

**South River Science Team
Expert Panel Briefing
October 2-3, 2001
Harrisonburg, Va**

Tuesday, October 2

9:30 am	Welcome & Introductions	Don Kain, Brenda Kennell
10:00 am	Logistics, Meeting Objectives Mission of the Science Team	Don
	Expectations of Panel Historical studies	Ralph Stahl
	DEQ Monitoring activities	Don or designate
	Health Advisory	Khizar Wasti VA Dept. of Health
11:00 am	Brief Background / Orientation to the river systems	Don
12:00	Lunch	
12:30 pm	Depart for river visit	
6:30 pm	Return to Hotel	
7:30 pm	Group dinner (tbd)	

Wednesday, October 3

8:30 am	Welcome / Introductions	Brad Chewing / All
8:45 am	Data Review	
	Fish tissue analysis Preliminary site conceptual Model	John Green Annette Guiseppi-Elie.
10:00 am	Break	
10:15 am	Pending studies	
	gut contents mud map	Tammy Newcomb Dick Jensen
11:00	Gap Analysis	All
12:00	Working lunch	
3:00 pm	Wrap up / Action Items	Don
3:30 pm	Adjourn	

Meeting Summary

Tuesday, October 2

Attendees included the following (Attachment 1):

- DEQ: Don Kain, Bill Van Wart, Ted Turner, Sandra Mueller
- DuPont: Ralph Stahl, Mike Liberati, Brenda Kennell, Lewis Garrett
- DGIF: Larry Mohn
- VDH: Khizar Wasti
- VIMS: Mike Newman
- Invited Expert Panel:
 - Rob Mason, Univ. of MD, Chesapeake Biol. Lab.
 - Ralph Turner, RT Geosciences
 - Gary Bigham, Exponent

Welcome & Introductions. Don Kain welcomed the group and outlined logistics and housekeeping and all attendees provided self-introductions.

Meeting Objectives and Mission of the Science Team. The primary purpose of the agenda for this day was to provide the expert panel members with an introduction to the river, the historic problem, a summary of data and decisions, and issues now being faced by the many stakeholders. Don gave a brief outline of meeting objectives and the mission of the Science Team, and provided handouts (refer to Presentation folder).

Expectations of Panel. Ralph Stahl outlined the Science Team's expectations of the expert panel members (refer to Presentation folder).

Historical studies. Ralph provided an overview of the history of the mercury problem in South River, as well as a summary of findings from previous studies and the current projects under consideration by the Science Team (Presentation folder).

DEQ Monitoring activities. Don provided a brief overview of the ongoing DEQ monitoring program for fish, water, and sediments (Presentation folder).

Health Advisory. Dr. Khizar Wasti outlined the VA Dept. of Health's process for establishing fish consumption advisories, with a focus on the South River and South Fork Shenandoah. He provided a handout describing the basis for these advisories, including recent changes for the statewide mercury action level.

Background / Orientation to the River Systems. Don provided an overview of the river system, with general information on hydrology, geology, water quality, land use, aquatic resources, recreation, and consumptive water uses (Presentation folder).

River Tour. Meeting attendees participated in a river tour by vehicle, with stops and discussions at each public access point through the reach of river visited. The tour began at the Grove Hill landing on the South Fork Shenandoah and worked its way upstream to Waynesboro. Stops on the tour are listed below.

South Fork Shenandoah River	South River
- Grove Hill Landing	- Grottoes (at Grand Caverns)
- Shenandoah Landing (below dam)	- Harriston (at Rte. 778)
- Shenandoah Landing (above dam)	- Crimora (at Rte. 612)
- Elkton Landing (at Rte. 33 business)	- Dooms (at Rte. 611)
- Island Ford Landing (at Rte. 649 bridge)	- Waynesboro (at Constitution Park, just above Main St. bridge and across from DuPont)
- Lynnwood (at Rte. 708)	
- Port Republic Landing (at confluence of South and North Rivers)	

Wednesday, October 3 (Day 2)

Attendees included those present on October 2 plus the remaining members of the Science Team. A roster is included as Attachment 1.

Welcome / Introductions. Brad Chewning, DEQ regional director of the Valley Regional Office welcomed the group. Self-introductions were made around the table.

Preliminary Conceptual Site Model. Annette Guiseppi-Elie presented a conceptual model of mercury in the system, emphasizing the need to identify potential "sources" and reservoirs, pathways and transport mechanisms, and receptors. The slides used in her presentation are included in the Presentation folder. Annette pointed out the importance of having adequate habitat and substrate maps for the model to be meaningful. For example, there may be certain areas or habitat types (millraces, mill ponds, wetlands, etc.) which are particularly significant as reservoirs or in the transport process. Fully understanding the sources, pathways, and receptors should enhance our ability for effective management and minimization of risk.

Data Review.

- Fish tissue analysis. John Green of DuPont made a presentation by conference call, as Ralph Stahl operated the projector. John's slides are included in the Presentation folder. John indicated that there was excellent correlation between fish length and weight; therefore, either could be used in the analysis comparing mercury levels with different fish size classes. Data collected since the 1970s indicate that the highest mercury levels seem to be in fish from South River stations at Doods, Crimora, and Grottoes. Values from 1996 collections appeared to be higher than from other collection periods. Fish data do not indicate that a "slug" of mercury is making its way downstream ("rat moving through the snake" analogy), as the highest levels have remained in the same reaches of the South River over time.

Recommendations for future sampling are that a minimum of 10 fish of each target species be collected from each site, that sites be consistent over time, and that size classes for each species at each site be consistent. These recommendations have been implemented since DEQ and DGIF began cooperatively collecting fish in 1999.

- Sediment Analysis. John presented a review of sediment data, but results were not conclusive, due to incomplete data and uncertainty about some sample locations. DEQ and DuPont staff will review all sediment data and ensure that records are properly identified and complete before the next Science Team meeting. John will provide another statistical presentation of sediment data at that time.

Virginia Tech Fish Gut Contents Proposal. Tammy Newcomb, Virginia Tech Fisheries Department, presented a proposal to identify, quantify, and evaluate fish food organisms for mercury content. This study may provide insight into the sources and pathways of mercury transport to resident fish in the system. Copies of the proposal were provided to attendees. There was general agreement that the study would be worthwhile. Science Team and panel members were asked to review the proposal and provide comments to Ralph Stahl and Don Kain by early November. Tammy is hoping to have a student on board by January in order to begin sampling by spring 2002. Fish sampling will be coordinated with DEQ/DGIF collections, where possible. Laboratory questions remain, but will be resolved as the project moves forward.

Mud Map. Dick Jensen provided an overview of a proposed "mud mapping" project in the South River. The effort proposes to create a detailed map of sediment characteristics through the South River from Waynesboro to Port Republic. The river will be traveled during low flow by canoe and on foot, with verbal descriptions of sediments, riverbanks, aquatic vegetation, wetlands, and other notable features throughout this reach. Each area described will be photographed, have its coordinates recorded by GPS, and be characterized in detail. This work is proposed to be conducted within the next month or so. The group felt that the project was worthwhile and would provide useful information for future water, sediment, and floodplain investigations.

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General Group Discussion. With all presentations completed, the floor was open to a general discussion. The Science Team solicited comments from the expert panel regarding the overall monitoring project and specific activities and proposals presented during the meeting.

Ralph Turner pointed out that the water pathway for mercury may be very important and that it is possible that there is still an active "source" of mercury feeding the river system. He encouraged the group to pursue intensive water column sampling in South River. He also suggested that hydrologic knowledge of springs entering the river may be useful in identifying inputs to the river. He cited a number of similarities between South River and streams researched in the Oak Ridge, TN area. He suggested that water sampling associated with potential source identification be need to be very intensive with regard to spacing of samples, since mercury has the ability to shift from the dissolved phase to becoming associated with solids particles within feet of a source. He also referenced some recent water data from South River, which suggested the possibility of an active source.

There was general agreement that it would be appropriate to focus additional effort on addressing mercury in the water column. DEQ is scheduled to conduct water sampling during 2002, and may be able to coordinate their regular water monitoring with more intensive sampling recommended by the Science Team. DEQ is currently doing limited clean metals monitoring in the drainage, and will explore the feasibility of expanding this project. Several individuals identified constituents other than mercury which are believed to be important influences on mercury behavior in the aquatic system, including cations, anions, sulfates, ammonia

Another topic of discussion included other potential target species which may accumulate mercury in tissue, including birds, reptiles, invertebrates, and mammals. Aquatic vegetation was also identified as a possible target for study. It was agreed that there is little knowledge on organisms other than fish in the South River, since the emphasis has been on organisms directly and frequently consumed by humans (i.e., fish). A "biopsy" method of fish tissue sampling was also discussed, which would allow fish to be sampled without being sacrificed.

No specific commitments for new monitoring or studies were made during the meeting.

Next Meeting. The next meeting was set for December 11 at 9:30 at the DEQ Harrisonburg Office.

Advance agenda topics include the following:

- Mud mapping status and preliminary results
- Sediment data statistical review
- DEQ fish tissue results, spring 2001
- DEQ proposed fish sampling, 2002
- DEQ proposed water sampling, 2002
- Virginia Tech fish food study status

Attachment 1. Attendees, October 3, 2001 Science Team Meeting

<u>Name</u>	<u>Organization</u>	<u>E-Mail Address</u>
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