# EXCAVATED PONDS
# (Stockwater and Wildlife)

This procedure applies in general to all excavated ponds whether used as a single practice or in combination with other practices as components of a total system. This includes when practices are installed in the watershed upstream to reduce erosion and the sediment effects on the pond.

Practice Standard Pond (378) has criteria for the design of an excavated pond with minimum size criteria when designed as a stockwater pond. Practice Standard Wetland Wildlife Habitat Management (644) has minimum size design criteria and other considerations when designed as a wildlife pond. The Engineering Field Handbook (EFH), Chapter 11, has guidance on planning, design, layout, construction, and maintenance of ponds. Practice Standard 378 requires that the pond be operated and maintained properly. The owner/operator shall be advised of the physical effects of this practice on his resource concerns.

## Before Construction

A. Job Investigation

1. Determine purpose of pond.
2. If for stockwater, find size of herd and grazing area to serve.
3. Source and reliability of recharge - underground or surface recharge.
4. Determine watershed size.
5. Soils - Suitability for holding water if a surface runoff, pond, and stability of side slops if a ground water interception or seepage pond.
6. If surface runoff pond, how can surface water enter the pond and be safely discharged?
7. Is the upstream watershed adequately protected from erosion to prevent sediment damage to the pond?
8. Where will the spoil be placed?
9. What kind of equipment will be used to excavate pond?
10. Determine if pond needs fencing, spoil seeded, and ramp graveled.
11. Is a wetland involved? Does it change wetland designation?
12. Legal problems or permits required.
13. Note observed buried or above ground utilities.
14. Consider alternative structure or other measures.
15. Identify complimentary conservation practices.
16. Determine engineering job class.
17. Prepare Operation and Maintenance Plan.

B. Design Survey

1. For design survey, design, layout and checkout use worksheet MN-ENG-41, Stockwater Pits or MN-ENG-26, Livestock Water Pit.
2. Make a good location sketch in field notes.
3. Make a soil boring to a minimum of 1 foot below estimated bottom of excavation, where soil conditions permit, and log boring in field notes.
4. Take elevation shots at four (4) corners of estimated pond size, at the center of pond, inlet, and outlet with an engineer’s level, laser level, or hand level.
5. For guidelines on the surveys of complimentary conservation practice installations, refer to the appropriate Minnesota Engineering Procedure.

C. Design

1. Design excavated ponds in accordance with Practice Standard (378) found in Section IV of the Field Office Technical Guide. If the pond has wildlife as a purpose, it must be designed in accordance with Practice Standard (644). Design information is available in EFH, Chapter 11.
2. Design information will be shown on worksheet MN-ENG-41 or MN-ENG-26. Field notes, computer printouts and drawings can be used instead of the above worksheets if they display the same information. The worksheets noted above or equivalent will be considered the plan for these jobs.
3. Determine size of excavated pond necessary to serve needs. Follow minimum size and capacity design criteria in Practice Standard (378) for stockwater ponds and Practice Standard (644).
4. Determine depth of pond from design survey elevation shots to obtain design size and design dimensions. Determine the area of spoil disposal and design dimensions.
5. Complete MN-ENG-098 Utility Checklist. Review with landowner/operator the design, O&M plan, and give him the MN-ENG-098 Utility Notice to complete.

## Construction

A. Layout

1. Check for underground and above ground utilities from available maps, completed MN-ENG-098 by landowner, site visit checklist, and contractor notification of Gopher State One-Call (GSOC).
2. Set corner stakes and mark cuts on stakes. Set additional stakes as necessary to show any special design considerations for inlets, outlets, or ramps. Record at least one elevation in spoil disposal areas.
3. Supply the cooperator with written instructions (which cooperator should give the contractor) on size of structure, any ramps for watering livestock, size of spoil banks, berm width, side slopes, and if fencing or seeding is necessary. A sketch of the layout showing dimensions should accompany the above information.

B. Construction Inspection

1. Field notes and check notes made during construction will be kept as part of the performance check documentation records. As much checking as possible will be done during construction so errors may be corrected before completion.

## After Construction

A. Checking

1. Make visual inspection of completed pond.
2. Record checkout on worksheet MN-ENG-41 or MN-ENG-26 when they were used for design and construction layout. Checkout notes are to include elevations of the depth of the pond from average ground level, side slopes, ramp slope, spoil bank slopes, height of spoil, and inlet and outlet elevations. Notes will also include measurements of berm width, ramp width, bottom width and length, top width and length, and distance to fence from edge of pond. If the pond is dry, this can be done by one cross section in each direction plus a few extra measurements. If the pit has water in it at the time of checking, judgment and ingenuity will have to be used. Some have used a long pole with a lead weight attached to one end of a graduated cloth tape or rope attached to the end of the pole.
3. Check adequacy of outlets and inlets. Make a statement or take elevation shots to assure compliance with plans.

4. Record observations and a statement of the condition and adequacy of seeding, fencing, spoil leveling and ramp gravelling when they are part of the plan.
5. Certification statements must state that the practice meets or does not meet NRCS Standards and Specifications, be signed and dated. Certifications can be made on worksheets MN-ENG-041 or MN-ENG-026 if these were used for design and construction check information. Certifications can also be made on the checkout notes or drawings if it contains the above noted statement.

B. As-built Plans

1. As-built plans are to be prepared for all major structural (Class V and greater) works of improvement. As-built plans for minor (Class I-IV) structures are to be prepared as determined by the person having job approval authority. In most cases for excavated ponds for livestock watering or wildlife, the completed worksheet MN-ENG-041 or MN-ENG-26 used for design and construction checkout will be adequate for an as-built plan.
2. Any changes made during construction to the original design should be documented in the design folder and approved by the person with the design approval authority.

C. Minimum Documentation to be included in Case File.

1. Design folder including survey notes and prepared drawings.
2. A list of applicable construction and material specifications, and construction notes.
3. Utility notice and checklist worksheet, MN-ENG-098, GSOC printout.
4. Seeding, fertilizing and mulching plan and certification or observation statement on condition or adequacy of vegetation or compliance with recommended plan.
5. Operation and Maintenance Plan and Inspection Plan (if developed).
6. Checkout survey field notes and any calculations of quantities for payment items. Include as-built plans and completion reports if they were required.