

Passaic Trading Program

Preliminary Template for Measuring Program Success

I. Overview

As we move toward completion of the trading program design stage of this project, the project team has developed preliminary success measures for the Passaic River Trading Program. These measures address indicators applicable to water quality trading in general, and to the unique challenges and aspects of the Passaic Program. The measures further address progress through each stage in program development, from preliminary research, team building, stakeholder engagement, and program design, to implementation and measuring of water quality, economic and associated program results.

Several unique elements of the Passaic Program stand out: First, the research and program design took place in advance of an approved TMDL. At this time, a proposed TMDL has been released, with substantial comment received by the New Jersey Department of Environmental Protection. The absence of a TMDL necessitated creating trading program design parameters from educated assumptions. This, in turn, necessitated creating a range of trading program scenarios based on these assumptions, notably as related to the chlorophyll-a criteria and the number of end points where this parameter will be measured. A second unique element is that under certain flow conditions, up to 250 million gallons per day of water is diverted from both the Passaic and Pompton Rivers and pumped to the Wanaque Reservoir for water supply storage. While the trading program will focus primarily on facilitating point to point source trades between wastewater treatment plants, opportunities for involving several municipal separate storm sewer system (MS4) operators and the water purveyor responsible for the Wanaque Reservoir also are being considered as cost effective water treatment/pollution prevention options.

In general, the overall complexity of this river system adds to the challenges of executing a successful trading program. The Passaic flows through one of the most densely populated areas of the nation. From the headwaters of the tributaries that feed the Passaic to the Dundee Dam, where the river becomes tidal, there is a dramatic range of land and water uses, demographic diversity, and stakeholder expectations for the river's use, protection and restoration. Added to this complexity is the fact that New Jersey is a home rule state. As a result, scores of municipal jurisdictions have a stake in a myriad of decisions affecting public and private actions related to the Passaic River. Many of these challenges are only indirectly related to the trading program. Nonetheless, this extreme complexity must be given full consideration in crafting and executing the trading program, and will ultimately have a significant impact on the effectiveness of water quality trading.

Following is a summary of the proposed measures of program success, organized by topic and divided into near-term (~2008) and long-term (~2012) results. 2008 is the end date for the current EPA funded project, and 2012 is the year when trades are anticipated

to commence. As the program concludes the design stage and moves toward implementation, the proposed measures of program success will be updated.

II. Environmental Impacts

Near-term evaluation (~ 2008)

- Degree of scientific basis/consensus for trading framework
- Degree of scientific basis/consensus for trading ratios
- Degree of success in designing trading program in absence of a TMDL
- Degree of success in addressing watershed-specific features in trading program

Long-term evaluation (~ 2012)

- Number of pounds of total phosphorus removed as a result of trading
- Achievement of TMDL goals (i.e. chlorophyll-a criteria in Dundee Lake and Wanaque Reservoir) through trading as compared to what would have been achieved without trading. (Measurement parameters may include timing and geographic distribution of phosphorus load reductions as compared to a command and control implementation scenario)
- Did trading accelerate the achievement of TMDL goals? By how much?
- Ancillary environmental benefits achieved through trading. (A list of possible ancillary benefits from this trading program will be developed. It should be noted that for point to point wastewater treatment plants (WWTPs) trades, ancillary benefits are not likely. However, purveyor/MS4 trades might yield some drinking water quality/habitat benefits.)
- Verification that trades did not exacerbate or create any phosphorus-induced hot spots in the watershed
- Impact of trades on water quality under a range of surface water diversion conditions

III. Economic Impacts

Long-term evaluation (~ 2012)

- Dollars saved because of trading (capital and operating costs)
- Transactional efficiency, i.e. pounds of phosphorus reduced per trade. (Given the limited number of potential trading participants in the Passaic, transactional efficiency is a more appropriate program measurement than total number of trades.)
- Number of WWTPs that we anticipate would gain an economic advantage through trading, versus the number that actually participate in trading
- Establishment of effective market
- Effective reduction of transaction costs
- Efficiency of trading program design
- Cost benefit analysis: Compare the cost of funding the research grant with the benefit of the trading program
- How much of the actual cost savings were captured by the forecasted savings?

IV. Policy, Regulatory and Stakeholder Impacts

Near-term evaluation (~ 2008)

- Impact of trading on NJDEP permitting approach (i.e. did trading stimulate NJDEP's first watershed-based permit? How effectively does the permit language facilitate trading? How many individual permits allow for trading?)
- Likely degree of integration or acceptance of trading by:
 - o NJDEP
 - o WWTPs and municipalities in NJ
 - o Environmental NGOs inside and outside NJ, including the perception that trading will yield equitable results
 - o NJ water purveyors
- Did trading program development appear to be transparent to the public?

Long-term evaluation (~ 2012)

- In its execution, did the trading program fully comply with the Clean Water Act?
- Degree of integration or acceptance of trading by:
 - o NJDEP
 - o WWTPs and municipalities in NJ
 - o Environmental NGOs inside and outside NJ
 - o NJ water purveyors
- Did the execution of the trading program raise new equity issues?
- Degree of trading program transparency to public
- Did the presence of the trading program accelerate the adoption of the TMDL?
- Flexibility of trading program as opposed to command and control regulation
- Did the trading program provisions or the regulatory enforcement mechanisms effectively address any issues of non-compliance associated with point source permit conditions?
- Policy for periodic review of trading program
- Trade tracking mechanism
- Efficiency of trading program design
- Did Passaic trading program stimulate follow-on of other trading projects in NJ?
- Level of positive behavioral change resulting from presence of trading program, regardless of number of actual trades (e.g. did the presence of a trading program stimulate more cooperation between DEP, WWTPs and other stakeholder groups)

V. Program Impacts at a Larger Scale: National Developments Affecting Progress in the Passaic and Results in the Passaic Playing a Role in National Trading Policy

Near-term evaluation (~ 2008)

- Incorporation of lessons learned from other trading programs into the Passaic Program

Long-term evaluation (~ 2012)

- Impact of Passaic trading program innovations (e.g. trading to protect two endpoints; trading to account for complex surface water diversions, etc.)
- Number of emerging issues effectively addressed by the project team (e.g. trading with MS4s, trading unused capacity, trading with water purveyor, economic benefits of trading under a phased-in TMDL cap, etc.)
- Number of published articles, professional presentations and stakeholder dialogue events addressing Passaic trading