

**Foster Joseph Sayers Feasibility Study
Public Workshop Comment Response
October 16, 2017**

1. *Who initiated this feasibility study and when? What is the authority granted to do so? How is it being funded and at what cost? Are similar studies being considered at other reservoirs? What will be the end result of the study? What are the next steps after the study is completed?*

The Susquehanna River Basin Commission (SRBC), as the non-federal sponsor, made a formal request for the Foster Joseph Sayers study in March 2012. The study authority is through the U.S. Army Corps of Engineers' (Corps) Continuing Authorities Program, Section 1135, which authorizes the review of modifications to structures and operations of water resources projects constructed by the Corps for the purpose of improving the quality of the environment. The modifications must be feasible and consistent with the purposes for which the projects were constructed, and implementation of the modification cannot exceed a total cost of approximately \$12.5 million (federal limit of approximately \$10 million and non-federal limit of approximately \$2.5 million). For Foster Joseph Sayers, the purposes of the project are flood risk management, recreation, and water quality.

While the study request originated in 2012, federal funding of \$50,000 was not provided until 2014. These funds were used to complete the Federal Interest Determination Report in June 2014, which concluded there was a federal interest in additional study to assess whether improvements to current reservoir operations were warranted. The next step was to complete a feasibility study, following execution of a feasibility cost-sharing agreement between the Corps and SRBC. The feasibility cost-sharing agreement was signed in April 2016. The cost of the feasibility phase must be split 50/50 between the federal government and non-federal sponsor. The total budget for this feasibility phase is \$780,032, which is split evenly between the Corps and SRBC at \$390,016 each.

As part of the nation-wide Sustainable Rivers Project, the SRBC, The Nature Conservancy and the Corps completed the Susquehanna River Low Flow Management Study in 2012. This study provided the data and documentation to demonstrate that alterations to reservoir releases may have beneficial impacts to in-lake and/or downstream aquatic species and their habitat during low flow and drought conditions. Based on this body of work, SRBC and the Corps have partnered to study and improve low flow management at Corps-owned and operated dam and reservoir projects. Related studies have been completed at Whitney Point Lake and Cowanesque Lake reservoirs and one is currently underway at Curwensville Lake reservoir. Each has led to successful implementation of improved dam operations during periods of low flow and drought conditions. Similar studies have been requested for Tioga-Hammond Lakes and Raystown Lake reservoirs.

The end product of this feasibility study, which includes a 30-day public and agency review of the documentation, will be a feasibility report and environmental assessment proposing a recommended plan. If the recommended plan proposes improvements to existing operations during low flow and drought conditions, the next step would be to receive federal funding and revise the Corps' reservoir regulation manual to implement the new operation.

If the recommendation is to maintain current operations and make no additional changes, then the feasibility report will document the study findings and conclude all efforts at that time.

2. *What is the primary reason for conducting the feasibility study? Is it to address abandoned mine drainage impacts from Beech Creek? Is it to improve the fishery and aquatic life for 13 miles of Bald Eagle Creek downstream? Is it to make more water available for natural gas development? Is it to provide more water to downstream users and the Chesapeake Bay? If there is a problem downstream, why not fix it downstream?*

The reason the Corps and SRBC are undertaking this study is to evaluate current project operations, which have been in place for several decades, to understand if a revised operation plan will provide improved environmental conditions for in-lake and/or downstream aquatic species and their habitat during low flow or drought conditions. SRBC and the Corps have a longstanding partnership regarding low flow management, including the completion of a report in 2012 with The Nature Conservancy, and numerous agencies and universities, which identified ecosystem flow recommendations for streams in the Susquehanna River Basin. The recommendations from the 2012 report focus on patterns of streamflow that follow more natural seasonal patterns, unlike traditional or historical operations at many reservoirs. The results of the 2012 report were also used to guide the Curwensville Lake and Cowanesque Lake assessments, as well as the current assessment for Foster Joseph Sayers. Technology and science have advanced since the time the reservoir(s) were built, and the Foster Joseph Sayers Section 1135 study provides an opportunity to determine if operations can be adjusted during low flow and drought conditions to improve the environment, without impacting the primary purposes of the project, which are flood risk management, recreation, and water quality.

The study will evaluate the potential for in-lake and downstream environmental improvements during low flow and drought conditions, including fisheries, wetlands, and the aquatic ecosystem. Aquatic ecosystem improvements are expected to be most substantial during low flow periods in the 13 miles of Bald Eagle Creek downstream of the dam. Potential benefits downstream of the confluence with the West Branch Susquehanna River are possible, but are not being investigated in this study.

This study is not being conducted to make more water available for natural gas development, downstream recreational water users, or the Chesapeake Bay. The natural gas industry, as with other commercial and industrial water users, already has permitted water withdrawals to meet their needs, and the majority of these withdrawals have requirements that prevent them from making water withdrawals during low flow periods. Any changes to Foster Joseph Sayers operations would not affect these requirements.

3. *Based on project history, the local community has a significant lack of trust for the United States Army Corps of Engineers and Susquehanna River Basin Commission. Taking this into consideration, how is the study team planning to maintain transparency and keep local officials, stakeholders, and the community informed and engaged throughout the study process?*

The team understands that sharing project information and requesting feedback from the public throughout the process is vitally important.

The team has been working with the county and other stakeholders to determine how best to keep local stakeholders informed and engaged in the process. The most recent communication with the Centre County Commissioners Office was in October. We will provide the community with the opportunity to stay up-to-date on study progress and share questions, concerns, and ideas with the study team, as appropriate, and we are currently determining the most efficient and useful methods for doing so. It is important to understand that this is a study, and no recommendations regarding revised operations have been or will be made without vetting them through officials, stakeholders and the public. A draft report will be available for public comment prior to any decision-making. The Corps' study webpage is being kept current with new information and documents, and the team is also holding a second public workshop in the spring 2018 to share the results of the low flow modeling alternatives, and potential environmental improvements and/or impacts for each alternative. We have an email list that was adopted from the August 30, 2017, workshop, and this list will be used to communicate significant project updates and the availability of new documents on our study webpage. To be added to this list, provide any comments or feedback on the study, and/or share ideas for community involvement, please email CENAB-CC@usace.army.mil at any time.

4. *The existing conditions of the creek, dam, reservoir, state park, and associated facilities at the Foster Joseph Sayers project are just fine as is. Why do you feel the need to come in and change things? Has there been a problem identified? If nothing is broken, why risk messing things up by trying to fix it?*

The study is about assessing whether or not there is an opportunity to improve the environment, solely with regard to water releases during low flow or drought conditions, using improved data and science gained since the time the reservoir was constructed. For example, there may be an opportunity to facilitate better aquatic conditions for in-lake or downstream fisheries, or wetlands, during key times in their life cycles or seasonal cycles, which would improve the overall fishery or ecosystem. The need to study and make improvements, if warranted, is to ensure the best use and application of public funds, which are provided to the Corps to operate Foster Joseph Sayers reservoir. If potential impacts outweigh the potential benefits, reservoir operations will not be changed from the current conditions.

Environmental resources at the project have also changed over time and since the current Reservoir Operations Manual was completed. For example, the manual states that the project should be operated to support the warmwater fishery downstream. However, recent electrofishing surveys by Pennsylvania Fish and Boat Commission and SRBC biologists have documented a strong population of wild brown trout downstream, which is a coldwater species. They have also identified the presence of American eel, which is a migratory fish species targeted for restoration throughout the Susquehanna River Basin.

The recommended action for this study must demonstrate that any changes will not interfere with the current project purposes of flood risk management, water quality, and recreation, and will provide environmental benefits. If the study results indicate that there are no viable alternatives, then a recommendation will be made to maintain the current operations.

5. *Economic impacts to the Borough of Howard, the state park, and the local community, from proposed changes in operations at the Foster Joseph Sayers project, are of significant concern. How will these impacts be evaluated as part of the study? Will there be an economic impact study?*

Yes, there will be an economic analysis of the alternatives evaluated as part of the feasibility study. The analysis will include an assessment of potential recreational, real estate and socio-economic (i.e., income, employment, etc.) impacts associated with each alternative. The alternatives are essentially various options or scenarios for increasing downstream flow during low flow periods to avoid or minimize environmental degradation during drought conditions and to allow the in-lake and downstream aquatic resources to be more resilient during these stressed conditions.

As part of our coordination with the Bald Eagle State Park, the Corps will continue to gather current and historical economic information for the town of Howard, Bald Eagle State Park, and the local community in rural Centre and Clinton counties, especially around the reservoir, and several miles downstream, including the communities of Mount Eagle, Blanchard, and Eagleville; the boroughs of Beech Creek, Flemington and Mill Hall; and the city of Lock Haven. The team also welcomes any historical or current socioeconomic, recreational real estate, or environmental information that members of the public wish to provide.

6. *Lowering lake levels during the recreation season would have a dramatic effect on the state park, Nature Inn, wastewater treatment plant, recreation, tourism, local businesses, employment, property values, Punkin Chunkin Festival, boating, fishing, camping, swimming, hiking, etc. How will the study ensure this full range of impacts is considered?*

As part of the study, various flow release alternatives will be assessed against historical data for each day from 1930 to 2014. Each alternative will be modeled as if it represented how the project would have been operated during low flow or drought conditions over this long-term period. Any lake drawdowns that would have been implemented under the various flow release alternatives being evaluated in this study will be documented and divided into recreation season and non-recreation season categories. They will be further classified by specific month and amount of drawdown. This will allow for a side-by-side comparison of alternatives where the frequency, timing, and the amount of drawdown can be evaluated for potential benefits and impacts of each scenario. This information will be combined with details regarding Bald Eagle State Park visitation, Nature Inn reservations, prime tourism months, Punkin Chunkin Festival in October of each year, critical marina lake levels, key boat ramp and beach lake levels, etc., in order to assess the potential impacts over an 85-year period. This look back in time will then assist the team, agencies and public in determining the likely benefits and impacts of any scenario into the future.

7. *Dust, odor, pollution, and insect issues associated with lake drawdowns have caused problems in the past and continue to be significant concerns for the local community. How will the study assess these impacts and ensure conditions are not made worse?*

This study will incorporate information on dust, odor, pollution, and insect issues associated with lake drawdowns from the former Dust Alleviation Study (1994).

The Dust Alleviation Study evaluated and compared a variety of drawdown alternatives and recommend a plan that avoids dust, odor, pollution, and insect issues. As a result, the lake is currently maintained at elevation 630 ft above sea level from May until mid-November when the level is lowered to elevation of 625 ft. Furthermore, the lake is maintained at this level until mid-February when the lever is lowered to reach elevation 610 ft by March 1 in anticipation of the normal spring runoff. Alternatives that cannot meet these constraints will be eliminated. Any new information provided through the spring 2018 public meeting and 30-day public review period for the draft report will also be considered. The team will also accept comments and feedback throughout the duration of the study.

8. *Raising the lake level by up to two feet could increase flooding as well as impact boat launches, marinas, beaches, hiking trails, etc. How will these impacts be evaluated as part of the study? Will we need to buy flood insurance?*

Study alternatives that propose raising the lake level ahead of drought events to build additional storage for low flow releases will be evaluated for environmental benefits as well as a full range of potential impacts, including flooding and recreational impacts. Alternatives proposing an increase to the lake level are based on the current range of operations contained in the Reservoir Regulation Manual related to a Drought Management Plan for the West Branch Susquehanna sub-basin. The current Drought Management Plan (1988) describes guidelines for using up to 2 feet above the normal pool, under certain conditions, to make low flow releases during droughts and to help meet emergency water supply needs. At the time the Drought Management Plan was developed, it was determined that storing this additional water would have minimal impacts on recreation and negligible impacts on flood risk management. The study will reassess the potential for increased flooding associated with alternatives that propose raising the lake level, by any amount, prior to low flow and drought conditions. This assessment will focus on the floodplain and structures, residences, businesses, and other facilities currently located along the lake shore. Based on current conditions, the study team does not anticipate that raising the pool by no more than 2 feet prior to drought conditions would create an additional need for FEMA flood insurance for neighboring communities; however, this will be assessed as part of the study.

Similar to the detailed modeling to be conducted for the various water release scenarios, lake level increases associated with the alternatives will be assessed for each day from 1930 to 2014. Actual lake conditions, river flows, and weather for the 85-year period will be analyzed as if the lake were managed to mimic the various flow release alternatives. This will allow for a side-by-side comparison of alternatives based on if, how often, when, and how much lake levels will be increased or decreased. Using this historical information, combined with details regarding critical marina lake levels, key boat ramp and beach lake levels, hiking trail locations, etc., allows for an assessment of these potential impacts over a future long-term period.

9. *Several alternatives were described as only changing conditions during drought years, which typically occur infrequently. How will these drought years be forecasted or determined? How often have they occurred in the past? How often can we expect them to occur in the future? -*

SRBC, the U.S. Geological Survey, and the Corps closely monitor low flow and drought conditions throughout the Susquehanna River Basin. Monitoring informs reservoir, public water supply, power generation, and various other water-use operations.

It also informs State drought declarations, water use restrictions and emergency action plans. Drought monitoring mainly focuses on rainfall, soil moisture, streamflow, groundwater levels, and reservoir storage.

For reservoir studies, streamflow values recorded at U.S. Geological Survey streamgages are typically used to define low flow or drought conditions. For the Foster Joseph Sayers study, there are multiple, long-term USGS streamgages in the vicinity of the project. They include Bald Eagle Creek below Spring Creek at Milesburg (upstream of dam), Bald Eagle Creek at Blanchard (downstream of dam), Bald Eagle Creek near Beach Creek Station (downstream of Beach Creek), and West Branch Susquehanna River at Williamsport (downstream of Bald Eagle Creek). The initial study alternatives will use both Milesburg (local conditions) and Williamsport (regional conditions) gages to monitor and define low flow and drought conditions that would trigger revised reservoir operations.

Streamflow values used to determine whether low flow or drought conditions are occurring is based on a percentage of time that streamflow is less than or greater than a given value. For example, it may be determined that reservoir operations should be adjusted if the downstream reach has 85 percent less water/flow than most other times that would be considered a low flow. This is called the percent exceedance level. The initial study alternatives use both the 85-percent and 95-percent exceedance streamflow values to monitor and define low flow and drought conditions that would trigger reservoir operations.

These exceedance streamflow values provide insight into how often similar low flow or drought conditions could be expected to occur in the future. For example, alternatives that would trigger changes to reservoir operations based on 95-percent exceedance streamflow values would be expected to occur, on average, 5 percent of the time in the future. This would be equivalent to about once every 20 years on average. Since the dam was constructed in 1969, low flow conditions of this nature were only detected at the Milesburg and Williamsport gages in 1988, 2002 and 2010.

10. *Maintaining more stable lake levels and adequate downstream releases year round could help improve recreation and the fisheries both in-lake and downstream. What alternatives are being evaluated that look at these two issues?*

Some of the study alternatives that will be evaluated involve more stable, year-round lake levels. These include alternatives that maintain a year-round lake level at 630 feet, maintain the existing 5-foot fall drawdown (625 feet) through the winter, and maintain the existing 5-foot fall drawdown (625 feet) through the winter unless there is significant snowpack or rain forecast that warrants drawdown to winter pool (610 feet). These alternatives could improve recreation and the in-lake fishery (bass/panfish); however, impacts to flood risk management would need to be carefully assessed.

11. *How will the study make a determination as to whether specific benefits or impacts are significant or not significant? Who makes that final determination?*

As part of the feasibility study, the team will continue coordination with stakeholders. This coordination and feedback will help define what is considered significant in terms of environmental and economic impacts. Whenever possible, the study will use numeric data to

compare alternatives and characterize environmental benefits as well as recreational, economic and environmental impacts. For example, the alternatives analysis will document impacts in terms of days per year, feet of drawdown, dollars in lost revenue, and other quantitative metrics. These data will be examined together to provide insight into which benefits or impacts might be short-term, long-term, significant, moderate or minor.

Once the alternatives analysis is complete, the information will be shared during the next public workshop in spring 2018. A draft report containing this information will also be released, after the meeting, for a 30-day public review and comment period. These steps will ensure there is ample opportunity for new information to be provided for feedback regarding study findings, and for a full evaluation of benefits and impacts. Based on the public review and comments received, the draft report will be revised accordingly. No decision will be made until after the spring meeting, and after all comments and input are assessed from the public comment period.

12. *Given Foster Joseph Sayers is a constructed facility with ecosystem impacts already occurring, why are you not considering the addition of hydropower to the facility?*

The study authority allows the review of, and modifications to, existing water resources projects constructed by the Corps to improve the quality of the environment. Since hydropower is not part of the existing project, the Corps cannot consider it during this effort. There are numerous Corps projects nationwide that have hydropower, but they were authorized by Congress to include this project purpose. A private firm would initiate this process when they apply for a permit through the Corps.

13. *Given the cost of the study and the critical interest, should there be a third party review?*

The feasibility study will result in a draft report with an associated 30-day public comment period, which constitutes an external review of the analyses and conclusions. In addition to public comments, interested state and federal agencies, academia, non-governmental organizations and others can provide input and express their support, opposition, or concerns with the recommendation. The comments received will be fully considered prior to making a final recommendation.

14. *What other agencies are involved in the study?*

The team notified approximately 260 entities of the study initiation by letter in November 2016, and have since engaged the Pennsylvania Fish and Boat Commission, Pennsylvania Department of Environmental Protection, U.S. Fish and Wildlife Service, Pennsylvania Historical and Museum Commission, and the Pennsylvania Department of Conservation and Natural Resources. These agencies have provided input and attended stakeholder meetings, and this list will likely grow as the study progresses.