

**SUSQUEHANNA RIVER BASIN COMMISSION
4423 N. FRONT STREET
HARRISBURG, PA 17110**

**BUDGET RECONCILIATION
FY-2022**

JUNE 17, 2021

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SUSQUEHANNA RIVER BASIN COMMISSION

BUDGET FOR FISCAL YEAR 2022

LEGAL CITATION:


New York:	Laws of 1967, Chapter 785
Pennsylvania:	Session of 1968, Act No. 181
Maryland:	Acts of 1967, Chapter 391
United States:	Public Law 91-575

This budget anticipates the receipt of both appropriations from the Commission's member jurisdictions and other revenues needed to support the continuing operations of the Commission. This includes short-term programs deemed necessary to achieve the purposes of the Susquehanna River Basin Compact (Compact) and the objectives and goals set forth in the SRBC Comprehensive Plan.

The Compact provides that the Commission may receive and accept such payments, appropriations, grants, gifts, etc., (Article 15, Section 15.1(a) 2) as may be made available to it by the member jurisdictions, or any other public or private corporation or individual, for use in furthering the purposes of the Compact.


Attached are schedules presenting this budget request in detail for Fiscal Year 2022, which covers the twelve month period beginning July 1, 2021. Comparative amounts for the budget reconciliation for Fiscal Year 2021 and the adopted budget for 2022 are also included. All statements and explanations submitted herewith are true and correct to the best of our knowledge.

HEREBY APPROVED AND SUBMITTED BY:



Marcia E. Hutchinson
Director, Administration & Finance

June 17, 2021
Date



Andrew D. Dehoff
Executive Director

June 17, 2021
Date

SUSQUEHANNA RIVER BASIN COMMISSION

BUDGET FOR FISCAL YEAR 2022 (July 1, 2021 – June 30, 2022)

	General Fund	Water Management Fund (1)	Total
Revenues:			
Member Jurisdictions	\$ 1,344,000		\$ 1,344,000
Grants & Contractual	2,728,250		2,728,250
Regulatory Program Fees	3,909,750	\$ 5,000,000	8,909,750
Other Income	275,000	1,400,000	1,675,000
TOTAL REVENUES	\$ 8,257,000	\$ 6,400,000	\$14,657,000
Expenditures:			
Personnel Services	\$ 5,375,000		\$ 5,375,000
Employee Benefits	2,891,000		2,891,000
Special Contractual Services	1,717,000		1,717,000
Travel & Subsistence	65,000		65,000
Commission Meetings & Public Hearings	20,000		20,000
Communications, Postage	80,000		80,000
Rent – Equipment Land & Buildings	40,000		40,000
Printing, Reproduction & Advertising	47,500		47,500
Software – License, Purchase & Maintenance	150,000		150,000
Repairs & Maintenance	144,500		144,500
Other Contractual Services	150,000		150,000
Utilities, Janitorial	110,000		110,000
Supplies & Materials	258,000		258,000
Grant Awards	120,000	2,700,000	2,720,000
Cowanesque/Curwensville Water Storage		1,000,000	1,000,000
Billmeyer Quarry Water Storage		300,000	300,000
Depreciation – Water Storage Rights		1,180,000	1,180,000
Capital Expenditures	195,000		195,000
TOTAL EXPENDITURES	\$11,363,000	\$ 5,180,000	\$16,543,000
EXCESS (DEFICIT) OF REVENUE OVER EXPENDITURES	\$ (3,106,000)	\$ 1,320,000	\$ (1,886,000)
Transfer from Water Management Fund	\$ 1,764,750 (2)	(1,764,750)	-
Transfer from Fiscal Stabilization Fund	\$ 310,000 (3)		\$ 310,000
Transfer from Sustainable Water Resources Fund	\$ 1,031,250 (4)		\$ 1,031,250
TRANSFERS IN (OUT)	\$ 3,106,000	\$ (1,764,750)	\$ 1,341,250
EXCESS (DEFICIT) AFTER FUND TRANSFERS	\$ -	\$ (544,750)	\$ (544,750)

(1) The Water Management Fund is designated for the financing of water supply related projects, including costs associated with the planning, engineering, design, and construction phases of new projects or the reformulation of existing projects, or any other project or study initiated by the Commission to address the cumulative impact of consumptive water use or otherwise to support low flow management in the Susquehanna River Basin. In FY-2022 the Commission will launch a new grant program designed to support its Consumptive Use Mitigation Policy using accumulated reserves. Grant programs and other projects and activities funded by the Water Management Fund are identified in the budget narrative starting on page 11.

(2) Costs for employees who are working on Water Management Fund projects are paid through the General Fund and reimbursed from the Water Management Fund.

(3) The Commission's regulations provide that certain withdrawals and consumptive uses that are in excess of the Commission's regulatory thresholds do not require Commission approval if they predated regulations and certain other conditions are met. In FY-2022, the Commission will continue to implement new regulations which require the registration of these projects. See Page 12 "Grandfathered Water Use Registrations" for a complete description of the anticipated activities. Implementation costs in excess of the registration fee will be covered by a transfer from the Commission's Fiscal Stabilization Fund.

(4) Pursuant to Resolution 2016-06, monies in the Sustainable Water Resources Fund may be used to support projects and activities that the Commission finds necessary to support its mission as authorized under the Susquehanna River Basin Compact which do not have funding available through other sources. Specific projects and activities funded by the Sustainable Water Resources Fund are identified in the budget narrative starting on page 11.

SUSQUEHANNA RIVER BASIN COMMISSION

**GENERAL FUND
COMPARATIVE STATEMENT OF REVENUES
BY MAJOR SOURCES**

SOURCES	Budget Reconciliation FY 2021	Current Expense Budget FY2022	Budget Reconciliation FY2022
Member Jurisdictions: (5)			
New York	\$ 259,000	\$ 248,250	\$ 259,000
Pennsylvania	760,000	739,750	739,000
Maryland	346,000	493,000	346,000
United States		493,000	
Subtotal – Member Jurisdictions	\$ 1,365,000	\$ 1,974,000	\$ 1,344,000
Other Income: (6)			
Grants & Contractual	\$ 2,718,000	\$ 2,712,250	\$ 2,728,250
Regulatory Program Fees	4,018,000	4,094,750	3,909,750
Interest Income, Building Rental & Other	385,000	350,000	275,000
Subtotal – Other Income	\$ 7,121,000	\$ 7,157,000	\$ 6,913,000
 TOTAL ALL SOURCES	 \$ 8,486,000	 \$ 9,131,000	 \$ 8,257,000

(5) In accordance with the Susquehanna River Basin Compact, Section 14.3(c), member jurisdictions are requested to include the apportioned amounts set forth in the current expense budget in their respective budgets next to be adopted, subject to such review and approval as may be required by their respective budgetary processes. Amounts included in the budget reconciliation reflect appropriations included in approved or proposed budgets.

(6) Income from other sources is estimated on the basis of past experience and authorized programs.

SUSQUEHANNA RIVER BASIN COMMISSION
COMPARATIVE STATEMENT OF EXPENDITURES
BY OBJECT

Class Titles	Budget Reconciliation FY 2021	Current Expense Budget FY2022	Budget Reconciliation FY2022
Personnel Services	\$ 5,375,000	\$ 5,495,000	\$ 5,375,000
Employee Benefits	2,834,000	2,907,500	2,891,000
Subtotal – Personnel & Benefits	\$ 8,209,000	\$ 8,402,500	\$ 8,266,000
Special Contractual Services	\$ 1,408,500	\$ 1,718,000	\$ 1,717,000
Travel & Subsistence	95,000	75,000	65,000
Commission Mtgs. & Public Hearings	30,000	25,000	20,000
Communications, Postage	75,000	75,000	80,000
Rent-Equip., Land & Buildings	40,000	40,000	40,000
Printing, Reproduction & Advertising	60,000	60,000	47,500
Software Licenses, Purchases & Maintenance	150,000	175,000	150,000
Repairs & Maintenance	157,000	157,000	144,500
Other Contractual Services	185,000	185,000	150,000
Utilities, Janitorial	115,000	115,000	110,000
Subtotal – Contractual Services	\$ 2,315,500	\$ 2,625,000	\$ 2,524,000
Supplies/Other	\$ 275,500	\$ 265,500	\$ 378,000
Capital Expenditures	\$ 170,000	\$ 205,000	\$ 195,000
TOTAL	\$10,970,000	\$11,498,000	\$11,363,000

SUSQUEHANNA RIVER BASIN COMMISSION

**MAJOR OBJECT CLASSIFICATION
PERSONNEL SERVICES**

Appropriation Class	Budget Reconciliation FY 2021	Current Expense Budget FY 2022	Budget Reconciliation FY 2022 (7)
Salaries	\$ 5,375,000	\$ 5,495,000	\$ 5,375,000

**COMPARISON OF STAFFING
FOR FISCAL YEAR 2022**

Departments	Current Expense Budget FY 2022			Budget Reconciliation FY 2022			Change (+ Or -)		
	Prof.	Cler.	Total	Prof.	Cler.	Total	Prof.	Cler.	Total
Executive	4	1	5	4	1	5	0	0	0
Administrative & Staff Services	7	2	9	7	2	9	0	0	0
Gov't/Public Affairs	2	0	2	2	0	2	0	0	0
Technical Programs	2	0	2	2	0	2	0	0	0
Project Review	13	2	15	13	2	15	0	0	0
Planning & Operations	8	0	8	8	0	8	0	0	0
Compliance	9	1	10	9	1	10	0	0	0
Grant Programs	15	1	16	14	1	15	-1	0	-1
TOTAL	60	7	67	59	7	66	-1	0	-1

(7) The FY-2022 budget reconciliation includes 3% for performance-based increases and bonuses, and 4% for cost of living increases.

SUSQUEHANNA RIVER BASIN COMMISSION

**MAJOR OBJECT CLASSIFICATION
EMPLOYEE BENEFITS**

Appropriation Class	Budget Reconciliation FY 2021	Current Expense Budget FY 2022	Budget Reconciliation FY 2022
Medical Insurance	\$ 745,125	\$ 735,000	\$ 725,000
Social Security - Commission Share	375,000	385,000	380,000
Worker's Compensation	25,000	27,500	18,000
Employee Life Insurance	42,000	45,000	33,000
Unemployment Compensation	5,000	10,000	10,000
Recognition & Rewards (8)	26,875	25,000	25,000
Retirement Plan – Commission Share (9)	1,615,000	1,680,000	1,700,000
TOTAL	\$ 2,834,000	\$ 2,907,500	\$ 2,891,000

(8) Budget for employee rewards & recognition programs budgeted separately at .5% of salaries.

(9) Retirement employer contribution rate budgeted for FY-2022 is 31.5% of payroll.

SUSQUEHANNA RIVER BASIN COMMISSION

MAJOR OBJECT CLASSIFICATION CONTRACTUAL SERVICES

Appropriation Class	Budget Reconciliation FY 2021	Current Expense Budget FY 2022	Budget Reconciliation FY 2022
Fees, Financial Services	\$ 60,000	\$ 60,000	\$ 50,000
Fees, Legal & Investigative Services	25,000	25,000	25,000
Fees, Cooperative Programs	68,000	68,000	68,000
Fees, Research & Laboratory Services	170,000	200,000	200,000
Fees, Computer Services Other	25,000	25,000	25,000
Other Services – Professional (10)	1,060,500	1,340,000	1,349,000
Travel & Subsistence	95,000	75,000	65,000
Commission Meetings	25,000	20,000	15,000
Public Hearing Expenses	5,000	5,000	5,000
Communications Expenses	60,000	60,000	65,000
Postage	15,000	15,000	15,000
Rent – Land, Buildings & Equipment	40,000	40,000	40,000
Printing & Reproduction	55,000	55,000	45,000
Advertising	5,000	5,000	2,500
Software Purchase, License & Maint.	150,000	175,000	150,000
Repairs & Maint. – Building & Grounds	50,000	50,000	77,500
Repairs & Maint. – Office Equipment	2,000	2,000	2,000
Repairs & Maint. – Auto Equipment	25,000	25,000	25,000
Repairs & Maint. – Lab Equipment	80,000	80,000	40,000
Insurance	160,000	160,000	125,000
Dues & Memberships	25,000	25,000	25,000
Electric, Heat, Water & Sewage	80,000	80,000	75,000
Janitorial Service	35,000	35,000	35,000
TOTAL	\$ 2,315,500	\$ 2,625,000	\$ 2,524,000

(10) The FY-2022 budget includes agreement with independent contractors. The Executive Director is authorized by the resolution adopting this budget to execute any and all agreements up to the total amount budgeted for contractors for the fiscal year.

SUSQUEHANNA RIVER BASIN COMMISSION

**MAJOR OBJECT CLASSIFICATION
SUPPLIES AND OTHER**

Appropriation Class	Budget Reconciliation FY 2021	Current Expense Budget FY 2022	Budget Reconciliation FY 2022
Office Supplies	\$ 30,000	\$ 30,000	\$ 25,000
Automotive Supplies (11)	40,000	40,000	40,000
Janitorial Supplies	5,000	5,000	5,000
Computer Supplies	20,000	20,000	20,000
Laboratory Supplies (12)	100,000	100,000	100,000
Miscellaneous Supplies	3,000	3,000	3,000
Subscriptions & Publications	2,500	2,500	10,000
Moving & Recruiting Expenses	5,000	5,000	10,000
Staff Training & Seminars	50,000	40,000	40,000
Grant Awards (13)			120,000
Miscellaneous	20,000	20,000	5,000
TOTAL	\$ 275,500	\$ 265,500	\$ 378,000

(11) Also includes fuel costs

(12) Includes replacement parts for continuous instream monitoring stations

(13) Grants awarded under the Commission's Water Level Grant Program – see page 12 for more details

SUSQUEHANNA RIVER BASIN COMMISSION

**MAJOR OBJECT CLASSIFICATION
CAPITAL EXPENDITURES**

Appropriation Class	Budget Reconciliation FY 2021	Current Expense Budget FY 2022	Budget Reconciliation FY 2022
Computer Equipment	\$ 70,000	\$ 70,000	\$ 40,000
Automotive Equipment (14)	40,000	75,000	75,000
Office Furniture & Fixtures	5,000	5,000	5,000
Scientific & Laboratory (15)	325,000	55,000	75,000
TOTAL	\$ 440,000	\$ 205,000	\$ 195,000

(14) Two Commission vehicles will be replaced in FY-2022.

(15) In FY-2020 the Commission completed a four year project to upgrade its Remote Water Quality Monitoring Network.

SUSQUEHANNA RIVER BASIN COMMISSION
ALLOCATION BY PRIORITY MANAGEMENT AREA
FOR FISCAL YEAR 2022

The total expense budget request for Fiscal Year 2022 is \$16,543,000. The budget will support the Commission's programs as follows:

<u>Percent of Total Budget</u>	
I. Water Supply	62%
II. Water Quality	19%
III. Flooding and Drought	5%
IV. Watershed Management	5%
V. Administration, Coordination & Outreach	9%
Total	100%

PRIORITY MANAGEMENT AREA A: WATER SUPPLY

Goal: Water supply is sufficient to meet diverse demands.

Vision: All users of the Basin’s water resources have reliable, conflict-free, and sustainable water supply for current and future generations, even as demographic, economic, and climate conditions evolve.

Programs

AREA A: Water Supply

Regulation of Water Users – Permit	\$ 1,300,000
Regulation of Water Users – ABR	384,500
Groundwater Regulation & Policy Updates	80,000
Compliance and Enforcement	1,300,000
Grandfathered Water Use Registrations	400,000
Cumulative Water Use and Availability Study	100,000
Cowanisque/Curwensville Reservoir Operations	2,181,000
Consumptive Use Mitigation Planning	325,000
Hydrologic Model Updates	75,000
Water Level Grant Program	181,500
Public Water Supply Assistance Initiative	175,000
Project Sponsor Assistance Initiative	70,000
Billmeyer Quarry Consumptive Use Mitigation Project	509,000
Consumptive Use Mitigation Grant Program	765,000
Water Conservation and Reuse Pilot Projects	2,066,500
Groundwater Management Plan Update	7,500
Octoraro Consumptive Use Mitigation Study	170,000
County Water Use & Availability Studies	38,500
Hydroelectric Project Regulation & Relicensing	<u>60,000</u>
 Total	 \$ 10,188,500

Activities which will be conducted under Priority Management Area A: Water Supply

Regulation of Water Users – Permits – Commission staff will review and make recommendations on appropriate actions to take on applications, modifications and renewals for water withdrawal and consumptive uses.

Regulation of Water Users – ABR - This expedited Approval-by-Rule process is used by companies interested in using a source of water that has already been approved for use (e.g., a public water supply) or a source that is of lesser quality (e.g., wastewater discharge, mine water).

Groundwater Regulation & Policy Updates - The Commission has proposed regulations and policies designed to provide clarity to project sponsors, target only the most appropriate activities, and establish a more efficient and effective framework to review groundwater withdrawals. In addition, with the successful implementation of grandfathering registration, SRBC proposes to simplify its regulations for these grandfathered projects. The regulations also build upon successful program changes with SRBC’s ABR(f) program and its minor modification regulation. The Commission is also proposing policies to improve its groundwater review processes to increase efficiency, leverage existing operational data and reduce costs for these reviews.

Compliance and Enforcement– The Commission requires metering at all withdrawal sites to document daily quantities of water which have been withdrawn or used. Metering data are reported quarterly by project sponsors online. Staff use the data to monitor approval conditions such as protective passby flows. The Commission’s compliance program also includes field inspection of approved projects both during construction and periodically during the term of approval, and enforcement actions against companies that fail to gain Commission approval or violate the terms and conditions of approvals. These costs also include the cost of maintaining the Sayre, Pennsylvania office.

Grandfathered Water Use Registrations - The Commission’s regulations provide that certain withdrawals and consumptive uses that are in excess of the Commission’s regulatory thresholds do not require Commission approval if they predated regulations and certain other conditions are met. This exemption is referred to as “grandfathering”. Grandfathered projects have not reported withdrawal or consumptive use data to the Commission, which hampers its ability to effectively manage the water resources of the Basin. The process for grandfathered projects and the Commission to determine the grandfathered amount is an expensive, inefficient and time consuming process that very often leads to inconclusive results given the scarcity of historical data. In FY-2022, the Commission will complete implementation of new regulations which require grandfathered projects to register with the Commission, receive a definitive determination of a grandfathered quantity, and to report water withdrawal and consumptive use data. Costs that are in excess of fees charged for the program are covered by the Commission’s Fiscal Stabilization Fund.

Cumulative Water Use and Availability Study – This study, which was initially completed in 2016, compiled a comprehensive, basin-wide water use data library and refined procedures for computing existing and projected cumulative consumptive water use at the project and watershed scales. Staff determined sustainable water availability limits for watersheds throughout the basin, and developed a GIS-based tool for automating the cumulative water use and availability analysis and illustrating results to inform regulatory and planning activities. In FY-2022, staff will maintain and update the water use database, evaluate additional refinements to the tool, and conduct more detailed analyses in priority watersheds. Funding for this project is provided by the Water Management Fund.

Cowanesque/Curwensville Reservoir Operations - The Commission owns water supply storage at Cowanesque and Curwensville Lakes. Costs include depreciation of water storage rights (\$1,131,000), and operating and maintenance costs for Cowanesque and Curwensville Lakes (\$1,000,000). The Commission’s share of the operating and maintenance costs for Cowanesque Lake are passed through to Exelon and Talon. Funding for all other costs is provided by the Water Management Fund.

Consumptive Use Mitigation Planning – Staff will continue to implement recommendations in the Consumptive Use Mitigation Plan related to the evaluation of water storage and low flow augmentation release potential within the basin including USACE reservoirs, state/private lakes, abandoned mine pools, and other feasible sources. Staff will also implement a Consumptive Use Mitigation Policy which provides guidance regarding the determination of an acceptable manner of mitigation to be provided by project sponsors whose consumptive use is subject to review and approval and memorializes contemporary consumptive use mitigation criteria utilized by the Commission in formulating and implementing consumptive use mitigation projects. Engineering support will be provided by Skelly & Loy at a cost not to exceed \$100,000. Funding is provided by the Water Management Fund.

Hydrologic Model Updates – Commission staff will continue to make necessary updates and refinements to our existing basin-wide OASIS hydrologic model. Improvements will include updated software, hydrologic records, demand data, and project operations as well as model documentation, training, and support. Hydrologic modeling and analysis support will be provided by Hazen & Sawyer at a cost not to exceed \$50,000. Funding is provided by the Water Management Fund.

Water Level Grant Program – Water level measurements in a supply well often can be a primary source of information about the characteristics of an aquifer and the influence that a project’s groundwater withdrawal has on the aquifer. Collecting and maintaining a record of routine water level data during ongoing withdrawals develops a valuable resource of operational water level data. Because the Commission recognizes the importance of water level measurements, the Commission developed this grant program to assist projects with purchasing, installing or maintaining water level

monitoring equipment. The grant program offers grant awards not to exceed \$1,500 per source, with a facility cap of \$7,500 per year, to qualifying facilities. Funding for this grant program, including grant awards of \$120,000, is provided by the Sustainable Water Resources Fund.

Public Water Supply Assistance Initiative – Through this initiative Commission staff provide both general and focused education and system-specific guidance to small municipal water supply project sponsors that meet eligibility requirements, lack financial and technical capabilities, and are subject to Commission groundwater withdrawal regulations. Staff also provide technical assistance related to groundwater withdrawal application process and aquifer testing requirements, and hydrogeologic guidance to assist in the development, management and protection of groundwater sources. Assistance also included requirements related to satisfying post-approval conditions, including technical assistance, loaning or purchasing equipment, and initial review of short-term data collection activities. Funding for this initiative is provided by the Sustainable Water Resources Fund.

Project Sponsor Assistance Initiative – This effort is an extension of the Public Water Supply Assistance Initiative described above. Staff will provide technical assistance, including meeting prior to water withdrawal applications being submitted, to small financially-challenged project sponsors to facilitate the completion of the Commission’s aquifer testing and application requirements. Funding is provided by the Sustainable Water Resources Fund.

Billmeyer Quarry Consumptive Use Mitigation Project – In December 2018, the Commission entered into a water storage agreement with LCSWMA for the use of up to 425 million gallons of stored water in Billmeyer Quarry for consumptive use mitigation. During FY-2022, staff will continue to implement the project operations plan (pending low flow conditions) and conduct ongoing monitoring related to aquatic invasive species and groundwater levels. Skelly & Loy will assist with construction and construction management services to make the project operational at a cost of \$100,000. Costs also include \$300,000 for payments due to LCSWMA under the Water Storage Agreement, and depreciation of water storage rights of \$49,000. Funding is provided by the Water Management Fund.

Consumptive Use Mitigation Grant Program - The Commission strives to encourage and undertake consumptive use mitigation projects through the administration of its regulatory program and its own activities funded by consumptive use mitigation fee payments. This includes pursuit of traditional water storage and low flow augmentation projects, as well as alternative methods including water conservation and reuse, groundwater recharge, and water quality improvements. This grant program will focus on soliciting and funding consumptive use mitigation projects within priority watersheds in the basin. Grants estimated to be awarded under this program for FY-2022 are included at \$400,000. Funding is provided by the Water Management Fund.

Water Conservation and Reuse Pilot Projects – The Commission will explore water conservation greater than what is required in regulation. This may include development of water conservation best practices, water conservation education and outreach, or entering partnerships with public water suppliers and consumptive users of water to invest in water conservation technology. The Commission will consider opportunities for water reuse and recycling. This may include development of reuse or recycling projects or entering partnerships with consumptive users of water to invest in water reuse and recycling technology, including partnerships with Infinite Cooling, Hanover Foods, and other such projects currently under development. Costs for FY-2022 include an estimated \$2,000,000 to fund pilot projects. Funding is provided by the Water Management Fund.

Groundwater Management Plan Update – The Groundwater Management Plan released in June 2005 provided a framework for the Commission to effectively manage the basin’s groundwater resources. Many regulatory changes have occurred since 2005 that influence the management of the groundwater resources such as significant new regulations and an aquifer testing policy (2007), new coordination practices in place with member agencies, and proposed regulations and policies under consideration in 2021. There also continues to be significant land development, changes to water use, and new industries and water use sectors beginning operations in the basin. With a new update to Commission’s Comprehensive Plan in place outlining existing and future challenges, an update to the outdated groundwater management plan is needed.

Octoraro Consumptive Use Mitigation Study – Chester Water Authority’s (Authority) right to divert up to 30 million gallons per day (mgd) from the Octoraro Reservoir and 30 mgd from the Susquehanna River is recognized in the Commission’s Comprehensive Plan as an authorized pre-Compact diversion. Recent service area expansions are not covered by the pre-Compact authorization and have been subject to Commission review, approval, and mitigation requirements. The Commission’s work will identify project operation and water quality improvement alternatives that would adequately mitigate the Authority’s diversion and consumptive use and will also include implementation of a water quality improvement demonstration project in partnership with the Octoraro Source Water Collaborative. Costs include the purchase of continuous instream monitoring equipment estimated at \$60,000. Funding is provided by the Water Management Fund.

County Water Use and Availability Studies – Commission staff will continue to work with county-level planning agencies to best assess and plan for existing and future water supply demands. Many counties are currently modifying or creating water resource management plans, and need technical assistance from the agencies that provide oversight for water withdrawals and use in order to best accommodate growth and prevent conflicts, as well as preserve areas that provide for critical recharge to the hydrologic system. In return, the Commission gains valuable insight with regards to land use planning and growth areas that help project future water use. Activities will include, but are not limited to, providing information on water use and availability, exchanging information on growth patterns, analyzing potential areas of concern with respect to competing demands and limits on water availability, and assisting county staff with developing materials to educate stakeholders. Funding is provided by the Sustainable Water Resources Fund.

Hydroelectric Project Regulation and Relicensing - The Commission will continue to be actively engaged with partner agencies and stakeholders in the relicensing of hydroelectric projects located in the Susquehanna River Basin. Key resource issues of focus typically include environmental flows, fish passage, water quality, sediment/nutrient management, etc. Staff have and will continue to coordinate with partner agencies and stakeholders on study requests, study plan/report reviews, National Environmental Policy Act document reviews, Section 401 Water Quality Certificate conditions, license requirement implementation, etc. throughout the relicensing processes.

PRIORITY MANAGEMENT AREA B: WATER QUALITY

Goal: Waters throughout the Basin exhibit good quality.

Vision: The waters of the Basin meet or exceed water quality standards and are able to support desired water supply, aquatic life, and recreational uses.

Programs

AREA B: Water Quality

Subbasin Surveys	\$ 90,000
Large Waters Assessment	65,000
National Aquatic Resource Surveys	78,500
Enhanced Basin Research	92,000
Total Maximum Daily Loads for Impaired Stream Reaches	159,000
Lower Susquehanna Source Water Protection Program	135,000
Water Quality Restoration and Protection	44,500
Chesapeake Bay Sediment & Nutrient Assessment Program	557,825
Chesapeake Bay WIP Support	160,000
Chiques-Conoy-Conewago Regional Partnership	37,000
Harmful Algal Bloom Studies	35,000
Morris Run Abandoned Mine Drainage Treatment Plant	920,000
Legacy Mining Feasibility Studies	220,000
Continuous In-stream Monitoring Network	<u>520,000</u>
 Total	 \$ 3,113,825

Activities which will be conducted under Priority Management Area B: Water Quality

Subbasin Surveys - The Commission has been conducting water quality and biological surveys of streams in each of the six major subbasins on a rotating basis. Subbasin Surveys involve collection of chemical, biological, and physical data. Subbasin-scale watershed assessments provide valuable macroinvertebrate, water quality, physical habitat, and discharge information to interested federal, state, and local parties located within the targeted subbasins. In FY-21, the Commission will be reporting on probabilistic data collected in the New York portions of the Basin (Chemung and Upper Susquehanna Subbasin), which will provide valuable information to New York State for use in 305(b) portion of the next Integrated Report. In FY-22, the Commission will collect data at probabilistic sites within the Middle Susquehanna Subbasin.

Large Waters Assessment – In 2002, the Commission conducted a pilot study to determine appropriate methods to assess the biological conditions of large rivers in the Susquehanna River Basin. In subsequent years, the large river assessment program was expanded to include biological and water quality monitoring at approximately 25 stations on the mainstem Susquehanna River and along sections of the West Branch Susquehanna River, the Juniata River, the Chemung River, as well as the series of reservoirs on the Lower Susquehanna River. The Commission also continues to coordinate with the states and USEPA, as well as integrate source water protection monitoring activities to enhance protection of public drinking water supplies that rely on the main stem Susquehanna River and its major tributaries. Ongoing focus for FY-2022 will be the major rivers and reservoirs in the Lower subbasin, including monitoring invasive species such as snakehead, blue catfish, flathead catfish, and gizzard shad; vulnerable species such as the Chesapeake Logperch; and migratory species targeted for restoration such as American eel and American shad.

National Aquatic Resource Surveys – The EPA National Aquatic Resource Survey Program is a nation-wide initiative to sample aquatic resources in a statistically-relevant and categorical process. The Commission participates in the National Lakes and National Rivers and Streams Assessment components (NLA, NRSA, respectively) according to their schedules of rotation. Since inception of the National Aquatic Resource Survey Program, the Commission has participated in NLA and NRSA sampling in the Basin as well as within one or more of the state jurisdictions of the Basin. In FY22, the Commission will survey ~10 river and stream sites throughout Pennsylvania and New York.

Enhanced Basin Research - The Commission has spent decades collecting chemical, physical, and biological data in the Basin as part of numerous monitoring projects that have been funded by Section 106, member state funding, and/or internal funding. In addition, other state and federal agencies have been collecting data within the Basin as part of separate monitoring projects while striving to reach their own goals. Combination datasets offer the potential for analyses on temporal and spatial scales that surpass the individual project objectives for which the data were originally collected. Beginning in FY-2017, SRBC’s collective dataset was re-structured and augmented with GIS information to leverage knowledge gained in specific areas for more efficient use to characterize Basin resources and enhance scientific understanding overall. While much of SRBC’s focus in early fiscal years of the project emphasized compilation and structural enhancements of the dataset, SRBC staff also began to use the dataset to study an array of other issues and for FY-2022 Enhanced Basin Research includes: (i) continued refinement of SRBC’s Water Quality Index tool; (ii) on-going integration of high-resolution meteorologic, LiDAR/bathymetric, in-stream/in-lake CIM data, and eDNA; (iii) expansion of computational skills and tools (i.e., R and Python code) that facilitate more efficient, more powerful, and more insightful data analytics & visualization; and (iv) further exploration of relationships and processes between nutrient enrichment, excess sediment, and aquatic community functions.

Total Maximum Daily Loads for Impaired Stream Reaches - The federal Clean Water Act requires that certain impaired waters be included on a Section 303(d) list for each state. After USEPA approves the state lists, TMDLs must be prepared for the listed waters. The Commission will coordinate with its member jurisdictions regarding TMDL and Section 303(d) issues, including the TMDL issues associated with the Chesapeake Bay restoration effort. The Commission also will assist the states in developing TMDLs. TMDL work in each member jurisdiction will be performed in accordance with the jurisdiction’s development plan; with the Commission developing TMDLs on streams affected by urban runoff, agriculture, and other causes of impairment. The Commission will coordinate closely with the appropriate agencies on the Commission’s TMDL activities. Underway since FY-2015, the Commission has continued its close coordination with PADEP on a pilot project for TMDL alternatives in the Chiques Creek watershed, referred to as the *Chiques Creek Restoration Initiative*. Focus in FY-2022 will include coordination of stakeholder groups, various watershed monitoring activities, including operation and maintenance of two real-time continuous in-stream monitoring (CIM) stations, documentation of best management practice (BMP) implementation and compilation of monitoring results, and completion of phosphorus-based TMDLs for up to 14 sub-watersheds within the Chiques Creek watershed. The Commission also will continue support of on-going TMDL activities in the Octoraro watershed in south-central Pennsylvania through continued operation and maintenance of two CIM stations, supplemental water quality and biologic data collection, and participation in stakeholder events.

Lower Susquehanna Source Water Protection Program - Staff will continue to support implementation of regional source water protection management measures for the majority of large public water supply systems within the Lower Susquehanna River Basin. Staff will also continue to operate, maintain, and provide data for the Early Warning System for public water suppliers, which was established by the Commission in 2003, and expanded in 2018. Staff also will continue to provide 24/7 support to members of PADEP’s Spill Response unit to furnish, real-time condition modeled estimates of travel time between suspected contaminant plumes and water supply intake features. In FY-2022, the Commission will continue to organize and formalize aspects of the Lower Susquehanna Source Water Protection Partnership through increased data and information sharing, development of technical and issue steering committees, promotion of awareness among members/affiliates about topical issues, as well as participation in regional and national source water protection collaborative efforts and activities. The Commission will also partner with Harrisburg University to develop an improved spill tracking tool at a cost of \$50,000. Funding for the improved tool will be provided by the Sustainable Water Resources Fund.

Water Quality Restoration & Protection - The Commission has long collaborated on inter-agency and other stakeholder organization partnerships to restore water quality and related ecosystem functions as the result of legacy mining impacts. Commission staff will continue to pursue and coordinate mine drainage restoration projects and related issues, as well as strengthen existing and develop new partnerships aimed at restoring/protecting water resources that are challenged by agricultural land use, stormwater management, and other development activities.

As warranted, Commission staff will furnish technical support related to site and watershed-scale restoration and protection in the form(s) of:

- collecting habitat and water quality data,
- completing biological community surveys,
- compiling historic data inventories,
- analyzing long-term water quality monitoring data for pollutant trends & loads,
- evaluating CIM data according to PADEP Eutrophication Cause Determination protocol that defines nutrients as a cause of stream impairment,
- designing site and watershed monitoring approaches,
- partnering for stakeholder outreach/education workshops, and/or,
- preparing concept-level site remediation plans.

Staff also will assist by coordinating among agencies and stakeholder groups to advance specific projects and/or initiatives aimed at elevating awareness or promoting support for restoration and protection activities.

Chesapeake Bay Sediment and Nutrient Assessment Program - This program was initiated in FY-1985, and provides data that are critical for calibration of the Chesapeake Bay watershed model and evaluation of tributary strategy activities. Monthly samples, baseflow samples and daily or more frequent samples during a minimum of five storms will be collected from the six (6) long-term monitoring sites on the Susquehanna River at Towanda, Danville, and Marietta, the Juniata River at Newport, the West Branch Susquehanna River at Lewisburg and the Conestoga River at Conestoga. Monthly and storm samples also will be collected at 21 additional sites in Pennsylvania, New York, and Maryland. The Commission will continue to work with its member states, USEPA, USGS, and other partners to maintain and optimize information obtained from the monitoring network to support state tributary strategies and the overall Chesapeake Bay cleanup effort.

The Commission will use the data to analyze and update information from the long-term water quality monitoring program for the Susquehanna River Basin as well as to calculate pollutant loads and trends analysis. The data and analysis will help evaluate progress in meeting pollutant load reductions for the Susquehanna River Basin.

Chesapeake Bay WIP Support – Staff will provide technical, logistical, and administrative support for the Pennsylvania Department of Environmental Protection (PADEP) Chesapeake Bay Office and serve in lead role in terms of modeling pollutant reductions using the Chesapeake Assessment Scenario Tool (CAST) on behalf of County Action Plan coordinators and their PADEP counterparts. Staff also will provide technical and GIS assistance to PADEP to support information exchange and messaging between PADEP, EPA and stakeholder groups engaged toward pollution reduction activities.

Chiques-Conoy-Conewago Regional Partnership – This project, which is aimed at providing outreach and technical assistance to farmers in the lower Susquehanna River region of Pennsylvania, will accelerate improved agriculture management through the implementation of forested riparian buffers, soil health practices, and stream restoration. The Commission will serve as a member of the Chiques Creek Reenvisioned Management Team, the Lancaster Clean Water Partners Watershed Action Team, and will provide monitoring support. Funding is provided by a National Fish & Wildlife grant. The Commission is providing matching funds of \$24,300, which are being covered by the Sustainable Water Resources Fund.

Harmful Algal Blooms – Populations of certain algae and bacteria can grow explosively and cascade into various environmental, ecological, and even human health problems. The Commission is partnering with an interagency work

group in Pennsylvania to exchange information and cultivate more thorough understanding of measures to protect, preempt, predict, and mitigate impacts that arise from HABs. Additionally, Commission staff are working with a research team at Harrisburg University on a pilot project to pair satellite-based multispectral sensor measurements with in-lake chlorophyll and turbidity data to explore relationships that may predict precursor conditions that ultimately trigger HAB events.

Morris Run Abandoned Mine Drainage Treatment Plant – An approximately 20-mile stretch of the Tioga River has long-standing impairment status owing to pollution from AMD within the watershed. Under contract to PADEP Bureau of Abandoned Mine Reclamation, the Commission will oversee Engineering Design activities for an active treatment plant (ATP) that will remediate the remaining principle mine drainage sources in the watershed, thereby fostering recovery of the Tioga River and enhancing downstream aquatic resources in the Chemung River. In FY-22, the Commission will solicit project Engineering Design bids, award a contract, and begin oversight of the Design process. Through a request for proposals process, a design contractor will be selected at a cost not to exceed \$1,900,000. An estimated \$800,000 will be paid to the selected contractor in FY-2022.

Legacy Mining Feasibility Studies – Dollar-for-dollar, the remediation of legacy coal mine impacts has consistently demonstrated tangible and positive investments in terms of natural resources service and function uplift. Over the years, tightening federal and state budgets have given funding priority to “shovel-ready” abandoned mine land and abandoned mine drainage (AML and AMD) projects, which has made it increasingly difficult to obtain funding to support the investigation, feasibility, design, permitting, and even certain types of implementation (e.g. soil decompaction & amendment, land-clearing, etc.) activities necessary to complete such projects. In FY-2022, the Commission will provide funding from its Sustainable Water Resources Fund to support investigation, design, permitting, and certain related activities to ensure a steady progression of shovel-ready AML/AMD projects exists. Engineering services not to exceed \$40,000 will be provided by an independent contractor. The Commission also anticipates contributions to partner agencies and organizations of \$18,000.

Continuous In-stream Monitoring Network – In early 2010, in the Marcellus Shale Gas Play portion of the Susquehanna River Basin, the Commission launched what has grown to be a 63-station continuous in-stream monitoring (CIM) project known as the Remote Water Quality Monitoring Network (RWQMN) that makes water quality indicator data publicly accessible in real-time through the Commission’s web interface. In addition to the RWQMN, the Commission operates approximately 25 CIM stations throughout the Basin in support of various projects, partner initiatives, and data needs. The Commission’s CIM program is supported by a blend of revenue sources that include internal resources as well as contracts with member jurisdiction agencies such as the Pennsylvania Department of Conservation and Natural Resources (DCNR) and PADEP, USEPA Clean Water Act and other grant-funded projects, and private industry.

In addition to the core water quality indicators, select stations are equipped with sensors that measure water level, chloride, nitrogen, and/or incident sunlight. Staff perform scheduled and trouble-shoot maintenance actions on CIM equipment as well as collect supplemental data/information such as aqueous chemistry, stream discharge, biologic community (benthic macroinvertebrate, fish, periphyton community), and habitat information. Data developed through the Commission’s CIM projects support a growing myriad of aquatic science applications by members of the Commission as well as analysts in numerous other organizations – the Commission’s CIM program is nationally and internationally recognized for its unparalleled scientific value.

In FY-2022, the Commission will enter its second decade of support to DCNR for O&M and data analytics at 10 CIM stations that are located on State-owned lands.

PRIORITY MANAGEMENT AREA C: FLOODING AND DROUGHT

Goal: Communities are more resilient to flooding and drought.

Vision: Basin communities will be prepared for and equipped to mitigate the effects of flooding and drought in a changing climate, minimizing loss of life and property, economic disruption, and adverse environmental impacts.

Programs

AREA C: Flooding and Drought

Flood Coordination.....	\$ 75,000
Tri-County Flood Warning System	28,000
Flood Studies	48,000
Susquehanna Flood Warning & Response System	90,000
Middle Susquehanna Flood Mitigation Project	100,000
Silver Jackets	39,500
HyperFacets Climate Science Research Project	42,000
National Water Model Flood Inundation Mapping.....	25,000
Low Flow Augmentation Operations	30,000
Low Flow Monitoring Project	56,750
Drought Monitoring	50,000
Drought Management Strategy Update	60,000
General Hydrologic Studies	41,500
Regional Climate Science Study	41,475
Groundwater Monitoring Drought Study	<u>56,975</u>
Total	\$ 784,200

Activities which will be conducted under Priority Management Area C: Flooding and Drought

Flood Coordination – Commission staff will facilitate existing partnerships and work to develop new partnerships at the federal, state and community level that leverage available resources to provide flood risk reduction techniques and technology to impacted communities across the basin. Focusing on community based needs, partnerships will plan, design, and implement solutions to facilitate understanding and response to flood events. Additionally, staff will be responsive to media, legislative, and general request for flood related information and products.

Tri-County Flood Warning System – Commission staff, under a Federal Emergency Management Agency (FEMA) grant, conducted a pilot project in Huntingdon, Lancaster, and Dauphin Counties focused on developing camera-based flood warning systems. The project will enhance situational awareness through a variety of pathways including existing mobile technologies, cellular based camera imagery, and a web-based data portal. In FY-2022, costs for the project include maintenance of the cameras and data portal.

Flood Studies –The persistent challenge of flooding in basin communities requires appropriate mitigation planning to minimize ongoing risks to life and property. The Commission will be responsive to partner requests for assistance relative to hydraulic and hydrologic studies that seek to characterize the nature and extent of flood risk within the basin. Efforts typically include river bathymetry surveys, hydraulic structure surveys, stormwater facility surveys, hydrologic analyses and modeling, flood mapping quality assurance reviews, technical report preparation, etc.

Susquehanna Flood Warning & Response System – Originally developed to serve riverine communities protected by the Wyoming Valley Levee System, SRBC, in partnership with USACE and others, completed Version 1.0 of the Susquehanna Flood Warning and Response System. The online tool provides expected damages associated with various

levels of flooding as well as response actions related to forecast stage. This project will expand the functionality and accessibility of Version 1.0 by developing additional reporting features and incorporating additional communities with available inundation map libraries. Providing a tool such as this, to community officials and stakeholder agencies, facilitates hazard mitigation planning, flood event response, and recovery after an event. As part of the project, the Commission will engage a contractor to collect ground based LiDAR data near Middletown, PA at a cost of \$50,000.

Middle Susquehanna Flood Mitigation Project – The Commission will assist the Pennsylvania Emergency Management Agency (PEMA) with hazard mitigation planning in the Susquehanna River Basin. Through funds obtained by PEMA from the Federal Emergency Management Agency’s Flood Mitigation Assistance Program, PEMA and the Commission will focus on ten Pennsylvania counties in the Middle Susquehanna and West Branch subbasins. The project will develop mitigation strategies and obtain data to prioritize, select and develop a minimum of five projects eligible for annual FEMA grant funding. Commission staff will coordinate outreach and provide technical assistance to PEMA and other key stakeholders. The Commission’s technical assistance will include assessing county plans, including Hazard Mitigation Plans. Staff will also provide GIS and flood modeling support. Ultimately, the implemented projects will help ensure Basin communities are more resilient to flooding under existing conditions, as well as any changing conditions brought about by climate change, and advance the Commission’s mission for reducing flood damage to communities.

Silver Jackets – Commission staff will continue to seek leveraged solutions for flood mitigation projects through coordination with Silver Jackets teams in the basin. The Silver Jackets effort is spearheaded by the USACE and involves multiple federal and state agencies with a common mission of protecting life and property during flood events. Statewide teams typically compete for pilot projects that match team member funds to USACE funds to complete mitigation projects.

HyperFacets Climate Science Research Project – The Susquehanna River Basin was selected as one of four case study watersheds to be investigated in the Hyperion Project. This Department of Energy funded research, run by leading climate science experts across the country, aims to develop new high-quality regional climate data specifically targeted to support stakeholder needs. The Hyperion Project was completed at the end of 2020. A second phase of the project is underway with components focused on evaluating the 1960s Northeastern United States drought, and rain on snow flooding in the Susquehanna, under future climate conditions. Both research projects will provide valuable climate science insight and data for informing the Commission’s water resources planning and management efforts.

National Water Model Flood Inundation Mapping – Leveraging a long standing partnership with NOAA National Weather Service, SRBC will work to operationalize recent advancements in the National Water Model and related inundation map projects. The project will involve evaluation, testing, and calibration of National Water Model output and related inundation map products and seek to integrate the same into the Commission’s non-structural flood risk reduction efforts. Of particular interest will be developing capability to generate and disseminate “on the fly” inundation map products which are both accurate and easily accessible to communities where no river forecast is currently available. Funding will be provided by the Sustainable Water Resources Fund.

Low Flow Augmentation Operations – The Commission continues to monitor hydrologic conditions throughout the basin and coordinate closely with partner agencies, particularly with respect to low flow events and operational triggers at consumptive use mitigation and environmental restoration projects. These projects currently include Curwensville Lake, Whitney Point Lake, Lancashire 15 Abandoned Mine Drainage Treatment Plant, Cresson Abandoned Mine Drainage Treatment Plant, and Billmeyer Quarry.

Low Flow Monitoring Project – The Commission strives to maintain focused research efforts on low flow management in light of consumptive use mitigation obligations and ecosystem flow needs. Implementation of the proposed study plan will be collaborative effort incorporating past results to direct monitoring in targeted areas of interest. Staff will combine water availability tools and an understanding of water challenged and potentially stressed areas across the basin with ecosystem flow questions regarding water quality and aquatic ecosystems to provide greater insight for improved policy making and enhance scientific understanding. Funding is provided by the Water Management Fund.

Drought Monitoring – The Commission established a basin-wide Drought Coordination Plan with its member jurisdictions to promote consistency when determining, responding to and informing the public of droughts, and convenes the Drought Coordinating Committee as drought conditions emerge to share information and identify possible response actions. Staff will continue to consult with the Drought Coordinating Committee during drought conditions.

Drought Management Strategy Update – The Commission’s Drought Coordination Plan describes the Commission’s drought management authority, drought watch, warning, and emergency stages, monitoring data and criteria for determining drought stage, and drought response actions by the Commission and partner agencies. Since adoption of the plan in 2000, monitoring networks have changed, data portals have improved, new drought indicators have emerged, and climate science research has provided new insights. Accordingly, there is a need to update the Commission’s drought monitoring, early warning, and management procedures and tools to increase drought preparedness in the Basin.

General Hydrologic Studies – Commission staff are continually monitoring basin hydrologic conditions and improving hydrologic datasets and tools to guide regulatory and planning decision making. Specific efforts include monitoring flood/drought conditions and associated mitigation operations, maintaining a comprehensive stream gage database containing basin characteristic and streamflow statistic data, improving passby flow determination datasets and spreadsheet tools, preparing low flow forecasts for Conowingo Pond Management Workgroup meetings, enhancing ecosystem flow recommendations compliance tool, etc.

Regional Climate Science Study – The Commission’s new Comprehensive Plan outlines climate change as a cross-cutting challenge that will need to be addressed throughout the Susquehanna River Basin. This study will assess regional climate projections and their implications to future hydrologic conditions in both surface water and groundwater settings. Specific studies that are needed for the Susquehanna River Basin to address anticipated future change risk to water management will be identified. Funding will be provided by the Sustainable Water Resources Fund.

Groundwater Monitoring Drought Study – The Commission’s Drought Coordination Plan directs staff to monitor hydrologic conditions and inform our Commissioners of emerging drought conditions. Groundwater level, in addition to precipitation deficit, streamflow, soil moisture, and reservoir storage depletion, is one of the indicators considered for county-based drought declarations. Presently, 34 groundwater observation wells maintained by the U.S. Geological Survey are relied upon for assessing drought conditions in 66 counties. Through this study, Commission-sponsored well monitoring data will be examined as a source to supplement the data generated by the existing USGS groundwater monitoring network. A subset of suitable monitoring wells and associated data will be compiled into a comprehensive database for 1) consideration by USGS to collaborate on a future study related to supplementing the existing groundwater monitoring network and 2) internal use for hydrologic conditions monitoring and informed decision making related to drought declarations within the Basin. Funding for this study will be provided by the Sustainable Water Resources Fund.

PRIORITY MANAGEMENT AREA D: WATERSHED MANAGEMENT

Goal: – Watersheds exhibit a healthy and sustainable balance between land and water management.

Vision: - Integrated land use and water management practices allow watersheds to function in a natural and sustainable manner to protect and improve the quantity and quality of water resources in the Basin.

Programs

AREA D: Watershed Management

American Eel Restoration	\$ 45,000
Eels in the Classroom	16,000
Stormwater Management Pilot Projects	125,000
DCNR Reservoir Environmental Flow Enhancements	67,500
USACE Reservoir Environmental Flow Enhancements	28,750
Kehm Run Dam Removal & Restoration Project	150,000
Critical Aquifer Recharge Area Pilot Projects	400,000
Conowingo Watershed Implementation Plan	30,000
Dam Removal Study	38,000
Water Resources Studies	<u>20,500</u>
 Total	 \$ 920,750

Activities which will be conducted under Priority Management Area D: Watershed Management

American Eel Restoration - Migration of historically-abundant American eels to and from the basin has been restricted by the presence of dams and hydroelectric projects on the Lower Susquehanna River since the early 1900s. Additionally, populations of the basin’s formerly most prevalent freshwater mussel species, which relies on American eel as a host species for part of its life cycle, have plummeted. In 2008, the US Fish and Wildlife Service began a limited, but successful, eel reintroduction program. Begun in FY-16, the Commission embarked on a long-term study aimed at discerning changes to freshwater ecosystem traits following reintroduction of American eels in specific sub-watersheds, including evaluations of shifts in fish and macroinvertebrate community composition, re-establishment of mussel populations, and water quality improvements.

Eels in the Classroom – This project leverages Commission expertise and broader efforts to restore eel populations. Commission staff will recruit up to ten participating school districts who have experience raising fish in aquaria. Preference will be given to school districts located in environmental justice areas. Participant schools will be allotted a nominal number of juvenile American eel, and students will raise them for several months, then release the fish to local streams. Through this project students are taught the value and importance of aquatic connectivity, ecosystem function and migratory fish restoration. Commission staff will furnish instructional material to teachers and participate in eel release activities for a subset of classrooms. Funding will be provided by the Sustainable Water Resources Fund.

Stormwater Management Pilot Projects – Commission staff will provide technical support to agencies as well as provide technical and regulatory coordination assistance to municipalities to improve stormwater management through structural and non-structural management practices to best manage increasing challenges associated with stormwater and nuisance flooding. Support will include, but is not limited to, providing guidance on development of educational/outreach materials for stakeholder implementation, technical assistance with developing stormwater reduction strategies, support for prioritizing and implementing best management practices in critical areas, and coordination support among local, state and federal interests. Funding for this project is provided by the Sustainable Water Resources Fund.

DCNR Reservoir Environmental Flow Enhancements – The purpose of this study is to assess opportunities for enhancing environmental flows at Pennsylvania Department of Conservation and Natural Resources (DCNR) lakes in the Susquehanna River Basin and addressing related goals and objectives cited in DCNR’s Climate Change Adaption and Mitigation Plan. Specifically, the Plan expresses a desire to 1) evaluate the operation of each dam and determine impacts downstream when water levels are reduced; 2) examine measures to compensate for low flows such as releasing compensation flow downstream to address conservation or recreation impacts; 3) develop and/or retrofit state park lakeshore infrastructure to be adaptable to changing pool depths; and 4) conduct water releases that mimic historical and natural variability. Additionally, the Plan summarizes strategies focused on improving conditions within watersheds upstream of DCNR lakes. These efforts entail restoration of riparian buffers, increasing stream thermal cover, management of invasive species, erosion and sediment control, and increasing overland flow retention leading to increased groundwater infiltration. Funding is provided by the Water Management Fund.

USACE Reservoir Environmental Flow Enhancements – Under the Planning Assistance to States (PAS) Program, staff will partner with the United States Army Corps of Engineers (USACE) on a study to assess environmental flows at federal reservoirs in the basin. Significant changes have occurred in the 6 major subbasins since the initial construction of the 15 USACE operated projects. Furthermore, despite recent advances in environmental flow science, no specific study has been conducted to evaluate opportunities for improving environmental flows at each USACE reservoir in the basin. The study will culminate in the development of a scoping plan for updating water control plans at applicable reservoirs. Funding is provided by the Water Management Fund.

Kehm Run Dam Removal and Restoration Project – SRBC and American Rivers have partnered to remove a high hazard dam along Kehm Run and restore floodplains, wetlands as well as address offsite stormwater issues. This project is proposed under the Environmental and Water Quality Alternatives in SRBC’s Consumptive Use Mitigation policy. This project will consist of removing a hazard dam, restoring the stream channel, floodplains, and wetlands. An offsite stormwater issues will be addressed to decrease sedimentation and provide groundwater recharge. The project will be completed in three phases: 1) dewatering and initial dam breach, 2) removal of remaining dam and stable channel excavation, and 3) restoring stream channel, wetlands, and addressing legacy stormwater concern. In FY-22 staff will conduct a complementary groundwater recharge/stormwater BMP pilot project comprised of site investigation and preliminary engineering. Engineering support will be provided by a contractor at a cost not to exceed \$100,000. Funding is provided by the Water Management Fund.

Critical Aquifer Recharge Area Pilot Projects – Groundwater recharge is the primary means of ensuring water is available to refill aquifers and support base flow to streams. Different geologic materials, structures, or surficial land use impact these conditions. This project aims to identify areas of the basin that provide greater recharge and baseflow support and are critical to maintaining adequate water supply to restore/improve hydrologic resiliency. Upon identification, Commission staff, in partnership with organizations such as the Upper Susquehanna Coalition, the Upper Susquehanna Conservation Alliance, North Central PA Conservancy and similar partners, will develop and implement preservation, restoration, or enhancement projects at preferred locations. Protecting and enhancing critical aquifer recharge and baseflow support to streams will help provide drought resiliency, enhance water quality and preserve the water supply for the future. Costs include \$300,000 for grants awarded to projects in FY-2022. Funding is provided by the Water Management Fund.

Conowingo Watershed Implementation Plan – The Commission is assisting the Chesapeake Bay Program Partnership with development and implementation of a Watershed Implementation Plan (WIP) that will reduce pollutant loads delivered to the Bay because of lost trapping capacity in reservoirs of the Lower Susquehanna River. The Conowingo WIP is a supplemental action, triggered mainly due to sediment infill behind the Conowingo Dam, that is needed to meet the overall nutrient and sediment goals under the Chesapeake Bay TMDL and the 2014 Chesapeake Bay Watershed Agreement.

Dam Removal Study – The removal of historic mill dams eliminates safety, maintenance, and liability concerns; restores free passage for aquatic life; and re-establishes continuity for a stream. However, the removal of dams also enables accumulated (“legacy”) sediment to be flushed downstream. The movement of the sediment and other associated

pollutants can diminish positive effects of watershed management plans underway to control pollutant loads. In addition, the release of sediment can degrade downstream habitats. In 2015, the Commission began to amass CIM and other data downstream of two historic mill dams located in the Chiques Creek watershed. One dam was removed in 2019 and the other dam is planned to be removed in 2022. The length of data collection pre- and post-dam removal, the variety of water quality parameters measured, the high-caliber standards & protocols applied, and the collection of high-resolution LiDAR and bathymetry data provide unique scientific opportunity to gain insights that can be applied to historic dam removal and legacy sediment management projects elsewhere. In FY-22, Commission staff will continue to collect CIM and other data at the fixed stations in the Chiques Creek watershed and additionally staff will:

- Implement regular channel surveys using high-resolution equipment to measure physical changes in stream bed/bank;
- Perform benthic macroinvertebrate and fish community surveys in stream reaches above, within, and downstream of existing/former mill dams to evaluate community composition;
- Coordinate data collection and findings with research scientists from Franklin and Marshall College, the University of Delaware, Penn State University, and Stroud Water Research Institute to develop additional insights and applied management approaches to dam removal and legacy sediment management.

Water Resources Studies – On an annual basis the Commission seeks proposals from its staff for studies/projects that further the mission and work of the organization. In FY-2022 the Commission, through funding provided by its Sustainable Water Resources Fund, will continue to support such studies, including (1) extension of research begun in FY-20 to inform sample collection, processing, and quantification methods to characterize *microplastics* in stream water, in partnership with Penn State University; and (2) use of environmental DNA (eDNA) for sentinel monitoring to detect aquatic invasive species (AIS, round goby and northern snakehead) in the Lower Susquehanna Subbasin.

ADMINISTRATION, COORDINATION AND OUTREACH

The Commission’s 2021 Comprehensive Plan focuses on the four Priority Management Areas (PMAs) presented in this budget: Water Supply, Water Quality, Flooding and Drought, and Watershed Management. The 2021 Comprehensive Plan also includes two cross-cutting streams that enable and support achievement of PMA goals: coordination and outreach to partners and the public, which plays an important role through all four PMAs, and technology and data analytics, which will expand water resources management capabilities in all areas. The Commission is also cognizant of the overarching influence of climate change and the importance of environmental justice, and will look to address these challenges to improve management as conditions change and support more equitable treatment of Basin communities.

Programs

Administration, Coordination and Outreach

Watershed Coordination Functions and Activities	\$ 278,000
Comprehensive Plan and Water Resources Program	88,000
Climate & Environmental Justice Policy Study	23,000
General Program Administration	683,225
Technology and Data Analytics	<u>463,500</u>
Total	\$ 1,535,725

Activities which will be conducted under Administration, Coordination and Outreach

Watershed Coordination Functions and Activities - Coordination is an essential and mandated responsibility of the Commission. The purpose of the program is to minimize duplication of efforts, maximize limited resources and reduce conflicts among federal, state and local governments sharing responsibility for management of the basin's water resources. Specific coordination activities include management of the Water Quality Advisory Committee (WQAC) and the Water Resources Management Advisory Committee (WRMAC), and coordination with state and federal agencies such as the USACE, USEPA, USGS and the NWS. Commission staff are also active participants in agency-sponsored programs, coalitions, and working groups including, yet not limited to: Susquehanna River Anadromous Fish Restoration Cooperative (SRAFRC), the Mid-Atlantic Panel on Aquatic Invasive Species (MAPAIS), and the Pennsylvania Wildlife Action Plan Advisory Committee.

Comprehensive Plan and Water Resources Program - The Compact states that the Commission shall develop and adopt, and may from time to time review and revise, a Comprehensive Plan for the immediate and long range development and use of the water resources of the basin. It also asserts that the Commission shall annually adopt a Water Resources Program, based upon the Comprehensive Plan, consisting of the projects and facilities which the Commission proposes to be undertaken by the Commission and by other authorized governmental and private agencies, organizations, and persons during the ensuing six years or such other reasonably foreseeable period as the Commission may determine. In FY-2022, the Commission will continue to implement the updated 2021 Comprehensive Plan. Staff will also prepare an annual update to the Water Resources Program for FY-2022.

Climate & Environmental Justice Policy Study – This study will research and compile a basic listing of the Basin’s member jurisdictions’ published policies and guidance on climate change and environmental justice. Background information that can inform the relevant climate change objectives within the Commission’s Comprehensive Plan will be provided. Additionally, where relevant, the study will provide general overview information about member jurisdiction and other appropriate institutions’ policies and guidance for environmental justice, which is an emerging area of research for the Commission. This research will prevent duplication of efforts. Funding for the study will be provided by the Sustainable Water Resources Fund.

General Program Administration - Internal and external meetings occur that do not relate directly to specific Commission programs. In addition, time is spent on program development, budgeting, periodic program summaries, annual reports, and responses to our signatory members and elected officials. This budget category also includes costs for the Commission's administrative personnel and programs, such as executive, finance, human resources and government relations.

Technology and Data Analytics - The importance of the Commission's information technology systems continues to grow. The Commission will continue to enhance our proprietary systems and Internet-based databases, and will strive to make increasing amounts of data available electronically via our website, including both water quality and water quantity data. We will also work to develop new systems and processes to share data internally and externally. In FY-2022 the Commission will replace network switches at a cost of approximately \$20,000.