November 29, 2011

Memorandum for the Record

Subject: Lower Susquehanna River Watershed Assessment (LSRWA) Kick-Off Team Meeting
Location: MDE, Montgomery Park Building, Aqua Conference Room
Date: November 2, 2011
Attendees:

Agency	Name	Email	Phone
USEPA	Gary Shenk	GShenk@chesapeakebay.net	410 267 5745
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MDE	Matt Rowe	mrowe@mde.state.md.us	410-537-3578
MDE	Secretary Robert Summers		
MDE	Tim Fox	tfox@mde.state.md.us	410-537-3958
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MDNR	Shawn Seaman	sseaman@dnr.state.md.us	410-260-8662
MGS	Jeff Halka	jhalka@dnr.state.md.us	410-554-5503
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SRBC	Dave Ladd	dladd@srbc.net	717-238-0425x204
SRBC	John Balay	jbalay@SRBC.NET	717-238-0423 x217
TNC	Kathy Boomer	Kboomer@tnc.org	607-280-3720
TNC	Mark Bryer	mbryer@tnc.org	301-897-8570
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USACE	Bob Blama	Robert.N.Blama@usace.army.mil	410-962-6068
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USACE	Chris Spaur	Christopher.C.Spaur@usace.army.mil	410-962-6134
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USACE-ERDC	Steve Scott	Steve.H.Scott@usace.army.mil	601-634-2371
USGS	Mike Langland	langland@usgs.gov	717-730-6953

Action Items:

A. Claire will email the team the "Roles and Responsibilities" spreadsheet to get input; compile and send out to team once completed.
B. Anna will send the LSRWA Team email distribution list to all team members.
C. Shawn Seaman will contact Michael Helfrich to notify him of quarterly meetings to see if he can attend.
D. Bruce Michael will have the lead in coordinating with SRBC, MDE, and MGS to set up a website where any products of the assessment can be kept to keep stakeholders informed.
E. Anna will prepare a brief public involvement plan to layout how the LSRWA will be coordinated with stakeholders and will send out the team for review.
F. Anna will update PowerPoint slides after each quarterly meeting to be utilized by anyone on the team providing updates to other Chesapeake Bay groups.
G. Anna will send out an update to via the large email distribution list that started with the original Sediment Task Force (includes academia, general public, federal, non-government organization (NGO), and state and counties representatives) notifying the group of LSRWA kick-off meeting and study start and will periodically update this group as the LSRWA progresses.
H. Anna will send out revised goals to the team for one final review and team approval.
I. Steve will coordinate with Bruce to obtain digitized maps of SAV data in the Susquehanna flats area.
J. Bruce will share results of the suspended sediment sampling taken at Conowingo outfall (taken during high flow events this year) with the team.
K. Mark and Anna will coordinate to conduct a literature search providing info on best management practices around the nation and world for reservoir sedimentation.
L. Matt will keep team informed on Innovative re-use committee findings to potentially incorporate ideas/innovative techniques into LSRWA strategies.
M. Claire will follow up with individual team members to develop a schedule for work to be conducted this year.
N. Shawn will provide a summary of Exelon study findings.

Discussion:

1. <u>Opening Remarks</u> Secretary Summers welcomed the group and discussed the impacts of Tropical Storm Lee on the Chesapeake Bay and that this time we had a close call in regards to not seeing the same extreme impacts similar to that of what we saw with Tropical Storm Agnes. He also thanked Herb for his efforts in executing an agreement to initiate this effort. Robert Pace noted that the Chesapeake Bay Community is concerned and energized in regards to managing sediments in the Chesapeake Bay due to the Total Maximum Daily Load (TMDL) process that has been ongoing in the watershed. USACE HQ is very tuned into the LSRWA and there is Assistant Secretary of the Army-level commitment as well due to the Chesapeake Bay executive order. Herb mentioned that there are a lot of efforts going on around the Bay that we can incorporate into the LSRWA such as the hydrologic studies going on below Harrisburg, fractured rock studies, and FERC Conowingo Dam relicensing studies. Study needs to consider NY and PA TMDLs.

2. Finalization of Cost-Sharing Agreement/Study Name Change Claire noted that a legal cost-sharing agreement was executed in September between USACE and MDE. MDE will have sub-agreements with SRBC, TNC, MD DNR, and MGS which are all contributing funds as in-kind services (tasks) to the assessment. The study received $250K in federal funding which can be used in Fiscal Year (FY) 12 even though it was received in FY11. Claire noted that FY12 funding is still uncertain. If Congress passes a USACE appropriations bill then the project is not expected to get additional funding. However, if USACE is under continuing resolution for the entire year, then additional funding may be forthcoming. The FY13 budget is currently being prepared and will be released in the first week of February. In order to receive more funding in the future, it is imperative that the team make good progress and expend any Federal funds that are received in a timely manner. Bruce noted that the state will be matching the federal funds received this year as in-kind services (25%) in line with the cost-sharing agreement (75 federal/25 non-federal). Claire mentioned that it is acceptable for the state to be spending at a faster or slower rate than the Federal funds are expended, as long as at the end of the assessment the 75-25 cost-sharing is maintained. Claire will be tracking this closely with Herb to ensure that the match does not get inordinately out of balance. .

   Anna noted that during the review process of the legal cost-sharing agreement and the project management plan for the study the name of the study changed to the Lower Susquehanna River Watershed Assessment in order to reflect that the study is a more holistic, comprehensive evaluation of sediment management within the lower Susquehanna River watershed.

3. Roles and Responsibilities This is a large team with many agencies involved, conducting activities for the assessment. In order to aid in communication so everyone has a good understanding of the roles and responsibilities of each person/agency, Claire prepared a spreadsheet which will be filled out by all team members. Claire will provide the spreadsheet electronically to the team after the meeting and all team members will provide their role/responsibility; Claire will compile and send out to the whole team.

4. Communication The team agreed to meet on a quarterly basis. Smaller meetings will be coordinated on a more frequent basis as needed depending on the need as tasks are underway for the assessment. Anna will send out the an email distribution list which includes all team members of the entire assessment team so anyone on the team can initiate a meeting outside of the quarterly time frame or communicate questions, concerns, etc.

   There was much discussion on public involvement/communicating to stakeholders outside of the team. Since no formal National Environmental Protection Act (NEPA) is being conducted for the LSRWA because no specific (implementation) actions will be recommended; public involvement is more flexible and can be less formal. The consensus was that getting input early and often from all stakeholders was very important to the LSWRA in order to have buy-in and have a good understanding of the public concerns of proposed strategies to manage sediments in the lower Susquehanna River.

However, it is important to have internal meetings as well when results and decisions are not quite ready to be vetted by the public and still need team consensus. Ideas included:

- Coordinating with Michael Helfrich (lower Susquehanna Riverkeeper) to attend quarterly meetings as he is very tuned into public view points on this issue.

- Inviting public/stakeholders to quarterly meetings.

- Setting up public meetings/workshops at appropriate times during the Assessment.

- Coordinating with other Chesapeake Bay groups that meet regularly to be included on the agenda to provide updates and get feedback on the assessment. Depending on the type of meeting, the most appropriate assessment team member (i.e., the assessment team member who is already attending or a part of that particular Chesapeake Bay group, etc.) could provide the update. Herb mentioned presenting to the House Environmental Matters Committee and Dave mentioned presenting updates at the SRBC quarterly meetings. PowerPoint slides will be updated after each assessment quarterly meeting to be utilized by anyone on the team providing updates to another Chesapeake Bay group.

- Utilizing the large email distribution list that started with the original Sediment Task Force (includes academia, general public, federal, NGO and state and counties representatives) that SRBC headed up in 1999 and 2000. Anna has been updating this list since 2009 with people requesting to be updated on this issue.

- Setting up a website where any products (factsheets, meeting summaries, reports, etc) of the Assessment and meeting summaries can be posted. MDNR will look into whether they can do this as an in-kind service. Chris noted that Baltimore District is not well suited to this task due to stringent department of defense security rules with website. John noted that SRBC could potentially take this task on as well.

All of these ideas will be summarized into a brief public involvement plan that will be vetted and refined by the team.

5. <u>Review Assessment Goals</u> The team revisited the goals that were developed for the study early on in the scoping process of the LSRWA in order to refine these goals. The purpose of the goals are to create bounds and focus for the team on what will be accomplished with the LSRWA and to communicate to stakeholders what the LSRWA will accomplish. Below are the goals the team worked up at the meeting which will be finalized after the meeting following one more team review.

1. Evaluate strategies to manage sediment and associated nutrient delivery to the Chesapeake Bay.
   - Strategies will incorporate input from Maryland, New York, and Pennsylvania Total Maximum Daily Load Watershed Implementation Plans
   - Strategies will incorporate evaluations of sediment storage capacity at the four hydroelectric dams on the Lower Susquehanna River.
   - Strategies will evaluate types of sediment delivery and associated impacts to Chesapeake Bay
2. Evaluate strategies to manage sediment and associated nutrients available for transport during high flow storm events; to reduce impacts to the Chesapeake Bay.
3. Determine the effects to the Chesapeake Bay from the loss of sediment and nutrient storage from behind the hydroelectric dams on the Lower Susquehanna River.

6. Conowingo Dam Relicensing Status Shawn provided an update to the group on the Federal Energy Regulatory Commission (FERC) relicensing process that the Conowingo Dam is undergoing as it relates to the LSRWA. The new license is required by 2014. In order to obtain the license, Exelon, the owner and operator of the dam, must undertake a variety of studies as requested by state and federal resource agencies to get an understanding of impacts of the dam. Several of the requested studies deal with sediment transport and accumulation in the dam system which relates to LSWRA efforts. At this time, most of the relicensing studies dealing with sediment transport and accumulation undertaken by Exelon are simply a compilation of existing literature and data. Their study findings were that 400,000 cfs (cubic feet per second) is not the threshold where sediments are scoured from behind the Conowingo Dam and that overall Tropical Storm Agnes did not scour sediments but ended up depositing more sediment behind Conowingo Dam. Mike said that this latter finding is not supported by USGS at this time.

   Comments on the studies from the resource agencies are due in the Feb-March 2012 timeframe and in the April-May 2012 time frame; FERC will make a decision if further sediments studies are warranted by Exelon in order to obtain a new license. In order for Conowingo Dam to be relicensed, all study findings must be approved FERC along with USFWS, and MDE must issue a Section 401 water quality certification.

7. New Data (Susquehanna Flats)/Potential Cost Savings Steve noted that upon review of Exelon data and reports for their FERC relicensing process of Conowingo Dam, he found that Exelon had already conducted bathymetric surveys of Conowingo Reservoir after Tropical Storm Lee, so this effort would not need to be conducted under the LSRWA scope. Mike will be reviewing that bathymetric data as it relates to the LSRWA under his scope of work. Steve noted that Exelon has also conducted bathymetry in the flats area below the Conowingo Dam; therefore, with the Exelon survey data and the NOAA depth chart data, conducting bathymetric surveys below the dam in the flats area is no longer required for LSRWA.

   In regards to the potential need for a three-dimensional (3D) model Steve noted that a desktop analysis could be performed instead of conducting model runs to get an understanding of 3D effects, resulting in a cost savings of approximately $20K for the

pertinent LSRWA task. During the 2D/3D study, Steve will also begin building the mesh for the models; this will save time and be a cost savings in the long run.

These adjustments to scope produce approximately $100K in savings.

8. SRBC Related Efforts John and Andrew updated the group on efforts that SRBC is undertaking that could be integrated with the LSRWA efforts.

    - FERC Relicensing activities – SRBC reviewed the Conowingo initial study report - *Sediment Introduction and Transport* and will provide comments to partners in advance of ultimate Feb/Mar 2012 comment deadline.

    - Conowingo Pond Management Plan – SRBC conducted a drought exercise, in cooperation with modeling contractor (Hydrologics) and stakeholders (power facilities, water suppliers, resource agencies, etc.), on October 3, 2011 in accordance with annual recommendations in this plan. This near real-time gaming exercise simulates evolving drought conditions and interactive operational scenarios to evaluate low flow management in the Conowingo Pond.

    - Susquehanna River Flow Management Project – This effort has several objectives related to the LSRWA including forming a stakeholder group (power facilities, water suppliers, resource agencies, etc.) with interest in flow-related issues in the lower Susquehanna River. In cooperation with a modeling contractor, the project aims to develop an hourly time step component of the existing OASIS hydrologic model for the entire lower 55-mile reach of the Susquehanna (Conowingo Dam to the Three Mile Island intake). Through the stakeholder process, SRBC will use the model to simulate alternatives for balancing environmental flow performance factors with operational constraints to develop flow recommendations for the lower 55-mile reach of the Susquehanna. Recommendations will be used by SRBC, 401 certification agencies, etc. in making recommendations to FERC as part of relicensing process. The project will be initiated once the modeling contractor has been secured.

    - Lower Susquehanna River Mainstem Monitoring Project – SRBC is currently designing a pilot monitoring study for the lower mainstem, which will assist with determining locations/methods for establishing an annual monitoring program to be paired with the annual monitoring conducted on the free-flowing portions of the Susquehanna River above Harrisburg (Large Rivers Project). Currently SRBC is considering an approach that assesses the free-flowing portion of the river as it approaches, and transitions into, a pool behind one of the dams with detailed data collection to be conducted in the pool as well. Data to be collected may include water quality (continuous and grab samples), fish/macroinvertebrates, habitat, periphyton/diatoms/algae, etc.

- Susquehanna River Basin Early Warning System – SRBC is upgrading the real-time monitoring stations on the Lower Susquehanna River with a goal of having a new web tool up and running in the first half of 2012.

- Lower Susquehanna Source Water Protection Partnership – SRBC in coordination with PADEP, are looking to convene a meeting in February 2012, to start building a framework for a sustainable workgroup that covers drinking water issues in the lower Susquehanna region. SRBC and PADEP have held a number of county-level meetings with a range of stakeholders over the past year dealing with local water quality issues of concern related to drinking water (sedimentation is high on the list).

- TMDL Data Collection and Development – As part of a contract with PADEP, SRBC is collecting data and modeling conditions in a number of watersheds in the lower Susquehanna basin for the development of local waterbody TMDLs (Conestoga, West Conewago, Octoraro, several urban watersheds, etc.). TMDLs cover a range of sources/causes, such as nutrient and sediment impairments from agricultural and urban pollution.

9. Tropical Storm Lee Impacts The team discussed the impacts of Tropical Storm Lee which scoured sediments, and what the impacts would be to the LSRWA scope.

   Mike Langland of USGS noted that Tropical Storm Lee scoured approximately 4 to 5 million tons out of Conowingo Dam into the Chesapeake Bay which is approximately 2 years of sediment/nutrient storage capacity. Mike reiterated that Exelon's consultant resurveyed bathymetry after the storm event behind Conowingo Dam. They utilized the same technique that USGS would have utilized and took measurements of velocity as well as refined bathymetry transects. Mike expects to obtain these datasets soon; as part of his scope, he will review these datasets to look for changes in bathymetry compared to the last time the reservoir was surveyed in 2008.

   Mike noted in the past, USGS utilized a 1D HEC-6 model to assess sediment deposition and transport in the entire reservoir system including sediments from the watersheds. Mike noted that there were shortcomings to this model. As part of his LSRWA efforts, Mike will construct and calibrate an updated 1D HEC-RAS model that will route inflowing sediment through the reservoirs, accounting for both sediment deposition and erosion in the upper reservoirs. The output of this model will provide boundary conditions for the 2D model simulations that Steve will be conducting as part of his scope in the Conowingo Reservoir.

   Gary Shenk will be conducting model runs utilizing the Chesapeake Bay Program's watershed model (CBP WSM), which will take into account watershed loads (same model utilized for TMDLs). He noted that he had concerns about the connections of the models (1D HEC-RAS, 2D, EPA WSM) in that there could be varying sediment rating curves and varying boundary conditions meaning potential differences in sediment loads that these models predict. Communication of this issue will be important in case the two

models (1D HEC-RAS and EPA WSM) have varying results; differences in models will need to be communicated (input data, purposes, methodology, etc.). Steve offered that he could run both boundary conditions (1D HECRAS and EPA WSM) when he conducts his 2D model simulations to see how the Conowingo bed reacts. Gary suggested that the relative difference in sediment load estimated by scenarios from the CBP WSM be applied to the rating curve rather than using two different models of sediment delivery to force the reservoir models.

Mike noted that there is not much data on sediment transported between the four reservoirs (some data was collected in the 1950's). Additional samples may need to be collected during a high-flow event to better understand flow versus particle size.

Bruce noted that there was minimal scouring during the spring 2011 high flow events. However, this was the worst year on record for hypoxia and second highest flow on record. High mortality has been seen in oysters.

Jeff noted that scouring occurred during Tropical Storm Lee from behind the Conowingo dam; these sediments appeared to bypass the upper Bay and accumulated more in the middle Bay. The approach channels to the C&D Canal were scoured according to Philadelphia District, and there did not appear to be significant burial of organisms since sediment was widely dispersed.

Steve noted that he needs some sediment (bottom) samples below the dam in areas where bedrock has sediment buried on top of it, rather than just where bedrock is exposed (bedrock is exposed for quite a ways downstream). Steve asked if submerged aquatic vegetation (SAV) data is available in the Susquehanna flats area which he needs in order to account for SAV impacts when he models sediment transport and deposition in this area. Bruce noted that annual SAV areal flyovers are done every year and digitized; however, due to poor water clarity in the upper Bay, areal flyovers this year have been delayed. Field observations have noted that some SAV beds in the flats area have been ripped along edges; however, overall the beds are still intact. The group discussed that SAV beds are highly dynamic from year to year, so modeling should utilize SAV data appropriate to the time period being modeled.

Carl asked if sediment sampling occurred at the Conowingo Dam that involved size fractionation and chemical analyses (this is a task scoped under the LSRWA that is a supplement to the regular sampling USGS conducts at the Conowingo outfall funded by MDNR). Bruce noted that this sampling occurred during the March-April high flow events, as well as during the Tropical Storm Lee event. Bruce noted that the results of this sampling would be available in 2-3 weeks and that he would share results with the team.

Bob Blama asked if sediment sampling had been done behind Conowingo Dam to determine chemical constituents of sediments. This is important if we are going to be evaluating placement or re-use of these sediments and to communicate to stakeholders. Jeff and Mike explained that sampling was done in 2001 to determine physical/chemical constituents with a finalized report of data available in 2006. The assumption in the

scope for the LSWRA is that this data would be adequate for the level of analyses (broader) that is being undertaken in this effort. Any future detailed investigation of dredging/construction alternatives would probably include bottom sampling.

There was discussion on the literature search task for this study. Mark noted that TNC has been involved with various groups looking at best management practices for dealing with reservoir sedimentation and sediment management around the world. Anna noted that it will be important to review literature compiled from the Sediment Task Force (1999-2000), as well as more recent literature dealing with sediment management practices and incorporate those ideas into the LSRWA; this was a task scoped in the LSRWA and USACE currently has the lead. The consensus was that USACE will still have the lead in preparing a literature search, however, TNC would supplement this task with information they obtain from best management practices around the world.

Matt noted that reaching out to MPA would be good as they head up the innovative re-use committee that looks at innovative dredging method sand re-use of dredged material. Since Matt is a committee member, he will keep the LSRWA team informed on this group's findings.

10. Prioritize Tasks and Schedule The team was provided handouts of the study approach, schedule, map, and modeling scenarios that were developed during scoping process. Claire noted that with the limited study funding, it is important to layout what tasks will be accomplished this year and to put dates on these tasks. The consensus was:

    Federally funded tasks (totaling $220K):

    - Mike Langland – (1) conduct QA / QC of Exelon 2011 Conowingo Pond survey; (2) build HEC-RAS model; and (3) compile data to support study modeling efforts.
    - Carl Cerco – assemble water quality data.
    - Steve Scott – (1) conduct 2D / 3D study; (2) initial numerical mesh construction; and (3) 2D AdH data assembly and initial hydrodynamic simulation.
    - ERDC team (coordinated by Steve Scott) – conduct SEDflume field data collection and analysis.

    Non-Federally funded tasks (no $ specified):

    - Bruce (MDNR) – fund USGS to conduct suspended sampling monitoring at Conowingo Dam.
    - Jeff – sediment sampling below Conowingo Dam in flats area.
    - Shawn – summary of Exelon findings.

    Claire will work with team members individually to schedule out these tasks and provide schedule to entire team for review.

11. Wrap Up The next meeting will be 23 January 2012.

Anna Compton

Study Manager