

Aquaculture Ponds

WV Conservation Practice Job Sheet

Code 397



DEFINITION

A water impoundment constructed and managed for commercial aquaculture production.

PURPOSE

The purpose of this conservation practice is to provide a favorable aquatic environment for producing, growing, harvesting, and marketing commercial aquaculture crops.

WHERE USED

This practice is used in all impoundments that store water and are managed for commercial aquaculture purposes; and on land where soil conditions, water resources, and topography are suitable for constructing a pond or reservoir.

PLANNING AND DESIGN CONSIDERATIONS

NOTE: Any pond construction necessary, must meet the current criteria as specified in the WV Conservation Practice standard (378) Pond.

Planners and landowners should work closely with professionals to determine several conditions:

- Feasibility
- Site Selection
- Marketing

A. Feasibility

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It is highly recommended that landowners refer to the West Virginia University (WVU) Extension Aquaculture questionnaire at:

<http://www.wvu.edu/~agexten/aquaculture/sitequest.htm>

This document may help formulate a strategy and site determination prior to getting started in aquaculture.

All permits must be obtained prior to construction and prior to raising and selling fish in West Virginia. Commercial fish producers and fee fishing operators are required to obtain licenses and/or permits from the West Virginia Department of Natural Resources, WV Department of Agriculture and/or the WV Division of Environmental Protection. Also, permits may be required to discharge water from commercial ponds into streams.

Federal food health and safety regulations may also apply. Consider implementing a Hazard Analysis and Critical Control Point (HACCP) plan for your proposed aquaculture production facility.

If aquaculture system construction will involve the diversion of a stream or withdrawal of water from a stream or river, contact your local West Virginia Division of Natural Resources (WVDNR) office for permit information. In addition the list of permitted activities may be found on the last page of this job sheet

B. Site Selection

Landowners should be knowledgeable about landuse activities within the watershed of the proposed or existing facility. Previous or ongoing use of herbicides, pesticides, aerial spraying, industrial discharges, mining, timbering, livestock grazing practices, or other activities

may impact or contaminate your water supply, particularly during periods of heavy runoff.

Sites must be found that provide an accessible water supply with a constant, year-round flow. For existing ponds, determine the surface acreage of water and the average depth. For springs or streams, be sure to gauge the water flow during the driest parts of the year.

NRCS planners are to encourage landowners to consult with the WVU Extension Aquaculture Specialist to determine the best type of production system to meet the available needs and resources of landowners. Contact the Aquaculture Specialist to schedule an on-site evaluation.

If pond construction is to be undertaken, contact your local Natural Resources Conservation Service (NRCS) field office to conduct a pond site evaluation. NRCS may also be contacted for design of dams or weirs for water collection and delivery to an aquaculture production system.

It is extremely important to have a water quality test performed on the water source to determine suitability for aquaculture.

At a minimum, an evaluation of a potential site for aquaculture should include testing for the following water quality parameters:

- pH
- Alkalinity (measured as CaCO₃)
- Total Hardness
- Carbon Dioxide
- Nitrate (NO₃)
- Iron (Fe) - ferrous
- Ammonia (NH₃)
- Nitrite (NO₂)

In addition, the prospective aquaculture producer should seriously consider testing for:

- Pesticide residues
- E. coli bacteria

Because potential sites and water sources for aquaculture can widely differ, additional water quality testing may be required even if the results of the above tests are within acceptable ranges. Other recommended tests can include screening for heavy metals, organochlorine compounds, hydrogen sulfide, nitrogen gas and other contaminants depending on the nature of the individual site and water source. These tests may be very expensive and should only be conducted after other aquaculture site evaluation criteria have been met successfully. For more information on water quality testing for aquaculture, or for a listing of approved water quality testing laboratories, contact your local WVU Extension office.

C. Marketing

A market evaluation for your product in your local area, and the availability of processing for your product should also be performed.

For marketing strategies refer to the publications entitled: *Strategic Approach for Marketing Recreational Fee-Fishing in Appalachia*; and *Marketing Processed Fish and Fish Products in the Aquaculture Industry: A Supply Chain Analysis*. These publications are available at the West Virginia University Extension website <http://www.wvu.edu/~agexten/aquaculture/index.htm>

It is also advisable to visit other aquaculture operations in the local area or state to observe system operations, strategies and management.

OPERATION AND MAINTENANCE

Plans for operation and maintenance should provide for inspection, operation, and maintenance of the vegetation, the pipes and valves, spillways, roads, and other parts of the system. Most of the maintenance will be in performed in conjunction with the structures constructed or prepared for this practice.

Periodic water quality monitoring should be performed at a frequency suitable for the species raised and more often when necessary. At a minimum, water quality testing should be performed annually.

In some instances, periodic maintenance may be designated or mandated by permits such as waste disposal. Those activities must be performed as specified.

Species management should be in accordance with West Virginia Conservation Practice Standard (399) Fishpond Management or other appropriate material prepared by aquaculture specialists.

ADDITIONAL REFERENCES

- Interested landowners may find the following contacts helpful.
- WVU Extension Service Aquaculture Specialist, <http://www.wvu.edu/~agexten/aquaculture/index.htm>
- West Virginia Department of Agriculture (marketing and permit information) <http://www.wvagriculture.org/>
- West Virginia Division of Natural Resources (WVDNR) <http://www.wvdnr.gov/>
- West Virginia Division of Environmental Protection (WVDEP) <http://www.wvdep.gov/>
- North Central Regional Aquaculture Center (NCRAC) <http://www.ncrac.org/>
- West Virginia Aquaculture Association
Route 4 Box 270, Charles Town, WV 25414
(304) 725-9141

SPECIFICATIONS

Site-specific requirements are listed on the following pages of this job sheet. Specifications are prepared in accordance with the WV NRCS Field Office Technical Guide. Information in this job sheet is considered to be part of the conservation plan.

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Client:	Farm #:
Field(s):	County:
Designed By:	Date:

Purpose (check all that apply)	
<input type="checkbox"/> Production of catfish	<input type="checkbox"/> Production of baitfish or minnows
<input type="checkbox"/> Production of trout	<input type="checkbox"/> Production of other species: (specify): _____

Additional Information (complete as necessary and applicable)	
<input type="checkbox"/> See attached site feasibility determination	<input type="checkbox"/> See attached marketability determination
<input type="checkbox"/> See the attached soils report	<input type="checkbox"/> See the attached water quality or water chemistry report
<input type="checkbox"/> This practice is performed in conjunction with the WV Division of Natural Resources Fisheries Biologist, West Virginia University Extension Aquaculture Specialist or Coordinating Aquaculture Specialist:	
Agency/Company: _____ Title: _____	
<input type="checkbox"/> Other coordinating partner(s): _____	

Specifications – NOTE: An Engineering design(s) may be required for installation of this practice. Please refer to (378) Pond design criteria if required.

	Pond # _____	Pond # _____	Pond # _____
Field			
Size (ac)			
Species #1			
Min. Depth Required			
Max. Depth Required			
Stocking Rate			
Species #2			
Stocking Rate			
Species #3			
Stocking Rate			
Water Supply Type ¹			
Approximate Volume Available			
Pond Type ²			
Target pH or pH Range			
Screens or Filters Required ³			

¹ List as **Spring, Overland Flow, Groundwater, Pumped, Existing Pond(s)** or **Other** (describe in “Additional Notes” section of this document).

² List as **Embankment** or **Excavated**

³ Identify whether screens or filters are required to exclude undesirable fish. If **YES**, refer to designs or additional notes.

Operation and Maintenance
Maintain this practice as outlined in the section of this document entitled “Operation and Maintenance”. Additional Notes:

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If needed, an aerial view or a side view of the practice can be shown below. Other relevant information, complementary practices and measures, and additional specifications may be included.

Permits and Activities that may be required for this Conservation Practice			
Activity	Permit	Fee	Contacts
Fish Processing Facility	Processing License Enrollment in Inspection Program	Varies	WV Department of Agriculture; Aquaculture Inspector, (304) 558-2226
	NPDES Permit	Based on volume of discharge	Division of Environmental Protection; Chief of Water Resources (304) 558-2107
Importation of eggs, fingerlings or fish from out of State	Fish Importation Permit	None	Division of Natural Resources; Wildlife Resources Section (304) 558-2771
Food Fish Production	Enrollment in Inspection Program	None	W.Va. Department of Agriculture; Aquaculture Inspection (304) 558-2226
Fish Production	Fish Pond License	\$10	Division of Natural Resources Law Enforcement Section (304) 558-2784
	Fish Sellers License	\$10	
Fee Fishing Operation	Commercial Fishing Preserve License	\$25/year	Division of Natural Resources; Law Enforcement Section (304) 558-2784
Bait Fishing Production	DNR Permit(s)	Varies	Division of Natural Resources; Law Enforcement Section (304) 558-2784
* Fish Production over 20,000 lbs/ year OR 5,000 lbs of feed / month	NPDES Permit	\$250 upon application, annual based on maximum feed per month	Division of Environmental Protection; Chief of Water Resources (304) 558-2107

* This permit applies only when required by a WVDEP inspector

Additional Specifications (Notes, etc.):

Questions regarding the operation, maintenance or establishment of this practice should be directed to:

at

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