South River Science Team
June 7, 2005 Meeting
Agenda

8:30	Welcome, Introductions	Don Kain
8:45	– NRDC, Sierra Club Settlement – SRST Brochure	Ralph Stahl
9:15	– Status of Waynesboro office. – Outreach / Newsletter – Invista plant site activities – Creel survey	Mike Liberati
10:00	Flux chambers	Rich Landis
10:30	Fish / Clam work	Billy Van Wart
10:40	Bird study	Dan Cristol (or grad students)
11:10	Geomorphology Update	Jim Pizzuto / Katie Skalak
12:00	Lunch	
1:00	JMU Proposal	Tom Benzing / Tiffany Tumer
1:20	USGS Continuous Monitoring	Jack Eggleston
1:45	Recent River Data	Dick / Ralph T.
2:30	Wrap-up, Action Items, Next Meeting	Ralph S. / Don K.

Introductions. Don Kain

- Self-Introductions were made by all. See attached list of attendees.

2005-06-07-SRST Attendees.jpg

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- Future CDs of meeting minutes will likely begin on a second volume (won't send out any old CDs once we start Vol. 2, unless specifically requested)

NRDC Settlement. Ralph Stahl

- Comment period is over, all comments have been addressed; need "no comment" letters from agencies to proceed with the settlement
- Ongoing studies will continue (i.e., bird, Mike Newman's periphyton, etc.)
- As soon as judge signs the order, DuPont will release "6-Year Plan"
- Order is legally binding- formal protocols to be used for data collection and analysis
- 1st 18-24 months of the plan will capture background information and data
- Jack Eggleston asked if NRDC will be involved w/ the SRST? "I don't know"
- Dean Cocking thinks NRDC involvement would be useful, and would provide them the context for what we've done, and what we plan to do; thinks they should be encouraged to participate. Ralph replied that the invitation is there for them to do so, should they desire
- Bob Luce asked if organization of past data is part of the plan? No, but that will be integrated into the study to reduce redundancy.
- Mike Jacobi – thinks the group that will be involved w/ NRDC and Dr. Livingston (for the Plan review phase) will suffice
- Hope that this will be finalized soon.

Brochure. Ralph Stahl

- Need to correct the DEQ web site address
- Need any other comments soon, to Ralph, Mike
- Dr. Wasti to look over Spanish version

Waynesboro SRST Office; 5 Year SRST Anniversary. Mike Liberati

- Office contractor job is out for bid. Hope to be in by Aug.
- Will request SRST to provide displays, tactile stuff, etc. for public area
- Still putting out 2 newsletters/year (spring/fall, sort of)
- Don Kain asked if we're still pursuing putting the newsletter on-line? Probably, along w/ dataset and other information (Don to pursue DEQ-end of newsletter)

Invista Site RCRA Action. Mike Liberati

- 2 indicators need to be addressed in the RCRA agreement: Protection of human health, and migration of groundwater; both have been met.

Storm Water. Mike Liberati

- All collection equipment is in place, still collecting data. Currently waiting for a "low" storm event, but will leave equipment in place to collect additional data
- Well from near WWTP had Hg, phase II will be to further delimit what's going on there. Some organics were also detected there.
- Isabel was collected w/ same protocol as present storms, but may collect another large storm anyway
- Northeast corner previously designated as karst turns out to be "collapsed karst" apparently doesn't have the characteristics of karst to channel water far off-site?

Creel Survey. Mike Liberati

- Ongoing since late April/ early May; primarily for South River. Random locations and times for surveys. To date, only one rejection

Safety Issues. Mike Liberati

- May make a laminated card w/ safety tips, procedures, etc.
- Still looking into providing first aid training
- Don Kain mentioned ongoing South Fork fish kill- doesn't seem to be a water quality issue. Similar kills in different rivers in previous years. No obvious patterns, no hypothesis consistent w/ all observations. Any suggestions? Anybody we should contact that we haven't yet? Consensus seemed to be that all appropriate individuals/agencies had been contacted/notified
- Billy and Pete (creel surveyors) will be asked to look for mortalities while they're doing their creel surveys.
- Mike Liberati asked if there could be a poultry litter connection; we noted that the kill has moved through the years, that some tribs which receive more litter and have more ag., haven't had kills observed on them.
- Tom Benzing- There's no difference this year in litter application, might even be less since more litter is being exported from the valley this year due to high fertilizer cost.

Flux Chamber Studies. Rich Landis

- Deployment has been accomplished
- Had to use weights to secure it (sediments were too unconsolidated; loose).
- Use "tedlar" (fluorinated mylar) collection bags for flux Hg
- Jack Eggleston- if gas bubbles up, will it get in the bag? "Probably not"
- One installed on an angle where sediment slopes into the bank (close to the spring)
- "Ebullition" –Gas bubbles from sediment

- Bob Luce – wants to know if there's Hg, MeHg, etc., on the clays; do a filter analysis (of the clays trapped during sampling for dissolved Hg)?
- Jack Eggleston- is there a D.O. criterion for stopping sampling? You'd need a micro-probe (Ralph Turner); D.O. measurements w/ a larger probe are not reliable.
- When D.O. was measured inside and outside of the chamber, the values were very similar
- Bill Van Wart – Could you do a winkler? Perhaps use a photo optical probe?
- See results slide: from 1-6 ng Hg/L per sq. ft. hr.
- Dean Cocking made the suggestion to standardize units (metric) to values commonly used in literature. Will check to find what units are commonly reported for Hg in efflux
- MeHg might be produced at night?
- Redox cycling- algal influence in the upper mm of sediment may result in increased flux
- Dick Jensen thinks the average flux of the area in the slide #14 shouldn't be 0.9 ng/L/sq. ft./ hr, but should be *9.0 ng*....
- MeHg is definitely being produced w/in the chamber in fairly substantial amounts
- Ralph Turner- we don't know whether we're seeing production or release of MeHg
- Jack Eggleston – do you think we've got any groundwater upwelling into the chambers? Probably not.
- T. Turner – could we use antibiotics to poison bacteria to determine whether there's methylation going on in the chamber? Ralph Turner- yes, that's one way to do it.

Hg Fish Tissue Collection. Bill Van Wart

- Samples are currently being shipped; we're behind schedule – should have results w/in 5 months
- Clams put off till next year, due to setbacks in scheduling

Hg Contamination in Birds. Dan Cristol

- Diversity study held up by cold weather early in season (birds still migrating)
- Plan to look for Hg in birds that over wintered in non-Hg contaminated sites
- May have 1st round data w/in 2 meetings from now
- Kingfisher study going better than expected
- Feather hg will be much higher than blood Hg; shouldn't be any soil Hg contamination, since feathers are cleaned
- Feathers grown last Aug., but don't know where they've been over winter (kingfishers wander around, but don't migrate)
- Will look at tarsal asymmetry in fledglings as stress indicators; number of young, unhatched eggs
- All nests so far have had 7 eggs; so far all young look healthy

- 28 days from hatching to fledging in kingfishers
- Have also been collecting fish that the adults bring back to identify species used as food and measure Hg in food items
- Ralph Stahl- could the current fish kill affect kingfishers by getting distressed fish? Dan C. will keep that in mind while analyzing data
- Study using tree swallows going very well
- Screech owls have been captured using nets and audio calls; have gotten 12 so far
- Screech owls are very sedentary; therefore there won't be any confounding of the data or other interpretation issues
- Hg in feathers in 90% MeHg
- Tree swallows live in medium-sized dead trees w/ woodpecker holes. These are usually found surrounding beaver ponds; we don't have much of that type of habitat, so Dan thinks most of the swallows he's gotten haven't nested in Virginia before

Geomorphology. Katie Skalak

- Currently working on a sediment budget
- Will eventually try to estimate mass balance to predict discharge (downstream through Harriston).
- Final sed. Budget slide; no estimates on rates of bed and channel storage; compartments exchange
- Did mud mapping to locate sediment deposits; characterize sites where deposition is expected
- See future studies slide
- May include number of cows/river mile in estimating bank erosion rates

Tree Hg Proposal. Tiffany Tumer / Tom Benzing

- Propose to use cores from trees to track Hg concentrations through time
- Might be able to track movement/progress at times of initial release
- EPA has Hg tree ring study (using sycamore, cottonwood and basswood?)
- Plan to use an upstream control, then co-locate at DEQ fish tissue sites
- Hg absorbed into wood, can move between annuli; could solve by using 5 year increments of rings
- Ralph Turner- literature indicates that ring deposition is primarily controlled by atmospheric deposition, not from roots; also, tree wood is typically pretty low in Hg- at about the ng/g, or ppb range. Hg gets in by vapor; can use x-ray ablation, but it's tough to quantify
- Discuss project w/ Ralph Turner to decide whether project is do-able, or whether to pursue a different project; Ralph thinks project could be very good for masters student; just needs refinement

USGS Continuous Monitoring TMDL. Jack Eggleston

- There will be continuous monitoring equipment on Waynesboro, Dooms, and Harriston gages
- Parameters will include temp., pH, turbidity, conductivity; won't do D.O. unless we specifically request it within a specific time frame (continuous D.O. monitoring requires a lot of probe maintenance/cleaning)
- Data will be collected at 15 min. intervals
- Gage IDs are 01626000 ( ) and 01626920 ( )
- Still planning on doing depth integrated surface water samples
- Will plan on doing storm water sampling, when possible
- Need to finish equipment installation and start storm water sampling
- Plan to do monthly sampling for 2 to 2-1/2 years
- Plan to collect storm samples over entire hydrograph
- Tom Benzing- does it matter that you can't distinguish between suspended solids and algae? "probably not, since we're primarily interested in total Hg transport"
- Should have USGS lab split some samples w/ Studio Geochemica (test lab results)

Pure Water Forum Roundtable Conference. Tom Benzing

- Conference will include ag., industry, Friends of the North Fork, etc.
- Next meeting will be at Orkney Springs, Fri. and Sat. June 17th and 18th.
- Talk to Tom if interested in attending or presenting

Transect and Tributary Sampling. Ralph Turner, Dick Jensen, Rich Landis

- Looked at old millrace in Waynesboro, upstream in Steele Run, did transects in South River, and did a whole river float in May
- For transects in the Dooms vicinity downstream of the bridge, saw biggest differences in Hg (dissolved and MeHg) 7 vs. 8 ng/L; highest near shore, bigger differences in MeHg
- Differences measured at transects probably represent real spatial variation.
- Steele Run seems to have more Hg that expected, maybe due to atmospheric deposition from DuPont in the past
- Old mill race embayment on South River in Waynesboro doesn't seem to be a big contributor of Hg to the river
- May 2005 float- whole river results should be available by next meeting
- Hg from places where they make cement (See Robert about site on Lewis Creek in Staunton).
- Could we to measure MeHg through the night ? Maybe
- Bottom line seems to be that Hg from the banks seems to control river Hg
- Dick Jensen- "things don't unmix themselves" Nice quote!

- Bob Luce wants to do mineral characterization, clay identification; thinks there may be something going on w/ organo-clay mixtures of smectites
- Ralph Turner is curious as to why floodplain soil Hg is so mobile
- Will follow up on Bob Luce's suggestion (Mike L. and Don)

Action Items.

- **Revise Brochure (need Health Dept. for Spanish)**
- **Don K. volunteered to put newsletters, brochures, perhaps presentations, on DEQ web site**
- **Mike Liberati – will follow up on bank mineralization issue w/ Bob Luce**
- **Discuss/summarize what's been done in the past, why, and how it can be applied to the 6 year plan**
- **Nancy Grosso will discuss groundwater issues, whether they're significant**
- **Next meeting, Tuesday Aug 9,**

Additional Info;

- USGS looking into finding any groundwater flux info for the N. F. Shenandoah
- Tom Benzing –Augusta Co. is working on their comprehensive plan; they should be told about Hg in the banks
- Depending on Erin for input for microbiologist to take John Rudd's position on SRST
- Oct. 18th and 19th; Expert Panel Meeting
- At this point, it's looking like the distributed source hypothesis (see Ralph Stahls hypothesis illustrations from previous meetings) is controlling Hg in fish (from banks and floodplain soils.