Attachment I-5:
Resource Agency Coordination

Attachment I-5: Resource Agency Coordination
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Study Initiation Notice

Lower Susquehanna River Watershed Assessment

The purpose of this notice is to announce the recent initiation of the U.S. Army Corps of Engineers, Baltimore District's (USACE) Lower Susquehanna River Watershed Assessment (LSRWA). In partnership with Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (MDNR), U.S. Geological Survey (USGS), The Nature Conservancy (TNC), and the Susquehanna River Basin Commission (SRBC), USACE is conducting the watershed assessment under Section 729 of the Water Resources Development Act of 1986, as amended. Enclosed is the executive summary of the project management plan (PMP) for the LSRWA, which includes a map of the study area.

The LSRWA is a multi-agency effort to comprehensively forecast and evaluate sediment and associated nutrient loads to the system of hydroelectric dams located on the Susquehanna River above the Chesapeake Bay. The assessment will also include an analysis of hydrodynamic and sedimentation processes and interactions, consideration of structural and non-structural strategies for sediment and nutrient management and an assessment of management strategies on future conditions in the lower Susquehanna River Watershed and Upper Chesapeake Bay. The official geographic area of the study is the lower Susquehanna River watershed, which flows into the Susquehanna River from Sunbury, Pennsylvania, down to the mouth at Havre de Grace, Maryland.

The LSRWA partners plan to meet quarterly to discuss, coordinate, and review technical and non-technical components of the assessment as well as management activities. These meetings will be open to the public and interested stakeholders; you will find an updated calendar of events at the project website along with the detailed PMP (http://bit.ly/LowerSusquehannaRiver). The project website will include various technical and management information as it becomes available.

Public meetings/workshops will also be coordinated by the LSRWA partners at appropriate times during the assessment. It is anticipated that there will be at least two public meetings over the course of the 3-year study – one when preliminary strategies for sediment and nutrient management strategies are developed (fall 2013), and a second meeting when the LSRWA report is released for public review (summer 2014). The purpose of the public meetings will be to provide information about the LSRWA report and obtain public input regarding its content.

If you have any questions regarding this project, please email eyesonthebay@yahoo.com or please contact Ms. Anna M. Compton at (410) 962-4633 or by e-mail at anna.m.compton@usace.army.mil. Correspondence can be provided by mail to:

U.S. Army Corps of Engineers, Baltimore District
ATTN: CENAB-PL-P (Compton)
P.O. Box 1715
Baltimore, Maryland 21203-1715

Amy M Guise
Chief, Civil Project Development Branch

LSRWA:
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Regional Conservationist – East
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Regional Director, Southcentral Region
Pennsylvania Department of Environmental Protection
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Harrisburg, PA 17110

Pennsylvania Department of Conservation and Natural Resources
Richard J. Allan
Secretary
Pennsylvania Department of Conservation and Natural Resources
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Harrisburg, PA 17102-2391

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Field Supervisor
U.S. Fish and Wildlife Service
Chesapeake Bay Field Office
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USEPA
William Early
Regional Administrator
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103

USGS
Bob Shedlock
Director
USGS MD-DE-DC Water Science Center
5522 Research Park Drive
Baltimore, MD 21228

James Campbell, Director
U.S. Geological Survey PA Water Science Center
215 Limekiln Road
New Cumberland, Pennsylvania 17070

Copy Furnish (cc)
Maryland Department of the Environment
Mr. Herb Sachs

Maryland Department of the Environment
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Baltimore, MD 21230

Maryland Department of Natural Resources
Mr. Bruce Michael
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Ave., C-4
Annapolis, MD 21401

Chesapeake Bay Program
Nicholas A. DiPasquale,
Director, Chesapeake Bay Program Office
US Environmental Protection Agency
410 Severn Avenue
Annapolis MD 21403

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

FEB 29 2012

Planning Division

Mr. John Nichols
Fishery Biologist
National Marine Fisheries Service
NOAA Chesapeake Bay Field Office
410 Severn Avenue, Suite 107A
Annapolis, MD 21403-0279

Dear Mr. Nichols:

This letter is to inform you of the recent initiation of the U.S. Army Corps of Engineers, Baltimore District's (USACE) Lower Susquehanna River Watershed Assessment (LSRWA). In partnership with Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (MDNR), U.S. Geological Survey (USGS), The Nature Conservancy (TNC), and the Susquehanna River Basin Commission (SRBC), USACE is conducting the watershed assessment under Section 729 of the Water Resources Development Act of 1986, as amended. Enclosed is the executive summary of the project management plan (PMP) for the LSRWA which includes a map of the study area.

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It is our intent that the efforts of this watershed assessment provide value to you in your agency's water resource planning and management efforts, and complement and support your other ongoing efforts.

Please inform our office of the degree with which your agency would like to be involved with the LSRWA within 30 days of the date of this letter. If you have any questions, please call Mr. Daniel Bierly at (410) 962-6139 or via email at Daniel.M.Bierly@usace.army.mil.

Sincerely,

Amy M. Guise
Chief, Civil Project Development Branch

Enclosure

CF:
CPD READING FILE
CENAB-PP-C
MDE, Herb Sachs
MDNR, Bruce Michael

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GUISE/CENAB-PL-P

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DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1715
BALTIMORE, MARYLAND 21203-1715

REPLY TO
ATTENTION OF

Planning Division

FEB 29 2012

William Early
Regional Administrator
U.S. EPA, Region III
1650 Arch Street
Philadelphia, PA 19103

Dear Mr. Early:

This letter is to inform you of the recent initiation of the U.S. Army Corps of Engineers, Baltimore District's (USACE) Lower Susquehanna River Watershed Assessment (LSRWA). In partnership with Maryland Department of the Environment (MDE), Maryland Department of Natural Resources (MDNR), U.S. Geological Survey (USGS), The Nature Conservancy (TNC), and the Susquehanna River Basin Commission (SRBC), USACE is conducting the watershed assessment under Section 729 of the Water Resources Development Act of 1986, as amended. Enclosed is the executive summary of the project management plan (PMP) for the LSRWA which includes a map of the study area.

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It is our intent that the efforts of this watershed assessment provide value to you in your agency's water resource planning and management efforts, and complement and support your other ongoing efforts. We appreciate EPA's direct and immediate interest in the LSRWA and we look forward to working closely with the Federal, State, and other agencies of the Chesapeake Bay Program in sharing the study's results.

Please inform our office of the degree with which your agency would like to be involved with the LSRWA within 30 days of the date of this letter. If you have any questions, please call Mr. Daniel Bierly at (410) 962-6139 or via email at Daniel.M.Bierly@usace.army.mil.

Sincerely,

Amy M. Guise
Chief, Civil Project Development Branch

Enclosure

CF:
CPD READING FILE
CENAB-PP-C
MDE, Herb Sachs
MDNR, Bruce Michael
EPA-CBPO, Nicholas DiPasquale

BIERLY/6139/nrs/CENAB-PL-P

See NOAA O'NEILL/CENAB-PP-C

BIERLY/CENAB-PL-P

GUISE/CENAB-PL-P

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Lower Susquehanna River Watershed Assessment

Executive Summary

The U.S. Army Corps of Engineers, Baltimore District (USACE), and the Maryland Department of the Environment have partnered to conduct the Lower Susquehanna River Watershed Assessment – Phase I. The Phase I assessment will comprehensively forecast and evaluate sediment loads to the system of four hydroelectric dams located on the Susquehanna River just above the Chesapeake Bay; analyze hydrodynamic and sedimentation processes and interactions within the Lower Susquehanna River watershed, consider structural and non-structural strategies for sediment management, and assess cumulative impacts of future conditions and sediment management strategies on the Upper Chesapeake Bay (page ES-2). Assuming adequate annual appropriations, Phase I will cost $1.4M, cost-shared 75% Federal/25% non-Federal, over 3 years. Phase II, to be scoped at a later date subject to sponsorship and funding, would utilize these results to formulate a Lower Susquehanna River Sediment Management Plan.

Critical components of the Phase I Watershed Assessment include:

- Integration of the Maryland and Pennsylvania Watershed Implementation Plans for nitrogen, phosphorus and sediment reduction, as required to meet the Chesapeake Bay Total Maximum Daily Loads,

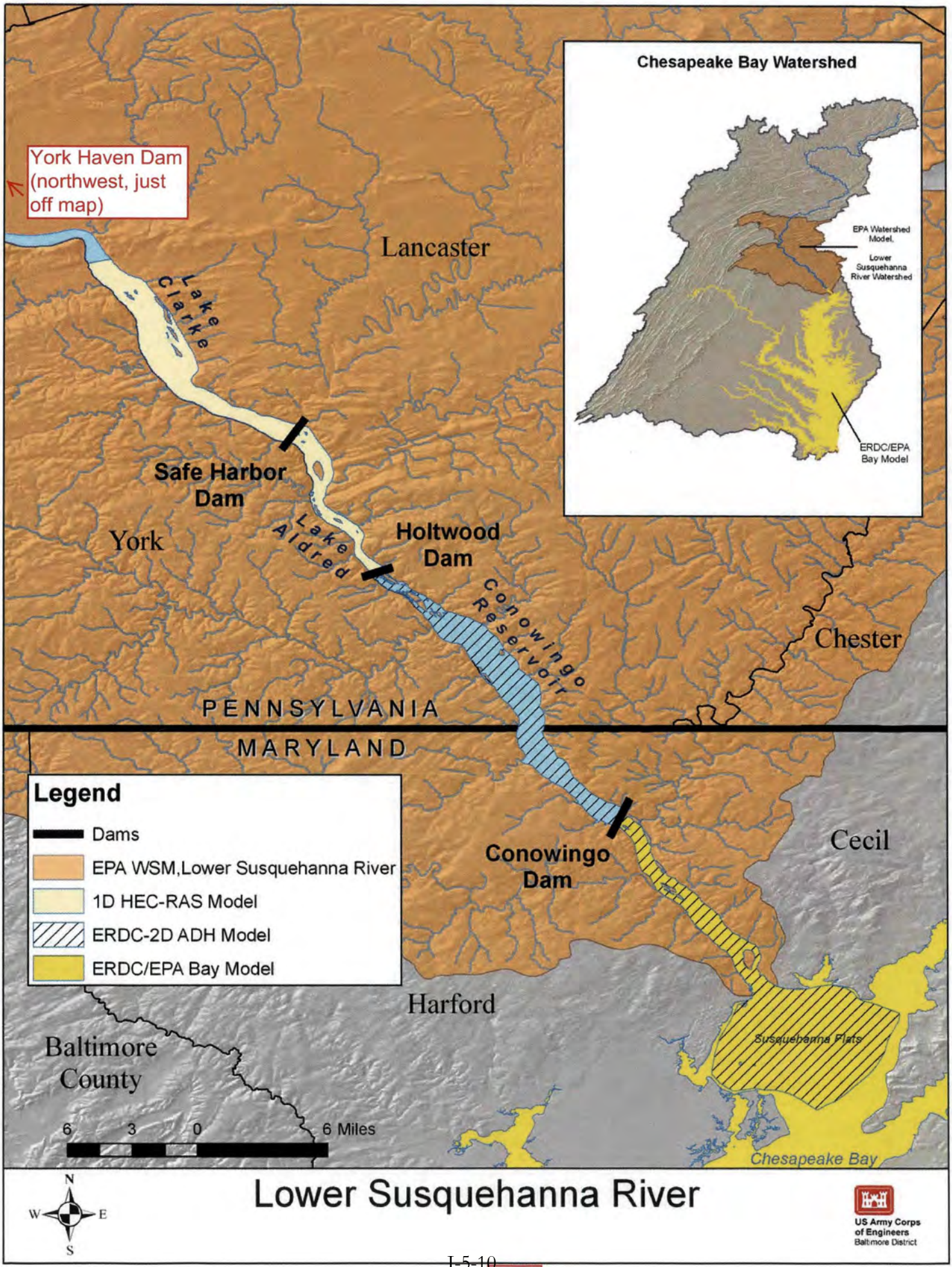
- Use of engineering models to link incoming sediment and associated nutrient projections to in-reservoir processes at the hydroelectric dams and forecast impacts to living resources in the Upper Chesapeake Bay,

- Identification of watershed-wide sediment management strategies, and

- Use of the U.S. Environmental Protection Agency's Chesapeake Bay Program water quality model to assess cumulative impacts of the various sediment management strategies to the Upper Chesapeake Bay.

Federal agencies share a renewed commitment to restore the Chesapeake Bay embodied in President Obama's Executive Order 13508, Chesapeake Bay Protection and Restoration (May 2009). This Executive Order established the Federal Leadership Committee, through which the Fiscal Year 2011 Federal Action Strategy was endorsed. This document specifically assigns USACE the "lead" role to "advance studies to evaluate the management of sediments" [in the Lower Susquehanna River Watershed, page ES-3].

USACE and the Maryland Department of the Environment, through collaboration with the Maryland Department of Natural Resources, Maryland Geological Survey, Commonwealth of Pennsylvania, U.S. Environmental Protection Agency, U.S. Geological Survey, Susquehanna River Basin Commission, The Nature Conservancy, and others seek to integrate water resources management in the Lower Susquehanna River Basin to ensure sustainable restoration of the Chesapeake Bay, the largest estuary in the United States.


Chesapeake Bay Watershed
EPA Watershed Model,
Lower Susquehanna River Watershed
ERDC/EPA Bay Model
York Haven Dam (northwest, just off map)
Lancaster
Lake Clarke
Safe Harbor Dam
Lake Aldred
York
Holtwood Dam
Conowingo Reservoir
Chester
PENNSYLVANIA
MARYLAND
Legend
Dams
EPA WSM,Lower Susquehanna River
1D HEC-RAS Model
ERDC-2D ADH Model
ERDC/EPA Bay Model
Conowingo Dam
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Harford
Baltimore County
Susquehanna Flats
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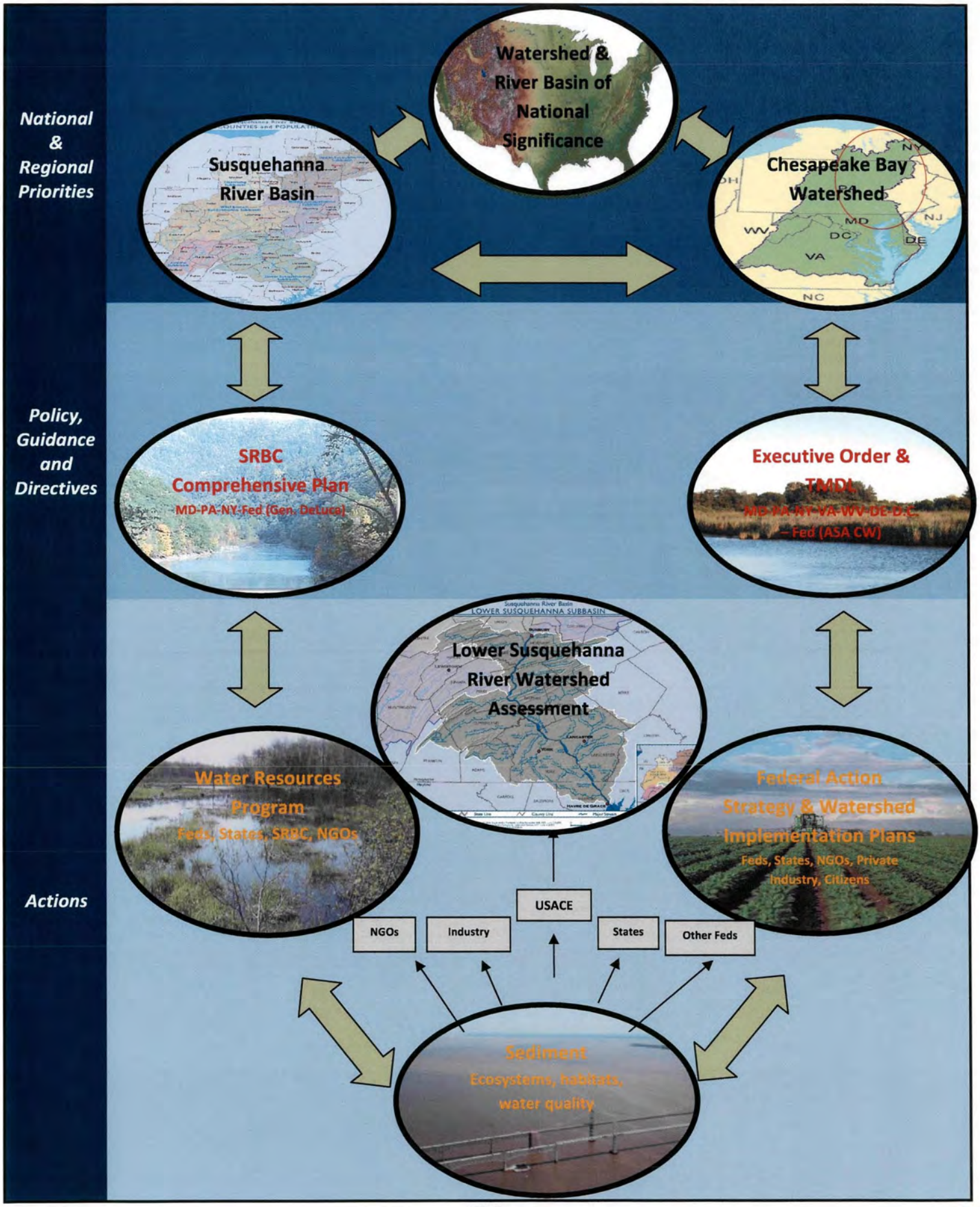
Lower Susquehanna River
US Army Corps of Engineers
Baltimore District

WATERSHED CONTEXT FOR CHESAPEAKE BAY & USACE ACTIONS



Pennsylvania Fish & Boat Commission

established 1866

Bureau of Fisheries
Division of Fish Production Services
1735 Shiloh Road
State College, PA 16801
(814) 353-2226 Fax: (814) 355-8264

March 16, 2012

Amy Guise
Planning Division
Department of the Army
Baltimore District Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203-1715

Re: Lower Susquehanna River Watershed Assessment

Dear Ms. Guise:

Thank you for notifying us of the LSRWA. The Pennsylvania Fish and Boat Commission is indeed very interested in the sediment issue in the Susquehanna River and the Chesapeake Bay. We manage fishes and other aquatic organisms in commonwealth waters. In addition to important fisheries for resident fishes, we have been attempting to restore migratory species for many years. Thus far, our efforts have focused primarily on American shad, however, we intend to focus on American eels and river herring in the coming years. Working with other resource partners (PA DEP, SRBC, USFWS, MD DNR and NOAA) we now have operating fishways at all four lower river hydroelectric dams and a planned fishway for the inflatable dam at Sunbury.

Naturally, we are interested in anything that impacts these fisheries and the habitats that support them. While we do not see ourselves as active players in this effort, we would like to be kept informed of your progress and perhaps attend some but not all of your meetings.

Please add the following individuals to your mailing list:
Michael L. Hendricks
Unit Leader, Anadromous Fish Restoration Unit
1735 Shiloh Rd.
State College, PA 16801
814-353-2226
mihendrick@pa.gov

Geoffrey Smith
Susquehanna River Biologist
PFBC
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Harrisburg, PA 17106-7000
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geofsmith@pa.gov

Sincerely,

Michael L. Hendricks
Leader, Anadromous Fish Research Unit
Division of Research

cc: A.Shiels
L. Young
D.Miko
G. Smith
J. Tryninewski

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
MD-DE-DC Water Science Center
5522 Research Park Drive
Baltimore, MD 21228
(443) 498-5503
rjshedlo@usgs.gov

Amy M. Guise
Chief Civil Project Development Branch
Department of the Army
Baltimore District, Corps of Engineers
P.O. Box 1715
Baltimore, MD 21203-1715

Dear Amy ~~Ms. Guise~~,

Thank you for the information regarding the Lower Susquehanna River Watershed Assessment. To date our Water Science Center has had a number of opportunities to exchange information and ideas with the LSRWA team. Most of our work has been through Bruce Michael of Maryland Department of Natural Resources. We would welcome the opportunity to become more involved in the LSRWA process due to our long-term monitoring of nutrient and sediment fluxes from the Susquehanna River.

I would recommend that you consider including Joel Blomquist (jdblomqu@usgs.gov, 443-498-5560) as the USGS representative for the MD-DE-DC Water Science Center on your team. We will be happy to continue to provide technical exchange, review, and comments on the LSRWA products.

Thank you.

Sincerely,

Robert J. Shedlock

Robert J. Shedlock
Center Director

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

MAR 26 2013

Ms. Anna Compton
US Army Corps of Engineers
Baltimore District
P.O. Box 1715
Baltimore, MD 21203-1715

Dear Ms. Compton:

On February 11, 2013, the Corps of Engineers, Baltimore District presented a document entitled "Reservoir Sediment Management Strategies", at the Quarterly Meeting of the Lower Susquehanna River Watershed Assessment Team. We appreciate the opportunity to outline foreseeable issues with two of the management strategy "sediment bypass" options presented in this document. These options include the hydraulic pumping of reservoir material to "sediment starved areas" of the upper Chesapeake Bay; and the hydraulic pumping of reservoir material past the Conowingo Dam into the Susquehanna Flats and northern Chesapeake Bay. We also outline alternatives to sediment bypassing that will minimize impacts to fish habitat in the Upper Chesapeake Bay.

Importance of the Upper Chesapeake Bay and lower Susquehanna River
The upper Chesapeake Bay north of Worton Point in Kent County, and Robins Point in Harford County (mainstem and tidal tributaries) and the lower Susquehanna River below Conowingo Dam are documented spawning and nursery ground for seven species of anadromous fish, including striped bass (*Morone saxatitis*), white perch (*Morone americana*), yellow perch (*Perca flavescens*), American shad (*Alosa spadissima*), alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), and hickory shad (*Alosa mediocris*) (Lippson, 1973, O'Dell et al., 1975). Physical features of this area include; 1) abundance of shallow depths (<3 feet, mean low water); particularly in the Susquehanna Flats area; 2) low spring salinities (< 2ppt); 3) abundance of coarse bottom substrate of sand, gravel, and cobble; and 4) the tidal/freshwater discharge circulatory retention of planktonic eggs and larvae associated with the Bay mainstem Estuarine Turbidity Maximum (ETM)(North and Houde, 2001). Together, this makes the upper Bay and lower Susquehanna River the most important migratory fish spawning ground in the Chesapeake Bay.

The upper Chesapeake Bay spawning zone is also a documented nursery habitat for numerous other commercially and ecologically important finfish that spawn in Bay waters, or in nearshore coastal waters off the mouth of the Bay. These include Atlantic menhaden (*Brevoortia tyrannus*), bluefish (*Pomatomus saltatrix*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micopogon undulatus*), winter flounder (*Pseudoharengus americanus*), and bay anchovy (*Anchoa mitchilli*) (Lippson, 1973). High water column detritus and zooplankton content

associated with the ETM make this nursery critical to maintenance of stock abundance for these mid-Atlantic species.

Dense and resilient beds of submerged aquatic vegetation (SAV) in the Susquehanna Flats and lower Susquehanna River also enhance the nursery ground qualities of the upper Bay spawning zone during the growing season, providing cover and forage habitat for juvenile finfish. Susquehanna Flats SAV has been stable and resilient for more than two decades, providing ecological stability to this area dating back the late 1980s of the post-Hurricane Agnus period. Because the Susquehanna Flats are the receiving waters for freshwater influx from the Susquehanna River, SAV in this area provides critical benefits that enhance ecological conditions locally in the spawning zone, and throughout the upper and middle sections of the Chesapeake Bay. These benefits include stabilizing surficial sediments, thereby sustaining water clarity in the bed areas; sequestering large amount of nitrogen and phosphorus throughout the growing season, thereby reducing concentrations of inorganic nutrients available for eutrophying phytoplankton blooms; and removing inorganic nitrogen from the estuarine system by promoting sediment biogeochemical processes such as denitrification.

Foreseeable issues with sediment bypassing options

The Chesapeake Bay has a nutrient and sediment loading problem which threatens the current and future health of this system. Nitrogen, phosphorus, and nutrient laden fine sediments transported to the Bay in freshwater discharge annually contribute to sustaining the high water column nutrient levels in mainstem and tributary waters, while nutrients settling to bottom substrates are recycled back to the water column through biogeochemical and geochemical processes (Cornwell & Owens, 1999; Boynton, Stankelis, Rohland, and Frank, 1999). Systemic ecological effects from eutrophication play multiple roles in degrading estuarine fish habitat.

Because the Susquehanna River carries almost 50% of freshwater discharge to the Chesapeake Bay, it is responsible for most of the nutrient loading problem in this system. Consequently, we are participating in the LSRWA process to assist with selection of solutions for reducing nutrient and sediment discharge from the Susquehanna River. We believe that selection of sediment management strategies should be in concert with the state TMDL reduction strategies. More importantly, we intend to recommend solutions that will protect and conserve the habitat integrity and high fishery values of the upper Chesapeake Bay spawning/nursery zone.

Conceptual reservoir sediment bypass options presented at the LSRWA quarterly meeting, and listed above, can adversely impact habitat integrity within the upper Chesapeake Bay spawning/zone. It is estimated that more than 193 million cubic yards of material is retained behind Conowingo Dam (Ann Swanson, electronic communication to LSRWA Team, 2/12/2013); with 85% silt content near the dam, and 55% silt content in upper reaches (Steve Scott, estimates provided during the August 7, 2012 LSRWA Quarterly Meeting). Hydraulic pumping of liquid slurry of such material to Susquehanna Flats will be impractical to control, and subsequent release and spreading of material will have far reaching effects on spawning substrate and SAV. Furthermore, much of the nutrient content of this material will be released to the water column of the upper Bay, contrary to state TMDL reduction strategies. These actions will result in negative impacts to sensitive finfish habitat, critical to resources of ecological and commercial importance to the Chesapeake Bay, and of broader scale importance to the mid-

Atlantic region. As such, we have significant concerns with the inclusion of sediment bypass options among the LSRWA sediment management options.

Alternative sediment reservoir management strategies
In our view, upland-based alternatives for sediment management will have the least impacts to out trust resources. Upland disposal of reservoir sediments/nutrients will provide a unique opportunity to remove fine-grain sediment and associated nutrient pollutants from the Chesapeake Bay system. Preferred upland-based options provided in the sediment management strategy document include 1) reclamation of quarries, mines, other disturbed fastland areas (including Shirley Plantation); 2) landfills; 2) innovative reuse, such as that provided by Harbor Rock, soil manufacture; and, 3) purchase of land for constructing containment facilities.

If water-based management strategies are selected, they should be located outside the upper Chesapeake Bay mainstem and tributaries anadromous fish spawning/nursery zone, including the Susquehanna Flats. Fringe or tidal tributary pocket marsh creation with reservoir material in other areas of the Bay system and Susquehanna River, including areas within and upstream of the Conowingo Pool should be considered. Such an option should consider the direct and indirect impacts to existing fish resources and habitats at a proposed site; the wave energy or riverine flow climate of the site (high energy sites should be avoided, requiring excessive amounts of armoring to retain placed material); and the physical and chemical make-up of reservoir material to be used.

Should tidal marsh creation be explored, material should be at least 70% sand in composition, and have predominant grain-size comparable to receiving sediments at the marsh creation site. Material containing excessive amounts of clay and silts is not acceptable for placement in aquatic systems for marsh creation because of its instability, and excessive rock armoring that is required to contain it. Keying in on predominantly sandy reservoir material will likely require mechanical handling and separation methods prior to placement at the marsh creation site.

Due to the large amount of material retained by the Safe Harbor, Holtwood, and Conowingo reservoirs, and the complexity of the sediment management strategies, we believe that multiple options will be required to restore reservoir trapping efficiency to a significant level.

Alternative sediment management strategies
Even with reservoir sediment trapping efficiency restored, nutrients will continue to be discharged to the upper Chesapeake Bay during high flow events. In particular, dissolved and colloidal forms of nutrients, which tend not to settle, will be components on post-sediment removal loading. It is, therefore, imperative that state and federal efforts continue to reduce nutrient and sediment loading to the Susquehanna River mainstem by applying land-based and drainage basin-based Best Management Practices within tributaries to the river. This option should be included, by default, with other options selected to reduce Chesapeake Bay loading levels.

Thank you for the opportunity to provide comments on this important initiative. If you have any questions, please contact me at (978) 281-9131; or, John Nichols at our Habitat Annapolis Field Office; John.Nichols@NOAA.GOV, or, (410) 267-5675.

Sincerely,

Christopher Boelke
Field Office Supervisor
Habitat Conservation Division

LITERATURE CITED

Boynton, W.R., R.M. Stankelis, F.M. Rohland, and J.M. Frank. 1999. A mapping survey of the sediment-water oxygen and nutrient exchanges in the upper Chesapeake Bay. Final Report to Maryland Port Administration. University of Maryland, Center for Environmental Science, Chesapeake Biological Laboratory, Solomons, MD.

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