface coating/sealer intact
      - (b) Roof
      - (c) Guttering and surface drainage
      - (d) Lighting/Electrical
      - (e) Masonry
      - (f) Tables/Seating
5. Safety
  - a. Trash removal/collection
  - b. Lighting
  - c. Warning signage
  - d. Parking Area/Access



## O&M INSPECTION RECORD (CHANNEL/DIKES) CHECKLIST

The items to be checked at time of inspection may include, but are not limited to the following: See O&M Manual Subpart F, Section 500.53 for a more complete checklist.

1. Vegetation
  - a. Need for cutting or spraying
  - b. Need for reseeding
  - c. Need for fertilizing
  - d. Evidence of overgrazing
2. Fences
  - a. Loose or damaged posts
  - b. Loose or broken wire
  - c. Accumulated debris in fence
  - d. Condition of gates
3. Channels
  - a. Sedimentation
  - b. Bank cutting
  - c. Debris accumulation
  - d. Condition of riprap or other works of improvement
    - (1) Undermining
    - (2) Damage of deterioration
    - (3) Adjacent channel scouring
  - e. Adjacent property damage
4. Berms
  - a. Erosion
  - b. Debris
5. Embankment (Dikes)
  - a. Settlement or cracking
  - b. Erosion
6. Riprap
  - a. Design thickness in place
  - b. Sprouts
  - c. Undermining
7. Tile Outlets
  - a. IS trash on or inside grille
  - b. Ice damage
  - c. Undermining of pipe
8. Lateral Structures
  - a. Pipes
    - (1) Inlet and Outlet open
    - (2) Flap gate working
    - (3) Exit Channel free of sediment
  - b. Concrete Structure
    - (1) Berm adequate
    - (2) Any unusual settlement
    - (3) Emergency spillway condition
    - (4) Exit channel open
    - (5) Weep/Drain holes open
- c. Leakage
- d. Rodent, wildlife, or livestock damage
- e. Wave damage

### SPECIAL STORM INSPECTION REPORT

SWCD \_\_\_\_\_ Date \_\_\_\_\_

Funding Program CO-01 \_\_\_\_\_ WF-08 \_\_\_\_\_ RC&D \_\_\_\_\_ Other \_\_\_\_\_

Watershed Project/ 14-digit HU \_\_\_\_\_ Area \_\_\_\_\_

Site Name/Owner \_\_\_\_\_

Completed By: \_\_\_\_\_

- 1) Approximate pool crest above principal spillway \_\_\_\_\_ ft. or  
approximate flow depth in auxiliary (emergency) spillway \_\_\_\_\_ ft.
- 2) Date of Rainfall \_\_\_\_\_ Amount of Rainfall \_\_\_\_\_ (in.) Rainfall intensity \_\_\_\_\_ (in./hr.)
- 3) Number of days principal spillway functioned \_\_\_\_\_.
- 4) Estimated hours Auxiliary (emergency) spillway discharged \_\_\_\_\_.
- 5) Condition of principal spillway: (inlet and outlet) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 6) Condition of auxiliary (emergency) spillway \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 7) Condition of embankment \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 8) Other concerns or remarks \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_