South River Science Team Meeting

January 20, 2016

This meeting was a half-day meeting conducted by webinar.

ROPS Overview: Nancy Grosso, DuPont

- Nancy went over the planned activities for 2016, giving updates for each project. Activities and findings listed below. See presentation (on SRST website) for more detail.
- List of 2016 activities:
    - Phase 1A Interim Measures/Phase 1B Design AOC4 – Anchor QEA/AECOM
        - Presented separately.
    - Enhanced Adaptive Management Model Training – Christy Foran, USACE
        - Discussed in Training presentation
    - Reactive Capping Simulation and Pore Water Monitoring – Danny Reible, Texas Tech
        - Capping of sands has the effect of driving sediment more anaerobic, increasing precipitation of reduced Hg phases and it also increased sorption within cap. There were minor increases in MeHg with reduction. Migration into cap minimal.
        - Capping of gravels benefits are insignificant compared to capping sands/silts.
        - Modeling long term effectiveness of caps post storm bank seepage: Even thin sorbing layer with modest capacity can substantially reduce seepage of Hg out of banks due to flooding-drainage cycle. Caps may not be needed if clean soil cover on bank stabilization provides same benefits.
    - Characterization/Treatment of Sediment/Soil – Carol Ptacek, Waterloo
        - Removal with biochar is >80%. There is greater Hg removal for high T than for low T biochars. Hardwood biochars are best due to low sulphase release and low DOC release.
        - Column experiments show effective removal of Hg through treatment layer even with 3.3 wt. % biochar.
        - Showed effective treatment of Hg and minimal production of MeHg in floodplain conditions.
        - All biochar columns (layered treatments) currently have similar declines in Hg concentration and are not yet at capacity while Hg concentrations in the column with no biochar are increasing across the clean soil layer.
        - Blending contaminated soils with biochar is moderately effective in static systems but not as effective in flow through systems. Considering trying other additives.
    - Dynamic Hg Cycling Model – Reed Harris
        - Calibration of model is underway.

        - After calibration is complete, different remediation scenarios will be tested.
    - Stable Hg Isotope Analysis – Joel Blum, U. Michigan
        - Hg isotopes in water samples show a mixing pattern between background Hg isotopes and Outfall 001 Hg isotopes.
        - However, a 3 end-member mixing model needed to explain isotopic variation. Additional work will be undertaken to understand a potential third mercury source.
    - Verification of Aquantity HydroGeoSphere Model – Steve Berg, Aquanty/ AECOM
        - Field program to verify the modeling results of post-storm volume of bank face seepage and GW flow through field still tentative. Possible locations to be scoped. Basic Park may be an option.

Remedial Designs Update: Clay Patmont, Anchor QEM

- Initially DuPont was proposing to City of Waynesboro to conduct work on BMAs in Constitution Park and North Park. Coming to an agreed approach in North Park has been problematic due to the more forested stream banks (more ecologically valuable habitat and valued by stakeholders); therefore, DuPont has changed direction and is now proposing to work on a BMA located at the Waynesboro WWTP, just downstream of the 2nd Street Bridge. This shift will demonstrate an ability to stabilize a much steeper bank receiving more energy from the river. The habitat here is not as ecologically valuable as that within North Park. The BMA work in Constitution Park is still being proposed. The BMAs in Constitution Park and at the WWTP offer an opportunity for DuPont to demonstrate different design approaches to different types of banks.
- Several diagrams of options for dealing with steep banks were presented and could be evaluated for use at the WWTP BMA. See presentation for diagrams. The WWTP BMA option was recently presented to City of Waynesboro. Discussions to follow.
- Schedule for 2016:
    - January/February – resolution of City and VADEQ comments on draft Phase 1A preliminary design report.
    - Spring 2016 – Phase 1A final design, access agreements, and permits
    - Summer 2016 – begin Phase 1A construction
- Lively discussion on bank design, saving trees, and City's desires at end of presentation.

Permitting: Christy Hoffman, AECOM

- Overview of permitting process given.
- Pre-application meeting held November 19, 2015 in Waynesboro with DEQ, USACE, DGIF and City of Waynesboro.
- A follow-up field meeting was held with USACE and DEQ so permit writers could see banks first hand. Meeting was held January 5, 2016.

- Most likely permit approach: USACE Nationwide Permit 13 (bank stabilization) which allows for 500 linear feet of disturbance and will not require separate permit from DEQ. VMRC subaqueous encroachment.
- Permit Application Schedule:
    - Submit 21 days after completion of design plans.
    - ~60 days for agency review
    - Notify USACE 1 week before construction
    - Permit Duration:
        - NWP – All NWPs expire March 2017. Extension can be requested in January 2017.
        - VMRC – Valid for 3 years and can be extended for up to 10 years.
    - USACE wants to visit BMAs after construction.

Monitoring: Josh Collins, AECOM

- Pre-remedy monitoring 2015
    - Transitioned to non-lethal fish tissue sampling
    - Fall 2015 monitoring was impacted by weather
    - Mallard duck sampling still pending
    - Habitat quality monitoring has been incorporated in to plan
- See presentation for monitoring results
- 2016 Monitoring Plans
    - All primary and secondary STM locations will be monitored in 2016
    - Enhanced vegetation/habitat monitoring elements will be employed
    - Real-time mercury analyzer pilot coupled with LTM surface water sampling efforts
    - Spring 2016 – "pre-remedy" conditions (pre construction)
    - Fall 2016 – "transitional" conditions (post construction)
- BMA Refinement Activities
    - Phase 1A – Final design survey data collection
    - On-going mercury characterization at Phase 1B BMAs
        - Intensive coring at Primary BMAs
        - Limited surficial/core sampling at Secondary BMAs to close data gaps
        - XRF field testing w/ JMU
    - Pre-design geophysical/ecological data collections

Training: Ralph Stahl, DuPont

- Link to survey monkey was emailed to members of SRST asking about training needs and timing in regards to learning how to use models such as RRM, EAM, etc. Results are pending.

Field Tools: Nancy Grosso (DuPont) and Robert Brent (JMU)

- In Situ Water Quality Measurements
    - Nancy discussed plans to test an optically based flow-through instrument to conduct real-time assessment of Hg and MeHg in South River. The instrument measures and records a number of water quality parameters. Hg concentrations are determined by correlation with TSS.
    - The plan is to have unit deployed in April 2016, collection data into May 2016 and recover at the end of May 2016 (I month). Discrete water sampling will occur while meter is deployed. Results will be presented via webinar.
- XRF Pilot Study
    - Robert is proposing to do more validation work with XRF. This includes the following:
        - Literature review
        - Field setup and protocol development
        - Field validation (coordinating with AECOM soil sampling, real time assistance with sampling extent for BMA delineation)
        - Additional laboratory validation (in-situ XRF measurement, field measurement on collected samples, Method 7471A lab measurement on collected samples, lab XRF measurement on collected samples)
        - Quantify method accuracy (use of NIST standards, spiking of SR soil samples)
        - Develop transferable calibration standards (investigate thin-film technologies for making durable field calibration check samples)
        - Additional Screening Level Use (assistance with BMA screening, on-site characterization of excavated material during remediation, sid-by-side comparison of other XRF units)
        - Data Analysis and Report Preparation

Creel Survey: Paul Bugas, VADGIF

- JMU/DuPont are supporting this survey.
- Combining to create larger survey, covering the entire South River and South Fork Shenandoah.
- Roving survey, stratified random sampling design. 4 clerks working in pairs floating in canoe or kayaks. Looking for bilingual clerks.
- Will cover May – September time period

Outreach: Mike Liberati, DuPont

- Creel Survey (details above)
- Fact Sheet #7 – being printed
- Newsletter – overview BMA – possibly turn into fact sheet # 8
- Story Boards – creating 8 boards for telling story of South River remediation to use at public outreach events.
    - 2 already complete

    - Using RAP to review
    - Time lapse rending Primary and Secondary Banks
- Carmen Moreno – new PDS program coordinator; she'll be on next meeting's agenda.
- 2016 plan
    - 2 meetings w/ RAP
    - 2 public information sessions
    - Riverfest – table and presentation
    - Social Media? Investigating feasibility

DuPont Corporate Changes: Mike Liberati and Ralph Stahl, DuPont

- DuPont is merging with Dow
- Schedule is in flux, but plan is for merger to occur 2016
- Lot to be done by then. There has to be approval of S&E Commission and shareholders.
- After merge, the plan is to split the company into 3 new companies. This will occur 1-2 years after merger.
- Material Science (mostly Dow with a little DuPont)
- Ag (60% DuPont, 40% Dow)
- Specialty Products (smallest of 3 companies)
- DuPont cut 1700 jobs beginning 2016. Only loss to SRST was Rich Landis. No changes anticipated for RCRA in 2016. There will be an evaluation at the end of the year, no indication what will happen next. DuPont employees have not been told to slow down in 2016.

Next SRST Meetings: April 5th and 6th at DEQ, Harrisonburg