POTOMAC RIVER BASIN DRINKING WATER SOURCE PROTECTION PARTNERSHIP

Quarterly Meeting Summary for February 16, 2012
Location: ICPRB, Rockville, Maryland

Attendees

Utilities
City of Rockville:
Judy Ding

DC Water:
Sarah Neiderer

Fairfax Water:
Jeanne Bailey
Traci Kammer Goldberg
Chuck Murray
Greg Prelewicz
Niffy Saji

Loudoun Water:
Beate Wright

Town of Leesburg:
Russell Chambers

Washington Aqueduct:
Shabir Choudhary
Anne Spiesman

WSSC:
Martin Chandler
Plato Chen
Mohammad Habibian

State and Local Government
DDOE:
Collin Burrell

MDE:
Jeremy Klavans
Lyn Poorman

PADEP:
Patrick Bowling

VDH:
Barry Matthews

WV DHHR:
Bill Toomey

Federal and Regional Agencies
EPA Headquarters:
Marjorie Copeland

EPA Region 3:
Bill Arguto
Andrea Bennett
Chuck Kanetsky
Ellen Schmitt

ICPRB:
Karin Bencala
Curtis Dalpra
Carlton Haywood
Joe Hoffman

MWCOG:
Steve Bieber

USGS:
Cherie Miller

Workgroup and Committee Reports

Government Committee – Bill Toomey, WV DHHR

The Government Committee continues to plan a system outreach meeting targeting systems in the area of Shepherdstown, W. Va. The meeting will be held at Shepherd University on April 26, 2012. A draft agenda was circulated (**Attachment 1**). Please send any comments to Karin or participate in future planning calls.

The committee is looking for a few utility members to participate both in the planning and on the day of the meeting. Their perspective on useful topics and their understanding of the Partnership would be very helpful.

Once the date, time, and location of the meeting are settled, ICPRB will draft an invitation and a flyer. State members will reach out to systems in their state as they wish. Additional, non-system participants were discussed. These included the university community, local governments, and state WARNs.

Water Quality Data

- Utility parameter list – Greg Prelewicz, Fairfax Water
  The list of parameters monitored for by the Partnership's utilities has been updated. This will not be a database of the actual data. If there is a specific water quality issue, the utilities may be asked to share data as needed.

- Ambient data collection list – Ellen Schmitt, EPA Region 3
  The group is also collecting information on water quality monitoring efforts that are going on throughout the basin. The data itself is not collected, just the parameters monitored, dates, web links, and contact information. This was started by interns at EPA Region 3 and Fairfax Water. More work on this could be done if anyone has available time.

  C. Murray, Fairfax Water, asked if anyone else had heard of a national monitoring effort getting underway through the EPA. No one was familiar with the proposal.

  The Chesapeake Bay Program's stream health indicator data was suggested as a source of water quality information by S. Bieber, MWCOG. Maps are attached that show stream health in the MWCOG region (**Attachment 2**). More information on this effort can be found here: http://www.chesapeakebay.net/data/downloads/baywide_benthic_database

- NPDES data and mapping capabilities – Karin Bencala, ICPRB
  Maps showing how NPDES permit information could be displayed were presented (**Attachment 3**). Both static, PDFs and interactive, Google Earth versions were reviewed. The data we currently have does not include actual discharge monitoring information. Land use maps were also presented to illustrate how the Partnership could hone in on non-point source concerns. Impaired waters can also be mapped. The group will work on getting maps of waters designated for public supply from each state.

  This information is available to the workgroups or members to help them with specific water quality questions. The Water Quality Data workgroup will continue to explore mapping capabilities, available spatial data, and where to store the maps.

- 2012 goals – Beate Wright, Loudoun Water
  The goals for the group are:
  - To determine the process for answering specific, timely water quality questions;
  - provide links to data sources;
  - map MS4 areas in the basin; and
  - figure out how to locate potential hotspots of non-point source pollution

Early Warning/Emergency Response – Carlton Haywood, ICPRB

- The spill exercise will be held on April 2, 3, and 4. Horsley Witten is developing the exercise scenario and contacting the agencies that will be involved. A planning meeting was held before the DWSPP business meeting. The final planning meeting will be held on March 7. Contact C. Haywood with any questions. All individuals participating in the exercise need to register with Horsley Witten as soon as possible - www.horsleywitten.com/potomacriver.
- There has been no follow up with Colonial Pipeline since the meeting with the utilities in July 2011. At that meeting they invited the utilities to visit their headquarters in Atlanta. When this was originally suggested, most were not interested in making the trip and were considering a video tele-conference instead. At the meeting, members discussed the benefits of seeing Colonial's main control room for responding to emergencies and meeting their integrity management planning team. Other items still to be explored are remote valves, automatic shut-offs, and risk modeling methods. The tentative plan is to hold a VTC first to see what we can learn and then to plan an in-person meeting if needed.
- The PHMSA is holding two meetings on pipeline safety technologies and best practices in Rockville at the end of March. They are looking for information and comments as part of a recommendation to Congress. The meetings are open to the public.
- Interstate notification fact sheet has be updated and distributed to members. The factsheet and contact information are available on ICPRB's website.
- ICPRB has made a number of improvements to its tools for estimating the travel time of hazardous spills into the Potomac. The ICPRB model can estimate travel times on the mainstem downstream of Cumberland, Md., Conococheague, Antietam, South Branch, Shenandoah, and Monocacy. Google Earth is being used to help locate spill sites and identify potential downstream concerns. The model is not publically available. The model itself does not require internet access to be used, though some inputs to the model are obtained on the web.

Reaching Out – Curtis Dalpra, ICPRB

A draft version of the Annual Report was distributed for comment. Send Curtis any comments or suggestions by March 9 (cdalpra@icprb.org). Pictures are needed as always. A. Spiesman suggested holding a photo contest to generate a bank of photos. P. Bowling will draft text on the upcoming outreach meeting to small systems for the back cover.

Urban Issues – G. Prelewicz

The workgroup's goals for the year include:

- Present updated land use information – 2006 land use information has been collected by the Water Quality Data workgroup. No other analysis has been done at this time.
- Update the inventory of stormwater management requirements in basin states – Niffy Saji, Fairfax Water, has been updating the existing matrix with new state regulations. This should be completed by spring 2012.

- Present deicing webinar – The presentation has be reviewed by the workgroup and updated with suggestions. COG has the capability of running a webinar at their office. G. Prelewicz will work to schedule a date and time.
- Identify a WIP project to champion – The workgroup continues to track the WIP progress in each state, but no specific project has been identified yet. The workgroup is hoping to go through the Phase 2 WIPs this spring to find a project to target.

The Loudoun County Soil and Water Conservation District has started a new initiative aimed at creating forest buffers on non-agricultural land along the Potomac in the county. They hope to have participation from all land owners in that area. Both Fairfax Water and Loudoun Water have been involved.

A grant opportunity through the Chesapeake Bay Trust focuses on reducing stormwater runoff in urbanized areas through the creation of "green streets." More information is available on CBT's website.

Given that there has been relatively little snow in the basin this year, it was suggested that it might be a good year to look at water quality data to get a sense of baseline conditions with minimal road salt application. If anyone is interested in this or has ideas for which parameters should be looked at, contact Greg (gprelewicz@fairfaxwater.org).

There have been two recent webinars of interest:

- GWPC/ASDWA Source Water Webinar: Using Clean Water Act Funding for Source Water Protection.
  Presentations and a video of the webinar are available online.

- Refining Expectations for Urban Stormwater BMP Performance in the Chesapeake Bay: Results of New Targeted Analyses of the International Stormwater BMP Database. More information on the database is available on the project's website.

Ag Issues – E. Schmitt
The workgroup's main goal for this year is to develop an outreach strategy using the group's advisory committee. The strategy will likely focus on phosphorus, pharmaceuticals, pesticides, and *Cryptosporidum*. The group will continue to look for opportunities to present source water concerns at ag forums. Additionally, they are going to review the state WIPs to understand how each state is trying to address agricultural runoff.

The Source Water Collaborative (SWC) has engaged USDA on source water protection issues. The USDA has directed the state conservationists to spend at least five percent of their EQIP funds to target 303d impaired waterways. SWC is encouraging their members to attend Natural Resource Conservation Service (NRCS) meetings to help identify watersheds to target. A number of related documents are available on the SWC website, including:

- USDA/SWC collaboration meeting agenda
- Draft USDA Engagement Plan (Short-Term)
- Draft USDA Engagement Plan (Detailed Overview)

Emerging Contaminants – Pat Bowling, PA DEP

- Legislative initiatives – The federal Safe Chemicals Act of 2011 was introduced by Sen. Lautenberg and is a revision to the 2010 version. It is a risk-based bill that modernizes the Toxic Substances Control Act (TSCA) to require chemical companies to demonstrate the safety of industrial chemicals

and the EPA to evaluate safety based on the best available science. The bill has been referred to the Senate Committee on Environment and Public Works. A hearing was held in November 2011. There has been no recent action on the EDC Exposure Elimination bills.

The proposed Unregulated Contaminant Monitoring Regulation (UCMR 3) would require PWS serving more than 10,000 people and a representative sample of 800 PWSs serving 10,000 or fewer people to test for 28 chemicals (including seven hormones) and two viruses from January 2013 through December 2015. More information and the list of proposed contaminants can be found on EPA's website.

Adding a provision to the Universal Waste Rule for pharmaceutical disposal had originally been proposed in 2008. A separate proposed rule to address pharmaceutical disposal in healthcare facilities is likely to be available in spring 2013.

- The next DEA-sponsored take back event will be on Saturday, April 28. DEA's proposed rule allowing for pharmaceutical take back events is still with DEA. It is not expected to make it into the Federal Register any time soon.
- Potomac Safe Disposal Alliance – Workgroup members have be participating with the Alliance, coordinated by Marjorie Copeland (EPA), in their efforts to encourage participation in local pharmaceutical take back initiatives. Alliance members are wondering if there are ways that they might support the Partnership's efforts. One idea is to ask the Alliance's state representatives to help identify pharmaceutical plants in the basin, ground-truth available data, and identify pre-treatment facilities and perhaps assist with outreach.
- The workgroup plans to hold a workshop in 2013. A couple of emerging contaminant-related projects that will influence the workshop topic(s) are wrapping up. Once these are completed the workgroup will decide which direction to head in.
- The Cadmus Group contacted P. Bowling to see if the Partnership would be interested in participating in a WateReuse Research Foundation project - Demonstrating the Benefits of Engineered Direct versus Unintended Indirect Potable Reuse Systems. A few of the member utilities were also contacted about participating. Participation by the Partnership will be discussed later, once a contractor is selected for the project.

Issue Updates

Uranium - G. Prelewicz

Fairfax Water has been tracking the recent uranium-related studies and legislation in Virginia. As it stands now, the Virginia moratorium on mining in the state remains in place. The General Assembly's Uranium Subcommittee of the Coal and Energy Commission requested that Governor McDonnell take no action at this time on the moratorium. In turn, the governor has created a work group to research various aspects of the issue and report back to the General Assembly in December 2012.

One item the work group is tasked with is to respond to the concerns raised by the National Academy of Science's report – "Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia." The report's major concerns center on the lack of regulations in place to protect human health and the environment. It suggests using internationally accepted practices as a starting point.

Fairfax Water has also conducted their own review of potential mining sites and threats to water supply.

Marcellus Shale/hydrofracking

Maryland – Jeremy Klavans, MDE

Maryland has received a few applications for drilling in Marcellus Shale, but no permits have been granted. At the request of the governor, a four-year study is being conducted by the Marcellus Shale Safe Drilling Initiative Advisory Commission. The first part of the study looked at questions of revenue and liability. The second part of the study will look at the environmental impacts. It is expected to be completed in August 2014.

The Maryland General Assembly has also taken up the issue. Proposals include:

- 2.5% to 15% severance tax
- Minimum performance bonds for drillers
- "Land Man" registry
- Surface water protections, including written notice to surface owners
- Presumption of damages within half a mile and one year of vertical drilling
- Location registry

Pennsylvania – P. Bowling

Approximately 9,000 permits have been issued, approximately 4,300 wells have been drilled, and approximately 2,000 of these have been fractured. They are seeing some activities slow down due to the currently low price of natural gas. Some of the drilling operations are moving to Ohio and western Pennsylvania where the gas is "wetter" (contains condensates like propane) and more profitable than "dry" gas (just methane), though there is now a lot of pipeline activity in northern areas.

The governor just signed HB 1950 that allows counties within the gas shale regions to enact an impact fee. It also requires operators to report information to the chemical registry, www.FracFocus.org. (To date, the registry already contains over 1,000 wells from Pennsylvania.) The Act provides a distinction between conventional and unconventional gas wells; increases setbacks from gas wells to waterways, private wells, buildings and public water systems; and expands an unconventional operator's presumed liability from 1,000 to 2,500 feet and extends the duration from 6 to 12 months. The new law also provides for increased uniformity and fairness of local regulations while preserving a municipality's traditional zoning authority. **Attachment 4** provides an example of what chemical information is reported to FracFocus.

West Virginia – B. Toomey

West Virginia is also seeing a change in the location of operations in the state and more pipeline construction.

The Natural Gas Horizontal Well Control Act was passed in December. It creates a permit fee for each well site. Wells permitted before December 2011 are not subject to the law's requirements.

Virginia – Barry Matthews, Virginia Department of Health

There is little to no activity in Virginia. The state is not set up to process any permit applications.

Hexavalent Chromium and emerging contaminants – Mohammad Habibian, WSSC

Recent animal studies show that at an approximate Cr+6 dose of 10mg/L or higher in feed water leads to an increase in blood chromium levels (**Attachment 5**). This increase is not seen at lower levels because it is believed to be processed in the stomach to Cr+3. New data is expected to show this conversion.

There is a joint AWWA and WaterRF webinar, "Hexavalent Chromium - New Insight and Research Results (W1221)," on February 29.

WaterRF is undertaking a new project to "develop robust approaches for managing CECs that consider the sources and variability of CECs, end uses of water, and the associated financial, environmental, and social costs/benefits" (**Attachment 6**). The key aspects of the project are that it will look at the issue from a national level and consider all possible EC sources.

The EPA is moving in the direction of integrating wastewater and stormwater, why is drinking water not included? Is this something on which the Partnership should comment?

Outreach to Environmental Community

A goal for the Partnership this year is to engage with the environmental community. AWWA and AMWA are doing something similar on the national level with groups like Clean Water Action and NRDC. Potential issues of common interest are pharmaceutical take backs, emerging contaminants, uranium mining, and hydrofracking. An initial meeting will be scheduled with the workgroup chairs this summer.

Administrative Updates – K. Bencala

- We are always looking for information session ideas. If you have topic or speaker ideas please send them along.
- An overview presentation of the Partnership has been developed for member use. It includes a description of source water protection, the Potomac River basin, workgroup priorities and recent activities. ICPRB will hold on to the current version and make changes as needed.
- 2012 invoices have gone out. If you need another copy or supporting documentation email Karin.

Information Session

Water Quality and Water Supply in March and Rock Creeks, Pennsylvania
Dr. Heidi Moltz and Jim Palmer, ICPRB

Next quarterly meeting:
Wednesday, May 23

Attachment 1

Source Water Protection through Cooperative Efforts

DRAFT

April 26, 2012
10:00 am – 2:00 pm

Byrd Center for Legislative Studies - Multi-Purpose Room
Shepherd University
Shepherdstown, West Virginia

AGENDA

Welcome and Introductions	Walt Ivey, WV Department of Health and Human Resources (WVDHHR) Dr. Ed Snyder, Shepherd University
Potomac DWSPP overview and Utility Perspective	Karin Bencala, Interstate Commission on the Potomac River Basin (ICPRB) Greg Prelewicz, Fairfax Water
EPA Source Water Protection	Ellen Schmitt, EPA R3
Water Quality Issues and Concerns: Participant perspectives	Open Discussion Facilitator: Bill Toomey, WVDHHR
Lunch (provided)	---
Collaborative Emergency Response Initiatives	Carlton Haywood, ICPRB
Addressing Cryptosporidium through Source Water Protection	Greg Prelewicz, Fairfax Water
USGS Water Quality Studies in the Potomac River Basin	Doug Chambers, U.S. Geological Survey
Future Steps – source water protection activities, collaboration, information needs	Open Discussion Facilitator: Lyn Poorman/John Grace, MD Department of Environment

Attachment 2

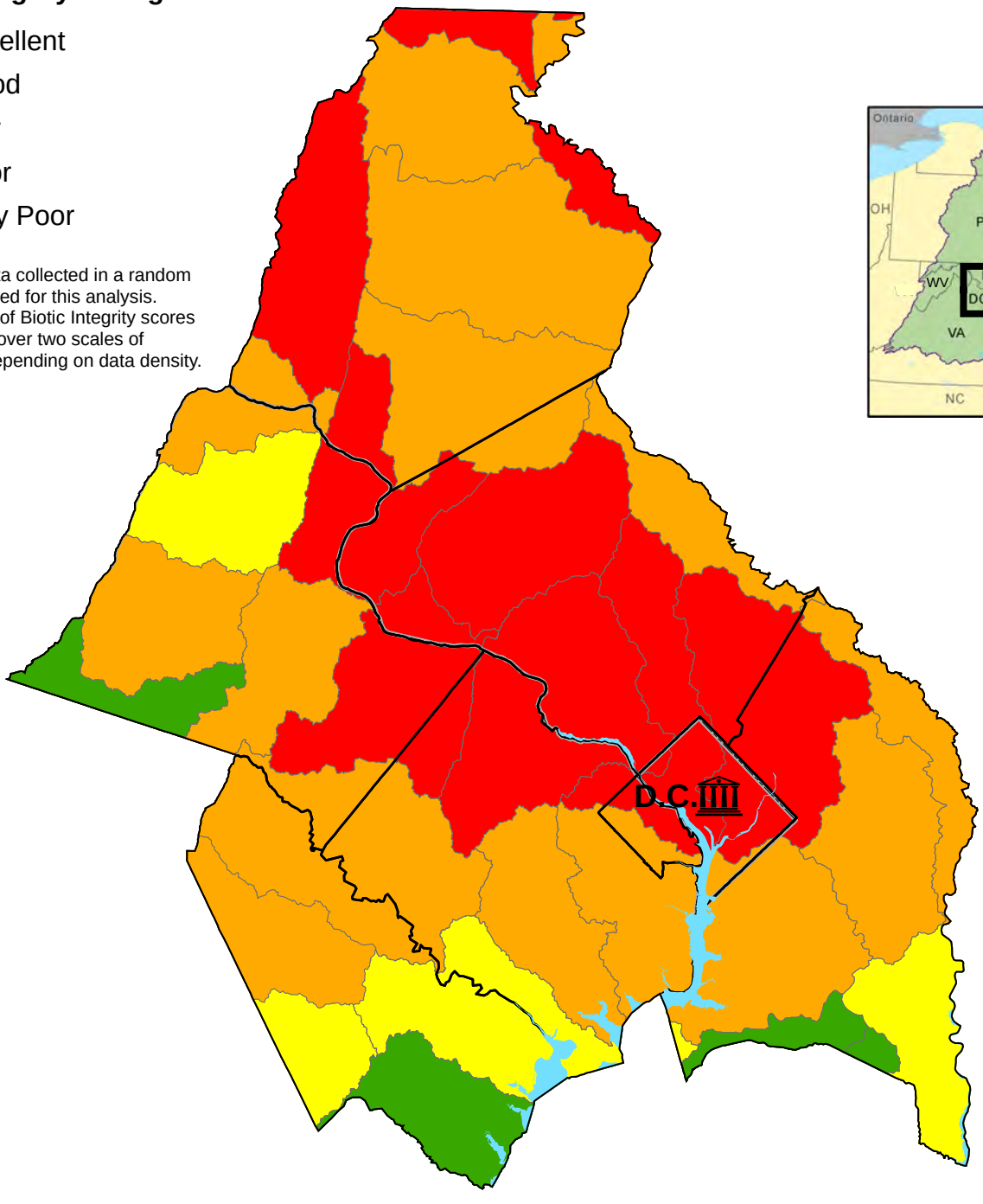
Average 2000-2008 Stream Health in Sub-watersheds in the Metropolitan Washington Council of Governments Area

Chesapeake Bay Program
A Watershed Partnership

Average Benthic Index of Biotic Integrity Rating

- Excellent
- Good
- Fair
- Poor
- Very Poor

Note: Only data collected in a random design was used for this analysis. Benthic Index of Biotic Integrity scores are averaged over two scales of watersheds depending on data density.



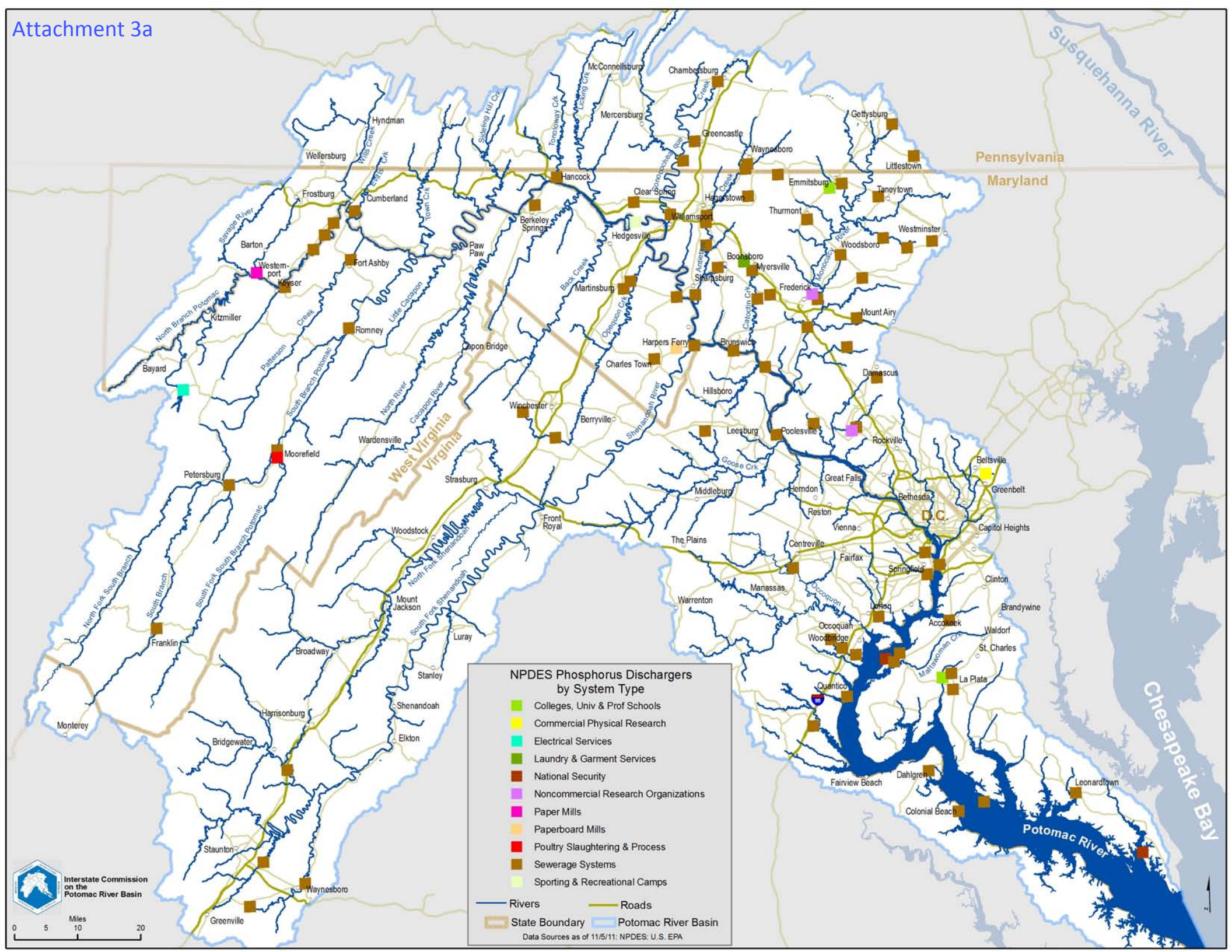
Data Sources: 2000-2008 biological, chemical and physical habitat data for non-tidal, wadeable streams from various federal, state, local, and river basin commission monitoring programs throughout the Chesapeake Bay Watershed. For a list of data sources see analysis and methods link on: http://www.chesapeakebay.net/status_streamhealth.aspx

0 5 10 20 Kilometers
0 5 10 20 Miles
N

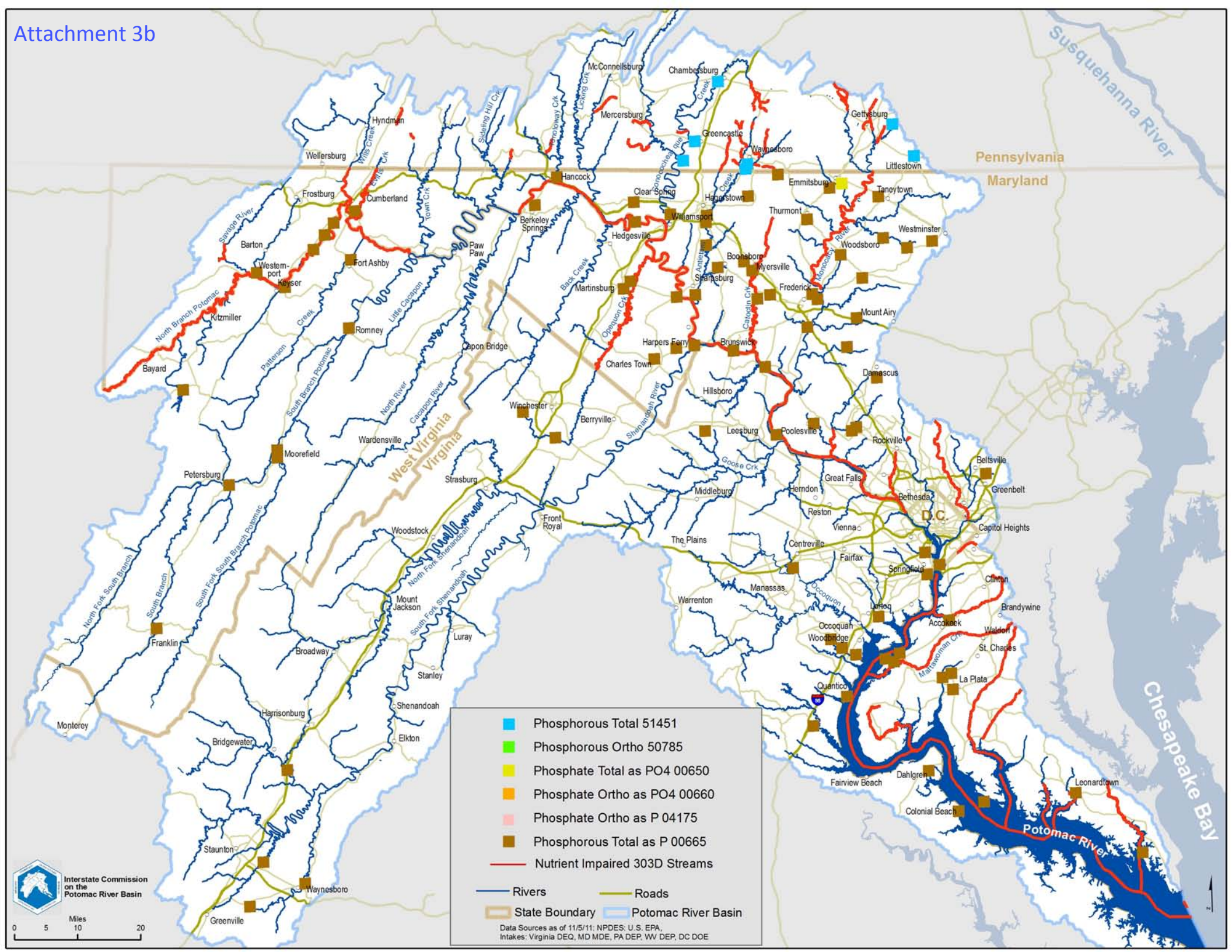
Created by FMI, 01/12/2012

UTM Zone 18N, NAD 83

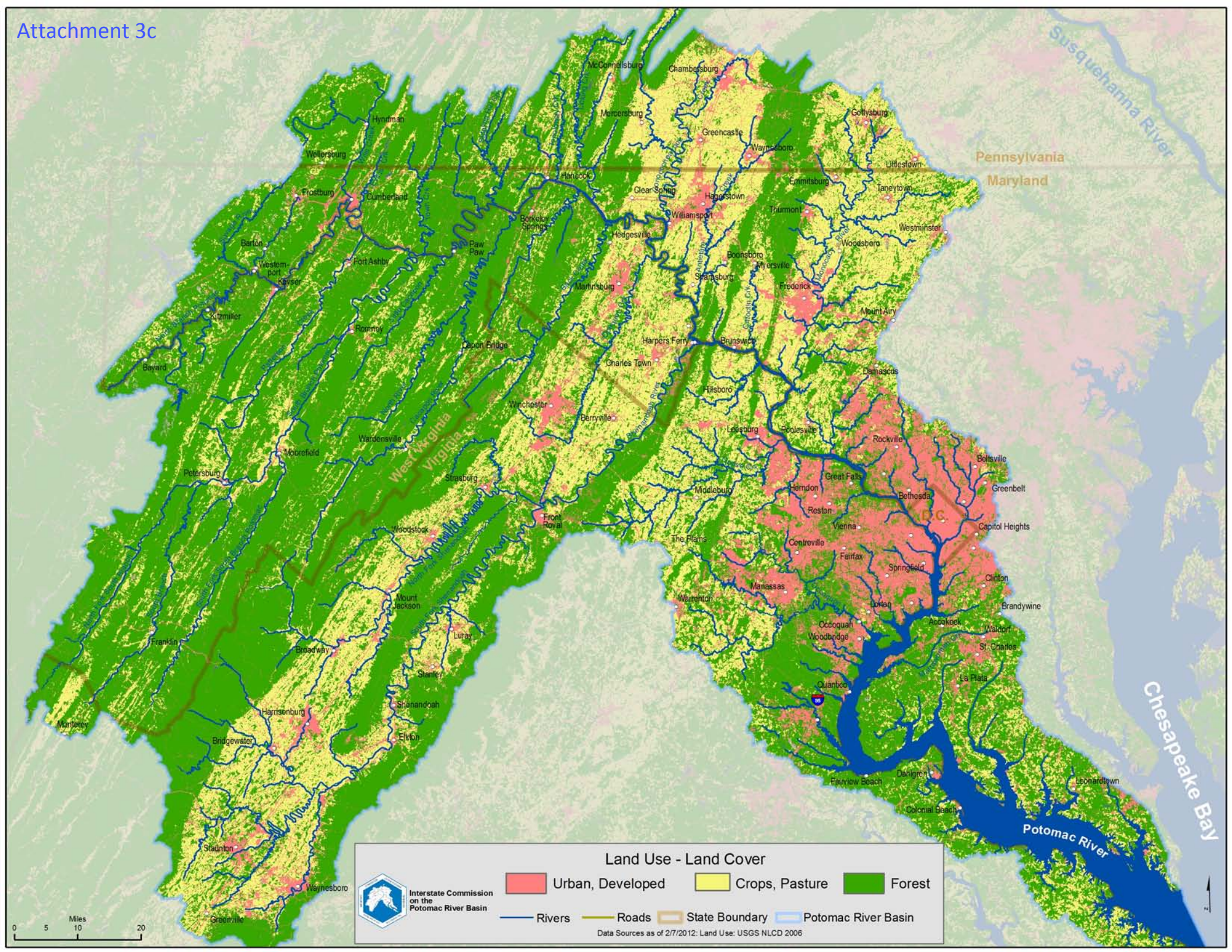
Attachment 3a



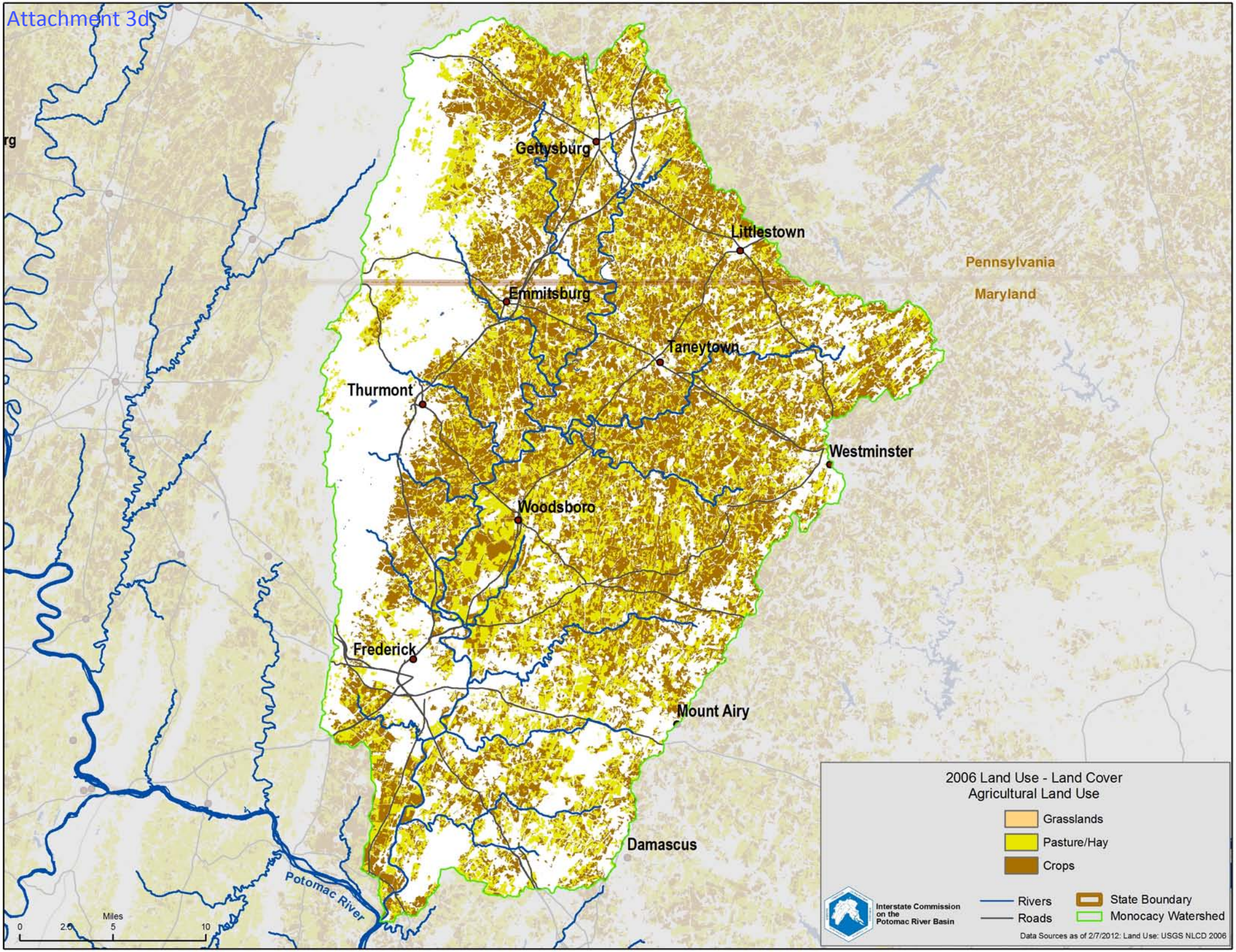
Attachment 3b



Attachment 3c



Attachment 3d



Attachment 4

www.FracFocus.org

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date	8/25/2011
State:	Pennsylvania
County:	Centre
API Number:	37-027-61661
Operator Name:	Williams
Well Name and Number:	Resource Recovery 3-2H
Longitude:	-78.056658
Latitude:	41.020439
Long/Lat Projection:	NAD83
Production Type:	Gas
True Vertical Depth (TVD):	8,517
Total Water Volume (gal)*:	5,663,806

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Water	ARM - Moshannon Creek SR53	Carrier/Base Fluid	Water		100.00%	86.6502%	
Sand- Silica Sand	Halliburton	Proppant	Crystalline Silica Quartz	14808-60-7	100.00%	12.9850%	
LP-65	Halliburton	Scale Inhibitor	Ammonium Chloride	12125-02-9	10.00%	0.0034%	
WG-36 Gelling Agent	Halliburton	Gel					
			Guar Gum	9000-30-0	100.00%	0.0024%	
BE-9M	Halliburton	Biocide					
			Tributyl Tetradecyl Phosphonium Chloride	81741-28-8	10.00%	0.0026%	
			Methanol	67-56-1	30.00%	0.0079%	
FR-66	Halliburton	Friction Reducer	Hydrotreated Petroleum Distillate	64742-47-8	30.00%	0.0187%	
SP Breaker	Halliburton	Breaker	Sodium Persulfate	7775-27-1	100.00%	0.0014%	
HCl	Halliburton	Acid	Hydrochloric Acid	7647-01-0	30.00%	0.1111%	
GBW-30 Breaker	Halliburton	Breaker					
			Carbohydrates	Trade Ingredient	95.00%	0.0013%	
			Hemicellulase Enzyme	9012-54-8	15.00%	0.0002%	
BA-40L	Halliburton	Buffer	Potassium Carbonate	584-08-7	60.00%	0.0158%	

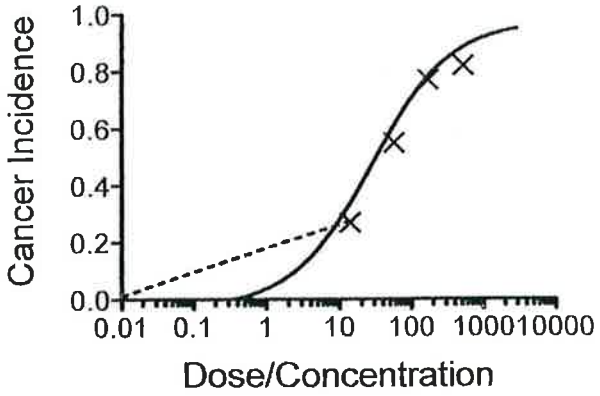
* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported

Attachment 5

Figure 2. Idealized dose response curve and a high dose range



Now, assuming doses/concentrations of 0, 0.1, 0.3, 1, 5, 20 and 100, the doses and the responses are shown in Figure 3 also superimposed on the idealized dose

EPA process for risk assessment:

"A nonlinear approach should be selected when there are sufficient data to ascertain the mode of action and conclude that it is not linear at low doses and the agent does not demonstrate mutagenic or other activity".

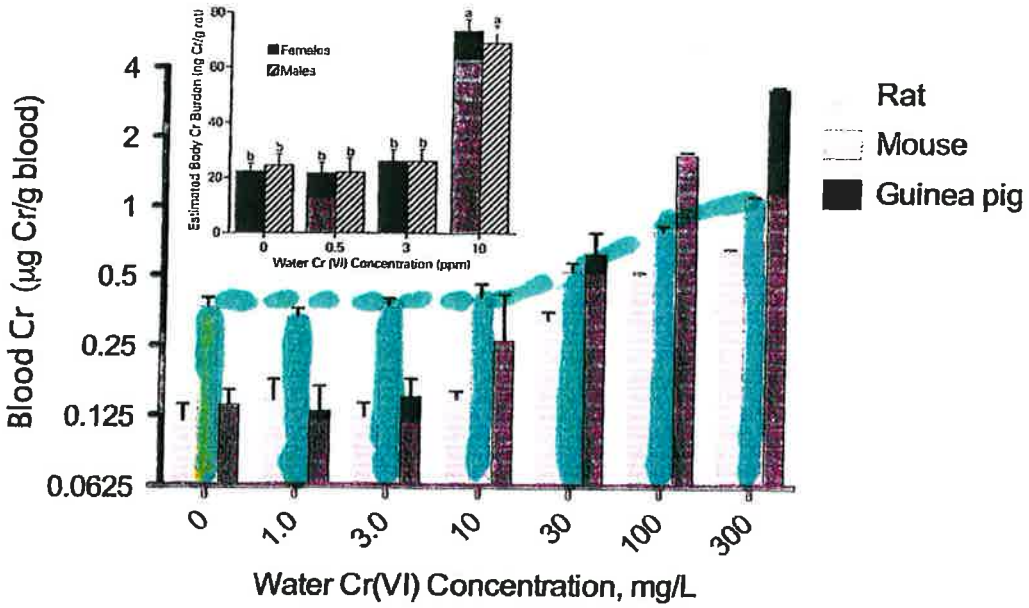


FIG. 3. Total chromium (Cr) concentration in the blood of rats, mice, and guinea pigs following 21 days of exposure to the indicated drinking water concentrations, milligrams per liter Cr(VI) as SDD (data are taken from NTP, 2007). For each species, these data suggest a dose-dependent transition in the disposition of chromium somewhere between 3 and 10 mg/l Cr(VI) in drinking water. The inset shows a similar dose-dependent transition in total Cr body burden between 3 and 10 mg/l Cr(VI) in drinking water administered as potassium dichromate for 44 weeks, which was reproduced with kind permission from Springer Science & Business Media: Biological Trace Element Research, Rats Retain Chromium in Tissues Following Chronic Ingestion of Drinking Water Containing Hexavalent Chromium, 74, 2000, 41–53, Sutherland, Zhitkovich, Kluz, and Costa, Figure 5, Copyright 2000 by Humana Press Inc.

Focus Area Description: Improved Cost-Benefit Analysis of Different Approaches for Managing CECs in Drinking Water:
By 2016, develop robust approaches for Managing CECs that consider the sources and variability of CECs, end uses of water, and the associated financial, environmental, and social costs/benefits.

Problem Statement:
Contaminants of emerging concern (CECs, Including EDCs and PPCPs) enter watersheds through point and non-point sources. The connection between sources and drinking water is not fully understood, and there are still many unknowns. Better understanding this connection would help identify optimal control strategies. While there is no 100 percent barrier for CECs, there are advantages and disadvantages of various control strategies, including watershed management strategies, centralized drinking water treatment, or even POE/POU treatment. The water industry and society would benefit from holistic strategies for reducing risk from exposure to CECs that maximize ecological and health benefits while minimizing the financial and environmental costs of doing so. This is consistent with EPA's new Drinking Water Strategy goal to use the authority of multiple statutes to help protect drinking water.

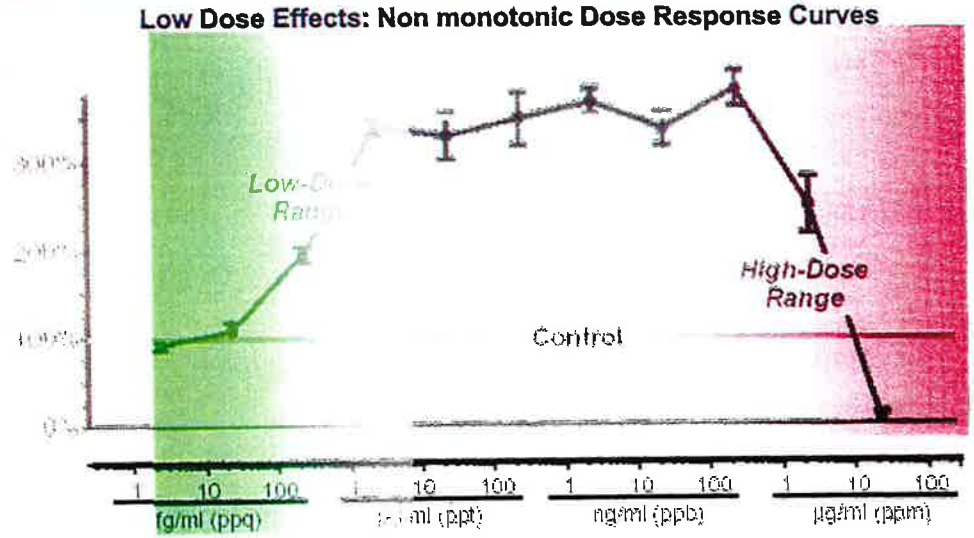
ECs- A Holistic National Framework?

- Estimate national cost, energy needs and GHG emission for using BATs, e.g. reverse osmosis
- Estimate relative exposures from various routes
- Estimate overall risk reduction with use of BATs for extra water treatment.
- Compare the cost/risk reduction ratio with the ratio used for major EPA regulatory actions
- Consider other urgent needs of water utilities
- List indirect issues such as ecosystem impacts
- List and compare control options such as source control, EU approach, point of use devices, and BATs

10

NIEHS

Low Dose Effects: Non monotonic Dose Response Curves



Nonmonotonic curves are common