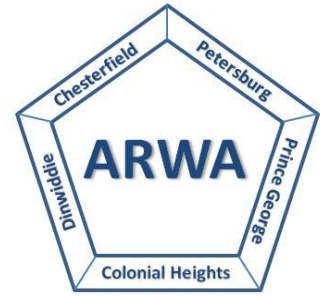


# Appomattox River Water Authority



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21300 Chesdin Rd. - S. Chesterfield, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

## APPOMATTOX RIVER WATER AUTHORITY Board of Directors Meeting

DATE: May 18, 2023

TIME: 2:00 pm

LOCATION: **Appomattox River Water Authority**  
Board Room, Administration Building  
21300 Chesdin Road  
South Chesterfield, VA 23803

### AGENDA

1. Call to Order/Roll Call
2. Approval of Minutes: Minutes of the Board Meeting held on March 16, 2023 (Exhibit A, pages 2 to 3)
3. Public Comment (Exhibit B, page 4)
4. Executive Director's Report:
  - FY23/24 Budget (Exhibit C, pages 5 to 11)
  - PFAS update (Exhibit D, pages 12 to 31)
  - Bathymetric Study results (Exhibit E, pages 32 to 46)
  - Lake safety (Exhibit F, pages 47 to 49)
  - Status Report (Exhibit G, pages 50 to 58)
  - Financials (Exhibit H, pages 59 to 63)
5. Items from Counsel
6. Closed Meeting
7. Other items from Board Members/Staff Not on Agenda
8. Adjourn

**BOARD OF DIRECTORS MEETING**  
**Appomattox River Water Authority**  
**March 16, 2023, at 2:00 p.m.**  
**Location: Appomattox River Water Authority**  
**21300 Chesdin Road, South Chesterfield, VA 23803**

**MEMBERS PRESENT:**

Doug Smith, Chairman (Colonial Heights)  
Joseph Casey, (Chesterfield)  
March Altman, (Petersburg)  
Jeff Stoke, (Prince George)

**ALTERNATES PRESENT:**

Frank Haltom, Secretary/Treasurer (Alternate, Prince George)  
George Hayes, (Alternate, Chesterfield)  
Eddie Pearson, (Alternate, Dinwiddie)

**ABSENT:**

Kevin Massengill, Vice-Chairman (Dinwiddie)  
Matt Rembold, (Alternate, Chesterfield)  
Tangela Innis, (Alternate, Petersburg)  
Todd Flippen, (Alternate, Colonial Heights)

**STAFF PRESENT:**

Robert B. Wilson, Executive Director, (ARWA & SCWWA)  
James C. Gordon, Asst. Executive Director (ARWA & SCWWA)  
Arthur Anderson, (McGuireWoods)  
Melissa Wilkins, Business Manager/FOIA (ARWA & SCWWA)  
Kathy Summerson, Administrative Assistant (SCWWA)

**OTHERS PRESENT:**

Chris Pomeroy, (AquaLaw)  
Barry Sarver, (Resident)

The ARWA meeting was called to order by Mr. Smith, Chairman, at 2:12 p.m.

**1. Call to Order/Roll Call**

The roll was called:	Doug Smith	Present
	Eddie Pearson	Present
	Joseph Casey	Present
	Frank Haltom	Present
	March Altman	Present

**2. Approval of Minutes: Minutes of the Regular Meeting of the Board on January 26, 2023**

Upon a motion by Mr. Altman and seconded by Dr. Casey the following resolution was adopted:

**RESOLVED, that the Minutes of the Regular Meeting of the Board on January 26, 2023 are hereby approved:**

**For: 5      Against: 0      Abstain: 0**

**3. Public Comment**

There were no public comments.

**4. Executive Director's Report:**

- **FY23/24 Budget Presentation**

Mr. Wilson reported on the FY23/24 Budget. Mr. Wilson stated what we are recommending today is that the Board take further consideration on the budget we proposed with the 5% salary adjustment and the elevated tank study. Mr. Wilson stated Mr. Massengill was not able to attend this meeting for Dinwiddie County and requested the Board hold the public hearing but consider holding off on taking action until the May 18, 2023, meeting.

The chairman opened the public hearing comment period. No comments had been received by staff nor had anyone signed up to speak. There were no comments, so the chairman closed the public hearing.

Dr. Casey asked staff if holding off until May 18, 2023 meeting would create any issues for payroll or VRS. Mr. Wilson responded that approval at the May 18<sup>th</sup> meeting does not create any issues. Dr. Casey thanked ARWA staff for including the tank study. Dr. Casey asked if the construction of the elevated tanks is included in the CIP. Mr. Wilson stated the elevated tanks are shown in the construction fund beginning in FY25. Mr. Wilson further stated we are considering a borrowing in FY25/26 which would include building the tanks, lining the lagoons, and rebuilding eight filters. Mr. Wilson asked members to review their rates and consider stepped increases to meet the potential double digit increase in FY25/26 for the proposed borrowing.

- **Status Report**

Mr. Wilson reported on the status report. Mr. Wilson stated flushing was finished today and we didn't receive any calls or complaints. Mr. Wilson further stated DWR is still working on the accident investigation for the September 17, 2022, incident. Dr. Casey stated that he knew Mr. Massengill wasn't here, and they had talked and hoped they could use that to have a bigger and broader discussion. Dr. Casey stated he would like to set up a meeting with Mr. Massengill and public safety officials from both jurisdictions to discuss the overall safety on the lake and address concerns brought by residents. Hopefully the accident investigation by DWR will be complete at that time.

- **Financials**

Mr. Gordon reported on the Financials.

**5. Items from Counsel**

There were no items from Counsel.

**6. Closed Session**

There was no Closed Session.

**7. Other Items from Board Members/Staff Not on Agenda**

There were no other items from Board Members/Staff not on agenda.

**8. Adjourn**

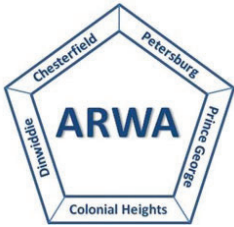
Mr. Smith stated, if there is no other business, and asked for motion to adjourn.

Upon a motion by Dr. Casey and seconded by Mr. Haltom the meeting was adjourned at 2:25 p.m.

MINUTES APPROVED BY:

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**Frank Haltom/Secretary/Treasurer**



APPOMATTOX RIVER WATER AUTHORITY  
21300 Chesdin Road  
Petersburg, VA 23803



SOUTH CENTRAL WASTEWATER AUTHORITY  
900 Magazine Road  
Petersburg, VA 23803

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### **GUIDELINES FOR PUBLIC COMMENT AT SCWWA/ARWA BOARD OF DIRECTORS MEETINGS**

If you wish to address the SCWWA/ARWA Board of Directors during the time allocated for public comment, please raise your hand or stand when the Chairman asks for public comments.

Members of the public requesting to speak will be recognized during the specific time designated on the meeting agenda for "Public Comment Period." Each person will be allowed to speak for up to three minutes.

When two or more individuals are present from the same group, it is recommended that the group designate a spokesperson to present its comments to the Board and the designated speaker can ask other members of the group to be recognized by raising their hand or standing. Each spokesperson for a group will be allowed to speak for up to five minutes.

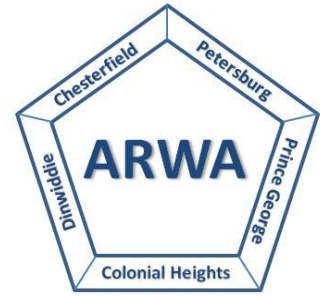
During the Public Comment Period, the Board will attempt to hear all members of the public who wish to speak on a subject, but it must be recognized that on rare occasion presentations may have to be limited because of time constraints. If a previous speaker has articulated your position, it is recommended that you not fully repeat the comments and instead advise the Board of your agreement. The time allocated for speakers at public hearings are the same as for regular Board meeting, although the Board can allow exceptions at its discretion.

Speakers should keep in mind that Board of Directors meetings are formal proceedings and all comments are recorded on tape. For that reason, speakers are requested to speak from the podium and wait to be recognized by the Chairman. In order to give all speakers proper respect and courtesy, the Board requests that speakers follow the following guidelines:

- Wait at your seat until recognized by the Chairman;
- Come forward and state your full name and address. If speaking for a group, state your organizational affiliation;
- Address your comments to the Board as a whole;
- State your position clearly and succinctly and give facts and data to support your position;
- Summarize your key points and provide the Board with a written statement or supporting rationale, when possible;
- If you represent a group, you may ask others at the meeting to be recognized by raising their hand or standing;
- Be respectful and civil in all interactions at Board meetings;
- The Board may ask speakers questions or seek clarification, but recognize that Board meetings are not a forum for public debate; Board Members will not recognize comments made from the audience and ask that members of the audience not interrupt the comments of speakers and remain silent while others are speaking so that other members in the audience can hear the speaker;
- The Board will have the opportunity to address public comments after the Public Comment Period has been closed;
- At the request of the Chairman, the Executive Director may address public comments after the session has been closed as well; and
- As appropriate, staff will research questions by the public and respond through a report back to the Board at the next regular meeting of the full Board. It is suggested that citizens who have questions for the Board or staff submit those questions in advance of the meeting to permit the opportunity for some research before the meeting.



# Appomattox River Water Authority



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## Exhibit C

TO: Appomattox River Water Authority Board of Directors

FROM: Robert B. Wilson, Executive Director  
James C. Gordon, Assistant Executive Director

DATE: May 18, 2023

SUBJECT: Proposed FY23/24 Budget

At the March 16<sup>th</sup> meeting the Board held the public hearing for the proposed FY23/24 Budget. There were no residents signed up to speak and there were no additional comments from members that needed to be addressed.

The proposed FY23/24 Budget is included as Attachment C1.

### Board Action Requested:

Staff requests that the Board approve the FY23/24 Budget as presented at the March 16<sup>th</sup> meeting and included as Attachment C1.

**APPOMATTOX RIVER WATER AUTHORITY**

Proposed: Janaury 26, 2023

Approved:

Revised:

Revision Approved:

**PROPOSED OPERATION & MAINTENANCE BUDGET 2023/2024**

	<b><u>FY2022/2023</u></b>	<b><u>FY2023/2024</u></b>	<b><u>FY22/23 to FY23/24</u></b>	
	Budget	Budget	\$ Change	% Change
<b><u>O&amp;M EXPENSES</u></b>				
<b>41000 · Salary</b>	<b>\$1,931,678</b>	<b>\$2,142,321</b>	<b>\$210,643</b>	<b>10.90%</b>
<b>42000 · Employee Benefits</b>	<b>\$801,994</b>	<b>\$864,051</b>	<b>\$62,057</b>	<b>7.74%</b>
42100 · Employer FICA	\$147,773	\$163,888	\$16,114	10.90%
42200 · Virginia Retirement System	\$68,961	\$49,916	-\$19,045	-27.62%
42210 · Deferred Comp 457	\$0	\$0	\$0	0.00%
42300 · Hospitalization Insurance	\$544,275	\$606,440	\$62,165	11.42%
42400 · VRS Group Life Insurance	\$25,884	\$28,707	\$2,823	10.90%
42500 · Group Term Life	\$2,100	\$2,100	\$0	0.00%
42600 · Unemployment Insurance	\$1,000	\$1,000	\$0	0.00%
42800 · Employee Promotions	\$10,000	\$10,000	\$0	0.00%
42900 · Other Fringe Benefits - EAP	\$2,000	\$2,000	\$0	0.00%
42950 · OPEB Health Insurance Adj	\$0	\$0	\$0	
42952 · Net Pension Adjustment				
<b>43000 · Contractual Services</b>	<b>\$1,152,600</b>	<b>\$1,218,289</b>	<b>\$65,689</b>	<b>5.70%</b>
43121 · Auditing Services	\$13,000	\$13,000	\$0	0.00%
43122 · Accounting Services	\$16,000	\$16,000	\$0	0.00%
43124 · Part-Time Summer Interns	\$5,000	\$5,000	\$0	0.00%
43130 · Legal/Engineering and Reservoir Studies	\$50,000	\$50,000	\$0	0.00%
43140 · Consulting Engineers	\$85,000	\$75,000	-\$10,000	-11.76%
43150 · Legal Services	\$75,000	\$85,000	\$10,000	13.33%
43152 · Medical - Testing	\$5,000	\$5,000	\$0	0.00%
43155 · Other Consulting Services	\$0	\$0	\$0	0.00%
43156 · Admin and Maintenance Svc-SCWWA	\$8,000	\$0	-\$8,000	-100.00%
43160 · Trustee Services	\$12,000	\$12,000	\$0	0.00%

43162 - Bank Service Charges	\$2,000	\$2,100	\$100	5.00%
43170 - Research	\$17,500	\$17,500	\$0	0.00%
43180 - Potable Water Contract	\$520,000	\$585,589	\$65,589	12.61%
43190 - Samples and Tests	\$40,000	\$50,000	\$10,000	25.00%
43200 - Lake Patrol	\$4,000	\$4,000	\$0	0.00%
43201 - Reservoir Management - Invasive Control Program	\$25,000	\$25,000	\$0	0.00%
43210 - Software Support	\$50,000	\$50,000	\$0	0.00%
43220 - VPDES Permit Fee	\$15,000	\$15,000	\$0	0.00%
43310 - Repair Services	\$25,000	\$25,000	\$0	0.00%
43320 - Service Contracts	\$125,000	\$125,000	\$0	0.00%
43500 - Printing and Binding	\$3,000	\$1,000	-\$2,000	-66.67%
43600 - Grounds Maintenance	\$57,100	\$57,100	\$0	0.00%
<b>45000 - Other Charges</b>	<b>\$1,098,000</b>	<b>\$1,197,100</b>	<b>\$99,100</b>	<b>9.03%</b>
45110 - Electricity - Pumping	\$510,000	\$600,000	\$90,000	17.65%
45111 - Electricity - Purification	\$275,000	\$280,000	\$5,000	1.82%
45120 - Heating Fuel	\$60,000	\$65,000	\$5,000	8.33%
45130 - Trash Pickup	\$5,500	\$8,100	\$2,600	47.27%
45210 - Postal Services	\$2,500	\$1,500	-\$1,000	-40.00%
45220 - Freight	\$20,000	\$10,000	-\$10,000	-50.00%
45230 - Telecommunications	\$35,000	\$35,000	\$0	0.00%
45308 - General Liability Insurance	\$110,000	\$125,000	\$15,000	13.64%
45410 - Lease/Rent of Equipment	\$25,000	\$20,000	-\$5,000	-20.00%
45510 - Mileage Allowance			\$0	0.00%
45530 - Meals and Lodging	\$5,000	\$2,500	-\$2,500	-50.00%
45540 - Education and Training	\$25,000	\$25,000	\$0	0.00%
45550 - Safety Supplies	\$25,000	\$25,000	\$0	0.00%
<b>46000 - Materials and Supplies</b>	<b>\$3,520,000</b>	<b>\$4,255,000</b>	<b>\$735,000</b>	<b>20.88%</b>
46001 - Office Supplies	\$12,000	\$10,000	-\$2,000	-16.67%
46004 - Laboratory Supplies	\$83,000	\$85,000	\$2,000	2.41%
46005 - Purification Chemicals	\$2,990,000	\$3,750,000	\$760,000	25.42%
46006 - Purification Process and Janitorial Supplies	\$15,000	\$10,000	-\$5,000	-33.33%
46007 - Repair & Maint Supplies-Shop	\$210,000	\$210,000	\$0	0.00%
46008 - Vehicle and Equipment Fuels	\$25,000	\$40,000	\$15,000	60.00%
46009 - Vehicle and Equipment Supplies	\$20,000	\$15,000	-\$5,000	-25.00%
46010 - Equipment Parts and Small Equipment Purchases	\$55,000	\$25,000	-\$30,000	-54.55%
46011 - Uniforms	\$15,000	\$15,000	\$0	0.00%
46012 - Dues and Subscriptions	\$40,000	\$35,000	-\$5,000	-12.50%
46014 - Repair & Maint Supplies-IT	\$30,000	\$35,000	\$5,000	16.67%

46015 · Small Equipment Purchases	\$0	\$0	\$0	0.00%
46016 · Operations Supplies and Maintenance	\$25,000	\$25,000	\$0	0.00%
<b>Total Operating Expenses</b>	<b>\$8,504,272</b>	<b>\$9,676,761</b>	<b>\$1,172,489</b>	<b>13.79%</b>
<b>58000 · Operating Capital Outlay</b>	<b>\$674,000</b>	<b>\$585,500</b>	<b>-\$88,500</b>	<b>-13.13%</b>
Debt - 2010 Issue (Refunded as 2019 series)	\$0	\$0	\$0	0.00%
Debt - 2012 Issue	\$302,322	\$302,293	-\$29	-0.01%
Debt - 2017 Issue	\$1,080,795	\$1,080,648	-\$147	-0.01%
Debt - 2019 Issue (2010 Refunded)	\$704,760	\$703,011	-\$1,749	-0.25%
<b>Total Debt</b>	<b>\$2,087,876</b>	<b>\$2,085,952</b>	<b>-\$1,925</b>	<b>-0.09%</b>
<b>Reserve Policy</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>0.00%</b>
<b>Total Expenses</b>	<b>\$11,266,148</b>	<b>\$12,348,213</b>	<b>\$1,082,065</b>	<b>9.60%</b>

FY Budget Year		Revenues					
2023/2024		Appomattox River Water Authority					
Proposed		Jan. 26, 2023		Adopted		Revised	
		Revision Adopted					
		Chesterfield	Colonial Heights	Dinwiddie	Petersburg	Prince George	Total
<b>1) Operations and Maintenance Base Rate</b>							
<b>O&amp;M Rate</b>							
	<b>\$/1000 gallons</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>
Estimated (\$/quarter)	\$	2,197,214	\$ 161,200.16	\$ 114,596	\$ 452,584	\$ 73,781	\$ 2,999,374.73
Total annual allocation	\$	8,788,856	\$ 644,801	\$ 458,384	\$ 1,810,334	\$ 295,124	\$ 11,997,499
% of flows		73.256%	5.374%	3.821%	15.089%	2.460%	100.000%
Estimated (mgd)		22.746	1.669	1.186	4.685	0.764	31.051
Calc. annual usage (bg)		8.302	0.609	0.433	1.710	0.279	11.334
O&M =	\$ 9,676,761	Op. Cap. Outlay	\$ 585,500	54.38% 2019 Debt (maintenance)	\$ 382,297		
Int./Misc. Income	\$ 30,000	100% 2012 Debt	\$ 302,293	100% 2017 Debt	\$ 1,080,648	Reserve Policy	\$0
<b>BASE RATE</b>	<b>\$/1000gals</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	<b>\$ 1.0586</b>	
<b>2) Expansion Rate</b>							
<b>Bonds</b>	% Financed						
Rate (cents/1000 gals)		\$ 0.0030	\$ 0.0303	\$ 0.4265	\$ -	\$ 0.3312	
2019 expansion (\$/year)	45.62%	\$ 25,240	\$ 18,473	\$ 184,667	\$ -	\$ 92,333	\$ 320,714
% allocation	7.87%		5.76%	57.58%	0.00%	28.79%	100.00%
FY22/23 Bond Payments	2019 refunding =	\$ 703,011					
<b>TOTAL DEBT SERVICE RATE</b>	<b>\$/1000 gals</b>	<b>\$ 0.0030</b>	<b>\$ 0.0303</b>	<b>\$ 0.4265</b>	<b>\$ -</b>	<b>\$ 0.3312</b>	
	\$/year	\$ 25,240	\$ 18,473	\$ 184,667	\$ -	\$ 92,333	\$ 320,714
<b>3) Total Rate</b>							
<b>TOTAL RATE (BASE + EXPANSION)</b>	<b>\$/1000gals</b>	<b>\$ 1.0616</b>	<b>1.0889</b>	<b>1.4851</b>	<b>1.0586</b>	<b>1.3898</b>	<b>\$ 1.2168</b>
Estimated annual charges	\$/year	\$ 8,814,096	\$ 663,274	\$ 643,051	\$ 1,810,334	\$ 387,457	\$ 12,318,213
<b>4) Budget Comparison (see note 1)</b>							
FY23/24 Total Rate	\$/1000 gals	\$ 1.0616	\$ 1.0889	\$ 1.4851	\$ 1.0586	\$ 1.3898	\$ 1.2168
FY22/23 Total Rate	\$/1000 gals	\$ 0.9905	\$ 1.0179	\$ 1.4198	\$ 0.9874	\$ 1.3300	\$ 1.1491
<b>Total Rate Difference</b>	<b>\$/1000 gals</b>	<b>\$ 0.0711</b>	<b>\$ 0.0710</b>	<b>\$ 0.0653</b>	<b>\$ 0.0712</b>	<b>\$ 0.0598</b>	<b>\$ 0.0677</b>
<b>Total Rate Difference</b>	<b>%</b>	<b>7.18%</b>	<b>6.98%</b>	<b>4.60%</b>	<b>7.21%</b>	<b>4.49%</b>	<b>5.89%</b>
FY23/24 Revenues	\$/year	\$ 8,814,096	\$ 663,274	\$ 643,051	\$ 1,810,334	\$ 387,457	\$ 12,318,213
FY22/23 Revenues	\$/year	\$ 7,970,116	\$ 618,033	\$ 607,881	\$ 1,680,806	\$ 359,312	\$ 11,236,148
<b>Annual Cash Difference</b>	<b>\$/year</b>	<b>\$ 843,980</b>	<b>\$ 45,241</b>	<b>\$ 35,170</b>	<b>\$ 129,529</b>	<b>\$ 28,145</b>	<b>\$ 1,082,065</b>
FY23/24 Expenses	\$ 12,348,213	FY 23/24 Income Revenue	\$ 12,348,213				

NOTES:

#### Reserve Policy:

Reserve Policy Calculation

#### Appomattox River Water Authority FY23/24

ARWA O&M Budget	Reserves as of 6/30/2021	Revenue for FY2021/2022	Total expected reserves on 6/30/2022	Recommended 50% O&M Reserves	Annual Charge to achieve 50% Reserves
\$9,676,761	\$6,403,336	\$0	\$6,403,336	\$4,838,381	\$0

**APPOMATTOX RIVER WATER AUTHORITY**  
**Operating Capital Outlay - 58000**  
**FY23/24**

Acct#	Current Budget 22/23	Proposed Budget 23/24	INFORMATIONAL & PLANNING									
			24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	
58010 - Machinery and Motors-Process	\$ 124,000	\$ 157,500	\$ 100,000	\$ 100,000	\$ 100,000	\$ 100,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
58020 - Instrumentation	\$ 100,000	\$ 68,000	\$ 58,000	\$ 30,000	\$ 115,000	\$ 35,000	\$ 35,000	\$ 25,000	\$ -	\$ -	\$ -	\$ -
58030 - SCADA	\$ -	\$ -	\$ -	\$ 15,750	\$ -	\$ -	\$ 10,000	\$ -	\$ 20,500	\$ -	\$ -	\$ -
58040 - Computer Equipmment	\$ -	\$ 15,000	\$ 20,250	\$ 5,500	\$ 25,800	\$ 11,000	\$ 6,400	\$ 51,720	\$ 7,000	\$ 7,300	\$ 13,900	
58050 - Furniture and Fixtures	\$ -	\$ 30,000	\$ -	\$ 130,000	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
58060 - Motor Vehicles	\$ -	\$ -	\$ 12,000	\$ 46,667	\$ 80,000	\$ 40,000	\$ 35,000	\$ -	\$ 110,000	\$ -	\$ -	\$ -
58065 - Maintenance Equipment	\$ -	\$ -	\$ -	\$ 115,000	\$ 35,000	\$ -	\$ 15,000	\$ -	\$ -	\$ -	\$ -	\$ -
58090 - Construction	\$ 450,000	\$ 315,000	\$ 400,000	\$ 350,000	\$ 300,000	\$ 250,000	\$ -	\$ -	\$ 75,000	\$ -	\$ -	\$ -
<b>TOTALS:</b>	<b>\$ 674,000</b>	<b>\$ 585,500</b>	<b>\$ 590,250</b>	<b>\$ 792,917</b>	<b>\$ 655,800</b>	<b>\$ 436,000</b>	<b>\$ 101,400</b>	<b>\$ 76,720</b>	<b>\$ 212,500</b>	<b>\$ 7,300</b>	<b>\$ 13,900</b>	

NOTE: FY 21/22 OPERATING CAPITAL OUTLAY BUDGET TO BE APPROVED WITH BUDGET

**Construction Fund (Capital Projects)**  
**FY23/24**

Project Cost Estimate	Budget 22/23	Proposed Budget 23/24	INFORMATIONAL & PLANNING									
			24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	
<b>ITEM</b>	<b>22/23</b>	<b>23/24</b>	<b>24/25</b>	<b>25/26</b>	<b>26/27</b>	<b>27/28</b>	<b>28/29</b>	<b>29/30</b>	<b>30/31</b>	<b>31/32</b>	<b>32/33</b>	
2012 Bond	\$ 302,322	\$ 302,293	\$ 302,016	\$ 302,475	\$ 301,671	\$ 301,604	\$ -	\$ -	\$ -			
2017 Bond	\$ 1,080,795	\$ 1,080,648	\$ 1,079,973	\$ 1,080,744	\$ 1,080,936	\$ 1,080,550	\$ 1,080,572	\$ 1,079,991	\$ 1,080,781	\$ 1,079,929	\$ 1,080,423	
2019 Bond (2010 Rebonding)	\$ 704,760	\$ 703,011	\$ 705,495	\$ 706,888	\$ 712,224	\$ 701,702	\$ 705,204	\$ 702,762	\$ 699,439	\$ 700,021	\$ -	
Rebuild Filters 1-8 \$ 5,500,000				\$ 404,633	\$ 404,633	\$ 404,633	\$ 404,633	\$ 404,633	\$ 404,633	\$ 404,633	\$ 404,633	\$ 404,633
Lagoon Liners \$ 8,000,000				\$ 588,558	\$ 588,558	\$ 588,558	\$ 588,558	\$ 588,558	\$ 588,558	\$ 588,558	\$ 588,558	\$ 588,558
Elevated Tank Storage \$ 12,000,000				\$ 1,052,107	\$ 1,052,107	\$ 1,052,107	\$ 1,052,107	\$ 1,052,107	\$ 1,052,107	\$ 1,052,107	\$ 1,052,107	\$ 1,052,107
Clearwell #4												
Transmission Main - Chesdin Rd. to Pickett Rd												
Transmission Main - Pickett Ave. to Matoaca Tank												
Transmission Main - Matoaca Tank to Branders Bridge												
Transmission Main - Branders Bridge to Lakeview												
<b>Totals</b>	<b>\$ 2,087,876</b>	<b>\$ 2,085,952</b>	<b>\$ 2,087,483</b>	<b>\$ 4,135,404</b>	<b>\$ 4,140,129</b>	<b>\$ 4,129,153</b>	<b>\$ 3,831,075</b>	<b>\$ 3,828,051</b>	<b>\$ 3,825,518</b>	<b>\$ 3,825,248</b>	<b>\$ 3,125,721</b>	

NOTE:

1) The above items for information only. Approval required from BOD at time of project award.

2) Bond Funding will be required for these Proposed Capital Projects. Debt Service was estimated at 3% for 20 years

Total Operating Capital Outlay and Construction Budget											
22/23	23/24	24/25	25/26	26/27	27/28	28/29	29/30	30/31	31/32	32/33	
\$ 2,761,876	\$ 2,671,452	\$ 2,677,733	\$ 4,928,321	\$ 4,795,929	\$ 4,565,153	\$ 3,932,475	\$ 3,904,771	\$ 4,038,018	\$ 3,832,548	\$ 3,139,621	

**ARWA Budget comparisons**

Year	O&M Expenses	Operating Capital Outlay	Debt Service 2010 issue	Debt Service 2012 issue	Debt Service 2017 issue	See Note (1) Debt Service 2019 issue	See Note (2) Debt Service 2026 issue	Reserve Policy	Total	Difference	% change	Comments
22/23	\$ 8,504,272	\$ 674,000		\$ 302,322	\$ 1,080,795	\$ 704,760		\$ -	\$ 11,266,148			
23/24	\$ 9,676,761	\$ 585,500		\$ 302,293	\$ 1,080,648	\$ 703,011		\$ -	\$ 12,348,213	\$ 1,082,065	10%	Reserve Fund is 50% of O&M
24/25	\$ 9,967,064	\$ 590,250		\$ 302,016	\$ 1,079,973	\$ 705,495		\$ -	\$ 12,644,797	\$ 296,584	2%	
25/26	\$ 10,266,076	\$ 792,917		\$ 302,475	\$ 1,080,744	\$ 706,888	\$ 2,045,298	\$ -	\$ 15,194,397	\$ 2,549,600	20%	
26/27	\$ 10,574,058	\$ 655,800		\$ 301,671	\$ 1,080,936	\$ 712,224	\$ 2,045,298	\$ -	\$ 15,369,987	\$ 175,590	1%	
27/28	\$ 10,891,280	\$ 436,000		\$ 301,604	\$ 1,080,550	\$ 701,702	\$ 2,045,298	\$ -	\$ 15,456,433	\$ 86,446	1%	

Notes:

(1) The 2010 issue was refinanced with the 2019 issue.

(2) The debt service service shown in 2026 represents:

Rebuild filters	\$ 404,633.00	replace filters 1-8, end of life - \$5.5M
Lagoon Liner	\$ 588,558.00	regulatory driven by DEQ based on groundwater monitoring program - \$8.0M

**ARWA Projected Annual Cost**

**5 year projections - O&M, Operating Capital Outlay, Reserve Policy, 54.38% 2019 Series, 2012 Series, 2017 Series, and estimated 2026 Series**

	Chesterfield	Colonial Heights	Dinwiddie	Petersburg	Prince George	total
	73.256%	5.374%	3.821%	15.089%	2.460%	100.000%
FY 23/24	\$ 8,810,832	\$ 646,413	\$ 459,530	\$ 1,814,861	\$ 295,862	\$ 12,027,499
FY 24/25	\$ 9,027,267	\$ 662,292	\$ 470,818	\$ 1,859,443	\$ 303,130	\$ 12,322,950
FY 25/26	\$ 10,894,530	\$ 799,285	\$ 568,206	\$ 2,244,063	\$ 365,831	\$ 14,871,915
FY 26/27	\$ 11,021,377	\$ 808,591	\$ 574,822	\$ 2,270,191	\$ 370,091	\$ 15,045,071
FY 27/28	\$ 11,088,220	\$ 813,495	\$ 578,308	\$ 2,283,959	\$ 372,335	\$ 15,136,317

Note: Budget % based on five year average flow consumption (FY17/18 to FY21/22)

**5 year projections -2019 Series Debt Service (45.62%)**

	Chesterfield	Colonial Heights	Dinwiddie	Petersburg	Prince George	total
Capacity	7.870%	5.760%	57.580%	0.000%	28.790%	100.000%
FY 23/24	\$ 25,240	\$ 18,473	\$ 184,667	\$ -	\$ 92,333	\$ 320,714
FY 24/25	\$ 25,329	\$ 18,538	\$ 185,319	\$ -	\$ 92,660	\$ 321,847
FY 25/26	\$ 25,379	\$ 18,575	\$ 185,685	\$ -	\$ 92,843	\$ 322,482
FY 26/27	\$ 25,571	\$ 18,715	\$ 187,087	\$ -	\$ 93,543	\$ 324,917
FY 27/28	\$ 25,193	\$ 18,439	\$ 184,323	\$ -	\$ 92,161	\$ 320,116

**5 year projections - \$/year**

	Chesterfield	Colonial Heights	Dinwiddie	Petersburg	Prince George	TOTAL
FY 23/24	\$ 8,836,073	\$ 664,886	\$ 644,197	\$ 1,814,861	\$ 388,195	\$ 12,348,213
FY 24/25	\$ 9,052,597	\$ 680,830	\$ 656,138	\$ 1,859,443	\$ 395,789	\$ 12,644,797
FY 25/26	\$ 10,919,909	\$ 817,860	\$ 753,891	\$ 2,244,063	\$ 458,674	\$ 15,194,397
FY 26/27	\$ 11,046,948	\$ 827,306	\$ 761,908	\$ 2,270,191	\$ 463,634	\$ 15,369,987
FY 27/28	\$ 11,113,413	\$ 831,934	\$ 762,631	\$ 2,283,959	\$ 464,497	\$ 15,456,433

**5 year projections - \$/1000 gallons**

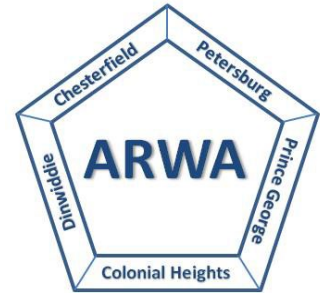
	Chesterfield	Colonial Heights	Dinwiddie	Petersburg	Prince George	Average
Annual consumptions (1000 gallons)						11,333,539
Five year average flows (FY17/18 to FY21/22)	73.256%	5.374%	3.821%	15.089%	2.460%	100.000%
FY 23/24	\$ 1.0643	\$ 1.0916	\$ 1.4877	\$ 1.0612	\$ 1.3924	\$ 1.2194
FY 24/25	\$ 1.0904	\$ 1.1177	\$ 1.5153	\$ 1.0873	\$ 1.4197	\$ 1.2461
FY 25/26	\$ 1.3153	\$ 1.3427	\$ 1.7410	\$ 1.3122	\$ 1.6452	\$ 1.4713
FY 26/27	\$ 1.3306	\$ 1.3582	\$ 1.7595	\$ 1.3275	\$ 1.6630	\$ 1.4878
FY 27/28	\$ 1.3386	\$ 1.3658	\$ 1.7612	\$ 1.3355	\$ 1.6661	\$ 1.4934

See Note (1) below

Notes:

(1) The FY25/26 figures include the proposed debt service for a 2026 Issuance. The projects for the issuance are still under consideration and the funding distribution has not been approved. These figures are subject to change.

# Appomattox River Water Authority



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21300 Chesdin Rd. - S. Chesterfield, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

## Exhibit D

TO: Appomattox River Water Authority Board of Directors

FROM: Robert B. Wilson, Executive Director  
James C. Gordon, Assistant Executive Director

DATE: May 18, 2023

SUBJECT: PFAS

At the March 16<sup>th</sup> the Board requested that staff provide an update on PFAS.

The fifth Unregulated Contaminant Monitoring Rule (UCMR 5) was issued by EPA in December 2021. This rule outlines the samples requirements for twenty-nine listed PFAS contaminants that will take place from 2023 to 2026. The sampling location is the point of entry for each distribution system. Since ARWA is a wholesale water treatment plant without a distribution system, the Authority is not participating in UCMR 5. The Virginia Department of Health (VDH) confirmed the Authority was not to be a participant in UCMR 5. Nevertheless, we are closely monitoring the impacts of this rule. A summary of UCMR 5 is included as Attachment D1.

The Appomattox River Water Authority is a member of three key drinking water associations:

- AWWA (American Water Works Association – national level)
- VA AWWA (Virginia Section of AWWA – local state level)
- VMDWA (Virginia Municipal Drinking Water Association – state level with local legal counsel)

Each of these associations is closing monitoring PFAS and providing daily updates. At recent VMDWA and VA AWWA meetings, the director of the VDH provided detailed updates of this regulations. The excerpts from the VDH presentation are included as Attachment D2. The key takeaways from the VDH presentation are VDH will have up to three years to implement the final rule for Virginia and the estimated EPA cost impact to utilities is between \$770 million and \$1.20 billion.



Staff recently met with representatives from Black and Veatch to discuss PFAS in drinking water. The relevant slides for Virginia from their presentation are included in Attachment D3. Of note is the last slide in Attachment D3. This slide illustrates samples for PFAS results below the practical quantification limit (PQL) for the Appomattox River:

- Town of Farmville – about fifty miles upstream of the ARWA intake.
- Chesterfield County water distribution system – supplied by ARWA water treatment plant.
- Virginia American Water Company (City of Hopewell) – tidal section of the Appomattox River.

This is positive information and indicates PFAS was not found during these sampling events. For UCMR 5, there are additional PFAS compounds that will be analyzed.

More updates will be provided as they become available.

Board Action Requested:

No Board action is requested.



## The Fifth Unregulated Contaminant Monitoring Rule (UCMR 5)

### Program Overview Fact Sheet

#### What is the Unregulated Contaminant Monitoring Rule (UCMR)?

As part of its responsibilities under the Safe Drinking Water Act (SDWA), the U.S. Environmental Protection Agency (EPA) implements Section 1445(a)(2), Monitoring Program for Unregulated Contaminants. SDWA requires that once every five years, EPA issue a list of priority unregulated contaminants to be monitored by certain public water systems across States, Tribes, and Territories. These contaminants may be present in drinking water but are not yet subject to EPA drinking water standards. Under the Unregulated Contaminant Monitoring Rule (UCMR), EPA collects nationally representative drinking water occurrence data to support EPA's future regulatory determinations and, as appropriate, assist in the development of national primary drinking water regulations (NPDWRs). For each UCMR cycle, EPA establishes a new list of contaminants for monitoring, specifies which systems are required to monitor, identifies the sampling locations, and defines the analytical methods to be used. On December 17, 2021, EPA Administrator Michael Regan signed the final "Revisions to the Unregulated Contaminant Monitoring Rule (UCMR 5) for Public Water Systems" and the rule was subsequently published in the *Federal Register* on December 27, 2021 (86 FR 73131). The 5-year UCMR 5 cycle spans 2022 – 2026, with preparations in 2022, sample collection from 2023 – 2025, and completion of data reporting in 2026.

#### Which water systems will participate in UCMR 5?

Section 2021 of America's Water Infrastructure Act of 2018 (AWIA) (Public Law 115-270) amended SDWA and specifies that, subject to the availability of EPA appropriations for such purpose and sufficient laboratory capacity, EPA must require all public water systems serving between 3,300 and 10,000 people to monitor and ensure that a nationally representative sample of systems serving fewer than 3,300 people monitor for the contaminants in UCMR 5 and future UCMR cycles. Systems serving a population of more than 10,000 people (large systems) continue to be responsible for participating in the UCMR program.

EPA anticipates approximately one-third of all systems will collect samples each year between 2023 and 2025. If EPA does not receive the appropriations needed in a given year, EPA will reduce the number of small systems that will be asked to perform monitoring.

Size Category (Number of People Served)	Monitoring Design (CWSs and NTNCWSs) <sup>2</sup>	Total # of Systems per Size Category
<b>Small Systems<sup>1</sup></b> (fewer than 3,300)	Nationally representative sample	800
<b>Small Systems<sup>1</sup></b> (3,300-10,000)	All systems, if confirmed by EPA	5,147 <sup>3</sup>
<b>Large Systems</b> (10,001 and over)	All systems	4,364 <sup>3</sup>
<b>Total</b>		10,311

1. This requirement is based on the availability of appropriations and sufficient laboratory capacity

2. Community Water Systems (CWSs), Non-Transient Non-Community Water Systems (NTNCWSs)

3. Counts are approximate

## What contaminants are in UCMR 5?

UCMR 5 specifies monitoring for 29 per- and polyfluoroalkyl substances (PFAS) and lithium listed in the table below.

Contaminant	CASRN <sup>1</sup>	MRL <sup>2</sup> (µg/L)	Additional Information
25 PFAS: EPA Method 533			
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	763051-92-9	0.005	PFAS are a group of synthetic chemicals used in a wide range of consumer products and industrial applications including: non-stick cookware, water-repellent clothing, stain-resistant fabrics and carpets, cosmetics, firefighting foams, electroplating, and products that resist grease, water, and oil. PFAS are found in the blood of people and animals and in water, air, fish, and soil at locations across the United States and the world.
1H,1H, 2H, 2H-perfluorodecane sulfonic acid (8:2FTS)	39108-34-4	0.005	
1H,1H, 2H, 2H-perfluorohexane sulfonic acid (4:2FTS)	757124-72-4	0.003	
1H,1H, 2H, 2H-perfluorooctane sulfonic acid (6:2FTS)	27619-97-2	0.005	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	0.003	
9-chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	0.002	
hexafluoropropylene oxide dimer acid (HFPO-DA)(GenX)	13252-13-6	0.005	
nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	151772-58-6	0.02	
perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	113507-82-7	0.003	
perfluoro-3-methoxypropanoic acid (PFMPA)	377-73-1	0.004	
perfluoro-4-methoxybutanoic acid (PFMBA)	863090-89-5	0.003	
perfluorobutanesulfonic acid (PFBS)	375-73-5	0.003	
perfluorobutanoic acid (PFBA)	375-22-4	0.005	
perfluorodecanoic acid (PFDA)	335-76-2	0.003	
perfluorododecanoic acid (PFDoA)	307-55-1	0.003	
perfluoroheptanesulfonic acid (PFHpS)	375-92-8	0.003	
perfluoroheptanoic acid (PFHpA)	375-85-9	0.003	
perfluorohexanesulfonic acid (PFHxS)	355-46-4	0.003	
perfluorohexanoic acid (PFHxA)	307-24-4	0.003	
perfluorononanoic acid (PFNA)	375-95-1	0.004	
perfluorooctanesulfonic acid (PFOS)	1763-23-1	0.004	
perfluorooctanoic acid (PFOA)	335-67-1	0.004	
perfluoropentanesulfonic acid (PFPeS)	2706-91-4	0.004	
perfluoropentanoic acid (PFPeA)	2706-90-3	0.003	
perfluoroundecanoic acid (PFUnA)	2058-94-8	0.002	
4 PFAS: EPA Method 537.1 <sup>3</sup>			
N-ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2991-50-6	0.005	See above for PFAS information.
N-methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2355-31-9	0.006	
perfluorotetradecanoic acid (PFTA)	376-06-7	0.008	
perfluorotridecanoic acid (PFTrDA)	72629-94-8	0.007	
Metal/Pharmaceutical: EPA Method 200.7; SM <sup>3</sup> 3120 B (2017); SM <sup>3</sup> 3120 B-99 (1999); ASTM <sup>4</sup> D1976-20			
lithium	7439-93-2	9	Naturally occurring metal that may concentrate in brine waters; lithium salts are used as pharmaceuticals, used in electrochemical cells, batteries, and in organic syntheses.

1. CASRN – Chemical Abstracts Service Registry Number

2. MRL – Minimum Reporting Level

3. SM – Standard Methods

4. ASTM – ASTM International

## Where will samples be collected?

UCMR 5 samples will be collected at entry points to the distribution system (EPTDS) for all contaminants.

- With prior approval, large ground water systems that have multiple EPTDSs can sample at representative sampling locations rather than at each EPTDS through a Ground Water Representative Monitoring Plan (GWRMP).
- Systems that purchase water with multiple connections from the same wholesaler may select one representative connection from that wholesaler. The representative EPTDS must be a location within the purchaser's water system. This EPTDS sampling location must be representative of the highest annual volume.

## What is the sampling frequency and timing?

Water systems will be required to collect samples based on the typical UCMR sampling frequency and timeframe.

Water Source	Timeframe	Sampling Frequency
Surface water, ground water under the direct influence of surface water, or mixed sources systems	Year-Round	Systems must monitor 4 times during a consecutive 12-month monitoring period. Sample events must occur 3 months apart.
Ground water systems	Year-Round	Systems must monitor 2 times during a consecutive 12-month monitoring period. Sample events must occur 5-7 months apart.

## What does UCMR 5 participation involve? Who pays?

All systems required to participate in UCMR 5 will *collect* samples. As with previous UCMRs, *large* systems make arrangements with approved laboratories and pay for their own sample shipping and analytical costs; EPA arranges for the analysis of *small-system* samples and pays for shipping and analytical costs. All laboratories conducting analyses for UCMR 5 must receive EPA approval to perform those analyses ([UCMR Laboratory Approval Program](#)).

## How did EPA select the UCMR 5 contaminants?

The National Defense Authorization Act for Fiscal Year 2020 (NDAA) specifies that EPA shall include all PFAS in UCMR 5, for which a drinking water method has been validated by the Administrator and that are not subject to an NPDWR. Accordingly, UCMR 5 includes all 29 PFAS that are within the scope of EPA Methods 533 and 537.1, as well as lithium. In evaluating contaminants for UCMR 5, EPA considered the fourth Contaminant Candidate List (CCL 4) as well as contaminants nominated by the public for potential inclusion on the fifth CCL (CCL 5) and other priority contaminants.

EPA selected UCMR contaminants using a multi-step prioritization process. The first step identified contaminants that were not monitored under previous UCMR cycles; may have significant occurrence nationally; and have a completed, validated drinking water method. The next step focused on contaminants associated with one or more of the following considerations: an available health assessment to facilitate regulatory determinations; high public concern; critical health endpoints (for example, a likely or suggestive carcinogen); active use (for example, pesticides); and/or an occurrence data gap. Then EPA considered stakeholder input; looked at cost-effectiveness of analytical methods (single methods that address multiple contaminants of interest); considered implementation factors (such as laboratory capacity); and further considered available health data (e.g., children), occurrence data, and persistence/mobility data.

## What are the public health benefits of the UCMR program?

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The UCMR program provides EPA and other interested parties with nationally representative occurrence data on emerging contaminants in drinking water. The data can be used to support EPA's regulatory determinations and may support additional actions to protect public health.

The public benefits from the information about whether or not unregulated contaminants are present in their drinking water. If contaminants are not found, consumer confidence in their drinking water should improve. If contaminants are found, related health effects may be avoided when subsequent actions, such as regulations, are implemented, reducing or eliminating those contaminants.

## Where can consumers find UCMR results?

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All systems are required to report their data to EPA. The analytical results from UCMR are stored in the [National Contaminant Occurrence Database \(NCOD\)](#) for drinking water. For a summary of the UCMR results, tips for querying NCOD, and health effects information (including reference concentrations), please refer to the [UCMR Occurrence Data webpage](#).

The [Public Notification Rule](#) requires that all systems notify their customers of the availability of UCMR results no later than 12-months after results are known. Community Water Systems (CWSs) are also required to report UCMR results in their annual [Consumer Confidence Report](#) (CCR) when unregulated contaminants are detected (the CCR Rule does not apply to non-community water systems). CWSs may include their public notice within CCRs, also known as annual drinking water quality reports, which are to be delivered to all billing customers by July 1 of each year. CWSs must report the average of the year's monitoring results and the range of detections. To obtain a copy of their CCR, consumers may check their water bill for information or contact their water supplier. Additional information about the CCR including details on reporting requirements can be found on the [CCR Homepage](#).



## What are the key deadlines and requirements?

Due Date	Requirement	Report via SDWARS <sup>1</sup>
<b>Reviewing EPA Publication on December 27, 2021</b>		
<b>August 1, 2022</b>	<b>Laboratories</b> seeking approval must complete and submit the necessary registration form and application materials in order to participate in the laboratory approval process. Contact <a href="mailto:UCMR_Lab_Approval@epa.gov">UCMR_Lab_Approval@epa.gov</a> for more information.	
<b>December 31, 2022</b>	<b>Large systems</b> must register for EPA's web-based reporting system "SDWARS", accept their notification letter, and update sampling location(s) and zip code(s). If applicable, the system may update their monitoring schedule. After December 31, 2022, large systems must contact <a href="mailto:UCMR_Sampling_Coordinator@epa.gov">UCMR_Sampling_Coordinator@epa.gov</a> to request any changes.	X
<b>December 31, 2022</b>	<b>Small systems</b> must register for SDWARS, accept their notification letter and update sampling location(s), shipping address, and zip code(s). Systems must provide an explanation and obtain approval for any requested monitoring schedule change. Contact the UCMR Message Center at <a href="mailto:UCMR5@glec.com">UCMR5@glec.com</a> for more information.	X
<b>6 months prior to the water system's scheduled sample collection</b>	<b>Large ground water systems</b> (or large surface water systems with ground water sources) that wish to monitor from representative EPTDSs may submit a ground water representative monitoring plan (GWRMP) approved under a prior UCMR cycle or a proposal for a new representative sampling plan. Systems scheduled for sample collection in 2023 are encouraged to submit plans by December 31, 2022, to allow time for review by EPA and, as appropriate, the State. Contact <a href="mailto:UCMR_Sampling_Coordinator@epa.gov">UCMR_Sampling_Coordinator@epa.gov</a> for more information.	
<b>Following Sample Collection</b>		
<b>Within 90 days of sample collection</b>	<b>Laboratories</b> post data to SDWARS.	X
<b>Within 30 days of laboratory posting data</b>	<b>Large water systems</b> review and approve the data. If the system has not acted upon the data after 30 days, the data are considered approved and ready for state and EPA review.	X

1. [Safe Drinking Water Accession and Review System \(SDWARS\)](#).

## What are the data elements EPA will collect?

EPA will collect the following information in EPA's web-based data reporting system, SDWARS.

Public Water System Identification (PWSID) Code	Disinfectant Type	Analysis Date
Public Water System Name	Treatment Information	Sample Analysis Type
Public Water System Facility Identification Code	Sample Collection Date	Analytical Result–Sign
Public Water System Facility Name	Sample Identification Code	Analytical Result–Measured Value
Public Water System Facility Type	Contaminant	Additional Value
Water Source Type	Analytical Method Code	Laboratory Identification Code
Sampling Point Identification Code	Extraction Batch Identification Code	Sample Event Code
Sampling Point Name	Extraction Date	Historical Information for Contaminant Detections and Treatment
Sampling Point Type Code	Analysis Batch Identification Code	Potential PFAS Sources

## Where can I find more information?

- [Safe Drinking Water Information Website](#) for information on how to submit drinking water comments or questions to EPA Office of Ground Water and Drinking Water
- [UCMR Website](#) for information on current and past UCMRs, occurrence data, and public meetings
- [EPA Ground Water and Drinking Water Website](#) for information on source water protection, drinking water regulations, monitoring requirements for States and systems, SDWA on Tribal lands, and laboratory certification
- [EPA PFAS Website](#) for information on the Agency's actions to address PFAS

## Questions?

- Contact the UCMR Message Center at [UCMR5@glec.com](mailto:UCMR5@glec.com) for general information about monitoring requirements or navigating SDWARS
- Contact [UCMR\\_Sampling\\_Coordinator@epa.gov](mailto:UCMR_Sampling_Coordinator@epa.gov) for changes to large water system inventory and/or schedule after December 31, 2022
- Contact [UCMR\\_Lab\\_Approval@epa.gov](mailto:UCMR_Lab_Approval@epa.gov) for information on the laboratory approval program and general laboratory support

## EPA's Proposed Action

- The proposed rule would require public water systems to:
  - Monitor for six PFAS;
  - Notify the public of PFAS detections; and
  - Reduce the level of PFAS if exceedance observed
- Current 60-day comment period in progress – Ends May 30, 2023
  - \* <https://www.regulations.gov/document/EPA-HQ-OW-2022-0114-0027>
  - \* 1,764 comments as of April 6, 2023
  - \* 1,300 supporting documents; 26 of which total 5,000 pages
- EPA expects to finalize the rule by early 2024
- VDH would have up to 3 years to implement final rule



## EPA's Proposed Action for the PFAS NPDWR

Compound	Proposed MCLG	Proposed MCL (enforceable levels)
PFOA	zero	4.0 ppt*
PFOS	zero	4.0 ppt*
PFNA		
PFHxS	1.0 (unitless)	1.0 (unitless)
PFBS	Hazard Index	Hazard Index
HFPO-DA, or "GenX"		

\*ppt = parts per trillion (also expressed as ng/L)

The Hazard Index is a tool used to evaluate potential health risks from exposure to chemical mixtures.

## Hazard Index (HI)

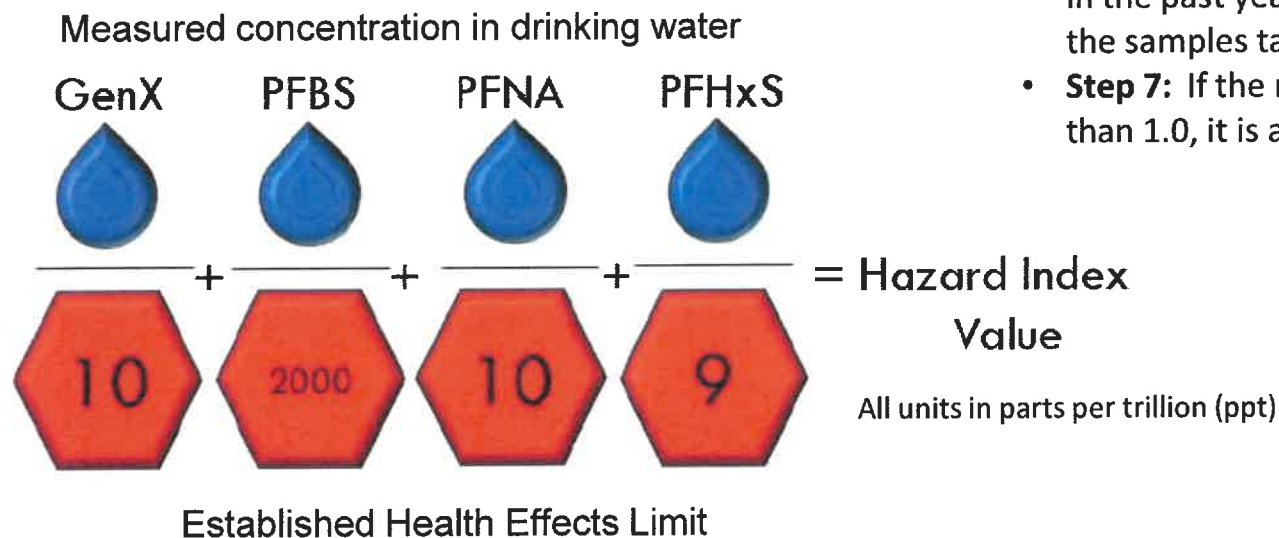
The HI considers the combined toxicity of PFNA, GenX, PFHxS, and PFBS in drinking water.

The Hazard Index is the sum of the fractions.

Each fraction compares the level of each PFAS measured in the water to the level determined not to cause health effects.

### Steps:

- **Step 1:** Divide the measured concentration of GenX by the health-based value of 10 ppt\*
- **Step 2:** Divide the measured concentration of PFBS by the health-based value of 2000 ppt
- **Step 3:** Divide the measured concentration of PFNA by the health-based value of 10 ppt
- **Step 4:** Divide the measured concentration of PFHxS by the health-based value of 9.0 ppt
- **Step 5:** Add the ratios from steps 1, 2, 3, and 4 together
- **Step 6:** Repeat steps 1-5 for each sample collected in the past year and calculate the average HI for all the samples taken in the past year
- **Step 7:** If the running annual average HI greater than 1.0, it is a violation of the proposed HI MCL



# National Benefits Summary

- EPA has quantified some of the reduced adverse health effects expected from the proposed rule
  - \* Kidney cancers, heart attacks, strokes, & developmental (birth weight) effects
- EPA anticipates significant additional benefits beyond those that EPA has quantified associated with the following adverse health effects:

- |                  |                   |
|------------------|-------------------|
| • Immune         | • Endocrine       |
| • Developmental  | • Metabolic       |
| • Cardiovascular | • Reproductive    |
| • Hepatic        | • Musculoskeletal |
| • Carcinogenic   |                   |

Annualized Quantified Rule Benefits (i.e., per year)	3% Discount Rate	7% Discount Rate
	\$1.23 billion	\$908 million

Discounting renders benefits and costs that occur in different time periods comparable

## National Costs Summary

- EPA expects about 66,000 water systems are subject to the proposed rule.
- About 3,400-6,300 systems are anticipated to exceed one or more MCL.
- EPA estimated costs, which included:
  - \* Administration, monitoring, and treatment
  - \* Capital costs, and yearly operation and maintenance costs

Annualized Quantified Rule Costs (i.e., per year)	3% Discount Rate	7% Discount Rate
	\$772 million	\$1.20 billion

- EPA estimates annual costs could increase \$30-\$61 million/year if water systems must dispose of PFAS as hazardous waste.

# PFAS Sampling in Virginia

	Phase 1	Phase 2
<b>Timeline</b>	Summer 2021	June - July 2023
<b># of Waterworks</b>	45	~400
<b># of Sampling Locations</b>	63	~440
<b>Type of Sampling Locations</b>	Entry points & Source waters	Entry points only
<b>Results</b>	15*	In Progress
<b>Report /More Info</b>	<a href="#"><u>RD877</u></a> <a href="#"><u>RD681</u></a>	<a href="#"><u>VDH ODW PFAS</u></a> <a href="#"><u>Webpage</u></a>
	*detected at least one PFAS	

# Virginia PFAS Phase 2 Sampling Study

- 76 samples collected so far in Phase 2 PFAS sampling
  - Sampling on-going (April - July 2023)
  - Plan to release total results by August 2023
  - Process is to perform QA/QC, share with waterworks, plan messaging
  - Recommended 12 re-samples so far (confirm result and QA/QC)
  - If results are “high”, then we act to immediately notify & respond
    - Results received so far show single-digit “hits”



# Understand Publicly Available Information

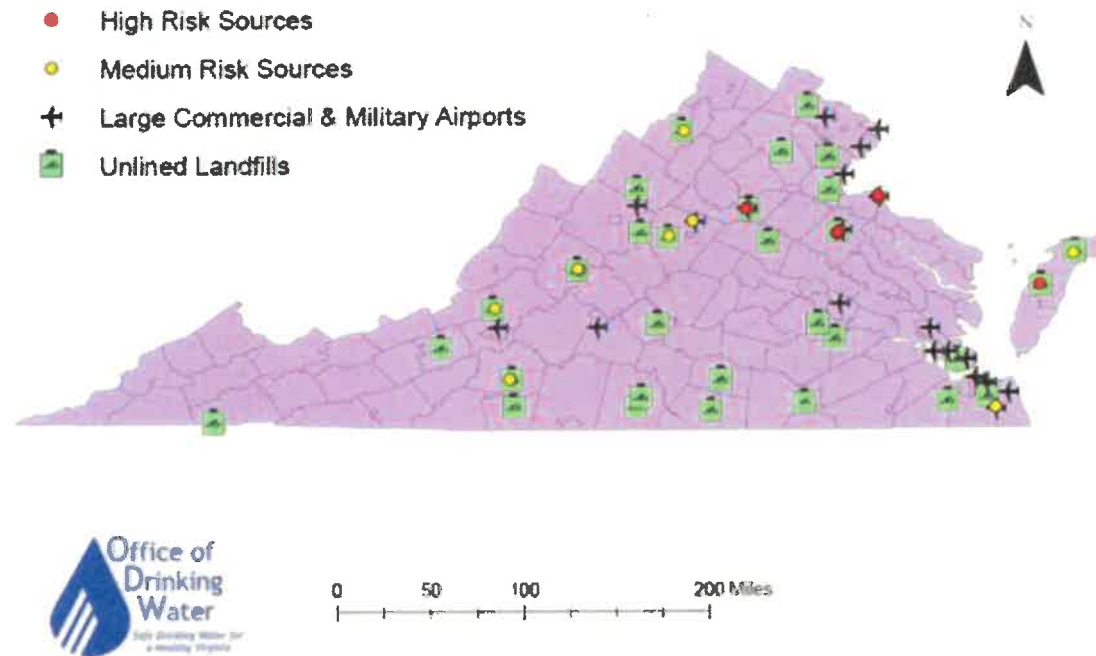


Figure 1 - Potential sources of PFAS contamination. High risk means the potential source of contamination is less than one-half mile from a waterworks. Medium risk means the potential source is between one-half and one mile from a waterworks.

Reference: *Virginia Per and Polyfluoroalkyl Substances (PFAS) in Drinking Water Sample Study Summary* (VDH, September 30, 2021)

# Understand Publicly Available Information

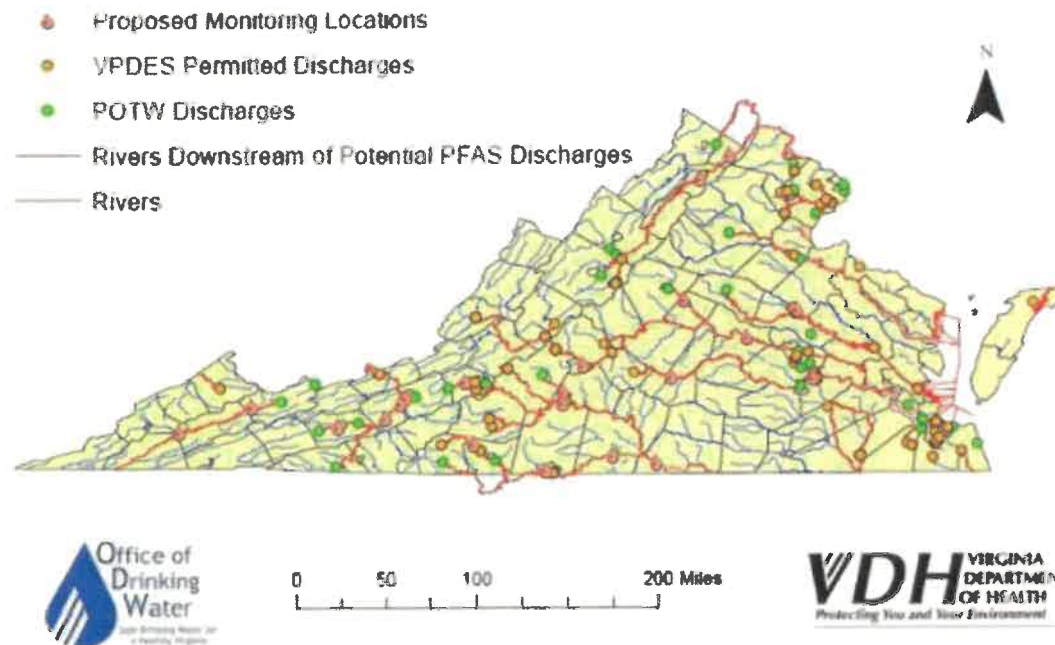


Figure 2— River systems (blue) with intakes downstream of potential PFAS discharges (red), and proposed PFAS monitoring locations.

Reference: *Virginia Per and Polyfluoroalkyl Substances (PFAS) in Drinking Water Sample Study Summary* (VDH, September 30, 2021)



# Understand Publicly Available Information

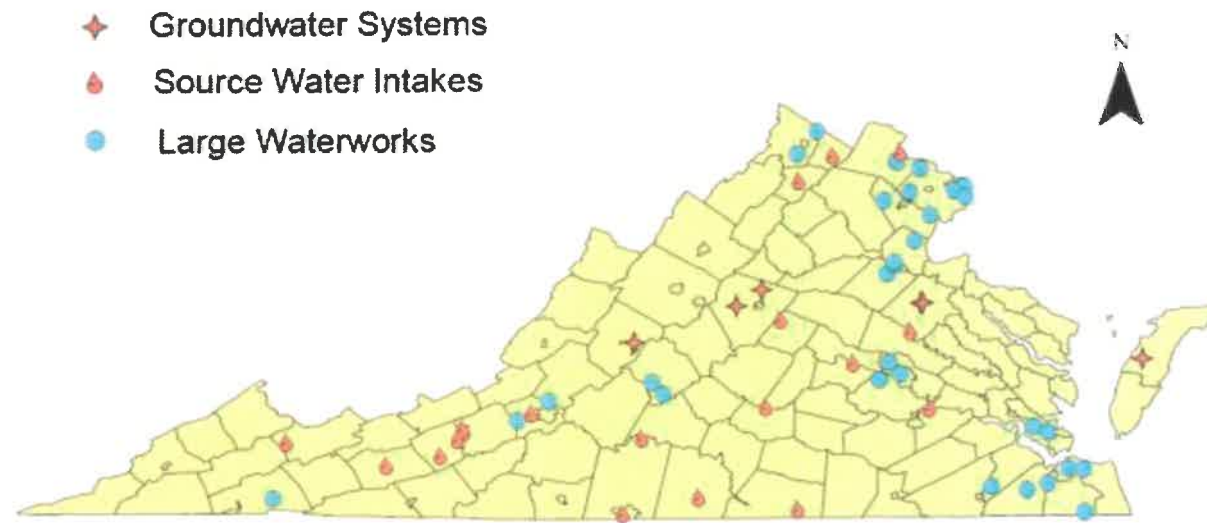


Figure 3 – PFAS monitoring locations.

Reference: *Virginia Per and Polyfluoroalkyl Substances (PFAS) in Drinking Water Sample Study Summary (VDH, September 30, 2021)*

# Understand Publicly Available Information

Table 1  
Samples with analytes above the Practical Quantification Limit (PQL)  
All results are parts per trillion (ppt)

Waterworks Name	Virginia American Water Co. - Alexandria District		Arlington County	Fairfax County Water Authority		Loudoun Water - Central System		Stafford County Utilities		Prince William County Service Authority - East	City of Newport News		Town of Altavista	Western Virginia Water Authority	Washington County Service Authority
City/County	City of Alexandria		Arlington County	Fairfax County		Loudoun County		Stafford County		Prince William County	City of Newport News		Campbell County	Roanoke County	Washington County
Sample Location	From Fairfax Water		From Washington Aqueduct	Griffith WTP	From Washington Aqueduct	Trap Rock WTP	From Fairfax County Water Authority	Smith Lake WTP	Lake Mooney WTP	From Fairfax County Water Authority	Harwoods Mill WTP	Lee Hall WTP	Staunton River + Reed Creek	Spring Hollow WTP	Middle Fork Water Treatment Plant
Water Type	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Finished	Raw Intake	Finished	Finished
PFOA (ppt)	*	4.2	*	5.5	*	*	4.5	*	*	5.5	*	*	*	*	*
PFOS (ppt)	*	3.9	*	5.1	*	*	*	6.4	*	4.1	7.1	4.4	*	*	5.2
PFBA (ppt)	7.7	9.2	*	7.7	4.3	4.0	4.6	*	5.9	12	4.3	4.3	*	*	*
PFHpA (ppt)	*	*	*	4.4	*	*	5.5	*	*	4.3	*	*	*	*	*
PFHxS (ppt)	*	*	*	*	*	*	*	*	*	*	4.9	*	*	*	*
PFNA (ppt)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
HPFO-DA (Gen-x) (ppt)	*	*	*	*	*	*	*	*	*	*	*	*	4.0	54 <sup>A</sup>	*
PFHxA (ppt)	6.8	9.3	3.7	12	4.4	*	*	*	4.2	11	*	6.1	*	*	*
PFPeA (ppt)	7.4	10	4.1	14	4.2	*	*	*	5.5	12	*	4.5	*	*	*
PFBS (ppt)	*	4.2	*	5.6	*	*	*	*	*	4.8	*	*	*	*	*

\*Results were below the Practical Quantitation Limit (PQL); PQL is the lowest level that can be reliably measured within specified limits of precision and accuracy during routine laboratory conditions.

<sup>A</sup> Average of two results. 51 ppt and 57 ppt

"Finished" means treated drinking water entering the distribution system.

"Raw Intake" means untreated water, before treatment.

"WTP" means water treatment plant.

*Reference: Virginia Per and Polyfluoroalkyl Substances (PFAS) in Drinking Water Sample Study Summary (VDH, September 30, 2021)*

# VDH PFAS Sampling

- Finished water sampling at most locations
- Compounds Analyzed:
  - PFOA, PFOS, PFBA, PFHpA, PFHxS, PFNA, HPFO-DA (GenX), PFHxA, PFPeA, PFBS
- ARWA levels were below the PQL (3.5 ppt)
- Town or Farmville (raw water) also below PQL

Table 2  
Samples with PFAS below the Practical Quantification Limit (PQL)

Water System Name	City/County	Water Type	Sampling Point
Earlsville Forest	Albemarle County	Finished	Combined Wells
Peacock Hill Subdivision	Albemarle County	Finished	Combined Wells
Pungoteague Elementary School	Accomack County	Finished	Well
Town of Bowling Green	Caroline County	Finished	Combined Wells
Mountain View Elementary School	Rockbridge County	Finished	Well
Frederick Water	Frederick County	Finished	James Diehl WTP
Frederick Water	Frederick County	Finished	James T. Anderson WTP
Western Virginia Water Authority	Roanoke County	Finished	Carvins Cove WTP
City of Chesapeake - Northwest River System	City of Chesapeake	Finished	Northwest River WTP
City of Chesapeake - Northwest River System	City of Chesapeake	Finished	Lake Gaston WTP
City of Norfolk	City of Norfolk	Finished	Moore's Bridges WTP
City of Norfolk	City of Norfolk	Finished	Kristen M. Leitz WTP
City of Portsmouth	City of Portsmouth	Finished	Lake Kirby WTP
City of Virginia Beach	City of Virginia Beach	Finished	From City of Norfolk
Chesterfield County Central Water System	Chesterfield County	Finished	Addison Evans WTP
Chesterfield County Central Water System	Chesterfield County	Finished	From City of Richmond
Chesterfield County Central Water System	Chesterfield County	Finished	From Appomattox River Water Authority
Henrico County Water System	Henrico County	Finished	Henrico WTP
Henrico County Water System	Henrico County	Finished	From City of Richmond
City of Richmond	City of Richmond	Finished	Richmond WTP
City of Lynchburg	City of Lynchburg	Finished	Albert Water Treatment Plant
City of Lynchburg	City of Lynchburg	Finished	College Hill WTP
Fairfax County Water Authority	Fairfax County	Finished	Corbais WTP
Prince William County Service Authority - West	Prince William County	Finished	City of Manassas WTP
Prince William County Service Authority - West	Prince William County	Finished	Fairfax County Water Authority
Spotsylvania County Utilities	Spotsylvania County	Finished	Ni River WTP
Spotsylvania County Utilities	Spotsylvania County	Finished	Motts Run WTP
NRV Regional Water Authority	Montgomery County	Raw Intake	New River
Radford Army Ammunition Plant	Montgomery County	Raw Intake	New River
Pulaski County Public Service Authority	Pulaski County	Raw Intake	Claytor Lake
Town of Richlands	Tazewell County	Raw Intake	Clinch River
Town of Wytheville	Wythe County	Raw Intake	Reed Creek
City of Radford	City of Radford	Raw Intake	New River
Town of Berryville	Clarke County	Raw Intake	Shenandoah River

Water System Name	City/County	Water Type	Sampling Point
Lake Monticello	Flovanna County	Raw Intake	Roanoke River
Town of Frost Royal	Warren County	Raw Intake	South Fork Shenandoah River
City of Salem	City of Salem	Raw Intake	Roanoke River
VA American Water Co., Hopewell District	City of Hopewell	Raw Intake	Appomattox River
James River Correctional Center	Goochland County	Raw Intake	James River
Hanover Suburban Water System	Hanover County	Raw Intake	North Anna River
Roanoke River Service Authority	Mecklenburg County	Raw Intake	Lake Gaston
Town of Farmville	Prince Edward County	Raw Intake	Appomattox River
City of Danville	City of Danville	Raw Intake	Dan River
Halifax County Service Authority - Leitch St Plant	Halifax County	Raw Intake	Dan River
Town of Leesburg	Loudoun County	Raw Intake	Potomac River

"Finished" means treated drinking water entering the distribution system.

"Raw Intake" means untreated source water, sampled at a water treatment plant.

"WTP" means water treatment plant.

"Well" means water from one well, after treatment, if provided.

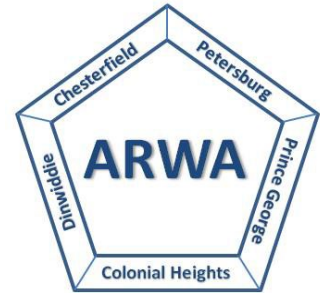
"Combined Wells" means water from two or more wells, after treatment, if provided.

"From" indicates finished water purchased from a waterworks.

The PQL is the lowest level that can be reliably measured within specified limits of precision and accuracy during routine laboratory conditions.

Reference: Virginia Per and Polyfluoroalkyl Substances (PFAS) in Drinking Water Sample Study Summary (VDH, September 30, 2021)

# Appomattox River Water Authority



21300 Chesdin Rd. - S. Chesterfield, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

## Exhibit E

TO: Appomattox River Water Authority Board of Directors

FROM: Robert B. Wilson, Executive Director  
James C. Gordon, Assistant Executive Director

DATE: May 18, 2023

SUBJECT: Bathymetric Study

The field data gathering portion of the project was completed in January of this year. The data processing/mapping was completed in April.

Lake Chesdin Storage Volume Reduction as a result of sedimentation					
	(1)	(2)	(3)	(4)	
			Cumulative	Annual	
			Percent	Percent	
			Storage	Storage	
	Capacity	Sedimentation	Storage	Loss Rate	
Date	(BG)	(BG)	Loss	from previous study	
1968 (as-built)	10.490	0		0	
2000	9.565	0.925	8.8%	0.30%	
2011	9.269	1.221	11.6%	0.28%	
2023	9.192	1.298	12.4%	0.07%	
2073 (projected)	8.824	1.666	15.9%	0.07%	(5)
Notes:					
(1) The actual calculated value from as-built or bathymetric study for lake capacity at full pool.					
(2) The reduction in lake capacity calculated by subtracting the current capacity from the previous capacity.					
(3) The cumulative percent change in capacity compared to the original as-built capacity.					
(4) The annual capacity reduction rate between bathymetric studies.					
(5) The fifty year projected lake capacity using the 2011 to 2023 storage loss rate.					

The report illustrates that the capacity reduction rate for the lake is slowing down over time. The majority of the area that is holding the sediment is the area where the Appomattox River enters the lake. This is the area west of the Chesdin Landing subdivision (Chesterfield County side of lake) and Cozy Cove Campgrounds (Dinwiddie County side of the lake). This is consistent with the results from the 2011 bathymetric study.

The supporting information for the bathymetric study is included as Attachment E1. This information will be forwarded to DEQ in October as part of the biannual VWP permit update.

Board Action Requested:

This report is submitted for information purposes. No Board action is requested.



April 25, 2023

Robert B. Wilson, P.E.  
ARWA/SCWWA Executive Director  
Appomattox River Water Authority  
21300 Chesdin Road  
South Chesterfield, VA 23803

Re: Lake Chesdin Hydrographic Survey Summary Report  
WWA Project No. 222002.05B

### Scope of Work

Ocean Surveys, Inc. (OSI) was contracted to perform a hydrographic survey of the Lake Chesdin reservoir on the Appomattox River near the City of Petersburg, VA. The Lake Chesdin reservoir has a full pool elevation of 157.2 feet and covers approximately 2,729.6 acres as of the 2000 hydrographic survey. OSI completed the hydrographic survey of the Lake Chesdin reservoir in January 2023. OSI ran a series of sub-parallel survey transects using a single beam echo sounder which were oriented cross the long axis of the main body of the reservoir and its bays, inlets and tributaries. These transects run approximately from bank to bank of the reservoir. Maximizing survey transect coverage is important for getting a true measure of capacity.

The hydrographic survey performed by OSI precisely measured the bathymetry across the reservoir. The data collected from this survey allowed for computing the reservoir capacity, safe yield and sedimentation analysis. The deliverables of this survey included the following:

- Contour drawings
- Capacity chart
- Volume reduction chart
- Colorized “deposition/erosion” plan, see Attachment 1
- Tabulation of values used to create the charts listed above, see Attachment 2

### Hydrographic Survey Data

Presented in Table No. 1 below is the data from the 2023 hydrographic survey as it relates to storage volumes from previous studies. This table also presents a year 2073 projection based on a straight-line interpolation from current data. From this table we can conclude that the deposition rate has slowed down from 0.25% per year from 2000 to 2011 to 0.07% per year from 2011 to 2023.

**Table No. 1**  
**Chesdin Reservoir Storage Volumes (Full Pool)**

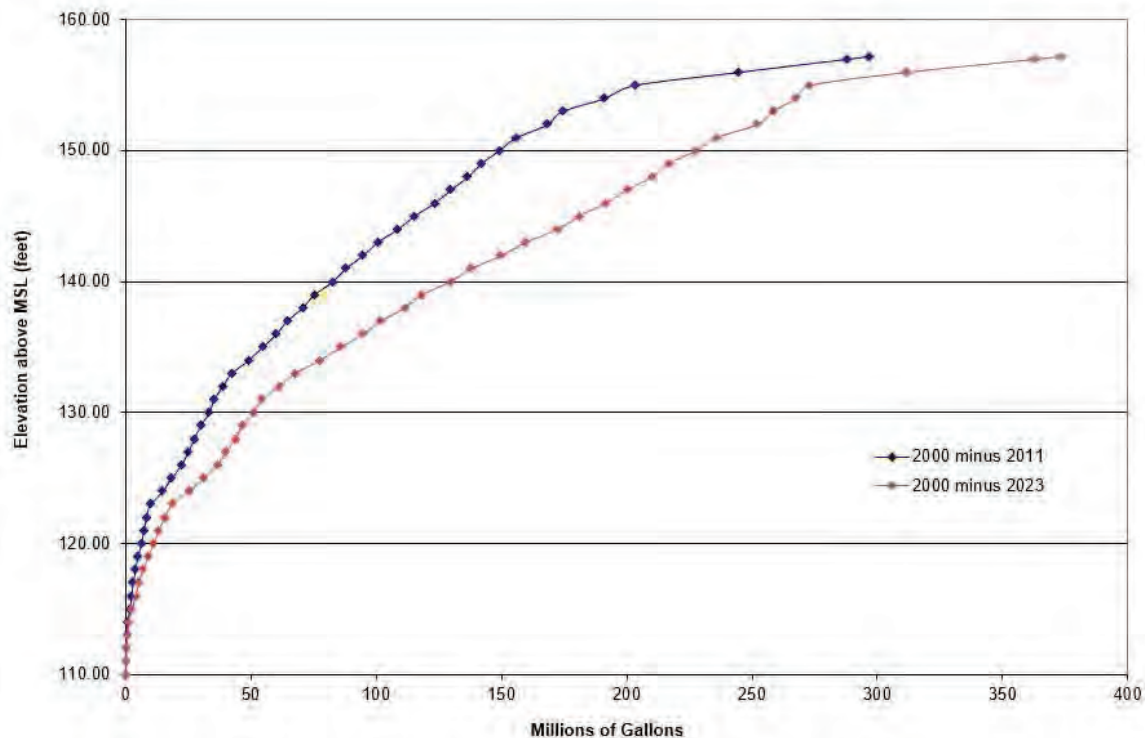
Date	Chesdin Reservoir Storage (MG)	TOTAL Sedimentation (MG)	Sedimentation as % of AS-BUILT Total Storage
1968 As-Built <sup>1</sup>	10,490	0	0
2000 <sup>2</sup>	9,565	925	8.8%
2011 <sup>3</sup>	9,269	1,221	11.6%
2023 <sup>4</sup>	9,192	1,298	12.4%
2073 (Projected)	8,824	1,666	15.9%

Notes:

1. As-Built volume was recalculated in the 2000 Source Water Study by Gannett Fleming. This was determined by digitizing original contour maps.
2. Results from Hydrographic Survey performed by Ocean Surveys in April 2001.
3. Results from Hydrographic Survey performed by Ocean Surveys in May 2011.
4. Results from Hydrographic Survey performed by Ocean Surveys in January 2023.

A differential volume reduction curve is shown below in Figure No. 1 which depicts a comparison of the reduction in volume in the reservoir from 2000 – 2011 and from 2000 – 2023 based on volume and the water level of the reservoir.

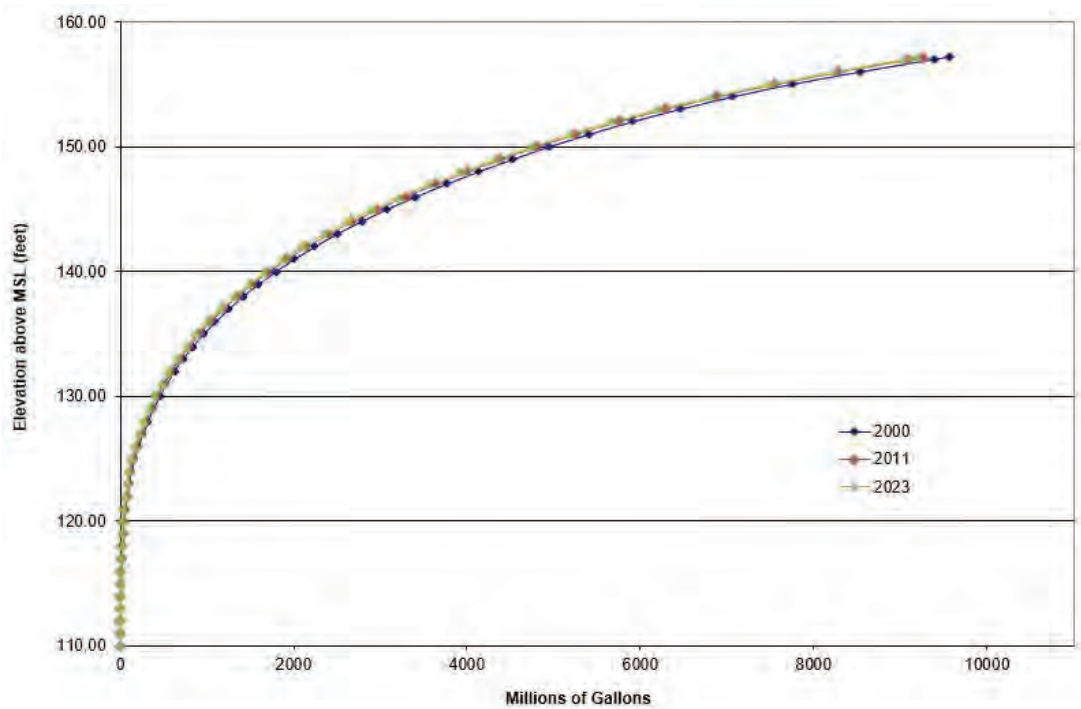
**Figure No. 1**  
**Volume Reduction Curve**





In Figure No. 2, below, a capacity curve is shown which depicts a comparison of the overall capacity of the Lake Chesdin reservoir in 2000, 2011 and 2023 based on the volume and water surface elevation of the reservoir.

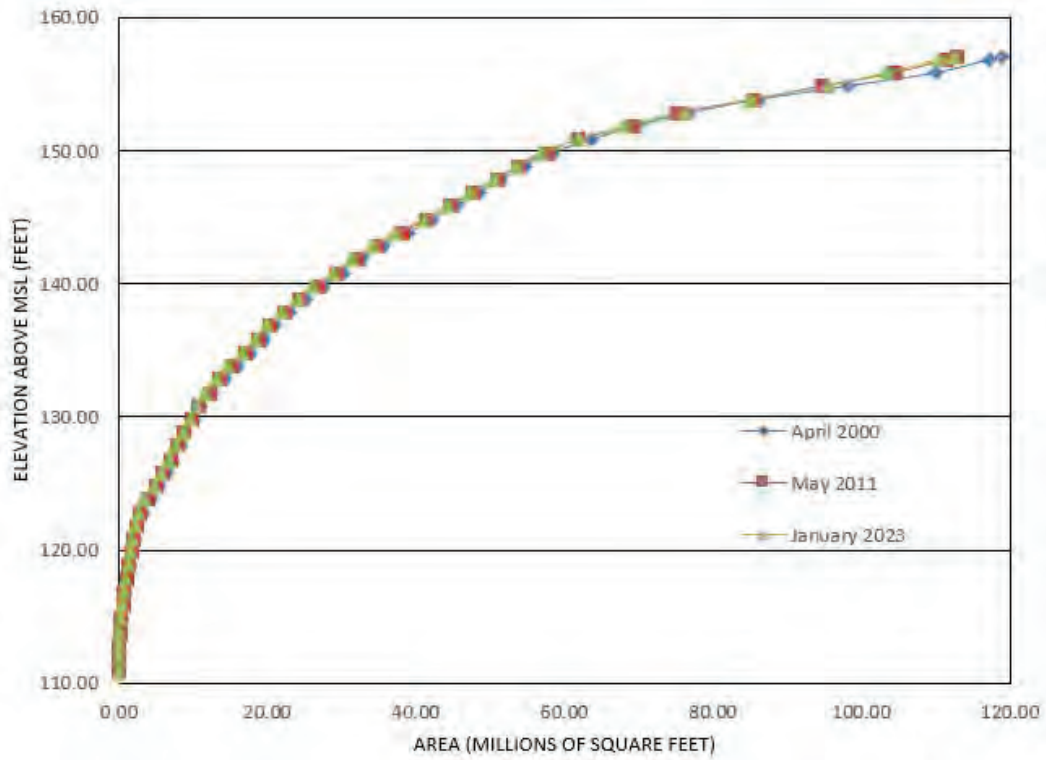
**Figure No. 2**  
**Capacity Curve**





A surface area curve is shown below in Figure No. 3. This depicts a comparison of the area of the Lake Chesdin reservoir in 2000, 2011 and 2023 based on the area and the water surface elevation of the reservoir.

**Figure No. 3**  
**Area Curve**



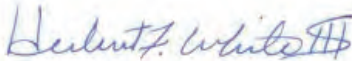
## Results

The results of the 2023 survey show an approximately 0.07% decrease per year in the total reservoir storage volume since the previous hydrographic survey performed in 2011. The results from the 2023 hydrographic survey show 12.4% sedimentation of the as-built total reservoir storage. Based on the 2011 hydrographic survey and the 2023 hydrographic survey, total sedimentation was projected linearly for the next 50 years (2073). Sedimentation could reduce storage in 2073 by 15.9% of the as-built total reservoir storage. Actual sedimentation will affect the future reservoir yield.

We trust this information meets with your approval. Should you have any questions, please feel free to call.

Sincerely,

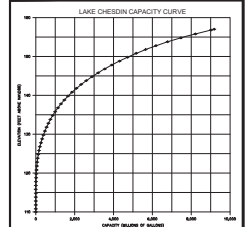
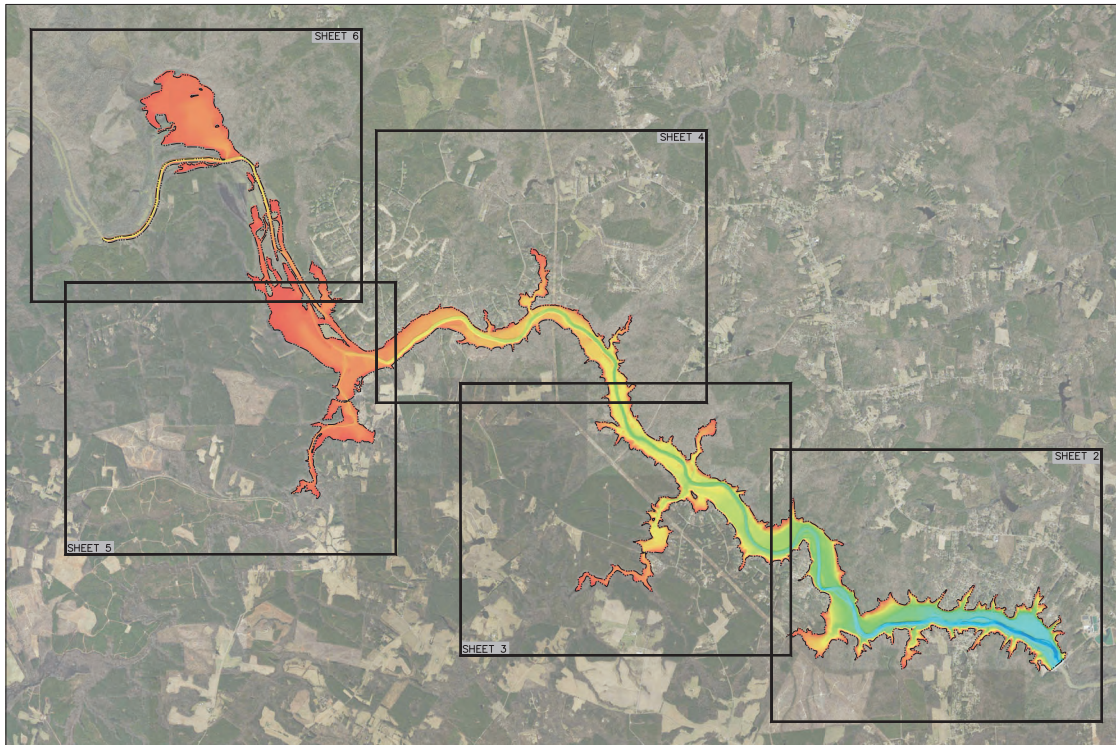
WW Associates, Inc.

A handwritten signature in blue ink, reading "Herbert F. White, III".

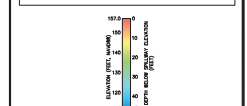
Herbert F. White, III, P.E.  
President

Attachments: Survey drawings; capacity data

# LAKE CHESDIN APPOMATTOX RIVER WATER AUTHORITY PETERSBURG, VIRGINIA



STATION	ELEVATION (FEET)	DEPTH (FEET)	STATION	ELEVATION (FEET)	DEPTH (FEET)
1	100.0	0.0	101	100.0	0.0
2	100.0	0.0	102	100.0	0.0
3	100.0	0.0	103	100.0	0.0
4	100.0	0.0	104	100.0	0.0
5	100.0	0.0	105	100.0	0.0
6	100.0	0.0	106	100.0	0.0
7	100.0	0.0	107	100.0	0.0
8	100.0	0.0	108	100.0	0.0
9	100.0	0.0	109	100.0	0.0
10	100.0	0.0	110	100.0	0.0
11	100.0	0.0	111	100.0	0.0
12	100.0	0.0	112	100.0	0.0
13	100.0	0.0	113	100.0	0.0
14	100.0	0.0	114	100.0	0.0
15	100.0	0.0	115	100.0	0.0
16	100.0	0.0	116	100.0	0.0
17	100.0	0.0	117	100.0	0.0
18	100.0	0.0	118	100.0	0.0
19	100.0	0.0	119	100.0	0.0
20	100.0	0.0	120	100.0	0.0
21	100.0	0.0	121	100.0	0.0
22	100.0	0.0	122	100.0	0.0
23	100.0	0.0	123	100.0	0.0
24	100.0	0.0	124	100.0	0.0
25	100.0	0.0	125	100.0	0.0
26	100.0	0.0	126	100.0	0.0
27	100.0	0.0	127	100.0	0.0
28	100.0	0.0	128	100.0	0.0
29	100.0	0.0	129	100.0	0.0
30	100.0	0.0	130	100.0	0.0
31	100.0	0.0	131	100.0	0.0
32	100.0	0.0	132	100.0	0.0
33	100.0	0.0	133	100.0	0.0
34	100.0	0.0	134	100.0	0.0
35	100.0	0.0	135	100.0	0.0
36	100.0	0.0	136	100.0	0.0
37	100.0	0.0	137	100.0	0.0
38	100.0	0.0	138	100.0	0.0
39	100.0	0.0	139	100.0	0.0
40	100.0	0.0	140	100.0	0.0
41	100.0	0.0	141	100.0	0.0
42	100.0	0.0	142	100.0	0.0
43	100.0	0.0	143	100.0	0.0
44	100.0	0.0	144	100.0	0.0
45	100.0	0.0	145	100.0	0.0
46	100.0	0.0	146	100.0	0.0
47	100.0	0.0	147	100.0	0.0
48	100.0	0.0	148	100.0	0.0
49	100.0	0.0	149	100.0	0.0
50	100.0	0.0	150	100.0	0.0



**NOTES**

1. ELEVATION DATA ARE IN FEET AND ARE BASED ON "TRIMBLE" DATA AND AN ELEVATION OF 102.4 FEET ABOVE SEA LEVEL AS PROVIDED BY THE ASSOCIATES.
2. THE ELEVATION DATA ARE IN FEET AND ARE BASED ON "TRIMBLE" DATA AND AN ELEVATION OF 102.4 FEET ABOVE SEA LEVEL AS PROVIDED BY THE ASSOCIATES.
3. THE ELEVATION DATA ARE IN FEET AND ARE BASED ON "TRIMBLE" DATA AND AN ELEVATION OF 102.4 FEET ABOVE SEA LEVEL AS PROVIDED BY THE ASSOCIATES.
4. SURVEYING AND DESIGN FEATURES ARE APPROXIMATE AND NOT TO SCALE. FIELD DATA FROM SURVEYING AND DESIGN FEATURES ARE APPROXIMATE AND NOT TO SCALE. FIELD DATA FROM SURVEYING AND DESIGN FEATURES ARE APPROXIMATE AND NOT TO SCALE.
5. THE INFORMATION PROVIDED ON THIS DRAWING REPRESENTS THE RESULTS OF SURVEYING AND DESIGN FEATURES ARE APPROXIMATE AND NOT TO SCALE. FIELD DATA FROM SURVEYING AND DESIGN FEATURES ARE APPROXIMATE AND NOT TO SCALE.

**PREPARED FOR:** RESERVOIR BOTTOM ELEVATIONS  
LAKE CHESDIN  
APPOMATTOX RIVER  
PETERSBURG, VIRGINIA

**PREPARED BY:** CORAN SURVEY, INC.  
OLD SAYBROOK, CONNECTICUT  
(860) 388-4431

**DATE:** 28 MARCH 2003

**SCALE:** 1"=2000'

**CHECK GRAPHIC SCALE BEFORE USING**

**PROJECT NUMBER:** 2003042

**DRAWN BY:** A. RUZZO

**DATE:** 28 MARCH 2003

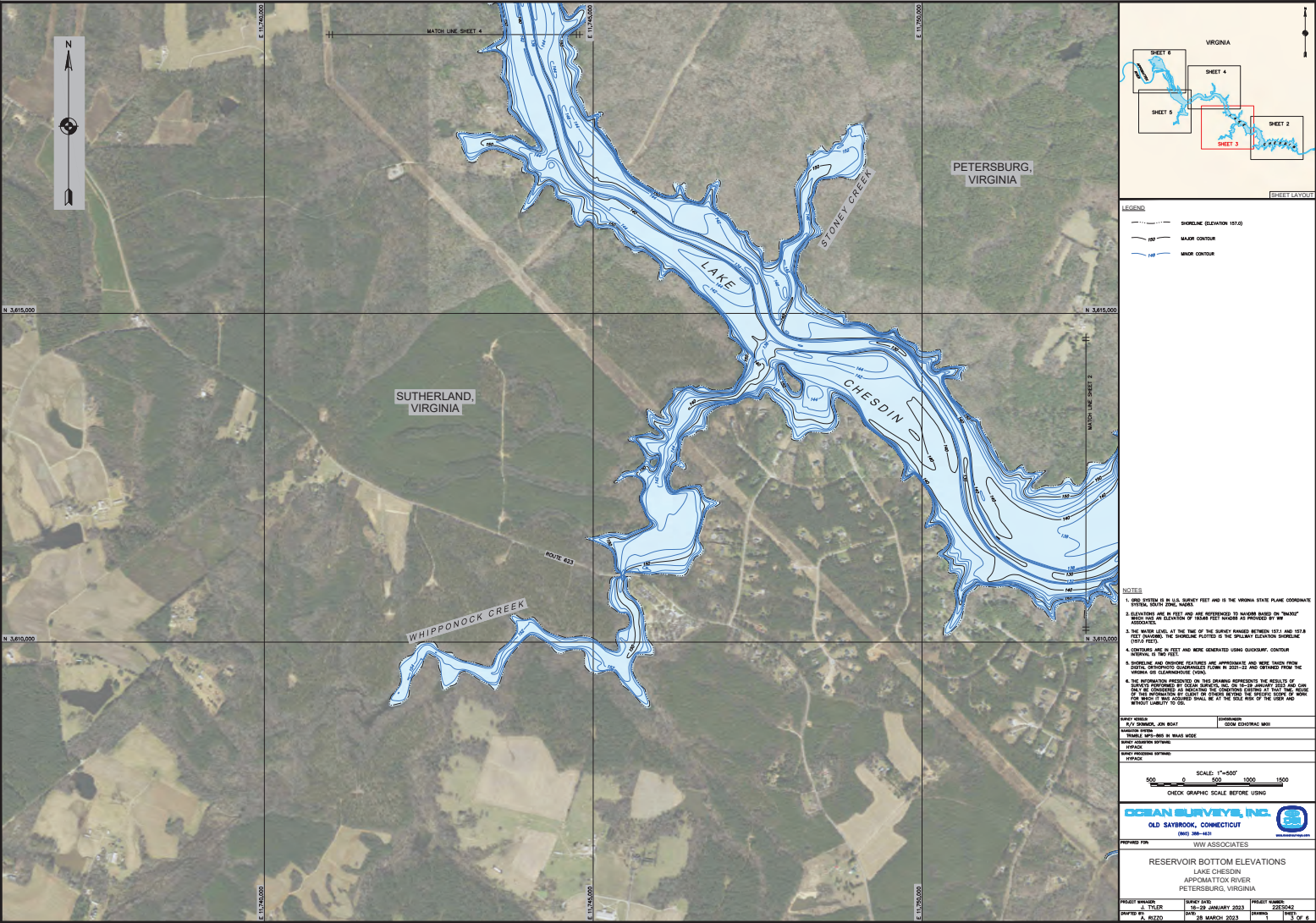
**PROJECT NUMBER:** 2003042

**DRAWN BY:** A. RUZZO











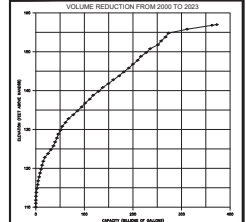
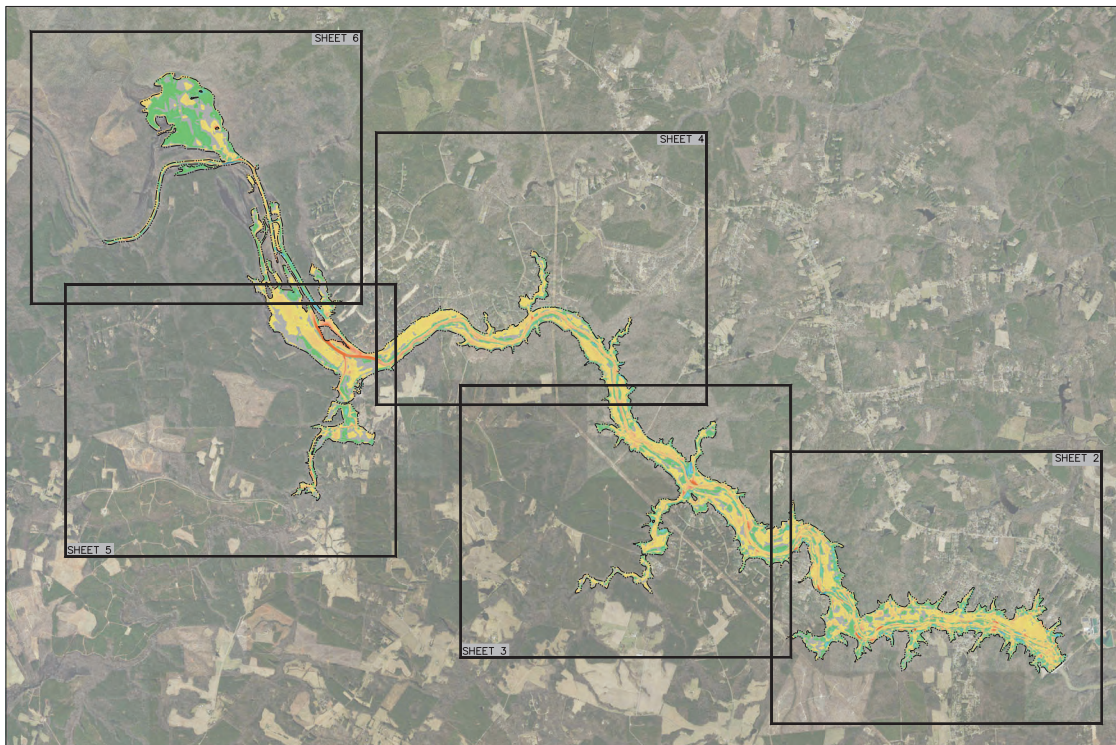










[illegible]

## NOTES

1. ELEVATIONS ARE IN FEET AND REPRESENT THE DIFFERENCE BETWEEN HYDROGRAPHIC SURVEY ELEVATIONS IN 1900 AND 2000 AND SURVEY 2022. THE DIFFERENCE IS EQUAL TO THE ELEVATION IN 2000 MINUS ELEVATION IN 2022.
2. NAVIGABLE ELEVATIONS ARE IN FEET AND ARE BASED ON "MEGID" WHICH HAS AN ELEVATION OF 193.68 FEET HANCOCK AS PROVIDED BY HRS ASSOCIATED.
3. MSL ELEVATIONS ARE IN FEET AND ARE BASED ON "MEGID" WHICH HAS AN ELEVATION OF 193.68 FEET HANCOCK AS PROVIDED BY HRS ASSOCIATED.
4. THE WATER LEVEL, AT THE TIME OF THE SURVEY RANGED BETWEEN 187.1 AND 187.8 FEET (NAVD83). THE SHORELINE PLOTTED IS THE SPILLWAY ELEVATION SHORELINE (187.8 FEET).
5. SHORELINE AND OBSCURE FEATURES ARE APPROXIMATE AND WERE TAKEN FROM DISCRETE PHOTOGRAPHIC QUADRANGLES PLUM IN 2021-22 AND DERIVED FROM THE VIRGINIA GIS CLEARWATERWAY (VCM).

6. THE INFORMATION PRESENTED ON THIS DRAWING REPRESENTS THE RESULTS OF SURVEYS PERFORMED BY OCEAN SURVEYS, INC. ON 7-19 APRIL 2000 AND 16-19 JANUARY 2003 AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS EXISTING AT THAT TIME. REUSE OF THIS INFORMATION BY CLIENT OR OTHERS BEYOND THE SPECIFIC SCOPE OF WORK FOR WHICH IT WAS ACQUIRED SHALL BE AT THE SOLE RISK OF THE USER AND WITHOUT LIABILITY TO OSI.

SUPPLY NUMBER R/Y SKIMMER, JON BOAT	COMMISSIONER GODD ECHOTRAC 5800
NAVIGATION SYSTEM TELETYPE MPS-900 IN WAAS MODE	

SURVEY ACQUISITION SOFTWARE
HYPACK
SURVEY PROCESSING SOFTWARE

SURVEY PROCESSING SOFTWARE	
HYPACK	
<div style="text-align: center;">             0010 47 00007         </div>	

SCALE: 1"=2000'

2000 0 2000 4000 6000

CHECK GRAPHIC SCALE BEFORE USING

**OCEAN SURVEYS, INC.**   
OLD SAYBROOK, CONNECTICUT

PREPARED FOR: MAIL ASSOCIATE

DIFFERENCE MAP

DIFFERENCE MAP  
LAKE CHESDIN  
ADOMATTOY RIVER

APPOMATTOX RIVER  
PETERSBURG, VIRGINIA

PROJECT MANAGER: J. TYLER	SURVEY DATE: 7-19 APRIL 2000 & 16-29 JANUARY 2023	PROJECT NUMBER: 22ES042
DRAFTED BY:	DATE:	DRAWING: SHEET:

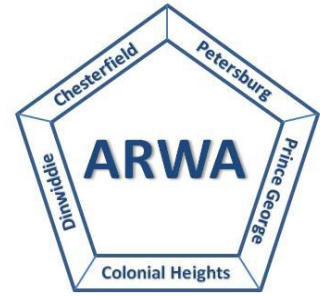
FORM 1041-1	27 MARCH 2023	2	1 OF 1
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## CAPACITY DATA

Level NAVD88	Level MSL	Capacity (millions of Gallons)					Area (millions of Square Feet)		
		April 2000	May 2011	January 2023	2000 minus 2011		April 2000	May 2011	January 2023
157.00	157.20	9565.23	9268.64	9192.10	296.59	373.13	118.90	112.86	112.49
156.80	157.00	9388.68	9100.88	9025.74	287.80	362.94	117.22	111.41	110.43
155.80	156.00	8538.01	8293.38	8226.31	244.63	311.70	109.96	104.52	103.40
154.80	155.00	7752.78	7549.63	7479.59	203.15	273.19	98.11	94.61	95.65
153.80	154.00	7067.62	6876.50	6800.21	191.12	267.41	86.20	85.59	85.05
152.80	153.00	6456.59	6282.39	6198.25	174.20	258.34	76.80	75.29	76.24
151.80	152.00	5909.55	5741.29	5657.65	168.26	251.90	69.75	69.40	67.96
150.80	151.00	5409.83	5253.93	5174.11	155.90	235.72	63.56	61.87	61.88
149.80	150.00	4956.67	4807.74	4729.23	148.93	227.44	58.33	57.66	56.84
148.80	149.00	4533.90	4392.10	4317.40	141.80	216.50	54.71	53.80	53.54
147.80	148.00	4137.11	4000.63	3927.26	136.48	209.85	51.48	50.90	50.41
146.80	147.00	3762.37	3632.76	3562.32	129.61	200.05	48.58	47.63	47.27
145.80	146.00	3411.10	3287.81	3219.64	123.29	191.46	45.44	44.58	44.11
144.80	145.00	3082.53	2967.44	2901.55	115.09	180.98	42.22	41.24	41.01
143.80	144.00	2779.39	2670.76	2607.27	108.63	172.12	38.86	38.10	37.22
142.80	143.00	2500.56	2400.14	2341.05	100.42	159.51	35.55	34.74	34.18
141.80	142.00	2245.12	2150.44	2095.44	94.68	149.68	32.86	32.07	31.28
140.80	141.00	2008.74	1920.97	1870.81	87.77	137.93	30.15	29.37	28.83
139.80	140.00	1793.14	1710.60	1663.84	82.54	129.30	27.61	26.95	26.08
138.80	139.00	1594.88	1519.66	1476.76	75.22	118.12	25.25	24.37	24.04
137.80	138.00	1415.51	1344.86	1304.27	70.65	111.24	22.93	22.41	21.80
136.80	137.00	1250.44	1186.09	1148.62	64.35	101.82	21.06	20.33	19.99
135.80	136.00	1099.18	1039.08	1004.57	60.10	94.61	19.48	18.91	18.32
134.80	135.00	959.78	905.20	873.93	54.58	85.85	17.68	16.97	16.62
133.80	134.00	833.79	784.67	756.31	49.12	77.48	16.04	15.29	14.62
132.80	133.00	720.32	678.01	652.90	42.31	67.42	14.18	13.46	13.10
131.80	132.00	620.98	582.34	559.75	38.64	61.23	12.51	12.18	11.61
130.80	131.00	532.28	497.04	477.87	35.24	54.41	11.04	10.76	10.47
129.80	130.00	453.42	420.08	402.51	33.34	50.91	10.12	9.84	9.56
128.80	129.00	380.95	351.13	334.41	29.82	46.54	9.04	8.72	8.67
127.80	128.00	316.54	289.04	272.81	27.50	43.73	8.23	7.90	7.70
126.80	127.00	258.31	233.43	218.45	24.88	39.86	7.24	7.01	6.87
125.80	126.00	206.88	184.63	170.34	22.25	36.54	6.49	5.99	5.77
124.80	125.00	162.08	143.85	131.00	18.23	31.08	5.40	5.01	4.74
123.80	124.00	125.27	110.52	100.08	14.75	25.19	4.39	3.83	3.38
122.80	123.00	96.36	86.45	77.93	9.91	18.43	3.26	2.83	2.64
121.80	122.00	75.24	67.02	59.71	8.22	15.53	2.51	2.43	2.21
120.80	121.00	57.59	50.41	44.54	7.18	13.05	2.18	2.04	1.85
119.80	120.00	42.89	36.56	31.77	6.33	11.12	1.80	1.69	1.55
118.80	119.00	30.35	25.53	21.54	4.82	8.81	1.50	1.31	1.21
117.80	118.00	20.59	16.67	13.60	3.92	6.99	1.13	1.07	0.88
116.80	117.00	13.18	10.27	8.16	2.91	5.02	0.78	0.70	0.63
115.80	116.00	8.02	5.64	4.02	2.38	4.00	0.60	0.55	0.43
114.80	115.00	4.02	2.41	1.65	1.61	2.37	0.45	0.31	0.23
113.80	114.00	1.58	0.74	0.35	0.84	1.23	0.22	0.15	0.10
112.80	113.00	0.46	0.11	0.01	0.35	0.45	0.09	0.04	0.01
111.80	112.00	0.05	0.01	0.00	0.04	0.05	0.03	0.01	0.00
110.80	111.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
109.80	110.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

# Appomattox River Water Authority



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21300 Chesdin Rd. - S. Chesterfield, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

## Exhibit F

TO: Appomattox River Water Authority Board of Directors

FROM: Robert B. Wilson, Executive Director  
James C. Gordon, Assistant Executive Director

DATE: May 18, 2023

SUBJECT: Lake Safety

A meeting was held on April 26<sup>th</sup> with representatives from the Chesterfield County and Dinwiddie County. The purpose of this meeting was to begin discussions for safety and enforcement on the lake. The Authority does not have any jurisdiction for enforcement. Enforcement on the lake is to be accomplished by DWR, Chesterfield Police Department and Dinwiddie County Sheriff's Department. The agency emphasis in the past has been boater safety. From the discussion, there needs to be more of a presence by law enforcement on the lake. There will be more discussions to come.

A summary of the discussion is included as Attachment F1.

### Board Action Requested:

This report is submitted for information purposes. No Board action is requested.

**From:** Robert Wilson  
**Sent:** Tuesday, May 2, 2023 7:50 AM  
**To:** Dr. Casey; Dr. Moore; 'George Hayes'; James Gordon; 'Kevin Massengill'; Melissa Wilkins; Mr. Badgerow; Mr. Carroll; Mr. Knott; Mr. Sarver  
**Cc:** Doug Smith  
**Subject:** April 26th Lake Safety Discussion

Highlights captured from the April 26<sup>th</sup> meeting:

- Representatives Present:

Dr. Mark Moore, Dinwiddie County Supervisor  
Kevin Massengill, Dinwiddie County Administrator  
William Knott, Dinwiddie County Sheriff's Office  
Kevin Carroll, Chesterfield County Supervisor  
Dr. Joe Casey, Chesterfield County Administrator  
George Hayes, Chesterfield County Director of Utilities  
Brad Badgerow, Chesterfield County Police Department  
Robert Wilson, ARWA/SCWWA  
Jamie Gordon, ARWA/SCWWA  
Melissa Wilkins, ARWA/SCWWA  
Barrie Sarver, Chesterfield County Lake Resident

- Mr. Saver stated there are about four areas on the lake that he would suggest additional signage or NO WAKE zones to make the lake safer.
- There are posted NO WAKE zones approved by DWR at:
  - Dinwiddie public boat landing ramp.
  - Seven Springs Marina
  - Whipponock Marina
  - Entrance to Eagle Cove
  - Cattle Creek
- ARWA is working with Dinwiddie County for the NO WAKE buoys posted at the entrance to Whipponock Creek. Dinwiddie County is currently going through the public comment phase for the application process.
- The Chesterfield ordinance does outline the process for requesting NO WAKE zones. The locality must advertise for public comment, take Board action recommending the installation of the NO WAKE zone then apply to DWR for approval before enforcement can be initiated.
- Mr. Wilson advised the speed limit signs stating the max speed of 45-mph had been posted at each public access point to the lake. The 45-mph speed limit is included in both the Chesterfield County and Dinwiddie County ordinances.

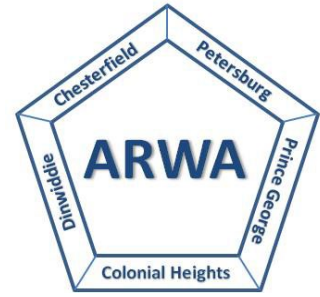
- There was a discussion on the technology for radar enforcement on the lake. Mr. Badgerow stated that lidar would be the most accurate and defensible method for speed enforcement on the lake. The police department does not currently perform speed enforcement on the lake.
- Mr. Sarver suggested that \$50 fines for boats exceeding the speed limit would not be enough of a deterrent. Mr. Carroll suggested that future discussion and consideration be given to a tiered fine structure for frequent offenders.
- There was a question about enforcement on the lake by DWR. Mr. Wilson advised DWR concentrates on boater safety including boating while intoxicated (BWI) and wildlife regulations. DWR is not certified nor owns the proper equipment for running radar on the lake.
- Dr. Casey lead a discussion on resources for the lake. The suggestion was made that officers from both Chesterfield and Dinwiddie could team with DWR so that patrols could occur more often. The discussion also touched on budget and assets that may be necessary to increase visibility and presence on the lake. There may even be the need to develop MOUs between the various agencies.
- There was a discussion on notification to lake residents and transient traffic. Mr. Carroll commented that almost everyone has a smart phone. He suggested that signs with QR codes could be added at each lake access ramp that would take you to a homepage that included the speed limit, boater safety tips, the location of NO WAKE zones and hazards, etc.
- Wake boats and especially jet skis speeding through coves are creating shoreline erosion concerns. This topic will require additional discussion.
- The exclusionary zone at the dam, area where boating is not allowed, is five hundred feet. The ordinances for Chesterfield and Dinwiddie have that distance called out as three hundred feet. That will need to be revised in both ordinances.
- Chesterfield and Dinwiddie representatives will have additional discussions in the next thirty to forty-five days. This group will plan to meet again in about sixty days.

Please let me know if there are any additions or revisions.

Thanks

Robert B. Wilson, P.E.  
 ARWA/SCWWA Executive Director  
 Appomattox River Water Authority  
 21300 Chesdin Road  
 South Chesterfield, VA 23803  
 (804) 590-1145 ext. 101 (o)  
 (804) 586-7420 (m)  
[rwilson@arwava.org](mailto:rwilson@arwava.org)

# Appomattox River Water Authority



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21300 Chesdin Rd. - S. Chesterfield, VA 23803 - Phone (804) 590-1145 - Fax (804) 590-9285

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## Exhibit G

TO: Appomattox River Authority Board of Directors

FROM: Robert B. Wilson, P.E., Executive Director  
James C. Gordon, Assistant Executive Director

DATE: May 18, 2023

SUBJECT: Ongoing Projects\Operations

### Operating Status Report

This report hits the highlights and does not cover the day to day operations, maintenance or preventive maintenance summaries.

#### ➤ General

- The next scheduled Board of Directors Meeting is Thursday, July 20, 2023 at the South Central Wastewater Authority at 2:00 pm.
- Mr. Gordon and I attended an VA AWWA seminar at the University of Richmond titled “Plant of the Future – What will drive imminent change?”. Topics included updates by VDH director and staff on PFAS and LCR, microplastics in water, water treatment, and cybersecurity.
- The executive director made a presentation to the Waterford Landing HOA on Sunday, May 7<sup>th</sup>. Mr. Wilson gave attendees a brief overview of the Authority, withdrawal limitations, development around the lake, algae, sedimentation, concerns and challenges.
- Executive director will be out of the office the week of June 5<sup>th</sup> through June 9<sup>th</sup>.

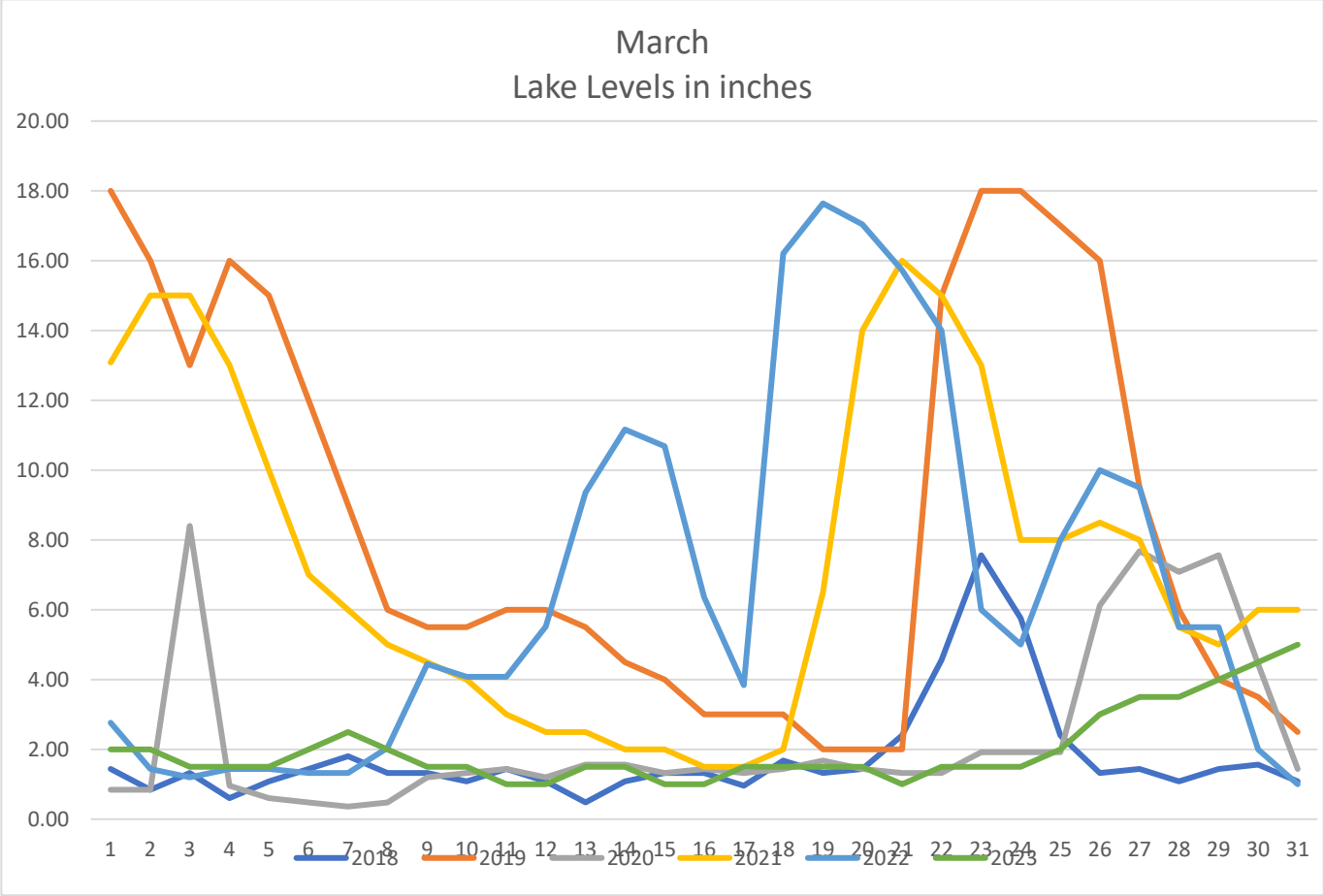
#### ➤ September 17, 2022 Boating Accident on Lake

- To date we are still waiting for updates from DWR. We continue to request updates.

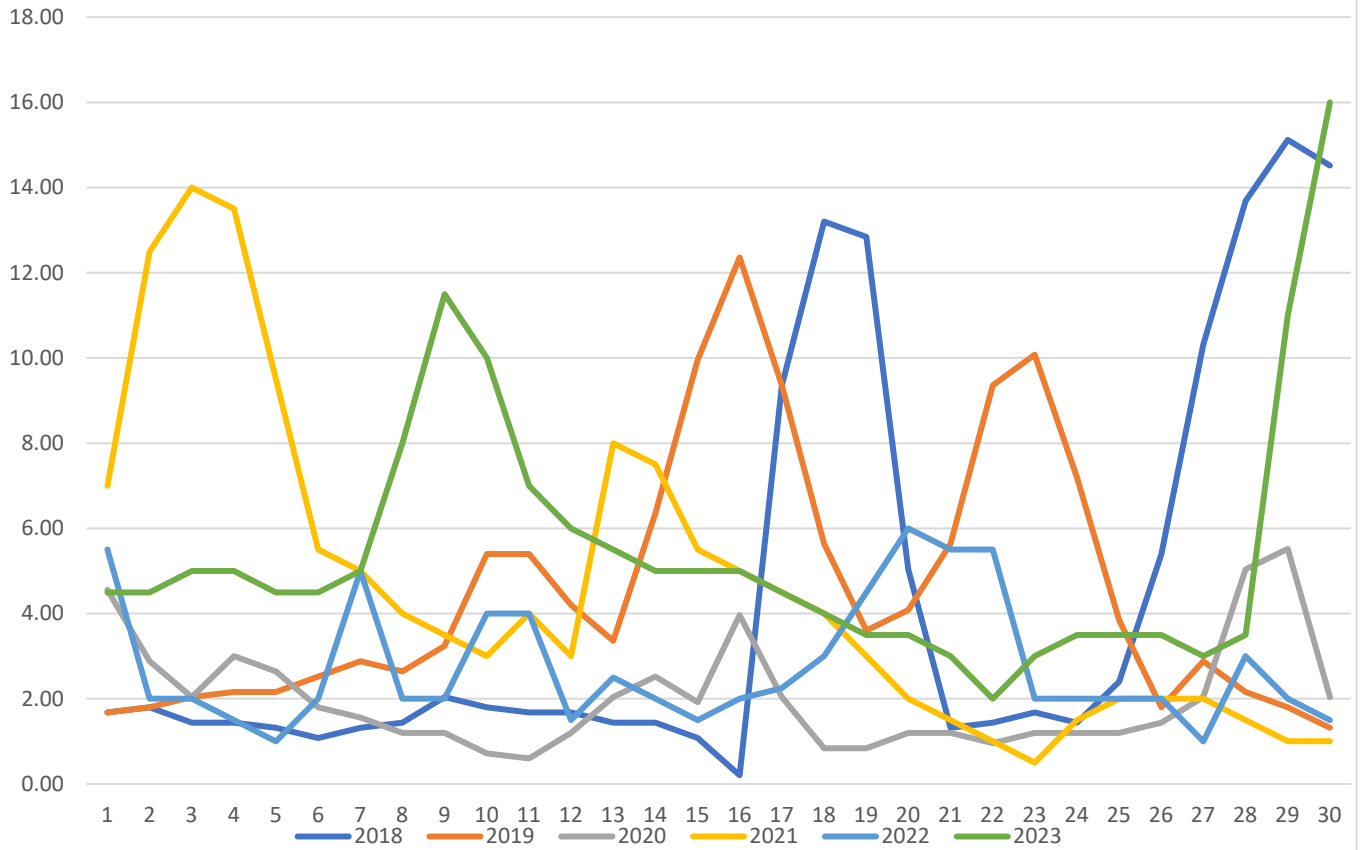
#### ➤ Lake Level Update

- The weather has been gracious and the lake is overflowing. The current year is the green line.





# April Lake Levels in inches



Month	Stage 1 – Drought Watch			Stage 2 – Drought Warning			Stage 3 – Drought Emergency		
	Percent Usable Storage (%)	NAVD88 Elevation (ft msl)	NGVD29 Elevation (ft msl)	Percent Usable Storage (%)	NAVD88 Elevation (ft msl)	NGVD29 Elevation (ft msl)	Percent Usable Storage (%)	NAVD88 Elevation (ft msl)	NGVD29 Elevation (ft msl)
<i>Full Pool</i>	100	157.2	158	100	157.2	158	100	157.2	158
Jan	75	154	154.8	60	151.5	152.3	40	147.3	148.1
Feb	80	154.8	155.6	65	152.3	153.1	42.5	147.9	148.7
Mar	82.5	155.2	156	70	153.2	154	45	148.5	149.3
Apr	85	155.5	156.3	70	153.2	154	45	148.5	149.3
May	85	155.5	156.3	70	153.2	154	45	148.5	149.3
Jun	82.5	155.2	156	67.5	152.7	153.5	45	148.5	149.3
Jul	80	154.8	155.6	65	152.3	153.1	42.5	147.9	148.7
Aug	75	154	154.8	60	151.5	152.3	40	147.3	148.1
Sep	70	153.2	154	55	150.7	151.5	40	147.3	148.1
Oct	65	152.3	153.1	50	149.7	150.5	35	146	146.8
Nov	70	153.2	154	52.5	150.2	151	35	146	146.8
Dec	75	154	154.8	55	150.7	151.5	37.5	146.6	147.4

➤ Operations

- The average daily finished water consumption for March was 29.45 mgd and the total withdrawn from the lake was 1.018 BG. The average daily finished water consumption for April was 33.27 mgd and the total withdrawn was 1.102 BG.

The maximum VWP permit criteria is:

- Daily maximum withdrawal is 86.24 mgd.
  - Monthly maximum withdrawal is 2.289 billion gallons.
  - Maximum annual withdrawal is 17.934 billion gallons (49.1 mgd average)
- The March 1<sup>st</sup> lake level was +2.00 and the April 30<sup>th</sup> lake level was +16.00”.
  - Dewatered and cleaned all sedimentation basins.
  - Dewatered and cleaned flume for filters 1-16.
  - Calibrated basin and filter NTU monitors (turbidity).
  - On-going operator training for new operators.
  - Cleaned caustic tanks and converted from 32% to 50% for the summer.
  - Performed filter drop tests.
  - Calibrated dry feeders – lime.
  - VDH gold award for operational excellence.

➤ Maintenance

- Completed flocculator preventative maintenance on 10 flocculators – chains, lubricators, sprockets.
- Installed fiber optic cable to shop gate to SCP-B in Rapid Mix Building.
- Added 2”X12” skirting around the new boat slips with boat bumpers.
- Treated lake for high chlorophyll with 13,500 lbs of copper sulfate – 18 working hours.
- Repaired Pre-chem silo conveyance screw on pipe bridge.
- Completed 200+ scheduled preventative maintenance work orders.
- Added three NO WAKE buoys to Whipponock Creek.
- Cleaned up conex storage box and disposed of scrap materials.
- Wired and installed cameras for oversight on ramp to operations.
- Seeded backside of lagoon dams in identified areas by DCR.
- Repaired leaking 6” potable water line in basin #7.

➤ Instrumentation

- Continuing to work with SCADA vendor on operations conversion.
- Wired new security cameras.
- Computer training for all staff.
- Conversion to Office365.

➤ Laboratory

- Monthly eDMR submittals to DEQ for March and April.
- Monthly Compliance Monitoring Data Portal (CMDP – bac-t and chemistry) submitted to VDH.
- Monthly Water Quality Reports submitted industry.
- Whole Effluent Toxicity (WET) testing performed – no toxicity. Resolved eDMR differences with DEQ. Automated reports did not follow VPDES requirements. Pointed out to DEQ.
- Quarterly groundwater testing performed. Working on 2022 VPDES Annual Groundwater Monitoring Report that is scheduled for submittal by March 31<sup>st</sup>.
- Used Flowcam to identify problematic diatoms resulting in lake treatment.
- Continue to work with Hazen on updating Lake Chesdin and Plant Management for Taste and Odor Plan.

➤ 30” Transmission Fortification

- New purchase order cut with Southern Construction to perform this work.
- Contractor scheduled to begin work in late May.

➤ Liquid Lime System

- Contract executed.

- Contractor has submitted plans to Chesterfield County for building permits.
- Contractor on site working on layout with superintendent.

➤ Hydrilla

- Attachment G1 is the proposed management plan for this year.

➤ Lead and Copper Rule

- The assistant executive director and I attended a recent association meeting where the director from VDH reinforced the deadline for completing your service line inventory. He also emphasized that it appears most utilities are behind on meeting this goal. He reinforced that the deadline is a hard stop. A one-page slide reinforcing the deadline and outlining approved methods for completing an inventory is included as Attachment G2.

➤ Docks

- Two new dock requests. Waiting for VRMC and the Corps approval.
- New covered Authority dock complete.

➤ Bathymetric Study

- Project complete.
- Separated out as a separate agenda item.

➤ Tunnel Repair

- Project complete.

➤ Replace Pontoon Boat

The pontoon boat is approximately fifteen years old. Five years ago staff replaced the pontoons with a used set of pontoons. Those pontoons are beginning to pit and take on water. It is at the point it needs to be replaced.

Staff priced a new tri-toon boat rigged for treating the lake. It would have limited seating behind the center console and an open front deck. It would have 27" pontoons instead of the standard 24" for a larger weight capacity (chemicals to treat lake).

The cost is around \$65,000. We are using the budgeted boat lift money toward this boat so that would bring it down around \$40,000. We will be collecting excess revenue this year and can cover the difference.

I would like to get approval to move forward with this replacement.

➤ Miscellaneous

- NO WAKE buoys installed at Whipponock Creek. Dinwiddie County completing the public notification and application process with DWR.

## **Hydrilla Management Plan Outline**

### **Committee Development**

Identify project team and establish communications. Completed, *but need to reestablish communications due to inactivity*

Gather site-specific information Completed.

### **Committee Meeting Task** (*assume one meeting*)

Identify management purpose and scope; what to manage, areas to manage, input from interested parties.

### **Committee Meeting Task** (*assume two meetings*)

Identify management priorities: impacted areas

Evaluate the status of Hydrilla in priority areas

Develop management objectives – what the end results should look like (measurable, achievable, timely results)

### **Committee Meeting Task** (*assume four meetings, plus additional subgroup meetings*)

Develop a set of management strategies, *see below*

Identify measures to avoid unintended impacts

Work Planning – schedule and steps for implementing measures

Develop inventory, monitoring, and evaluation methods

Develop data and information management methods

Develop Plan

### **Committee Meeting Task** (*meetings as required*)

Implement and Track Plan

Re-assess Workplan as needed

## **Hydrilla Management Options**

- Complete removal of Hydrilla from Lake Chesdin. Likely not feasible. Management options will need to be evaluated based on effectiveness, cost, and impacts to the ecology, water supply, recreational users, and residents.
- Management options for evaluation include:
  - Education to slow or prevent the spread of Hydrilla
  - Mechanical Harvesting/Cutting/Dredging
  - Bottom Barriers - Benthic Mats/Shading
  - Biological Controls - Grass Carp/ Enhance Native Vegetation Populations
  - Aquatic Herbicides
  - The management approach should include localized management around residential shorelines and docks with treatment in-stream to reduce potential sources of reinfestation.



# Lead and Copper Rule Revision Requirements

## Compliance Requirements

- Submit a complete Lead Service Line Inventory by **October 16, 2024!**
- Also, submit a complete Lead Service Line Replacement Plan, if required.
- Failure to meet these requirements will result in enforcement action(s).

## Required Records to Review

- Most recent approved LCR material survey
- Construction/Plumbing codes and records, including [Lead Ban Guidance and Chronology](#)
- Water System Records
- Ongoing updates of discovered service line material/replacement is required

## Additional Service Line Material Investigation Methods

### Pre-approved

- Visual inspection at meter box and/or inside customer premises
- Customer self ID
- External CCTV
- Magnet and Scratch Tests
- Excavation (potholing)

### ODW Approval Required

- Water quality sampling
- Statistical methods
- Predictive modeling
- Emerging methods

Additional information can be found on ODW's Lead and Copper Rule Revisions Guidance [webpage](#).

## Appomattox River Water Authority-Balance Sheet

For Month Ending April 30, 2023

### Assets

#### Current Assets

Petty Cash	\$	400
SunTrust Operating Fund	\$	1,472,445
SunTrust Replacement Fund	\$	(7,291)
<b>Total Unrestricted Cash</b>	<b>\$</b>	<b>1,465,554</b>

Water Revenue	\$	4,640,658
LGIP-O&M Reserve	\$	6,703,141
LGIP-Revenue Surplus	\$	2,908,874
ERRF (Equipment Repair/Replacement)	\$	2,558,975
Debt Service Reserve	\$	2,136,305
Bond Principal/Interest	\$	1,051,397
Bond Construction	\$	153,095
<b>Total Restricted Cash</b>	<b>\$</b>	<b>20,152,445</b>

<b>Total Checking/Savings</b>	<b>\$</b>	<b>21,617,999</b>
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Accounts Receivable	\$	14,800
Other Current Assets	\$	6,421
Inventory	\$	884,594

<b>Total Current Assets</b>	<b>\$</b>	<b>22,523,814</b>
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#### Fixed Assets

Right to Use Lease Assets	\$	21,869
Accum amort-right of use lease	\$	(5,921)
Land and Land Rights	\$	1,044,167
Water System	\$	85,932,231
Equipment	\$	1,960,167
Hydro	\$	34,873
Construction in Progress	\$	13,378,702
Accumulated Amortization	\$	(34,873)
Accumulated Depreciation	\$	(55,226,860)

<b>Total Fixed Assets</b>	<b>\$</b>	<b>47,104,355</b>
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#### Other Assets

Def Outflow-OPEB GLI	\$	-
Def Out Res-Post ER Pension Costs	\$	36,260
Deferred Outflow-OPEB GLI	\$	23,546
Def Out Res-Net Dif Pension Inv	\$	-
Def Out Res-OPEB Experience	\$	36,839
Def Out Res-OPEB Assumptions	\$	4,592
Def Out Res-OPEB Subsequent	\$	13,173

<b>Total Other Assets</b>	<b>\$</b>	<b>114,410</b>
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<b>Total Assets</b>	<b>\$</b>	<b>69,742,579</b>
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# Appomattox River Water Authority-Balance Sheet

## For Month Ending April 30, 2023

### Liabilities & Equity

#### Current Liabilities

Accounts Payable	\$	108,076
Retainage Payable	\$	15,468
Accrued Interest Payable	\$	116,996
Accrued Interest-GASB 87	\$	36
Lease Liability-current portion	\$	5,850
<b>Total Current Liabilities</b>	<b>\$</b>	<b>246,427</b>

#### Long Term Liabilities

Def Inf Res-Net Dif Pension Inv	\$	325,532
Def Inf Res-Pen Chg Assumptions	\$	(134,527)
Def Inf Res-Pens Dif Proj/Act E	\$	808,579
Net Pension Liability	\$	(1,687,965)
Def Infl-OPEB Chg of Assumptions	\$	158
Deferred Inflow-OPEB GLI	\$	42,737
Deferred Inflow-Expect & Actual	\$	5,992
Bonds Payable-2010	\$	-
Bonds Payable-2012	\$	1,654,000
Bonds Payable-2017	\$	9,553,000
Bonds Payable-2019 Refunding Bond Payment	\$	5,630,000
Bonds Payable-2019 Def Amt on Refunding	\$	(83,288)
Lease Liability-non-current	\$	10,275
Accrued Leave Payable	\$	204,282
Post Employment Benefit	\$	129,956
OPEB Liability-GLI	\$	81,499
<b>Total Long-Term Liabilities</b>	<b>\$</b>	<b>16,540,230</b>

### Total Liabilities

**\$ 16,786,657**

### Equity

Retained Earnings	\$	2,705,054
Reserve for Water Revenue	\$	5,129,019
Reserve for Operations	\$	3,059,424
Reserve for Suplus	\$	2,529,242
Reserve for Replacements	\$	2,500,000
Reserve for Bond Interest	\$	116,996
Reserve for Debt Service	\$	2,094,831
Reserve for Bond Principal	\$	1,640,000
Reserve for Reserve	\$	4,252,136
Fixed Assets, Net of Debt	\$	29,144,730
Net Income	\$	(215,511)
<b>Total Equity</b>	<b>\$</b>	<b>52,955,922</b>

### Total Liabilities & Equity

**\$ 69,742,579**

\$ -

Appomattox River Water Authority  
YTD Income Statement for the period ending April 30, 2023

Water Rate Center  
Revenues and Expenses Summary

<i>Budget</i>	<i>Budget</i>	<i>Actual</i>	<i>YTD Budget</i>	<i>Variance</i>
<i>FY 22/23</i>	<i>Year-to-Date</i>	<i>Year-to-Date</i>	<i>vs. Actual</i>	<i>Percentage</i>

**Operating Budget vs. Actual**

**Revenues**

Water Sales	\$ 11,236,148	\$ 8,427,111	\$ 8,611,835	\$ 184,725	2.19%
Rent/Misc. Income	\$ 30,000	\$ 22,500	\$ 21,514	\$ (986)	-4.38%
<i>Total Operating Revenues</i>	<b>\$ 11,266,148</b>	<b>\$ 8,449,611</b>	<b>\$ 8,633,349</b>	<b>\$ 183,738</b>	<b>2.17%</b>

**Expenses**

Personnel Cost	\$ 2,733,672	\$ 2,278,060	\$ 2,219,765	\$ (58,295)	-2.56%
Contractual/Professional Services	\$ 1,152,600	\$ 960,500	\$ 736,931	\$ (223,569)	-23.28%
Utilities	\$ 850,500	\$ 708,750	\$ 844,787	\$ 136,037	19.19%
Communication/Postal/Freight	\$ 57,500	\$ 47,917	\$ 39,800	\$ (8,117)	-16.94%
Office/Lab/Janitorial Supplies	\$ 110,000	\$ 91,667	\$ 88,322	\$ (3,345)	-3.65%
Insurance	\$ 110,000	\$ 110,000	\$ 124,847	\$ 14,847	13.50%
Lease/Rental Equipment	\$ 25,000	\$ 20,833	\$ 11,439	\$ (9,394)	-45.09%
Travel/Training/Dues	\$ 70,000	\$ 58,333	\$ 49,227	\$ (9,106)	-15.61%
Safety/Uniforms	\$ 40,000	\$ 33,333	\$ 22,217	\$ (11,116)	-33.35%
Chemicals	\$ 2,990,000	\$ 2,491,667	\$ 2,687,224	\$ 195,557	7.85%
Repair/Maintenance Parts & Supplies	\$ 312,000	\$ 260,000	\$ 340,521	\$ 80,521	30.97%
<i>Total Operating Expenses</i>	<b>\$ 8,451,272</b>	<b>\$ 7,061,060</b>	<b>\$ 7,165,079</b>	<b>\$ 104,020</b>	<b>1.47%</b>
<i>Operating Results Suplus/(Deficit)</i>	<b>\$ 2,814,876</b>	<b>\$ 1,388,551</b>	<b>\$ 1,468,270</b>	<b>\$ 79,719</b>	<b>5.74%</b>

**Replacement Outlay Budget vs. Actual**

Machinery & Motors-Process	\$ 124,000	\$ 103,333	\$ 125,004	\$ 21,671	20.97%
Instrumentation	\$ 100,000	\$ 83,333	\$ 218,267	\$ 134,934	161.92%
IFIX Upgrade	\$ -	\$ -	\$ 76,702	\$ 76,702	#DIV/0!
SCADA	\$ -	\$ -	\$ 36,336	\$ 36,336	#DIV/0!
Furniture/Fixtures	\$ -	\$ -	\$ -	\$ -	#DIV/0!
Maintenance Equipment	\$ -	\$ -	\$ -	\$ -	#DIV/0!
Valve Replacement	\$ 75,000	\$ 62,500	\$ 37,981	\$ (24,519)	-39.23%
Stop Logs at RWPS1	\$ 250,000	\$ 208,333	\$ 4,636	\$ (203,697)	-97.77%
Security Infrastructure Upgrade	\$ -	\$ -	\$ 7,658	\$ 7,658	#DIV/0!
Dock Improvements	\$ 25,000	\$ 20,833	\$ 75,882	\$ 55,048	264.23%
Lagoon Spliter Box Access	\$ -	\$ -	\$ -	\$ -	#DIV/0!
Sedimentation Basin Improvements	\$ -	\$ -	\$ -	\$ -	#DIV/0!
Single Pane Windows	\$ 100,000	\$ 83,333	\$ 87,750	\$ 4,417	5.30%
Filter #1 Replacement	\$ -	\$ -	\$ 209,409	\$ 209,409	#DIV/0!
Carport-Slab-Fence	\$ 53,000	\$ 53,000	\$ 53,654	\$ 654	1.23%
<i>Total Capital Outlay</i>	<b>\$ 727,000</b>	<b>\$ 614,667</b>	<b>\$ 933,279</b>	<b>\$ 108,550</b>	<b>17.66%</b>

**Construction Outlay Budget vs. Actual**

In-Plant Capital Upgrade	\$ -	\$ -	\$ 69,679	\$ 69,679	#DIV/0!
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**BOD Designated Surplus Fund**

Liquid Lime System	\$ -	\$ -	\$ 126,950	\$ 126,950	#DIV/0!
Firewall Upgrade	\$ -	\$ -	\$ 19,078	\$ 10,196	#DIV/0!
Replacement Doors	\$ -	\$ -	\$ 17,536	\$ 17,536	#DIV/0!
VWP Permit	\$ -	\$ -	\$ 169,676	\$ 169,676	#DIV/0!
FlowCam	\$ -	\$ -	\$ 136,147	\$ 122,257	#DIV/0!

**Debt Service Budget vs. Actual**

Interest Income	\$ -	\$ -	\$ 513,696	\$ 513,696	#DIV/0!
Other (Income)	\$ -	\$ -	\$ 4	\$ 4	#DIV/0!
Sell of Asset	\$ -	\$ -	\$ 7,500	\$ -	#DIV/0!
Interest Expense	\$ 447,876	\$ 447,876	\$ 447,876	\$ 447,876	100.00%
Int on Purchase of US Treas	\$ -	\$ -	\$ 29,760	\$ 29,760	#DIV/0!
Bond Issuance Cost	\$ -	\$ -	\$ -	\$ -	#DIV/0!
Principal Payments	\$ 1,640,000	\$ 1,640,000	\$ 255,000	\$ 1,640,000	100.00%

**Other Income/Other Expense**

Alum Litigation Proceeds-Received YTD	\$ -	\$ -	\$ -	\$ -	#DIV/0!
Alum Litigation Proceeds-Credited to Members YTD	\$ -	\$ -	\$ -	\$ -	#DIV/0!

**Appomattox River Water Authority  
Executive Review  
Cash And Debt Highlights  
As of April 30, 2023**

<i>Highlights: ARWA Cash Positions</i>			<i>30-Jun-22</i>		<i>30-Apr-23</i>		<i>Change</i>	<i>Explanation</i>	
Unrestricted Cash & Investments:									
Petty Cash			\$	400.00	\$	400.00	\$	-	see explanation (a) below
SunTrust Operating Account			\$	1,962,064.46	\$	1,472,444.72	\$	(489,619.74)	see explanation (b) below
SunTrust Replacement Fund			\$	-	\$	(7,291.00)	\$	(7,291.00)	see explanation (c) below
Restricted Cash and Investments:									
Water Revenue			\$	3,041,305.97	\$	4,640,658.19	\$	1,599,352.22	see explanation (d) below
LGIP-O&M Reserve			\$	6,008,559.41	\$	6,703,141.16	\$	694,581.75	see explanation (e) below
LGIP-Revenue Surplus			\$	2,529,241.78	\$	2,908,873.84	\$	379,632.06	see explanation (f) below
ERRF (Equipment Repair/Replacement)			\$	2,500,000.00	\$	2,558,975.00	\$	58,975.00	see explanation (g) below
Debt Service Reserve			\$	2,094,831.09	\$	2,136,305.41	\$	41,474.32	see explanation (h) below
2012 Bond	Principal/Interest	\$	280,741.56	\$	614,933.19	\$	334,191.63		
2017 Bond	Principal/Interest	\$	960,986.29	\$	5,933.52	\$	(955,052.77)		
2019 Bond	Principal/Interest	\$	632,913.93	\$	430,530.52	\$	(202,383.41)		
2017 Construction		\$	210,679.88	\$	153,094.64	\$	(57,585.24)		
<i>Total Cash and Investments</i>			<i>\$</i>	<i>20,221,724.37</i>	<i>\$</i>	<i>21,617,999.19</i>	<i>\$</i>	<i>1,396,274.82</i>	

<b>Highlights: ARWA Outstanding Bonds</b>		<b>30-Jun-22</b>		<b>30-Apr-23</b>		<b>Change</b>
2012 Bond	\$	1,654,000.00	\$	1,654,000.00	\$	-
2017 Bond	\$	10,383,000.00	\$	9,553,000.00	\$	(830,000.00)
2019 Bond	\$	6,185,000.00	\$	5,630,000.00	\$	(555,000.00)
2019 Bond-Def Amt on Refund	\$	(83,288.25)	\$	(83,288.25)	\$	-
<b>Total Bonds Outstanding</b>		<b>\$ 18,138,711.75</b>	<b>\$ 16,753,711.75</b>	<b>\$ (1,385,000.00)</b>		

**Explanation of Unrestricted and Restricted Cash positions:**

- a. On-Hand Petty Cash for incidental expenses
- b. Financial Policy: Based on next four months of O&M expense
- c. Pass-through account: From US Bank to SunTrust Bank for Replacement Fund Requisitions
- d. Financial Policy: Held by Trustee for all operating water revenues
- e. Financial Policy: 50% of current FY O&M Budget
- f. Board Approval: Surplus Revenue approved for specific projects.
- g. Financial Policy: Must maintain a minimum of \$2.5M
- h. Financial Policy: Held by Trustee, funded at such amount as may be necessary.

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2022	\$	1,601,000.00	\$	487,456.03	\$	2,088,456.03
2023	\$	1,640,000.00	\$	447,876.21	\$	2,087,876.21
2024	\$	1,679,000.00	\$	406,951.58	\$	2,085,951.58
2025	\$	1,723,000.00	\$	364,483.12	\$	2,087,483.12
2026	\$	1,770,000.00	\$	320,106.38	\$	2,090,106.38
2027	\$	1,821,000.00	\$	273,831.09	\$	2,094,831.09
2028	\$	1,858,000.00	\$	225,855.20	\$	2,083,855.20
2029	\$	1,605,000.00	\$	180,776.72	\$	1,785,776.72
2030	\$	1,644,000.00	\$	138,753.27	\$	1,782,753.27
2031	\$	1,685,000.00	\$	95,219.57	\$	1,780,219.57
2032	\$	1,730,000.00	\$	49,950.17	\$	1,779,950.17
2033	\$	1,067,000.00	\$	13,422.86	\$	1,080,422.86