

PA659. WETLAND ENHANCEMENT DESIGN AND CHECK DATA REQUIREMENTS

The following items must be addressed in the design folder for the Wetland Enhancement. The following pages shall be included:

- (1) Table of Contents
- (2) Operation and Maintenance Plan
- (3) Soils and Foundation Data
- (4) Design calculations
- (5) Construction Specifications
- (6) Engineering Drawings
- (7) Erosion & Sediment Control Plan
- (8) Quality Assurance Plan

Listed below are specific items that are required in the design:

Table of Contents

This organizes the design folder.

Operation and Maintenance Plan

Start Up Sequence

- a. Clean water source
- b. Water level(s) to maintain
- c. How long until wastewater is introduced?

Normal Operation

- a. Water level(s) to maintain
- b. Freeboard requirements
- c. Seasonal adjustments
- d. When to add water
- e. Check & clean inlets & outlets
- f. Removal of excess vegetation
- g. Pump or siphon

Maintenance

- a. Embankments & liner
- b. Inlets & outlets
- c. Vegetation (harvest?)
- d. Sediment accumulation
- e. Pump or siphon

Emergency Action Plan

- a. Flow control

- b. Temporary storage or diversion
- c. Contact numbers
- d. Equipment needs

Monitoring Plan (if applicable)

Soils and Foundation Data

Document compliance with The PA One-Call Utility Check Act before digging.

Written soils description for test pits and site specific comments are included,

Reference pit locations to site contour map.

Include soils lab data and clay liner calculations where applicable.

Document need for rock excavation, drainage, isolation from open foundation rock, and depth limitations based on soils investigation.

Design calculations

Determine wetland surface area

Water budget

- Detention time
- Seepage control

Effluent disposition (for wastewater)

- Recycle
- Land application area
- Wastewater Treatment Strip
- Storage facility

Hydraulic calculations

- Pipes
- Pump or siphon
- Spillways

Water control elevations

- Freeboard requirements
- Floodplain limits

Quantities and cost estimate

Construction Specifications

Enclose the applicable specification(s) 659, 313P, and others (e.g. 342, 362, 606, 634, 635).

Include any "additional conditions" or items that are site specific or must be defined to supplement the standard specification.

Add any special or "by-others" specifications.

Engineering Drawings

General

On each drawing sheet, the title block should show the operator's name, county and the persons involved in drawing and designing the enhanced wetland.

Include any standard drawings made by NRCS or designed by others and concurred in by NRCS that are needed, and include them in the drawing index on the cover sheet.

Listed are items that should be included:

Plan View Sheet(s)

- North arrow
- Utilities/roads
- Bench mark(s)
- Scale
- Legend
- Existing structures
- X-section locations
- Construction limits
- Drainage & outlet locations
- Wetland cell locations
- Transfer line locations
- Borrow area
- Spoil area
- Outlet location
- Wastewater treatment strip location
- Plant locations

- Wastewater treatment strip or storage
- Set backs (if applicable)

Site Contour Sheet

(Preferably same as Plan View Sheet)

- North arrow
- Bench mark(s)
- Scale
- Soils test pit location
- Existing structures
- Contour lines
- Property lines
- Water well and spring location(s)
- Water courses
- Known sinkhole locations
- Legend

Cross Section Sheet(s)

- One section, minimum per cell
- Scale(s)
- Soil test pit profile(s)
- Each cell with liner & plant medium
- Pipe profile(s)
- Earth fill zones
- Drainage configuration
- Water levels & freeboard
- Reference to detail drawings

Erosion and Sediment Control Plan

See DEP's Erosion and Sediment Pollution Control Program Manual and conservation District requirements.

Quality Assurance Plan

What specific items need inspection and when?

Who will do the actual inspection?

Is any testing equipment required for the inspection?