



SUSQUEHANNA RIVER BASIN COMMISSION

1721 North Front Street • Harrisburg, Pennsylvania 17102-2391

(717) 238-0423 Phone • (717) 238-2436 Fax

www.srbc.net

METERING PLAN PREPARATION GUIDANCE FOR SURFACE WATER WITHDRAWALS

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The Susquehanna River Basin Commission (Commission) developed this guidance document to assist with the preparation of metering plans for proposed surface water withdrawals. A plan must be submitted and approved for each withdrawal location prior to construction or operation. The plan and design drawings must be signed and sealed by a professional engineer licensed to practice engineering in the state of the proposed project.

A metering plan is a detailed description of the proposed infrastructure that will be used to withdraw water and monitor water use. The plan should provide, at a minimum, the following information:

A. Intake Design – The intake should be designed to meet the demand of the withdrawal yet minimize size, limit overall disturbance from installation, and avoid impacts and hazards to recreational use of the waterbody. The design should allow for complete removal of the intake and related equipment at the completion of the project. To avoid impacts to aquatic species, if possible, locate the intake in water at least 3 feet deep and avoid cobble, gravel, or sandy substrates. The intake screen should have openings no larger than 0.1875 (3/16) inches for floating intake structures, and no larger than 0.1 inches for submerged or buried intake structures. The intake should be designed to limit the through-screen entrance velocity to 0.5 feet per second (fps) or less. Regular maintenance of the intake structure is expected. Pump controls should not be adjusted to compensate for a clogged intake screen.

1. Narrative – A written description that should:

- a. Characterize the withdrawal setting in terms of average water depth and substrate.
- b. Discuss site features such as wetlands, floodplains, steep slopes, and riparian vegetation, and indicate how the design avoids or minimizes impact to these features.
- c. Identify potential freshwater species of concern at the site and discuss measures for avoiding impact to these species.
- d. Describe the intake design including type, size, and materials, and explain why the design and/or type of intake was chosen.
- e. Identify the size, type, power supply, configuration, and number of withdrawal pumps.
- f. Describe the type, size, and configuration of water conveyance pipe.

- g. Describe site-specific withdrawal procedures and operations.
- h. Identify debris management, and maintenance intervals and requirements.
- i. Indicate how water will be managed, stored, and/or transported off-site following withdrawal.
- j. Describe the estimated construction schedule and completion date.

2. Supporting Documentation – To include, but not be limited to, the following:

- a. Photographs of the withdrawal location.
- b. Intake size, effective open area, and entrance velocity calculations.
- c. Calculations that led to the selection of the pump(s).
- d. Pump and system head curves.
- e. Manufacturer information for the intake, intake screen, and pump(s).
- f. Copies of correspondence/approvals from other regulatory agencies pertaining to the design and construction of the intake, and for avoiding or mitigating for impacts to special concern species or features.
- g. Copy of the Pennsylvania Natural Diversity Inventory (PNDI) review receipt.
- h. Calculations demonstrating the ability to transport the requested quantity of water from the site via either truck or pipeline.

B. Metering – Meters, accurate to within 5 percent of the flow rate, must be installed in a fashion whereby they are not easily bypassed, zeroed, or reset. Meter displays and transmitters should be capable of displaying both a maximum instantaneous flow rate, and a totalized flow quantity, recordable to at least 8 digits to prevent frequent rollover. Valves are recommended both upstream and downstream of a meter, in addition to the appropriate manufacturer specified straight pipe sections. To prevent the spread of aquatic invasive species, some form of backflow prevention is required. Note: Results of a hydrostatic pressure test for pipelines between the point of withdrawal and the water meter may be deemed necessary by Commission staff when pipeline length is considered to be significant.

1. Narrative – A written description that should:

- a. Describe the type, make, model, size, accuracy, and flow range of the proposed meter(s).
- b. Indicate the type of meter display or transmitter, the display capabilities, and the number of digits capable of recording and displaying.
- c. Indicate where the meter and meter display will be located and how Commission staff will have access during routine compliance inspections. Note: Inspections may occur without prior notification and all meter displays must be accessible at all times without locks, keys, or special access privileges.
- d. Describe the procedure for monitoring the flow meter during withdrawal operations.
- e. Describe the procedure for maintaining an accurate and continuous record of the water withdrawal.

- f. Describe the techniques or the equipment used to limit the maximum instantaneous and peak day withdrawal to prescribed limits.
- g. Describe the procedure for tracking water leaving the withdrawal site, going to multiple locations, and/or being consumptively used.

2. Supporting Documentation – To include, but not be limited to, the following:

- a. Manufacturer information and specifications for the proposed flow meter, meter display, and/or transmitter.
- b. Information pertaining to manual or automated flow-limiting devices and/or supervisory controls.
- c. Upon installation, provide serial number for flow meter, pictures of the installed meter, and certification of the meter's accuracy.

C. Plans, Details, and Maps – Provide to scale and clearly label.

- 1. Site Plan – The site plan should include contours and provide detail at no smaller than 50-scale. Proposed grading and land development plans are preferred if available.
 - a. Show the project site layout and location of the intake structure, meters, flow limiting valves and/or controls, backflow prevention devices, storage facilities, pipelines, pumping equipment, power supply, existing or proposed buildings, access roads, truck loading or water distribution facilities, and staging or operating areas.
 - b. Label intake and edge of bank coordinates.
 - c. Show the location of sensitive site features such as wetlands, floodplains, steep slopes, and/or vegetated riparian zones.
- 2. Details – Draw to scale, clearly label, and dimension.
 - a. Detail the meter configuration with distances to nearest valves or fittings specified.
 - b. Provide a top, side, and section view of the intake structure and/or the intake screen.
 - c. Provide an elevation cross section of the proposed intake structure and related equipment. Show the existing and proposed grades, streambank(s), surface water elevations, bottom of water column, and any required bedding or fill materials.
- 3. Maps – Provide a topographic map showing the project site and any off-site features such as pipeline routes, storage areas, and location of consumptive use.