

SUBJECT: Proposed Action Plan, Fish Tissue PCB Contamination Source Investigation, James River between Richmond, Virginia and the Windmill Point below Hopewell, VA

TO: Larry Lawson, WPC

THROUGH: Gerry Seeley, Jr., Regional Director

FROM: Mark S. Alling

DATE: October 24, 2002

COPIES: Gerry Seeley, CO: J. Cunningham, A. Pollock, F. Campbell

Objective:

The intent of this project is to identify actual source(s) of the PCBs in the James River below Richmond, VA down to Windmill Point below Hopewell, VA. This area was delineated by the Virginia Department of Health (VDH) in 2002 based on DEQ fish tissue data from 2001. The consumption advisory recommended eating no blue catfish and only two meals of carp per month taken from the problem area. The river stretch is approximately 50 miles. Thus the focus is on protecting human health by identifying and eliminating the sources from which the fish tissue PCBs originated.

Justification:

Carp and Blue Catfish tissues collected in 2001 exceeded the VDH level of concern of 600 ppb or higher for PCBs, a specific toxic contaminant. Carp samples from Bailey Creek at Rt. 10 in Hopewell, VA, had PCB levels of 699 ppb, from the James River near I-95 in Richmond, VA, had 809 ppb, and from the James River at Buoy 104 below Hopewell, VA, had 937 ppb. Blue Catfish samples from Bailey Creek at Rt. 10 had PCB levels of 778 ppb, from the James River near I-95 had 1197 ppb, and from the James River at Buoy 104 had 3212 ppb. Also, the VDH requested a follow up study to determine the magnitude and extent of fish contamination.

The above 2001 carp and blue catfish tissues analyzed using DEQ risk assessment techniques for PCBs as carcinogens exceeded the DEQ risk-based Screening Value (SV) of 54 ppb. Although

PCBs are only suspected carcinogens, the carp and blue catfish tissues also exceeded the SV for non-carcinogens of 220 ppb. The SVs are from Table 6a of the Water Quality Assessment Guidance Manual for Y2002 305(b) Water Quality Report and 303(d) Impaired Waters List (DEQ, July 15, 2002).

As a result of the above tissue analyses, the VDH recommended no eating of blue catfish, and only two meals per month of carp in the area of the James River from the I-95 bridge in Richmond, VA downstream to Windmill Point below Hopewell, VA. This suggests a potential threat to human health upon which the Director may determine the need for a source assessment.

This same segment was listed impaired for fish consumption use in the draft 2002 303(d) Impaired waters list (Segment ID VAP-G01E-03) due to PCBs in tissues of multiple species at James River miles 98.64, 86.22, 74.44, and 66.88, Bailey Creek at Rt. 10, and in the tidal Appomattox River at miles 1.53 and 4.12 collected in 1997.

Therefore this project is consistent with the DEQ Toxic Contamination Source Assessment Policy (TCSAP, Jan. 5, 2000) which describes when and how to conduct source assessments for toxic contaminants. The circumstances above represent triggers listed in that document, which indicates the need for source assessment.

Project Structure:

The project will be divided into tiered sampling events which will likely cover a period of several years. Concurrently with the first tier of sediment sampling at currently known potential PCB sources, and less expensive sediment screening tests at tributaries, a detailed records and literature search will be performed within DEQ and with other state and federal agencies. This information search will include interviews and document searches at municipalities and industries in the river segment. The scope and direction of subsequent sampling tiers will depend on screening test results from the initial sample tier. Upon receipt of first tier results, DEQ will seek input from a citizen advisory committee for recommendations on follow-up sampling tiers and communication of results with the public. VIMS researchers will perform sediment sample analyses. PRO staff will analyze sediment screening tests at the PRO laboratory.

Further PCB fish and sediment studies are being conducted by the DEQ Water Quality Standards and Biological Programs (WQS&BP), to better define the spatial extent of contamination. These studies are incorporated into the budget for this study.

OSHA Safety Requirements:

Activities covered under this study plan include 1) in-house investigations, 2) site and facility surveys, 3) general sampling, and 4) known PCB site sampling. These activities are listed in increasing degree of health and safety planning. 1) In-house investigations require the base-line health and safety actions applicable in the DEQ work place. 2) Site and facility surveys will generally require steel-toed boots, hard hat, and eye and hearing protection. This protective gear is the same as for VPDES or Pretreatment compliance inspections of industries and municipal STPs. Reduced protection is allowed in facility offices during interviews where the individual is not exposed to mechanical or physical hazards. 3) General sampling is defined as sample collection on sites without a history of PCB use or contamination, where there is a low probability of encountering PCBs. General sampling protection will include double gloves, disposable boots, and eye protection. 4) known PCB site sampling is sample collection on sites with a history of PCB use or contamination, and where there is a high probability of encountering PCBs (concentrations above 1 ppm). On these sites, Level D personal protection will be employed. Waste generated during sampling will be appropriately disposed of and

sampling equipment cleaned prior to any reuse as described in the H&S Plan. Medical monitoring of blood PCB levels prior to and following the study will be performed on staff taking samples. Prior to any field sampling, a global Health and Safety Plan will be developed for all general sampling events. Specific Health and Safety Plans will be developed for each known PCB site sampling event.

E. QA/QC for Field Sampling and Laboratory Analyses:

DEQ will perform all field sampling covered by this plan. All field quality control samples will be collected in accordance with the DEQ WQM SOP. Field splits will be collected at a frequency of 10%. All samples collected under this plan will be analyzed by VIMS (DCLS alternate by MOU between the Virginia Division of Consolidated Laboratory Services and DEQ) using ASTM Method 8082 for congeners. All samples will be collected following Chain of Custody Procedures.

F. Project Scope:

The project consists of up to four tiers of sampling, with an initial concurrent document search, interviews, and a citizen advisory committee created to assist with project direction after the initial tier of results are available. The projected study schedule follows:

August 2002 – Draft QAPP

September 2002 – Concurrence signatures on final draft QAPP.

October 2002 – Approval of Proposed Project Plan for VEERF funding.

November 2002 – January 2003 – First Tier of sediment sampling at known PCB sites, and screening tests of sediments/soils at tributaries, PS outfalls. Submit sediment samples to vendor for analysis. Analysis and reporting of sample results from vendor typically take six to eight months.

November 2002 – June 2003 – Concurrent document and literature search, interviews of industrial and municipal site staff, review of historical data to compile list of possible source locations for second tier of sampling.

June – December 2003 – Coordinate citizen advisory committee. Assess results of first tier of sampling. Second tier of sediment sampling at possible sources identified in historical search, and at hotspots identified by first tier of sampling. Submit samples to vendor.

June – December 2004 – Assess results of second tier of sampling. Third tier of sediment and soils sampling at hotspots identified by second tier of sampling. Submit samples to vendor.

June – December 2005 – Assess results of third tier of sampling. Fourth tier of soils sampling at hotspots identified by third tier of sampling. Submit samples to vendor.

Spring 2006 – Final report due two months after return of last tier of sample results.

Summer 2006 and beyond – Remediation of hotspots as indicated by findings.

Document and Literature Search

The document and literature search will include a file and database review and communication with federal, state, and local officials, as well as communication with local industry and business to establish the following.

a. Baseline, in-house information

- All currently permitted, and to the extent possible, historical piped discharges to the James River in the Piedmont Region.
- All currently permitted, and to the extent possible, historical smoke-stack sources in the James River in the Piedmont Region.
- All currently permitted waste facilities and landfills, and document to the extent possible the location of historical and abandoned dump sites.
- DEQ Pollution Incident Reports (PReP) for pollution incidents involving PCBs in the Piedmont region portion of the James River basin.
- DEQ pretreatment programs for potential or actual PCB pollutant sources.

b. Baseline, outside information.

- EPA files and literature for potential pollutant sources in the watershed, including Superfund sites and the TSCA database
- US Geological Survey insight and characterization of hydrology and sediment related transport in the study area
- Department of Emergency Services incident files
- Department of Game and Inland Fisheries and DCR files
- Railroad company files
- Electric generator files
- Virginia Department of Health and Virginia Department of Agriculture files
- local fire, emergency response, and planning commission files
- local industries and businesses for potential or actual current and historical pollutant sources

c. Retrieval and Analysis of Existing Monitoring Data

This phase will consist of a review and analysis of existing monitoring data from DEQ, dischargers, and others.

G. Responsibility for Specific Study Plan Tasks:

Communication: Periodic presentations of data summaries and conclusions to DEQ management, and prompt posting of interim reports on the DEQ web site will occur. Contacts with EPA will be opened so information important for their regulatory programs are shared. A Citizen Advisory Committee will be formed composed of citizens who work or live in the affected area. The composition will represent public interests on the river. They will advise DEQ on the direction and substance of the investigation, the steps necessary to communicate information to the local public, and provide local information and perspectives critical to the project's success. They will be the main conduit through which DEQ and VDH communicate with the public. Periodic meetings with the Citizen Advisory Committee and the public in the affected area will be conducted to update the public and the press on investigation progress and discoveries. The Piedmont and Central Office contacts for the project will be advertised to provide ready access to information to the public and local officials. Contacts will be maintained with the Department of Game and Inland Fisheries and the Virginia Department of Health to obtain their inputs and/or attendance at meetings.

Project Team:

1. PRO:

Gerard Seeley, Jr. – PRO Regional Director. Oversees all project manpower, financial considerations and communications. Approves Citizen Advisory Committee composition for PRO, and project plans and reports. Communicates progress and findings to Central Office upper management. Obtains plan approval from the Agency Director.

Mark S. Alling – PRO Project Manager and origin of PRO information. Responds to local community questions about PRO information. Develops study plan, and health and safety plans. Coordinates meetings with the Citizen Advisory Committee and public. Contacts other State agencies for meeting notices and appropriate input. Point of release of project information and publishes findings. Communicates with Central Office for consistency and cooperation. Oversees survey interviews of potential sources and coordinates field investigations.

Louis D. Seivard - PRO Monitoring Team Leader. In charge of field sample team and develops site sampling plans. Provides Chain-of-Custody oversight for field samples. Tracks project sample data and results.

John T. Conover – PRO Safety Officer. Safety Officer during sample collection at sites of known PCB contamination.

Curt Linderman – PRO Water Permits Manager. Reviews water permit records for relevant information.

J.R. Bell – PRO Water Compliance Manager. Reviews water compliance records for relevant information.

Stephen Morris – PRO PReP staff. Reviews PReP records for relevant information.

James Kyle – PRO Air Permits Manager. Reviews air permit records for relevant information.

Homer Lisle – PRO Air Compliance Manager. Reviews air compliance records for relevant information.

Al Willett – PRO UST/AST Manager. Reviews UST/AST records for relevant information.

Rob Timmins – PRO Waste Manager. Reviews waste records for relevant information. Acts as regional facilitator for remediation plans with Central Office permit staff.

2. CENTRAL OFFICE:

Jean Gregory – Central Office recipient of project communication from PRO. Helps facilitate coordination among the Central Office staff if the need arises.

Bill Hayden – DEQ Information Officer. Central Office point of contact for web-targeted information. Central Office contact for reporters and press releases.

Gary Du – WQA QA/QC Officer and Central Office contact for QA/QC of sample data analyzed by DCLS. Field QA/QC officer at sample collection sites.

Alex Barron – WQS&BP manager of joint fish tissue and sediment collection field work.

Rick Browder and **Gabriel Darkwah** – WQS&BP fish tissue and sediment collection field work.

Erica Dameron , Patricia McMurray, or designee – DEQ Toxicologist/Scientist providing review of risk assessments for identified PCB sources.

H. Costs of Implementation:

The Virginia Legislature has authorized use of the Virginia Environmental Emergency Response Fund (VEERF) for conducting the assessments described here in accordance with DEQ's TCSA Policy (VEERF Policy Statement 2-2001, effective 9/11/2000). Costs budgeted include sampling and analysis for samples of first tier sediment monitoring only:

Total Cost for First Tier sampling Oct 2002 – June 2003: \$ 94,499

- **Mileage Vehicle** (\$ 882): Includes round trip mileage for Piedmont Office and WQS&BP electrofishing field team travel to a mid point on the James River study segment (86 mi), at the Jordan Point Yacht haven, Rt. 156, Hopewell, VA. **Boat** (\$493): Includes round trip mileage from Jordan Point Yacht haven (mid point in river segment) (24 mi), at a per mile rate of twice the vehicle rate because boat gas mileage is approximately one half of vehicle gas mileage.
- **Chemical Analysis** (\$ 29050): This covers laboratory analysis, monitoring equipment, and expendable supplies for sediment samples analyzed by VIMS, and screening tests **for the first tier only**. Most of the funds are for laboratory analysis work. Sediment analysis will be through VIMS. ASTM Method 8082 for congeners will be used. The analytical costs for sediment averages \$520 each constituting the largest fraction of the budget. Hach PCB in Soil Screening tests are estimated to average \$30 per sample (\$1000 up front equipment costs plus \$20 per sample for test kits). We project that 49 sediment and 119 screening test samples will be collected and analyzed for the first tier. The sediment collection equipment is partially expendable and partially reusable after proper cleaning with special solutions. The expendable category includes personal protective equipment and supplies (PPE) used at the target sites.
- **Fish Tissue Analysis** (\$30600): WQS&BP estimates 60 samples (@\$510) will be required to further delineate the upstream and downstream boundaries of fish tissue contamination, per the VDH request for follow up study on the magnitude and extent of contamination. VIMS will perform the sample analyses.
- **Medical monitoring for blood PCBs before and after study** (\$3000): This provides medical information on the unlikely possibility of personal contamination during sampling.
- **Salary** (\$26274):
- **Site inspections & sediment sample collection** (\$0): The DEQ PRO regional staff will perform the collection of soils, individual sediments and tributary sediments. The manpower for and sediment and screening sampling is estimated at 60 FTE days for Nov 2002 – January 2003 (two staff for 6 preparation days and 24 field sampling days).
- **PCB Inspector** (\$26274): To accomplish the scope of work a WE-14 PCB Inspector position is necessary from November 2002 through June 2003. The majority of records investigation, accumulation, and assessment will occur within the boundaries of the Piedmont Regional Office (PRO), but some work will extend upstream to the Lynchburg area. While personnel in PRO and CO are expected to generate certain in-house information, extensive effort is needed to assemble, process, and track the information for DEQ management. Off-site searches for and copying of information at other agencies, organizations, and industries will be necessary. An on-site WE-14 that can assist in interviews and surveys, conduct record searches, assemble applicable information, and do the leg

work for all units over nine months is an essential component that will move this project forward. The WE-14 will also participate in first tier field sampling.

- **Incidentals** (\$ 4200): A commitment of \$3000 for map development, report production, and copying will be needed. Costs include publication of Citizen Advisory Committee meeting notices in local newspapers, and reference materials.

Any change in the scope of work to include special contracted services or expanded sampling will require additional resources. The Tier 2 - 4 monitoring costs are unknown at this time and dependent on the number of target sites discovered.

Tier 1 2002-2003 Itemized Budget:

CATEGORY	COST
Mileage (Vehicle and boat:	
Vehicle (\$0.19/mi) roundtrip to Jordan Pt ramp (54 trips X 86mi)	\$882
Boat ((\$0.38/mi)(1/2 gas mileage of vehicle)) roundtrip to river mid pt.(30 trips X 24mi)	\$493
Sample Analysis: sediment (\$520 ea), screening (\$30 ea; \$1000 up front, \$20/ sample)	
First Tier Oct – Dec 2002 (n=49 sediment, 119 screening)	\$29050
Sample Analysis: fish (\$510 ea)	\$30600
Medical monitoring for blood PCBs:	
For three samplers before/after study (@ \$500)	\$3000
Salary:	
WE-14 salary (9mo X 20d X 8 hr X \$13.19/hr + \$7.65% Fringe + 28.5% Indirects))	\$26274
Incidentals:	
report publication, reference materials, safety gear	\$3000
expendables for PCB sample collection	\$1200
subtotal:	\$4200
Total, Tier 1, Oct 2002 - June 2003	\$94499

Budget costs for the second, third and fourth tiers of sampling are dependent upon prior tier results, and are unknown at this time.

I. Products:

The Project will generate the following products:

1. GIS maps with the following information
 - jurisdictional boundaries, hydrology (streams), and roads land use
 - point source (piped) discharge location, current and historical
 - pollution incident locations, as identified
 - monitoring locations for fish tissue, sediments, and soils
 - potential or actual sources of PCBs
2. Tables
 - permitted and historical piped discharges
 - permitted and historical air emissions
 - current and historical waste dumps and landfills
 - pollution incidents on file with date and type of incident
 - industrial activity, current and historical, based on available information
3. Monitoring and inventory data references
 - water monitoring station locations, dates sampled, and results
 - CEDS, PTS, DMRs, and water permit files
 - AIRS, TRI Report, and air permit files

- existing toxics databases and files
 - annual water monitoring reports, historical 305(b)s, historical 303(d)s,
 - STORET, CEDS-WQM, PReP files, and special studies
4. Reports
- Periodic (annual?) summary of tasks accomplished and information gained
 - Conclusions that can be made based on the results of investigations
 - Plans and recommendations for further investigation or remedial action
 - Final report at the close of investigations

DEQ Director Approval: _____ Date: _____