

Attachment 1



Authority Board Chair: Laura Cavey
Authority Board Vice-Chair: Lesley Dahlkemper
TAC Chair: Ryan Adrian
TAC Vice-Chair: Matt Collitt

CHATFIELD WATERSHED AUTHORITY TAC MINUTES

**Chatfield Watershed Authority TAC Meeting
Tuesday, February 7, 2023
2:00 p. m. – 4:00 p. m.**

Member Attendees:

- Patrick O’Connell (Jefferson County)
- Barbara Biggs (Roxborough WSD)
- Ryan Adrian (Douglas County) Chair
- David Van Dellen (Town of Castle Rock)
- Kirby Clark (Plum Creek WRA)
- Alison Witheridge (Denver Water)
- Brent Soderlin (City of Littleton, Board)
- Julie Tinetti (Centennial WSD)
- Josh Baile (Dominion WSD)

**Alternate Members, Other Associate Agencies
& Attendees:**

- Alan Leak (RESPEC)
- Michael Daugherty (Somach Simmons and Dunn)
- Kris Wahlers (DNR/CPW)
- Bill Szafranski
- Kevin Bierlein (Hydros Consulting)
- Diane Kielty (CWA)
- Jim Walker (Pine Canyon)
- Kurt Walker (Pine Canyon)
- Cathy Begej (JCD)
- Charly Hoehn (CRMC)
- Jon Erickson (DNR)

2:00 pm Call to Order

The regular TAC meeting was called to order at 2:02 pm by TAC Chair Ryan Adrian. There were no disclosures.

ACTION/APPROVAL ITEMS (2:05 P.M. – 2:30 P.M.)

A. APPROVAL OF AGENDA

A motion was made by Josh Baile to approve the Chatfield TAC February 7, 2023, Agenda and seconded by Alison Witheridge. Motion carried unanimously.

B. APPROVAL OF MEETING MINUTES

Approval of Chatfield TAC January 3, 2023, Meeting Minutes

A motion was made by David Van Dellen to approve the Chatfield TAC January 3, 2023, meeting minutes and seconded by Alison Witheridge. Motion carried unanimously.



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CHATFIELD WATERSHED AUTHORITY TAC MINUTES

C. APPROVAL/RATIFICATION OF INVOICES

The table summarizes the invoices included in the meeting packet.

Total amount of invoices approved by CWA Manager \$250.00

A motion was made by David Van Dellen to approve the RESPEC and Colorado Watershed Assembly invoices for a total of \$18,962.50 and ratify the remaining invoice and was seconded by Josh Baile. Motion carried unanimously.

Invoices < \$5,000 and within Budget and Scope (Manager’s Approval)	
Dog Waste Stations – Castle Rock	\$250.00
Invoices \$5,000 - \$15,000 and within Budget and Scope (TAC Approval*)	
RESPEC_W0035.22002-CWA-INV-31DEC22	\$8,622.50
4Q_CO Watershed Assembly_Chatfield 2022 030 Invoice 4th Q Rev	\$10,340.00
Invoices > \$15,000 and/or any Amount not within Budget or Scope (Board Approval)	
*Also requires post-payment Board ratification at next quarterly Board Meeting	

D. APPROVE LAKES NUTRIENTS HEARING REBUTTAL STATEMENT (MICHAEL DAUGHERTY)

CWA continues to request that the Commission reject the Division’s proposal to impose the proposed cold-water table value TN standard on Chatfield Reservoir beginning in 2023 and instead allow CWA to develop a site-specific TN standard once CWA has completed work on its revised TMAL. Chatfield Reservoir does not fit neatly into the Division’s proposed categorization of the state’s reservoirs as either warm water or cold water and asserts that the existing site-specific standards for chlorophyll *a* and phosphorus for Chatfield Reservoir support CWA’s request for a delayed site-specific TN standard, and also are sufficiently protective of water quality to protect the public uses of the reservoir, as evidenced by CWA’s ongoing compliance with its chlorophyll *a* standard.

It was asked if, in the CWA bylaws, there is any reference to moving in a direction that lessens restrictions on water quality. SSD will check the bylaws for this language and come back to the TAC Chair with this information. It is more difficult to get a site-specific value once a table standard is in place. CWA should be aware of a no opposition rebuttal in the Cherry Creek site-specific position. The next triennial review for the South Platte basin is in 2025. This is a significant date.

Northern Water and Arapahoe County, in their statements, suggest they will seek further delay. February 15th is the deadline for rebuttals. A motion to delay the hearing would come up later in the



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CHATFIELD WATERSHED AUTHORITY TAC MINUTES

month. SSD asked if TAC would like to take a position on further delay. CWA may want to go a step further to assert delaying the hearing if the Division would not support delaying the adoption of the statewide standard. If CWA wants to seek this it should file a motion. The Division could ask what CWA plans to do to advance the discussion during this delay. CWA should be prepared to answer this question. It may be better to cooperate with the Division. If SSD does see a motion to delay in the rebuttals, SSD will plan to have CWA consent to the motion. A statement will also be added to the CWA rebuttal that Chatfield is one of four reservoirs with control regulations which have been in place for decades and working to protect and improve water quality with a proven track record. For Chatfield this has been working.

A motion was made by Barbara Biggs to approve the draft rebuttal with suggested revisions and was seconded by David Van Dellen. Motion carried unanimously.

If additional items come up regarding the rebuttal, the Lakes Nutrients Subcommittee will be alerted.

E. APPROVE REALLOCATION OF CONSULTANT BUDGETS TO LAKES NUTRIENTS HEARING (ALAN LEAK & MICHAEL DAUGHERTY)

This request is to approve an internal reallocation of RESPEC's and Somach Simmons & Dunn's (SSD) internal contract budget allocations to accommodate continued participation in the Water Quality Control Commission's (WQCC) Lakes/Nutrients rulemaking process. It will be important for CWA to review other parties rebuttal statements and specifically listen to EPA and Plum Creeks statements as directly relevant to CWA concerns. Centennial's presentation may also be an important presentation to follow.

A motion was made by Josh Baile to approve an internal reallocation of RESPEC's and Somach Simmons & Dunn's (SSD) internal contract budget allocations as needed and as directed by the TAC to accommodate continued participation in the WQCC Lakes/Nutrients rulemaking process. The motion was seconded by Barbara Biggs. Motion carried unanimously.

DISCUSSION ITEMS (2:30 P.M. – 3:00 P.M.)

A. FUNDING AND PARTNERING (ALAN LEAK)

The plan reflects the projects that CWA would like to move forward. A review of a Colorado Parks and Wildlife grant was made and determined CWA would not qualify without insurance. It is important to be aware of what CWA can and cannot do. A review of grants to determine applicable grants for CWA projects will be evaluated. RESPEC will review grant specific requirements. This information will be brought forward during the April TAC meeting. Having projects from CWA in the WQCD SEP library is a desired outcome of this effort. There are no matching requirements for SEP funds. A discussion with CDPHE would also be desirable as CWA project information is refined going forward to apply for grants.



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CHATFIELD WATERSHED AUTHORITY TAC MINUTES

DOLA - Local Community Funding Guide: <https://cdola.colorado.gov/funding-technical-assistance/local-community-funding-guide>

Water Funding Navigator: https://docs.google.com/spreadsheets/d/e/2PACX-1vQVmVJW2huhKOOzvPbFT9IK5_5f5Tj7N7fFJux-6aFwjEnH5B4_52H_AvzGQm-CKZ7xKvpovsNeSVTI/pubhtml

UPDATES (3:00 P.M. – 3:55 P.M.)

A. TECHNICAL (ALAN LEAK)

1. The Annual Report request for information was made. Much of the information provided can be added to the CWA website. We also need MS4 information. The Annual Report is due May 15th. RESPEC needs this information by early April. An email will be sent to all CWA members requesting specific information desired for the report. RESPEC will be working with the Chatfield Reservoir Mitigation Company to confirm data before submission.
2. Sellars Gulch Coliform Speciation Analysis update. At the board meeting it was determined that the Town of Castle Rock Water will work on the Coliform issue on Sellars Gulch.
3. Chatfield Reservoir Mitigation Company Update
4. Other Member – The Lobbyist update was discussed. A request was made for a written update to be provided at the next TAC meeting.

B. MANAGER (DIANE KIELTY)

The manager will be follow up with TWS Financial on dues receipt status.

The 208 Planning Agency topic is resurfacing. SP CURE has invited the Manager to attend an SP CURE meeting on this topic. Regional planning has been a useful process to ensure decisions are not made in a vacuum. The Division is the obvious choice as the 208 Planning Agency. The State of Colorado has taken on the role of the planning agency but doesn't appear to have the capacity to manage this region. The Division didn't want a proliferation of 208 planning agencies. Governments making land use decisions is a difficult hurdle to overcome.

C. FINANCIAL (DIANE KIELTY)

1. The December 2022 Financial Summary was provided. The 2022 CWA Audit Exemption form will be distributed this week for Board signatures.

D. EXECUTIVE SESSION

24-6-402(4)(b) C.R.S. Conferences with an attorney for the purpose of receiving legal advice on specific legal questions.



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CHATFIELD WATERSHED AUTHORITY TAC MINUTES

UPCOMING MEETINGS (3:55 P.M. – 4:00 P.M.)

A. Next Scheduled TAC Meetings:

a) Tuesday, March 7, 2023: 2:00 – 4:00 p.m., Google Meet Online

B. Next Scheduled Board Meeting:

a) Monday, April 17, 2023: **New Time 4:00 pm – 6:00 pm**, Hybrid Live & Online

Hybrid | Live & Virtual

LIVE ADDRESS

100 Jefferson County Parkway
Golden, CO 80419

Directions and parking details

<https://www.jeffco.us/2051/Driving-Directions>

Parking – once through the roundabout, head toward the building, guests can park in either of the top-level parking areas to the left or right

Enter the building and go to your left (unsecured side)

Once at elevators, head to your right and look for signs for Chatfield Watershed Authority/Faye Griffin Room (just pass Hearing Room 1)

VIRTUAL

[Join with Google Meet](#)

meet.google.com/jrs-kqsc-odb

Meeting ID

meet.google.com/jrs-kqsc-odb

Phone Numbers

(US)+1 314-649-4059

PIN: 878 604 219#

[More phone numbers](#)

3:19 p.m.

Adjournment

Attachment 2

Invoice Listing

Sort Order: Client-Matter

Invoices Sorted by: Invoice Number

Selection: Chatfield Watershed Authority - All Matters

Posted Invoices

Invoices Dated: 2/1/2023 - 02/13/2023

Matter Name	Matter Code	Invoice #	Invoice Date	Fees	Expenses	Costs	Interest	Total	2022 Totals
General	1	3016659	2/13/2023	2,288.00	14.45	-	-	2,302.45	2,302.45
WQCD-WQCC	2		*	*	*	*	*	*	-
Pine Canyon Application	3		*	*	*	*	*	*	-
Reg. 73 Triennial Review	4		*	*	*	*	*	*	-
Policy Revision Project	5		*	*	*	*	*	*	-
2022 Lakes Nutrients Rulemaking Hearing	6	3016660	2/13/2023	1,586.00	-	-	-	1,586.00	1,586.00
Client Year Totals				\$ 3,874.00	\$ 14.45	\$ -	\$ -	\$ 3,888.45	\$ 3,888.45

* No Invoice This Month

2022 Budget (Rollover)	\$ 10,944.29	
2023 Budget	\$ 58,640.00	
Amount Billed	\$ 3,888.45	6.6%
Budget Remaining	\$ 65,695.84	94.4%

Invoice Listing

Sort Order: Department

Selection: Filters Set (1)

Invoices Dated: 2/1/2023 - 2/13/2023

Invoices Sorted by: Client-Mater

- Posted Invoices
- Void Invoices
- Unposted Invoices

Client	Matter	Invoice #	Invoice Date	Fees	Expenses	Costs	Interest	Tax	Total
Default Department									
002051 CHATFIELD WATERSHED AUTHORITY									
	000001	3016659	02/13/2023	\$2,288.00	\$0.00	\$14.45	\$0.00	\$0.00	\$2,302.45
				\$2,288.00	\$0.00	\$14.45	\$0.00	\$0.00	\$2,302.45
	000006	3016660	02/13/2023	\$1,586.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,586.00
				\$1,586.00	\$0.00	\$0.00	\$0.00	\$0.00	\$1,586.00
				\$3,874.00	\$0.00	\$14.45	\$0.00	\$0.00	\$3,888.45
	Department Total:			\$3,874.00	\$0.00	\$14.45	\$0.00	\$0.00	\$3,888.45
	Report Total:			\$3,874.00	\$0.00	\$14.45	\$0.00	\$0.00	\$3,888.45

Attachment 3



Bill To:

Chatfield Watershed Authority
 Attn: Diane Keilty
 P.O. Box 460736
 Denver, CO 80246

Remit To:

RESPEC
 Attn: Accounts Receivable
 P.O. Box 725
 Rapid City, SD 57709-0725

Phone (605) 394-6400, FAX (605) 394-6514

Contract Number :	Invoice Date	02/28/2023
Purchase Order No.	Payment Terms :	NET 30
RESPEC Project Number : W0035.22002	Invoice No.	INV-0223-979
	Invoice Period:	02/01/2023 - 02/28/2023

June 2022 - May 2023 Contract

Description	Budget	Previous Billings	Current Billings	Billed to Date	Amount Remaining	Percent Complete	Amount Due This Invoice
Board & Committee Support	\$21,950.00	\$13,563.75	\$562.50	\$14,126.25	\$7,823.75	64.36%	\$562.50
Water Quality Monitoring Data	\$9,410.00	\$11,715.00	\$1,335.00	\$13,050.00	(\$3,640.00)	138.68%	\$1,335.00
Regulatory Technical Support	\$28,975.00	\$21,287.50	\$1,115.00	\$22,402.50	\$6,572.50	77.32%	\$1,115.00
Advancing Strategic Initiatives	\$27,760.00	\$3,125.00	\$675.00	\$3,800.00	\$23,960.00	13.69%	\$675.00
Direct Expenses	\$360.00	\$36.61	\$0.00	\$36.61	\$323.39	10.17%	\$0.00
Grand Total	\$88,455.00	\$49,727.86	\$3,687.50	\$53,415.36	\$35,039.64	60%	\$3,687.50



Invoice Supporting Information

Cost Category	PLC Desc	RESPEC Project No.	Name	Week Ending Date	Hours	Billing Rate	Amount To Bill	Reference #	Description	
Labor	Wastewater Engineer	W0035.22002.003	Gilley, Alicia D	02/18/23	0.50	\$205.00	\$102.50		Labor Hours	
	Wastewater Engineer	W0035.22002.002		02/25/23	1.00	\$205.00	\$205.00		Labor Hours	
	Wastewater Engineer	W0035.22002.002		02/28/23	2.00	\$205.00	\$410.00		Labor Hours	
						3.50		\$717.50		
	Hydrologist	W0035.22002.002	Hassel, Willow R	02/11/23	1.00	\$120.00	\$120.00		Labor Hours	
	Hydrologist	W0035.22002.002		02/18/23	1.00	\$120.00	\$120.00		Labor Hours	
	Hydrologist	W0035.22002.002		02/25/23	4.00	\$120.00	\$480.00		Labor Hours	
						6.00		\$720.00		
	Principal	W0035.22002.001	Leak, Alan J	02/04/23	0.50	\$225.00	\$112.50		Labor Hours	
	Principal	W0035.22002.003		02/04/23	2.00	\$225.00	\$450.00		Labor Hours	
	Principal	W0035.22002.004		02/04/23	0.50	\$225.00	\$112.50		Labor Hours	
	Principal	W0035.22002.001		02/11/23	1.50	\$225.00	\$337.50		Labor Hours	
	Principal	W0035.22002.003		02/11/23	2.50	\$225.00	\$562.50		Labor Hours	
	Principal	W0035.22002.004		02/18/23	2.00	\$225.00	\$450.00		Labor Hours	
	Principal	W0035.22002.001		02/25/23	0.50	\$225.00	\$112.50		Labor Hours	
	Principal	W0035.22002.004		02/28/23	0.50	\$225.00	\$112.50		Labor Hours	
						10.00		\$2,250.00		
	Labor					19.50		\$3,687.50		
	Total					19.50		\$3,687.50		



Task Summary

RESPEC Project ID & Description	Current Hours	Current Dollars	Hours Billed to Date	Dollars Billed to Date
W0035.22002.000 - Direct Expenses				\$36.61
W0035.22002.001 - Board & Committee Support	2.50	\$562.50	68.00	\$14,126.25
W0035.22002.002 - Water Quality Monitoring Data	9.00	\$1,335.00	106.50	\$13,050.00
W0035.22002.003 - Regulatory Technical Support	5.00	\$1,115.00	111.50	\$21,992.50
W0035.22002.004 - Advancing Strategic Initiatives	3.00	\$675.00	18.00	\$3,800.00
Overall - Total	19.50	\$3,687.50	304.00	\$53,005.36

Attachment 4

INVOICE

March 7, 2023

Bill to: Chatfield Watershed Authority
Attn: Diane Keilty
info@coloradowater.org

Spring Up the Creek Sponsorship

DESCRIPTION	AMOUNT
<u>Item Description</u>	
2023 Spring up the Creek Sponsorship	\$250.00
TOTAL	\$250.00

Please remit payment to: Town of Castle Rock
Attn: Sandi Sandman
175 Kellogg Ct.
Castle Rock, CO 80109

Attachment 5

**Invoice to Chatfield Watershed Authority
from
Steve Balcerovich & Attwood Public Affairs**

**Invoice #22-04: February 2023 Professional Governmental Affairs
Services**

TOTAL DUE: \$3,000

**Note: Please send \$1500 to Steve Balcerovich:
2441 N. Broadway
Unit 218
Denver, CO 80205**

**Please send \$1500 to Attwood Public Affairs:
9224 West Berry Place
Littleton, CO 80123**

Attachment 6

**Invoice to Chatfield Watershed Authority
from
Steve Balcerovich & Attwood Public Affairs**

**Invoice #22-05: March 2023 Professional Governmental Affairs
Services**

TOTAL DUE: \$3,000

**Note: Please send \$1500 to Steve Balcerovich:
2441 N. Broadway
Unit 218
Denver, CO 80205**

**Please send \$1500 to Attwood Public Affairs:
9224 West Berry Place
Littleton, CO 80123**

Attachment 7

Somach Simmons & Dunn

Attorneys at Law

500 Capitol Mall, Suite 1000

Sacramento, California 95814

Federal Tax I.D. No.: 68-0261618

somalchlaw.com

Telephone: (916) 446-7979

Fax: (916) 446-8199

COVER SHEET

Chatfield Watershed Authority

P.O. Box 460736

Glendale, CO 80246-0736

Attention: Diane Kielty, Program Manager

March 13, 2023

Client: 002051

Page: 1

For Professional Services Rendered Through February 28, 2023

ACCOUNT SUMMARY

Matter	Description	Invoice #	Services	Tax	Disbursements	Interest	Total
000001	General	3016957	\$1,274.00	\$0.00	\$0.00	\$0.00	\$1,274.00
000002	WQCD-WQCC	3016958	\$416.00	\$0.00	\$0.00	\$0.00	\$416.00
000006	2022 Lakes Nutrients Rulemal	3016959	\$2,440.00	\$0.00	\$0.00	\$0.00	\$2,440.00
Total Current Charges							\$4,130.00
Previous Balance							\$3,888.45
<i>Less Payments</i>							(\$3,888.45)
PAY THIS AMOUNT							\$4,130.00

Remittance Advice

Check Payable To:

Somach Simmons & Dunn
Attn.: Accounts Receivable
500 Capitol Mall, Suite 1000
Sacramento, California 95814

Somach Simmons & Dunn

Attorneys at Law

500 Capitol Mall, Suite 1000

Sacramento, California 95814

Federal Tax I.D. No.: 68-0261618

somalaw.com

Telephone: (916) 446-7979

Fax: (916) 446-8199

REMITTANCE COPY

Chatfield Watershed Authority

P.O. Box 460736

Glendale, CO 80246-0736

Attention: Diane Kiely, Program Manager

March 13, 2023

Client: 002051

Page: 1

For Professional Services Rendered Through February 28, 2023

ACCOUNT SUMMARY

Matter	Description	Invoice #	Services	Tax	Disbursements	Interest	Total
000001	General	3016957	\$1,274.00	\$0.00	\$0.00	\$0.00	\$1,274.00
000002	WQCD-WQCC	3016958	\$416.00	\$0.00	\$0.00	\$0.00	\$416.00
000006	2022 Lakes Nutrients Rulemal	3016959	\$2,440.00	\$0.00	\$0.00	\$0.00	\$2,440.00
Total Current Charges							\$4,130.00
Previous Balance							\$3,888.45
<i>Less Payments</i>							(\$3,888.45)
PAY THIS AMOUNT							\$4,130.00

Remittance Advice

Check Payable To:

Somach Simmons & Dunn

Attn.: Accounts Receivable

500 Capitol Mall, Suite 1000

Sacramento, California 95814

Attachment 8

TWS FINANCIAL INC.

CERTIFIED PUBLIC ACCOUNTANTS
6901 S. Pierce St. #200
LITTLETON CO. 80128
(303) 933-4207

Invoice

Date	Invoice #
3/14/2023	23057

Bill To
Chatfield Watershed Authority 4255 N. US Highway 85 Castle Rock, Co 80108

P.O. No.	Terms	Project

Quantity	Description	Rate	Amount
	Feb. 2023 Financial Statement Prep.	750.00	750.00
Thank you for your business.		Total	\$750.00

Attachment 9

TWS FINANCIAL INC.

CERTIFIED PUBLIC ACCOUNTANTS
6901 S. Pierce St. #200
LITTLETON CO. 80128
(303) 933-4207

Invoice

Date	Invoice #
3/14/2023	23056

Bill To
Chatfield Watershed Authority 4255 N. US Highway 85 Castle Rock, Co 80108

P.O. No.	Terms	Project

Quantity	Description	Rate	Amount
	January 31, 2023 Financial Statement Prep.	750.00	750.00
Thank you for your business.		Total	\$750.00

Attachment 10



Bill To:

Chatfield Watershed Authority
 Attn: Diane Keilty
 P.O. Box 460736
 Denver, CO 80246

Remit To:

RESPEC
 Attn: Accounts Receivable
 P.O. Box 725
 Rapid City, SD 57709-0725

Phone (605) 394-6400, FAX (605) 394-6514

Contract Number :	Invoice Date	01/31/2023
Purchase Order No.	Payment Terms :	NET 30
RESPEC Project Number :	Invoice No.	INV-0123-1607
W0035.22002	Invoice Period:	01/01/2023 - 01/31/2023

June 2022 - May 2023 Contract

Description	Budget	Previous Billings	Current Billings	Billed to Date	Amount Remaining	Percent Complete	Amount Due This Invoice
Board & Committee Support	\$21,950.00	\$12,101.25	\$1,462.50	\$13,563.75	\$8,386.25	61.79%	\$1,462.50
Water Quality Monitoring Data	\$9,410.00	\$10,770.00	\$945.00	\$11,715.00	(\$2,305.00)	124.50%	\$945.00
Regulatory Technical Support	\$28,975.00	\$19,712.50	\$1,575.00	\$21,287.50	\$7,687.50	73.47%	\$1,575.00
Advancing Strategic Initiatives	\$27,760.00	\$2,562.50	\$562.50	\$3,125.00	\$24,635.00	11.26%	\$562.50
Direct Expenses	\$360.00	\$28.75	\$7.86	\$36.61	\$323.39	10.17%	\$7.86
Grand Total	\$88,455.00	\$45,175.00	\$4,552.86	\$49,727.86	\$38,727.14	56%	\$4,552.86



Invoice Supporting Information

Cost Category	PLC Desc	RESPEC Project No.	Name	Week Ending Date	Hours	Billing Rate	Amount To Bill	Reference #	Description
Labor	Hydrologist	W0035.22002.002	Hassel, Willow R	01/07/23	2.00	\$120.00	\$240.00		Labor Hours
	Hydrologist	W0035.22002.002		01/14/23	4.00	\$120.00	\$480.00		Labor Hours
					6.00		\$720.00		
Labor	Principal	W0035.22002.001	Leak, Alan J	01/07/23	3.00	\$225.00	\$675.00		Labor Hours
	Principal	W0035.22002.002		01/07/23	1.00	\$225.00	\$225.00		Labor Hours
	Principal	W0035.22002.003		01/07/23	3.00	\$225.00	\$675.00		Labor Hours
	Principal	W0035.22002.001		01/14/23	0.50	\$225.00	\$112.50		Labor Hours
	Principal	W0035.22002.003		01/14/23	2.50	\$225.00	\$562.50		Labor Hours
	Principal	W0035.22002.004		01/14/23	1.00	\$225.00	\$225.00		Labor Hours
	Principal	W0035.22002.001		01/21/23	2.50	\$225.00	\$562.50		Labor Hours
	Principal	W0035.22002.004		01/21/23	0.50	\$225.00	\$112.50		Labor Hours
	Principal	W0035.22002.001		01/28/23	0.50	\$225.00	\$112.50		Labor Hours
	Principal	W0035.22002.003		01/31/23	1.50	\$225.00	\$337.50		Labor Hours
	Principal	W0035.22002.004		01/31/23	1.00	\$225.00	\$225.00		Labor Hours
						17.00		\$3,825.00	
Labor					23.00		\$4,545.00		
Travel		W0035.22002.000	Alan J. Leak				\$7.86	234652	1/23 Board Mtg 12mi*\$0.655
								\$7.86	
Travel							\$7.86		
Total					23.00		\$4,552.86		



Task Summary

RESPEC Project ID & Description	Current Hours	Current Dollars	Hours Billed to Date	Dollars Billed to Date
W0035.22002.000 - Direct Expenses		\$7.86		\$36.61
W0035.22002.001 - Board & Committee Support	6.50	\$1,462.50	65.50	\$13,563.75
W0035.22002.002 - Water Quality Monitoring Data	7.00	\$945.00	97.50	\$11,715.00
W0035.22002.003 - Regulatory Technical Support	7.00	\$1,575.00	106.50	\$20,877.50
W0035.22002.004 - Advancing Strategic Initiatives	2.50	\$562.50	15.00	\$3,125.00
Overall - Total	23.00	\$4,552.86	284.50	\$49,317.86

Attachment 11

ACTION MEMORANDUM CHATFIELD WATERSHED AUTHORITY

Date: April 4, 2023

TO: CWA TAC

FROM: Alan J. Leak, P.E., CWA Technical Consultant

SUBJECT: Lynker's Chatfield Watershed Model – Point Source Model Results Memorandum dated March 30, 2023.

SUMMARY OF ACTION REQUESTED: Accept Lynker's Chatfield Watershed Model – Point Source Model Results Memorandum dated March 30, 2023.

RECOMMENDED EFFECTIVE DATE: Not Applicable

COST IMPACTS: No cost impacts

PURPOSE / BACKGROUND: The CWA contracted with Lynker to use the Authority's Watershed model (prepared by Lynker) to perform additional model runs to investigate the potential changes in phosphorus loads and concentrations entering Chatfield Reservoir from changes in phosphorus loads from wastewater treatment facilities in the Chatfield watershed. The attached Memorandum presents and documents the assumptions, analysis, and results of Lynker's modeling. This memorandum completes Lynker's contracted modeling tasks.

RECOMMENDATION(S): Recommend the CWA TAC accept Lynker's Chatfield Watershed Model – Point Source Model Results Memorandum

Attachment: Lynker Chatfield Watershed Model – Point Source Model Results Memorandum dated March 30, 2023.

MEMORANDUM

To: Chatfield Watershed Authority Technical Advisory Committee
cc: Diane Kielty, Colorado Watershed Assembly; Alan Leak, RESPEC
From: Bill Szafranski, Lynker Technologies
Subject: Chatfield Watershed Model – Point Source Model Scenarios
Date: March 30, 2023

Introduction

The Chatfield watershed model was built to simulate total phosphorus loading in the Chatfield watershed. The model was built in 2016 using the Hydrologic Simulation Program – FORTRAN (HSPF) and was set up to run from January 1, 1995 to September 30, 2015 at an hourly time step. The model was calibrated using water quality records from 2000 to 2015. The model currently simulates five point source discharges in the watershed: Plum Creek Water Reclamation Authority (PCWRA), Lockheed Martin, Sageport wastewater treatment facility (WWTF), Waucondah WWTF, and the Roxborough WWTF (see Figure 1). In most instances the point sources are simulated in the model from 2000 to 2015 using average monthly data. The Louviers and Town of Larkspur WWTFs were not included in the model because they had not recently discharged to the watershed when the model was built (Leonard Rice Engineers and Lynker Technologies, 2016).

Purpose

In this analysis, we evaluate the impact of changes to the point source discharges in the watershed by simulating the point source discharges a) off and b) increased to the full wasteload allocation. In the first analysis, to evaluate the impact of these point sources on total phosphorus loading in the Chatfield Reservoir watershed, we ran the model with these five point source discharges turned off and compared the results to the watershed model representing historical conditions (point sources following historical operations). In the second analysis, we ran the model with the point source dischargers set to their full wasteload allocation and we compared the results with the watershed model representing historical conditions.

Point Source Observational Data

For each of the point sources, we calculated average monthly orthophosphorus and organic phosphorous loads from available observational total phosphorus data. The observational data were collected at different frequencies and durations for each of the point sources, as summarized below.

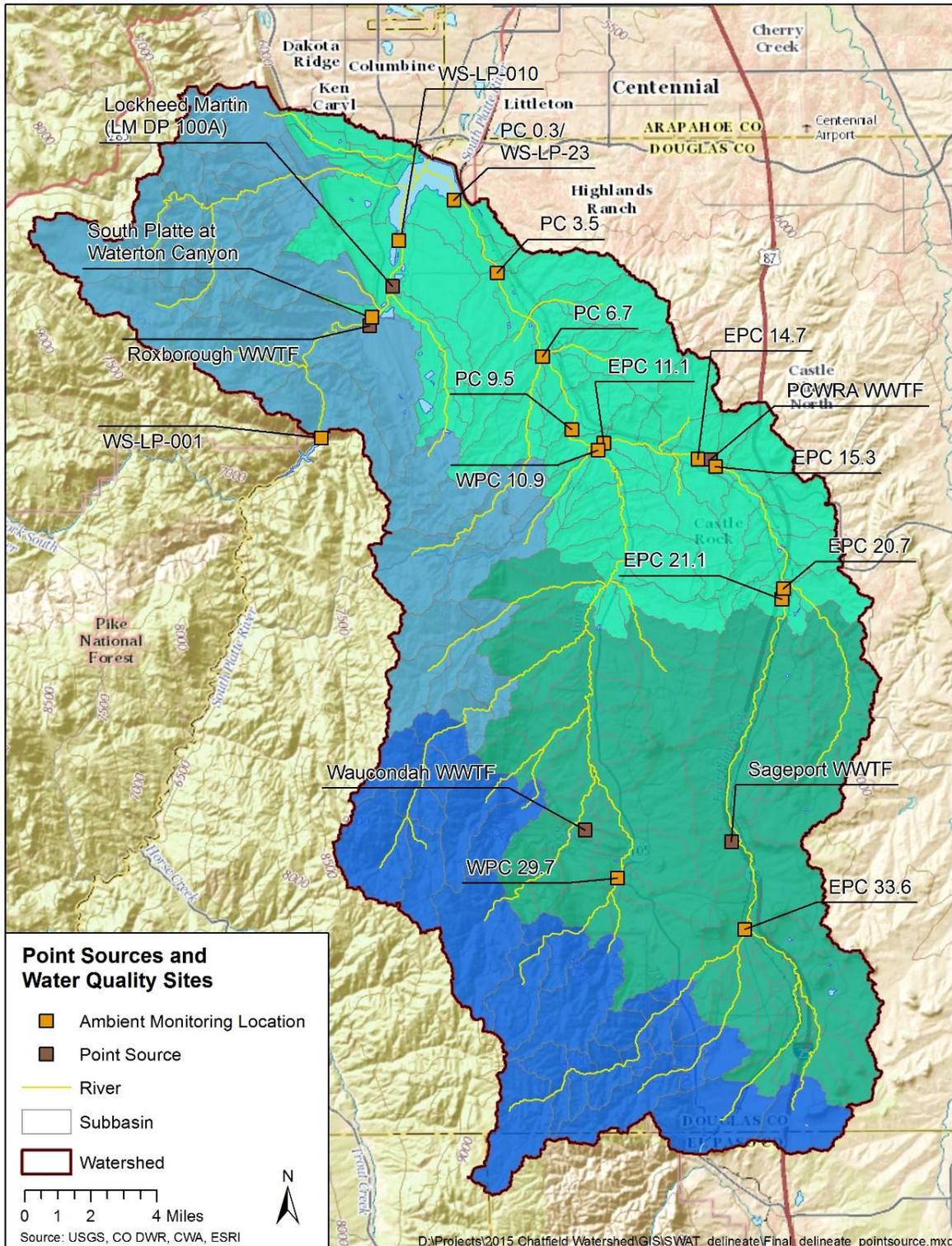
- The Plum Creek Water Reclamation Authority (PCWRA) is located on East Plum Creek at Highway 85 and West Happy Canyon Road, and the data are loaded into the model in reach 52. The PCWRA total phosphorus point source data typically include four to five data points per month between January 2000 and October 2012 and one data point per month between November 2012 and July 2015, with average monthly values used from August 2015 to September 2015.

- The Lockheed Martin facility discharges to the South Platte River near Waterton Canyon, and the data is loaded into the model in reach 16. The Lockheed Martin total phosphorus point source data typically include four data points per month from January 2000 to October 2007 and one data point per month from November 2007 to June 2015, with average monthly values used from July 2015 to September 2015.
- The Sageport wastewater treatment facility (WWTF) discharges to East Plum Creek, and the data is loaded into model reach 116. The Sageport point source data include one total phosphorus measurement per month from January 2005 to December 2014, with data from 2009 and 2015 filled using average monthly values.
- The Waucondah WWTF discharges into Bear Creek, a tributary to West Plum Creek, and the data is loaded into model reach 113. The Waucondah point source data include one total phosphorus measurement per month from January 2005 to December 2014, with data from 2015 filled using average monthly values. This data was used to calculate average monthly orthophosphorus and organic phosphorus loads to use in the model.
- The Roxborough WWTF is located near the South Platte River, and the data are loaded into model in reach 29. The Roxborough point source data typically includes 4 to 5 data points per month from January 2000 to September 2007, except for September through December 2001 and all months in 2003, which were filled using average monthly values. Roxborough stopped discharging into the Chatfield watershed after 2007 when it conveyed its effluent to the Littleton Englewood WWTF (Leonard Rice Engineers and Lynker Technologies, 2016).

A summary of the annual total phosphorus point source loads included in the model is provided in Table 1.

Table 1: Annual Total Phosphorus Point Source Load

Year	PCWRA (lbs)	Lockheed Martin (lbs)	Sageport WWTF (lbs)	Waucondah WWTF (lbs)	Roxborough WWTF (lbs)
2000	1,250	310	0	0	480
2001	1,630	140	0	0	450
2002	2,650	190	0	0	550
2003	3,310	180	0	0	770
2004	3,910	200	0	0	830
2005	2,650	230	62	103	1,180
2006	2,300	170	66	107	760
2007	2,180	280	51	144	970
2008	2,660	80	53	209	0
2009	2,880	20	47	101	0
2010	1,850	20	40	93	0
2011	2,210	10	34	81	0
2012	2,510	10	25	69	0
2013	1,860	20	25	85	0
2014	1,900	20	29	91	0
Average (when discharging)	2,380	120	43	105	750



Source: Figure 2-12 (Leonard Rice Engineers and Lynker Technologies, 2016)

Figure 1: Point Source Locations

Watershed Simulated without Point Source Discharges

We used the Chatfield watershed model to run scenarios with the point sources operating normally (the historical model) and with the point sources turned off. When the point sources are turned off, all five point sources (PCWRA, Lockheed Martin, Sageport WWTF, Waucondah, and Roxborough WWTF) no longer discharge flow, total phosphorus, and other water quality constituents into the watershed.

We ran the model for the full period of record (January 1995 to September 2015) and analyzed the results from January 2000 to December 2014, representing the calibrated model record. Here we provide simulated annual total phosphorus loads for the South Platte (model reach 16) and Plum Creek (model reach 15) (Table 2). On average, the total phosphorus contribution from the South Platte River decreased by 360 pounds per year and the total phosphorus contribution from Plum Creek decreased by 1,740 pounds per year when the model simulates the watershed without point source discharges.

Table 2: Simulated Annual Total Phosphorus Load

Year	South Platte River Total Phosphorus Load (lbs)			Plum Creek Total Phosphorus Load (lbs)		
	Historical Model	Point Sources Off	Difference	Historical Model	Point Sources Off	Difference
2000	5,610	5,030	590	4,110	3,370	750
2001	3,010	2,700	310	4,100	3,080	1,020
2002	3,550	3,090	450	3,090	1,390	1,700
2003	7,440	6,800	640	10,630	8,270	2,350
2004	7,050	6,330	720	6,870	3,990	2,880
2005	8,730	7,760	960	6,720	4,630	2,080
2006	4,310	3,710	600	5,610	3,920	1,690
2007	17,090	16,130	960	19,190	17,340	1,850
2008	4,020	3,940	70	5,110	3,070	2,040
2009	5,320	5,300	20	7,750	5,590	2,170
2010	4,860	4,850	20	15,260	13,840	1,420
2011	1,590	1,580	10	4,960	3,400	1,560
2012	680	680	10	4,420	2,690	1,730
2013	2,060	2,040	10	4,010	2,750	1,260
2014	5,950	5,920	20	5,070	3,710	1,370
Average	5,420	5,060	360	7,130	5,400	1,720

Full Wasteload Allocation Simulation

We used the Chatfield watershed model to run scenarios with four of the five point sources discharging their full wasteload allocation to represent future potential buildout conditions in the Chatfield Reservoir watershed. In this scenario the Roxborough WWTF point source does not discharge into the watershed due to a change in wasteload ownership (Table 3). In Table 3, we show the total phosphorus load from the last 10-years of the historical record in the model (2005-2014), which is used in the development of parameters for the wasteload allocation scenario. We note that the total phosphorus load in the 10-year historical record (2005-2014) is similar to the total phosphorus load for the most recent historical data (2021), representing a reasonable approximation of current conditions. The total phosphorus load simulated by the model in the wasteload allocation scenario is 5,699 pounds (lbs)/year (as shown in Table 3), which represents 75% of the total phosphorus wasteload allocation for all point sources in the watershed (7,605 lbs/year) (CWA, 2021).

Table 3: Total Phosphorus Annual Historical and Wasteload Allocation

Permittee	CDPHE Permit	Total Phosphorus Load (2005-2014) (lbs/yr)	Total Phosphorus Load (2021) (lbs/yr)	Total Phosphorus Wasteload Allocation (lbs/yr)
Plum Creek Water Reclamation Authority (PCWRA)	CO0038547	2,035	2,044	4,256
Lockheed Martin Space Systems Company	CO0001511	57	22.1	1,005
Perry Park Water and Sanitation District (Sageport)	CO0043044	41	59.4	73
Perry Park Water and Sanitation District (Waucondah)	CO0022551	107	173.8	365
Total		2,241	2,299	5,699

Note: The Roxborough WWTF stopped discharging to the watershed in 2007, and its wasteload allocation is owned by the Dominion Water and Sanitation District, which was not modeled for this analysis.

The wasteload allocation modeling scenario simulates an increase of approximately 3,458 pounds of total phosphorus per year compared to the 10-year historical average (2005-2014), of which about 950 pounds are distributed to the South Platte River and 2,500 pounds are distributed to Plum Creek (see Table 4).

Table 4: Total Phosphorus Wasteload Allocation by River Basin (lbs)

Watershed	Wasteload Allocation	Historical (2005-2014)	Difference
South Platte	1,005	376	629
Plum Creek	4,694	2,183	2,511
Total	5,699	2,559	3,458

The total phosphorus load is the product of concentration and flow volume. Therefore, when simulating the wasteload allocation we evaluated increases to total phosphorus concentrations and flow. For this analysis, we assumed that future total phosphorus concentrations would remain similar to historical total phosphorus concentrations, as dischargers are trying to meet concentration limits, so the increase in total phosphorus load is simulated by an increase in the total effluent (total flow) from the facility.

The historical total phosphorus concentrations and flow for each facility from the last 10 years of the historical record available in the model (2005-2014) are shown in Table 5 along with the modified total phosphorus concentrations and flow for the full wasteload allocation scenario. The average historical total phosphorous concentrations (2005-2014) were used as the basis of the total phosphorus concentrations in the wasteload allocation scenario. For each facility, historical and wasteload total phosphorus concentrations are similar while flows have been increased, contributing to the increase in total phosphorus load. The total phosphorus concentrations and flows from Table 5 were used to calculate a monthly total phosphorus load for each point source (Table 6), which sum to the total phosphorus annual wasteload allocation shown in Table 3 (5,699 pounds).

Table 5: Simulated Total Phosphorus Annual Wasteload Allocation

Point Source	Historical Data (2005-2014)		Wasteload Allocation Scenario	
	Total Phosphorus Concentration (mg/L)	Flow (ft ³ /s)	Total Phosphorus Concentration (mg/L)	Flow (ft ³ /s)
Plum Creek Water Reclamation Authority (PCWRA)	0.22	4.70	0.22	9.87
Lockheed Martin Space Systems Company	0.16	0.19	0.16	3.22
Perry Park Water and Sanitation District (Sageport)	0.24	0.23	0.26	0.71
Perry Park Water and Sanitation District (Waucondah)	0.30	0.07	0.31	0.12

Table 6: Total Phosphorus Monthly Wasteload Allocation (lbs)

Month	PCWRA	Lockheed	Sageport	Waucondah	Roxborough	Total
January	361	85.4	6.1	30.4	0	483
February	326	77.1	6.1	30.4	0	440
March	361	85.4	6.1	30.4	0	483
April	350	82.6	6.1	30.4	0	469
May	361	85.4	6.1	30.4	0	483
June	350	82.6	6.1	30.4	0	469
July	361	85.4	6.1	30.4	0	483
August	361	85.4	6.1	30.4	0	483
September	350	82.6	6.1	30.4	0	469
October	361	85.4	6.1	30.4	0	483
November	350	82.6	6.1	30.4	0	469
December	361	85.4	6.1	30.4	0	483
Total	4,256	1,005	73	365	0	5,699

South Platte Historical Diversions

In the South Platte River, to quantify the total phosphorus load from point sources that reach Chatfield Reservoir, we needed to thoroughly document modeled historical diversions in the watershed. In the historical model, the Roxborough WWTF point source discharges into model reach 29 from 2000-2007, with discharges ending in 2007. In the same model reach (reach 29), there are two diversions (Denver Conduit #20 and Highline Canal) that divert water out of the watershed using historical diversion data. These diversions also remove total phosphorus from the watershed. In the historical model, they divert on average 2,690 pounds of total phosphorus annually (2000-2014) and in the point sources off scenario they divert on average 2,540 pounds of total phosphorus annually (2000-2014), about 140 less pounds. The difference in total phosphorus between these two diversions occurs from 2000 to 2007, when the Roxborough WWTF point source is active. Therefore, this difference needs to be accounted for when comparing the full wasteload allocation scenario to the historical scenario. Since the Roxborough WWTF point source is always off in the full wasteload allocation scenario, the difference in total phosphorus from the diversions needs to be accounted for when tracking the transport of total phosphorus in the watershed. See the *Discussion of Results* Section of this memorandum for a discussion of how this difference is accounted for in the model results.

Results

We ran the model for the full period of record (January 1995 to September 2015) and analyzed the results from January 2000 to December 2014, representing the calibrated model record. In this analysis, we compare the results of the wasteload allocation scenario, which represents steady-state conditions where the total phosphorus point source load is always 5,699 pounds per year, to the historical model in which the total phosphorus point source load varies from year to year based on the historical data. The results from the model simulation are shown at key locations in the watershed, South Platte River at Chatfield Reservoir and Plum Creek at Chatfield Reservoir for total phosphorus (Table 7) and total flow (Table 8). Supplementary

model results are provided for the point source locations in Table 9 including, PCWRA (reach 52), Lockheed Martin (reach 16), Sageport (reach 116), and Waucondah (reach 113).

The model simulation shows there is an average annual increase in total phosphorus of approximately 620 pounds in the South Platte River and an average annual increase in total phosphorus of approximately 1,830 pounds in Plum Creek (Table 7). A more thorough analysis of the model results can be found in the *Discussion of Results* Section, where we compare the fractions of total phosphorus point source load that is transported to Chatfield Reservoir.

In Table 8, the simulated flows for the South Platte at Chatfield Reservoir and Plum Creek at Chatfield Reservoir are provided to show the increase in flow between the wasteload allocation scenario and the historical model results. In Table 9, we show the simulated total phosphorus loads for each reach where a point source discharges into the watershed. The table shows the wasteload allocation scenario, the historical scenario, and the difference between the two model scenarios. The results confirm that the largest increases in total phosphorus load occur in the reaches where the PCWRA and Lockheed Martin discharge into the watershed.

Table 7: Total Phosphorus Annual Wasteload Allocation at Chatfield Reservoir

Year	Wasteload Allocation (lbs)		Modeled Historical (lbs)		Difference (lbs) (wasteload – historical)	
	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)
2000	6,020	6,940	5,610	4,110	410	2,820
2001	3,680	6,600	3,010	4,100	670	2,500
2002	4,080	4,810	3,550	3,090	530	1,720
2003	7,790	11,810	7,440	10,630	350	1,190
2004	7,310	7,570	7,050	6,870	270	700
2005	8,750	8,240	8,730	6,720	20	1,530
2006	4,690	7,470	4,310	5,610	380	1,870
2007	17,120	21,140	17,090	19,190	30	1,950
2008	4,930	6,590	4,020	5,110	920	1,480
2009	6,280	9,180	5,320	7,750	960	1,430
2010	5,840	17,490	4,860	15,260	970	2,220
2011	2,550	6,890	1,590	4,960	960	1,940
2012	1,630	6,130	680	4,420	950	1,720
2013	3,030	6,190	2,060	4,010	970	2,180
2014	6,920	7,260	5,950	5,070	970	2,190
Average	6,040	8,950	5,420	7,130	620	1,830

Table 8: Total Flow Annual Wasteload Allocation

Year	Wasteload Allocation (acre-foot (af))		Modeled Historical (af)		Difference (af) (wasteload – historical)	
	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)
2000	71,200	23,160	69,510	17,670	1,690	5,490
2001	52,910	19,390	51,260	14,210	1,650	5,180
2002	34,710	10,650	32,980	5,600	1,730	5,040
2003	53,520	30,330	51,960	25,610	1,560	4,730
2004	48,760	22,700	47,230	18,180	1,530	4,520
2005	76,180	29,400	74,780	25,190	1,400	4,220
2006	86,600	20,080	85,190	16,050	1,400	4,020
2007	258,780	65,650	257,230	62,000	1,550	3,650
2008	114,900	21,180	112,660	17,360	2,240	3,810
2009	113,850	30,010	111,610	26,560	2,240	3,450
2010	105,560	47,680	103,310	43,960	2,250	3,720
2011	61,860	17,050	59,600	13,400	2,260	3,650
2012	25,620	16,820	23,340	13,020	2,280	3,800
2013	55,900	17,010	53,630	13,720	2,270	3,300
2014	140,000	19,580	137,730	16,590	2,270	2,990
Average	86,690	26,050	84,800	21,940	1,890	4,100

Table 9: Total Phosphorus Annual Wasteload Allocation at Point Source Locations

Year	Modeled Wasteload Allocation (lbs)				Modeled Historical (lbs)				Difference (wasteload – historical)			
	PCWRA	Lockheed Martin	Sageport	Waucondah	PCWRA	Lockheed Martin	Sageport	Waucondah	PCWRA	Lockheed Martin	Sageport	Waucondah
2000	6,330	6,020	610	470	3,270	5,610	540	120	3,070	410	70	360
2001	6,160	3,680	600	460	3,490	3,010	530	100	2,680	670	70	360
2002	5,240	4,080	290	410	3,560	3,550	220	50	1,670	530	70	360
2003	8,310	7,790	2,210	800	7,290	7,440	2,140	430	1,020	350	70	360
2004	6,750	7,310	640	480	6,330	7,050	570	120	410	270	70	360
2005	6,860	8,750	1,090	580	5,230	8,730	1,080	320	1,630	20	10	250
2006	6,630	4,690	1,080	560	4,680	4,310	1,070	310	1,960	380	10	250
2007	12,010	17,120	4,200	1,210	9,910	17,090	4,180	1,000	2,090	30	20	210
2008	6,140	4,930	550	470	4,520	4,020	530	310	1,620	920	20	150
2009	7,130	6,280	960	520	5,730	5,320	940	260	1,400	960	30	260
2010	10,050	5,840	3,420	1,090	7,630	4,860	3,390	820	2,420	970	30	260
2011	6,470	2,550	490	450	4,410	1,590	450	170	2,070	960	40	280
2012	5,970	1,630	430	440	4,180	680	380	150	1,790	950	50	290
2013	5,970	3,030	480	450	3,550	2,060	430	170	2,430	970	50	280
2014	6,600	6,920	520	460	4,220	5,950	480	190	2,380	970	40	270
Average	7,110	6,040	1,170	590	5,200	5,420	1,130	300	1,910	620	40	290

PCWRA is located in model Reach 52, Lockheed Martin is in Reach 16, Sageport is in Reach 116, and Waucondah is in Reach 113.

Discussion of Results

In model scenario 1) Watershed Simulated without Point Source Discharges (the no point source loading scenario) and model scenario 2) the Full Wasteload Allocation scenario, we consider three different iterations of point sources in the watershed and their total phosphorus loading implications for Chatfield Reservoir: no point sources in the watershed, historical point sources, point sources discharging with their full wasteload allocation. In these analyses we compare results using the modeling period of record (2000-2014), and a subset of the modeling period of record (2008-2014), which analyzes results after point source discharges from the Roxborough WWTF have ended. The recent modeling record (2008-2014) is helpful to demonstrate changes in the South Platte basin over time. See the *South Platte Historical Diversions* Section for further discussion of the Roxborough WWTF point source and historical diversions in the South Platte basin.

Point Sources and Watershed Loading

First, we examined how the point sources are represented in the Chatfield Reservoir watershed, by quantifying the total phosphorus load from the point sources as a fraction of the total phosphorus contributing to the reservoir (by subwatershed, South Platte versus Plum Creek). Note that this does not measure the relative contribution of total phosphorus from the point source to the reservoir (see the next section of the memorandum).

Equation 1:

$$\begin{aligned} & TP \text{ Point Source to Total TP Load (\%)} \\ &= \frac{\text{Historical TP Point Source}}{\text{Simulated TP to Chatfield Reservoir for Historical Scenario}} \end{aligned}$$

Equation 2:

$$\begin{aligned} & TP \text{ Point Source to Total TP Load (\%)} \\ &= \frac{\text{Full Wasteload TP Point Source}}{\text{Simulated TP to Chatfield Reservoir for Wasteload Scenario}} \end{aligned}$$

South Platte River

When the point sources are turned off, there are no point sources contributing total phosphorus to Chatfield Reservoir from the South Platte River. In the historical scenario the South Platte River point sources (Lockheed Martin and Roxborough) (24-524 lbs) represent 1-10% of the total phosphorus load from the South Platte River to Chatfield Reservoir (3500–5400 lbs) (depending on the period of record) (Equation 1).

In the full wasteload allocation scenario, the expanded Lockheed Martin point source (1,000 lbs) represents 17-23% of the total phosphorus load from the South Platte River to Chatfield Reservoir (4,500-6,000 lbs) (depending on the period of record). The new fraction of total phosphorus in the full wasteload allocation scenario is about 10-21% of the South Platte total phosphorus load to Chatfield Reservoir (depending on the period of record) (Equation 2). We

note that the Roxborough point source is off for the full wasteload allocation scenario since it is currently treated out of the basin (see Table 10).

Plum Creek

When the point sources are turned off, there are no point sources contributing total phosphorus to Chatfield Reservoir from Plum Creek. In the historical scenario the Plum Creek point sources (PCRWA, Sageport, and Waucondah) (2,500 lbs) represent 35% of the total phosphorus load from Plum Creek to Chatfield Reservoir (7,100 lbs) (Equation 1).

In the full wasteload allocation scenario, the expanded Plum Creek point sources (4,700 lbs) represent 52% of the total phosphorus load from Plum Creek to Chatfield Reservoir. The new fraction of total phosphorus in the wasteload allocation scenario is about 20% of the Plum Creek total phosphorus load to Chatfield Reservoir (9,000 lbs) (Equation 2) (see Table 11).

Fraction of New Point Source Load to Chatfield Reservoir

In the next analysis, we used the simulations to understand how changes to point source loads in the watershed relate to changes in the amount of total phosphorus delivered to Chatfield Reservoir. By analyzing the change in total phosphorus transitioning from a simulation without point source loading, to historical point source loading, to full wasteload allocation loading, we can better understand how future potential increases in total phosphorus loads in the watershed may be delivered to Chatfield Reservoir. These data represent the simulated effects of the new (incremental) total phosphorus point source load fraction that returns to Chatfield Reservoir.

Equation 3:

$$\begin{aligned} \text{New TP to Chatfield Reservoir (\%)} \\ = \frac{(\text{Simulation of Historical Load} - \text{Simulation without Point Sources})}{(\text{Observed Historical Load} - \text{Observed without Point Sources})} \end{aligned}$$

Equation 4:

$$\text{New TP to Chatfield Reservoir (\%)} = \frac{(\text{Simulated Wasteload} - \text{Simulated Historical Load})}{(\text{Observed Wasteload} - \text{Observed Historical Load})}$$

South Platte River

In the first model scenario (no point source loading), we compare the historical model simulation with a simulation that has point source discharges turned off. By analyzing the difference in total phosphorus loads between these two models we see that 69-97% of the total phosphorus point source load is released to Chatfield Reservoir (24-360 lbs of the 24-520 lbs of total phosphorus load is transported to the reservoir, depending on the period of record) (Equation 3) (see Table 10 for results).

Over the complete period of record (2000-2014) less of the total phosphorus is transported to the reservoir (69%) because of the active diversions in reach 29 that remove some of the total phosphorus discharged into the watershed by the Roxborough WWTF. In comparison, from

2008 to 2014, 97% of the total phosphorus is transported to the reservoir when all active point sources (Lockheed Martin) are located below the diversion structures.

In the second scenario (full wasteload allocation), we compare the historical model simulation with the maximum wasteload allocation simulation. In this model run, the wasteload is 1,006 pounds and the historical load is 24-525 pounds, so the new contributing load is 480-980 pounds. By analyzing the difference in total phosphorus loads between the two models we see that 97-100% of the new (incremental) total phosphorus point source load is released to Chatfield Reservoir (480-960 lbs of the 480-980 lbs of total phosphorus load is transported to the reservoir) (Equation 4) (see Table 10).

In the South Platte River, due to the location and timing of the Roxborough WWTF point source and historical diversions from the river (model reach 29), a comparison between the full wasteload scenario and the historical scenario needed to account for the changes in these conditions. Since the full wasteload scenario did not include the historical Roxborough point source (2000-2007), we had to account for its total phosphorus removal from the basin by the historical diversions (approximately 140 pounds annually 2000-2014) during the historical scenario when comparing it to the full wasteload scenario. Table 10 shows the average annual simulated point source at the reservoir (620 lbs, 2000-2014), the additional total phosphorus removed by the diversions when Roxborough WWTF is simulated (140 lbs, 2000-2014), and the final average annual point source simulated at the reservoir by the full wasteload scenario (480 lbs, 2000-2014).

Plum Creek

In the first model scenario (no point source loading), we compare the historical model simulation with a simulation that has point source discharges turned off. By analyzing the difference in total phosphorus loads between these two models we see that 69% of the total phosphorus point source load reaches Chatfield Reservoir (1,720 lbs of the 2,480 lbs of total phosphorus load is transported to the reservoir) (2000-2014) (Equation 3) (see Table 11).

In the second scenario (full wasteload allocation), we compare the historical model simulation with the maximum wasteload allocation simulation. In this model run, the wasteload is 4,700 lbs and the historical load is 2,480 lbs, so the new contributing load is 2,210 lbs. By analyzing the difference in TP loads between the two models we see that 83% of the Plum Creek total phosphorus point source load is released to Chatfield Reservoir (1,830 lbs of the new 2,210 lbs total phosphorus load is transported to the reservoir) (2000-2014) (Equation 4) (see Table 11).

Summary

The point sources along the South Platte River (Lockheed Martin and Roxborough WWTF) are relatively close in distance to Chatfield Reservoir with higher flow rates, and most of the incremental total phosphorus point source load is transported to Chatfield Reservoir. In the historical scenario 69-97% of the total phosphorus point source load is transported to the reservoir. Over the complete period of record (2000-2014) less of the total phosphorus is transported to the reservoir (69%) because of the active diversions in reach 29, that remove some phosphorus from the watershed. After the Roxborough WWTF stops discharging into the

watershed (2008-2014), 97% of the total phosphorus is transported to the reservoir because the remaining point source (Lockheed Martin) is located below both of the diversion structures. In the full wasteload allocation scenario 97-100% of the new total phosphorus is load transported to Chatfield Reservoir (see Table 10).

Table 10: South Platte River Total Phosphorus Point Source Loading

	Historical Point Sources		Full Wasteload	
	2000-2014	2008-2014	2000-2014	2008-2014
Total Point Source				
Historical TP point source load (lbs)	520	20	1,000	1,000
Simulated TP load to Chatfield Reservoir (lbs)	5,420	3,500	6,040	4,450
TP Point Source / Total TP Load to reservoir (%)	10%	1%	17%	23%
New Point Source				
New simulated TP point source load (lbs)	360	20	620	960
Reach 29 TP modeled historical diversion (lbs) (removed from river)	---	---	140	0
Revised simulated TP point source load (lbs)	360	20	480	960
New estimated TP point source load (lbs)	520	20	480	980
New TP to Chatfield Reservoir (%)	69%	97%	100%	97%

The point sources in Plum Creek (PCWRA, Waucondah, and Sageport) are further upstream in the watershed from Chatfield Reservoir, with lower flow rates. In the first scenario (no point source to historical scenario) about 69% of the new total phosphorus load is transported to the reservoir, while in the wasteload allocation scenario about 83% of the new total phosphorus load is transported to Chatfield Reservoir (see Table 11).

Table 11: Plum Creek Total Phosphorus Point Source Loading

	Historical Point Sources		Full Wasteload	
	2000-2014	2008-2014	2000-2014	2008-2014
Total Point Source				
Historical TP point source load (lbs)	2,480	2,408	4,700	4,700
Simulated TP load to Chatfield Reservoir (lbs)	7,130	6,650	8,950	8,530
TP Point Source / Total TP Load to reservoir (%)	35%	36%	52%	55%
New Point Source				
New simulated TP point source load (lbs)	1,720	1,650	1,830	1,880
New estimated TP point source load (lbs)	2,480	2,410	2,210	2,290
New TP to Chatfield Reservoir (%)	69%	68%	83%	82%

The total phosphorus point source loads are transported fairly efficiently to Chatfield Reservoir, with a large fraction of the new incremental load present as inflow to the reservoir. However, we note that the total phosphorus load in Plum Creek may have more opportunities for loss due to adsorption to sediment, deposition of adsorbed phosphorus, and uptake by algae, for example. Additionally for Plum Creek, in the full wasteload scenario (scenario 2), a larger fraction of the total phosphorus is transported to Chatfield Reservoir (83%) than from the first scenario (no point source to historical scenario) (69%), indicating there is less total phosphorus lost within the river reach. In the South Platte, both scenarios transported most of the total phosphorus point source load to the Chatfield Reservoir (97-100%), unless the point source load was upstream of the diversions in reach 29, in which case some of the total phosphorus load is removed from the basin.

References

- Chatfield Watershed Authority, 2021. 2021 Annual Report. Accessed September 2022. Available online <https://www.chatfieldwatershedauthority.org/annual-reports>.
- Leonard Rice Engineers and Lynker Technologies, 2016. Chatfield Watershed HSPF Model Report.

Attachment 12

CHATFIELD WATERSHED AUTHORITY BOARD ACTION MEMORANDUM

Date: April 17, 2023

TO: Chatfield Watershed Authority TAC

FROM: Diane Kielty, Program Manager

SUBJECT: Recommend to CWA Board that CWA enter a contract extension for technical services with RESPEC.

SUMMARY OF ACTION REQUESTED: Chatfield Watershed Authority enters 1-year contracts with consultants. The technical services contract with RESPEC expires on May 31, 2023. This request is for a contract extension with RESPEC through May 31, 2024.

RECOMMENDED EFFECTIVE DATE: June 1, 2023

COST IMPACTS: The contract term will be extended for one year for an additional sum of \$81,426.00 for services provided to extend the RESPEC contract through May 31, 2022.

PURPOSE / BACKGROUND: Chatfield Watershed Authority is charged with reviewing applications for Clean Water Act compliance and documentation in trade applications pursuant to Regulation 73. It also has a workplan that includes watershed modeling and supporting potential Nonpoint Source projects. RESPEC is the contracted consultant managing the technical elements of this work.

TAC RECOMMENDATION(S): CWA extend RESPEC's contract another year for the term of June 1, 2023 through May 31, 2024 at the additional sum of \$81,426.00.

PROPOSED MOTION to BOARD: Move to recommend to the Chatfield Watershed Authority Board that the Chatfield Watershed Authority Program Manager enter a contract extension with RESPEC that reflects the funds allocated in the 2023 Approved Chatfield Watershed Authority budget line item and anticipated 2024 budget allocation for technical services.

Enclosure(s) / Attachment(s): RESPEC_2023-2024 RESPEC Chatfield Budget Estimate

Chatfield Watershed Authority Technical Services
RESPEC FEE ESTIMATE (June 2023- May 2024)

Task No	Task Description	AL	JN	AG	JL	WH	NA	ADMIN	Total Hours	Total Cost	Budget Notes
		SPM	SE	W/WE	HY	WRE	WQE				
		\$ 225	\$ 190	\$ 205	\$ 130	\$ 120	\$ 145				
1	Board and Committee Support										
1.1	Meeting Attendance	32							32	\$ 7,200	
1.2	Prepare and Present Materials	12		6	4			4	26	\$ 4,750	
1.3	Conduct Follow-up Tasks	12		8	4		2	6	32	\$ 5,600	
1.4	Educate Board and TAC Members	6			4			8	18	\$ 2,470	
Task 1 - Subtotal Hours		62	0	14	12	0	2	18	108		STH
Task 1 - Subtotal Cost		\$ 13,950	\$ -	\$ 2,870	\$ 1,560	\$ -	\$ 290	\$ 1,350		\$ 20,020	STC
2	Water Quality Monitoring Data										
2.1	Coordination	2		2	2				6	\$ 1,120	
2.2	Data Assessments	4		12	30			6	52	\$ 7,710	
2.3	W. Q. Data Recommendations	2		2			4		8	\$ 1,440	
2.4	Review SAP	2					2		4	\$ 740	
Task 2 - Subtotal Hours		10	0	16	32	0	6	6	70		STH
Task 2 - Subtotal Cost		\$ 2,250	\$ -	\$ 3,280	\$ 4,160	\$ -	\$ 870	\$ 450		\$ 11,010	STC
3	Regulatory Technical Support										
3.1	Prepare Annual Report	6		12	12	22		4	56	\$ 8,310	
3.2	Prepare WQCC Presentation	2		4		4		4	14	\$ 2,050	
3.3	Track Water Quality Issues	4		2					6	\$ 1,310	
3.4	Conduct Technical Reviews	3		8				2	13	\$ 2,465	
3.5	Facilitate Authority Responses	6		8		8			22	\$ 3,950	
Task 3 - Subtotal Hours		21	0	34	12	34	0	10	111		STH
Task 3 - Subtotal Cost		\$ 4,725	\$ -	\$ 6,970	\$ 1,560	\$ 4,080	\$ -	\$ 750		\$ 18,085	STC
4	Advancing Strategic Initiatives										
4.1	Chatfield Watershed Planning	16		16			4	9	45	\$ 8,135	
4.2	Watershed Model Coordination	6		8	4		4		22	\$ 4,090	
4.3	Promote NPS Opportunities	6	16					16	38	\$ 5,590	
4.4	Plan for TMAL Next Steps	24		14		12	12		62	\$ 11,450	
Task 4 - Subtotal Hours		52	16	38	4	12	20	25	167		STH
Task 4 - Subtotal Cost		\$ 11,700	\$ 3,040	\$ 7,790	\$ 520	\$ 1,440	\$ 2,900	\$ 1,875		\$ 29,265	STC
Subtotal Hours		145	16	102	60	46	28	59	456		
Subtotal Costs		\$ 32,625	\$ 3,040	\$ 20,910	\$ 7,800	\$ 5,520	\$ 4,060	\$ 4,425		\$ 78,380	
Direct Costs (mileage, printing)										\$ 340	
Total Costs										\$ 78,720	(1)

AL = Alan Leak; JN = Jessica Nolle; AG = Alicia Gilley; JL=Jenna Loeman WH = Willow Hassel; NA = Natalie Acosta

SPM = Senior Project Manager; SE = Stormwater Engineer; W/WE = Water/Wasewater Engineer; WRE = Water Resources Engineer; ADMIN = Administrative Staff

Budget Notes:

(1) Budget projection used in the 3-year budget planning workbook is \$78,719.

Contract Period	RESPEC		RESPEC		RESPEC		RESPEC	
	Actual		Actual		Current		Proposed	
	June 2020-May 2021		June 2021-May 2022		June 2022-February 2023		June 2023-May 2024	
	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure	Budget	Expenditure
Board and Committee Support	\$ 17,990.00	\$ 21,060.00	\$ 20,960.00	\$ 18,907.50	\$ 21,950.00	\$ 14,126.25	\$ 20,020.00	\$ -
Water Quality Monitoring Data	\$ 8,625.00	\$ 10,522.50	\$ 8,700.00	\$ 11,075.00	\$ 9,410.00	\$ 13,050.00	\$ 11,010.00	\$ -
Regulatory Technical Support	\$ 15,455.00	\$ 21,490.00	\$ 13,200.00	\$ 29,002.50	\$ 28,975.00	\$ 21,992.50	\$ 18,085.00	\$ -
Advancing Strategic Initiatives	\$ 22,120.00	\$ 6,695.00	\$ 26,780.00	\$ 10,870.00	\$ 27,760.00	\$ 3,800.00	\$ 29,265.00	\$ -
Sub-Total	\$ 64,190.00	\$ 59,767.50	\$ 69,640.00	\$ 69,855.00	\$ 88,095.00	\$ 52,968.75	\$ 78,380.00	\$ -
Direct Costs (mileage, printing)	\$ 310.00	\$ -	\$ 360.00	\$ 112.66	\$ 360.00	\$ 36.61	\$ 340.00	\$ -
Total Contract	\$ 64,500.00	\$ 59,767.50	\$ 70,000.00	\$ 69,967.66	\$ 88,455.00	\$ 53,005.36	\$ 78,720.00	\$ -

Attachment 13

March 15, 2023

Governor Jared Polis
Members of the House Agriculture, Water, and Natural Resources Committee
Members of the Senate Agriculture and Natural Resources Committee

Re: Need for Delay Before Adopting Water Quality Standards That Would
Cost Colorado Public Wastewater Utilities and their Rate Payers Tens of
Billions of Dollars

Dear Governor Polis, Representatives, and Senators:

The Town of Castle Rock requests your support for a delay in the currently-scheduled April 10 Water Quality Control Commission (“Commission”) hearing to consider revisions to nutrient standards for lakes and reservoirs. The Water Quality Control Division (“Division”) of the Department of Public Health and Environment has proposed revisions that, if implemented as currently proposed, threaten to unreasonably and unnecessarily burden Colorado’s domestic wastewater utilities, water providers, and the public that fund these essential services. Castle Rock Water’s initial rate modelling of the preliminary estimates of capital upgrades and additional operational costs required for the Town’s share in the water reclamation authority to meet the potential permit requirements that may stem from the revised standards indicates that **rates on our customers will have to be tripled over current rates.**

On March 14, the Division provided parties with alternative approaches, one of which would be acceptable to Castle Rock and not cause untenable rate increases on our customers and residents. However, the Division’s preferred alternative still imposes unacceptable risks and costs on wastewater utilities. **The Division identified, but still does not recommend, an alternative that would not impose these infeasible standards on specific lakes and reservoirs located downstream of wastewater utilities. This alternative would be acceptable to Castle Rock.** Unless the Division changes course and recommends this more reasonable alternative, a delay of the hearing is necessary to allow enough time for a) consideration of a cost-benefit analysis; b) development of feasible standards and variances for specific lakes and reservoirs; and c) outreach to communities whose utility rates would be significantly increased by the proposal.

March 15, 2023

Page 2

Reducing nutrients down to concentrations in the Division proposal is expected to cost public wastewater utilities across the state tens of billions of dollars (with no source of funding identified to address this change) and to significantly reduce water supplies. A cost-benefit analysis prepared when the Commission considered less stringent standards in 2012 estimated the statewide cost would be \$25 Billion and would result in relatively few water quality benefits for the dollars spent. This figure is considerably higher today. Furthermore, the required treatment technology requires evaporation or deep-well injection of large amounts of water that would otherwise be used and reused by Colorado municipalities.

While a cost-benefit analysis of the Division's current proposal is being prepared, it is being completed by the Division without input from wastewater utilities that have the expertise in implementing water treatment systems. The Division has said this critical cost-benefit analysis will only be available nineteen days before the Commission's scheduled rulemaking on the proposal on April 10, 2023 — far too late to meaningfully inform the Division's development of appropriate standards which balance protecting water quality and the cost to everyday Coloradans that will be required pay for potentially infeasible and unnecessary treatment. While the Commission previously extended the hearing schedule to allow time to prepare the cost-benefit analysis, the revised schedule still does not allow enough time for meaningful input or consideration of alternatives to the proposal.

Wastewater utilities are publicly funded and provide an essential service of protecting water quality and public health. In carrying out this mission, utilities have the responsibility to efficiently use and manage public funds in order to avoid an unreasonable burden on the general public, including rural and disadvantaged communities, that pay for their services. Wastewater utilities must therefore balance water quality priorities with the economic health of the community. This requires utilities to develop long-term capital plans for implementing upgrades to their infrastructure and treatment technologies.

While wastewater utilities share the Division's goal of reducing the harmful effects of nutrient pollution in Colorado's waterways and want to be partners with the Division in improving water quality, nutrient pollution poses a unique problem for wastewater utilities and water providers. Meeting the Division's proposed standards would require wastewater utilities to implement advanced water treatment systems, which have enormous costs, high energy demands, and negative collateral environmental

March 15, 2023

Page 3

consequences, including high levels of water consumption and the need to dispose of the resulting brine. Therefore, any proposal to adopt numeric standards for nutrients must take into consideration the cost and feasibility of their implementation as required by the Colorado Water Quality Control Act. However, the Division's proposal in the upcoming hearing has not considered these costs, and instead includes generally applicable nutrient standards that are lower than necessary to prevent the harmful effects of nutrients for many lakes and reservoirs.

These costs are expected to hit communities whose wastewater is currently discharged upstream of reservoirs particularly hard. Many communities are hard-pressed to meet their current obligations, let alone new requirements for nutrients. Increases in wastewater utility rates to meet these requirements would disproportionately affect lower-income households. These communities should have the opportunity to comment on the balancing of the added costs to the expected water quality benefits. Therefore, it is very important for the Commission to conduct outreach to inform disproportionately impacted communities about the proposed rules and to provide information about how the public can participate.

The wastewater utilities signing this letter do not oppose regulations that prioritize the development of standards and implementation methods that result in a reasonable relationship between the water quality benefits of the rule and the economic, environmental, energy, and public health costs and benefits. The utilities are asking the Division to agree to a delay of the rulemaking hearing in order to provide sufficient time to develop and consider a thorough cost-benefit analysis and to develop standards for specific lakes and variances for specific facilities. Additional time is also needed to conduct outreach to disproportionately impacted communities. There is simply no reason to rush to adopt infeasible nutrient standards. Therefore, The Town of Castle Rock requests a delay of the rulemaking hearing in order to ensure that Coloradans' dollars are efficiently and effectively spent in achieving actual water quality benefits.

Sincerely,

Jason Gray
Mayor of the Town of Castle Rock

March 15, 2023

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Cc: Jonathan Moore, Policy Advisor to Governor Jared Polis
Kelly Romero-Heany, DNR Special Water Advisor to the Governor
Tracy Kosloff, Colorado State Engineer's Office
Nicole Rowan, Water Quality Control Division
Nathan Moore, Water Quality Control Division
Trisha Oeth, CDPHE Director of Environmental Health and Protection
Town Council, Town of Castle Rock
David L. Corliss, Town Manager, Town of Castle Rock
Mark Marlowe, Director of Castle Rock Water, Town of Castle Rock
Board of County Commissioners, Douglas County, Colorado

Attachment 14



CHATFIELD

WATERSHED AUTHORITY
2022 ANNUAL REPORT

DRAFT

The Chatfield Watershed Authority promotes protection of water quality in the Chatfield Watershed for drinking water supplies, recreation, fisheries, and other beneficial uses.

MAY 15, 2023

We Protect the Water You Enjoy

www.chatfieldwatershedauthority.org

The **2022 Annual Report** is the annual water quality summary and status report presented by the Chatfield Watershed Authority to communicate the water quality of Chatfield Reservoir and its watershed, highlighting information required by the Colorado Water Quality Control Commission in Control Regulation #73.

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May 15, 2023

Water Quality Control Commission
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80246

Dear Commissioners:

The Chatfield Watershed Authority (CWA or Authority) is pleased to submit this 2022 Annual Report to the Water Quality Control Commission (WQCC) in accordance with the reporting requirements of the Chatfield Reservoir Control Regulations, Regulation #73. 2022 has certainly been a different year, not only due to the continued impacts of Covid 19, but also due to the continued dry climate conditions occurring in the summer and fall of 2022. Chatfield Reservoir was in compliance with Regulation 38 (WQCC CCR 1002-38) TP and chlorophyll- α standards for the 2022 monitoring period.

The Authority has been busy in 2022 as is evidenced by the activities reported in this annual report. These activities included the continued use of the Chatfield watershed model to evaluate the impact on water quality of the existing and full use of existing wastewater treatment facility's wastewater allocations and the continued efforts of our members to promote water quality education and control of water quality from construction activities through their stormwater criteria and MS4 permitting activities. Last, the Board approved a 20% increase in the voluntary dues paid by its member entities for 2022 and beyond to address the continued rising costs of the Authority's ongoing operations while continuing to fund and promote activities and non-point source projects that improve water quality in the Chatfield watershed and Reservoir. We hope you enjoy reading our report and look forward to presenting this report at a future WQCC meeting.

Sincerely,

Lora L. Thomas

2022 Chatfield Watershed Authority Board Chair

CHATFIELD WATERSHED AUTHORITY

The Chatfield Watershed Authority (CWA or the Authority) was established in 1984 when the Governor of Colorado designated the Authority as the 208 Management Agency, in accordance with the Federal Clean Water Act. The Authority purpose is to preserve the beneficial uses in Chatfield Reservoir and Watershed through the promotion of point source, nonpoint source, and stormwater controls that reduce phosphorus and chlorophyll.

The Authority continues to implement Colorado Water Quality Control Commission (WQCC) Chatfield Reservoir Control Regulation (Code of Colorado Regulations No. 73 , 5 CCR 1002-73); and coordinating with state and federal agencies regarding water quality control measures.

The Authority is comprised of stakeholders (members) within the 400 square mile watershed and is comprised of the Plum Creek basin and portions of the South Platte River basin (from the outfall of Strontia Springs Reservoir to Chatfield Reservoir, including the Massey Draw and Deer Creek sub-basins). The members develop and implement projects to protect the watershed, reservoir health and water quality. Opportunities exist within the watershed to address the chemical, physical and biological constituents (pollutants) that impact the watershed and reservoir. Some examples of this include phosphorus removal in wastewater treatment, stabilizing degraded streambanks, mitigating runoff from agricultural lands, minimizing leachate from septic systems, controlling runoff from wildfire burn areas, and providing public education for reducing contamination from the actions of people.

The Authority members' jurisdictions and service area boundaries as well as the Chatfield watershed boundary are shown on **Figure 1** Error! Reference source not found.. The five-member Board of Directors (Board) is comprised of three elected officials representing Douglas County, Jefferson County, and the Town of Castle Rock; one wastewater district representative; and one representative for other members. The Board continues to implement the Chatfield Reservoir Control Regulation and meets regularly to address policy



2022 BOARD MEMBERS

Board Chair: Lora L. Thomas, Douglas County Commissioner

Board Vice-Chair: Laura Cavey, Town of Castle Rock

Board Director: Lesley Dahlkemper, Jefferson County Commissioner

Board Director of Water and Sanitation Members: Barbara Biggs, Roxborough Water & Sanitation District Manager

Board Director of Other Members: Alison Witheridge, Denver Water

and fiscal issues.

The Technical Advisory Committee (TAC) is a standing committee that meets monthly to address technical and scientific matters, serving the needs of the Board. Other standing committees are formed, as necessary, to address specific issues at the Board's request.

2022 TECHNICAL ADVISORY COMMITTEE REPRESENTATIVES

Jefferson County: Representative, Patrick O'Connell

Dominion Water & Sanitation District: Representative, Bob Neal

Castle Pines Metropolitan District: Representative, Gina Burke

Centennial Water & Sanitation District: Representative, Julie Tinetti

City of Littleton: Representative, Carolyn Roan

Denver Water: Representative, Alison Witheridge

Douglas County: Representative, Ryan Adrian

Louviers Water & Sanitation District: Representative, Matt Collitt

Roxborough Water & Sanitation District: Representative, Barbara Biggs

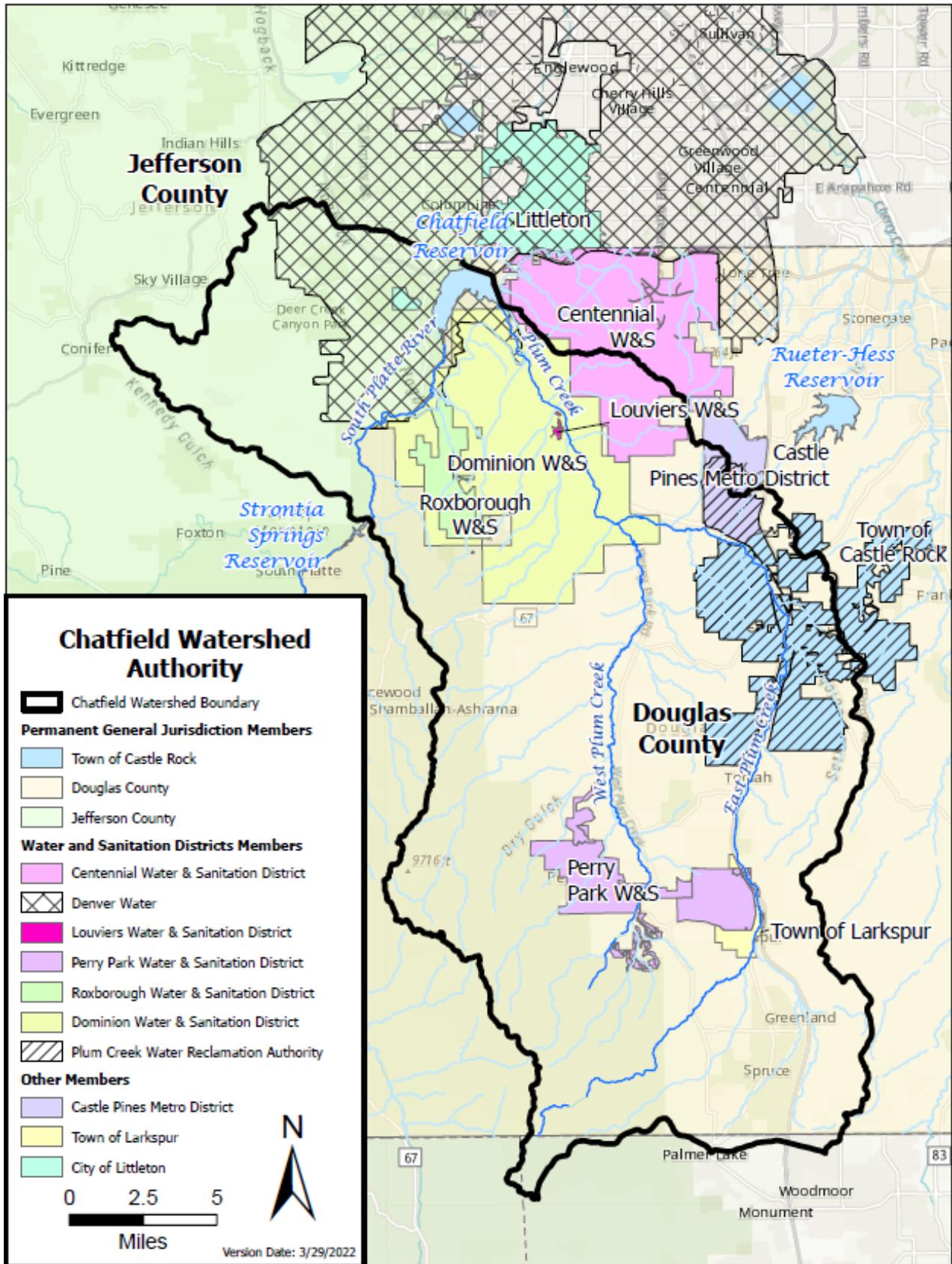
Plum Creek Water Reclamation Authority: Representative, Weston Martin

Perry Park Water & Sanitation District: Representative, Diana Miller

Town of Castle Rock: Representative, Dave Van Dellen

Town of Larkspur: Representative, Sean Hogan

Figure 1. Chatfield Watershed Authority Watershed Boundary and Member Entities.



RESERVOIR REGULATORY COMPLIANCE

Chlorophyll-a

In 2022 Chatfield Reservoir maintained compliance with the Code of Colorado Regulations No. 38 (5 CCR 1002-38) chlorophyll-a (chl- α) standard. The Chatfield Reservoir chl- α standard is 10 $\mu\text{g/L}$, with a one in five-year allowable exceedance frequency. The WQCC adopted a chl- α assessment threshold of 11.2 $\mu\text{g/L}$ to determine compliance with the standard. The chl- α standard is the growing season (July through September) average. In 2022, the chl- α average was 4.4 $\mu\text{g/L}$, below both the standard and the assessment threshold. Given the allowable exceedance frequency for chl- α , the Chatfield Reservoir is in compliance with the chl- α standard (**Figure 2**). Observed 2022 chl- α concentrations in Chatfield Reservoir are depicted in **Figure 3**.

Figure 2. Growing Season Average Chlorophyll α Concentrations, Chatfield Reservoir, 1983-2022.

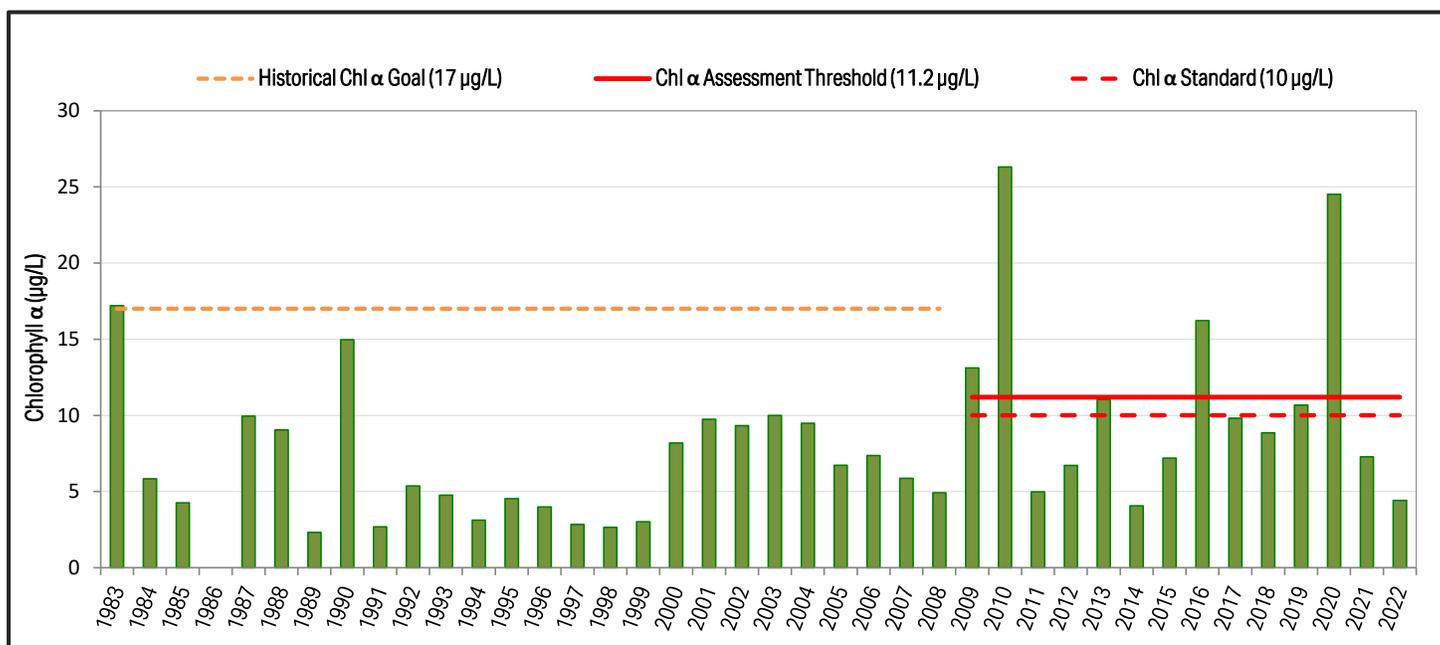
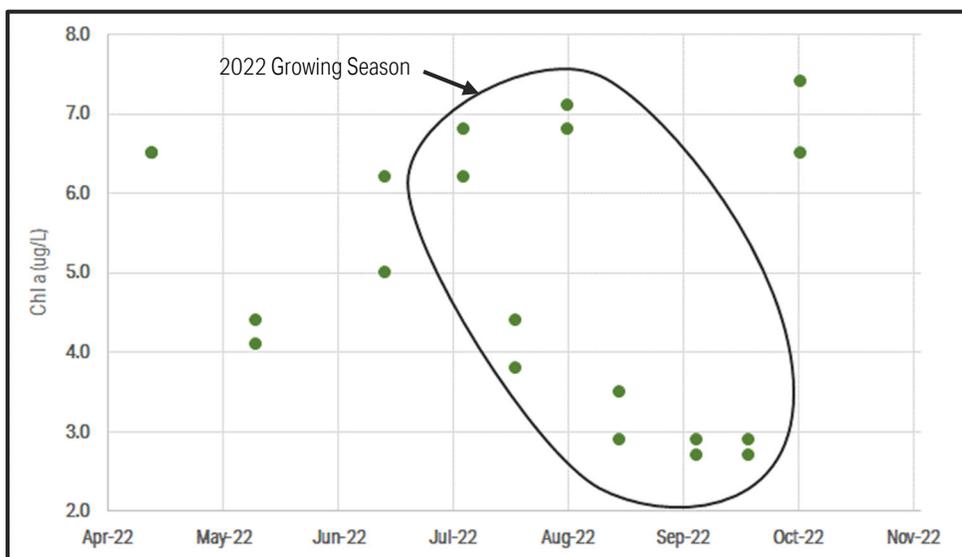
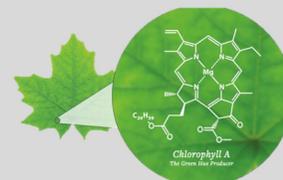


Figure 3. Observed Chlorophyll α Concentrations, Chatfield Reservoir, 2022.



The July-September growing season chlorophyll- α average in 2022 was 4.4 $\mu\text{g/L}$, below the assessment threshold of 11.2 $\mu\text{g/L}$. In 2022, the Chatfield Reservoir was in compliance with the chlorophyll- α water quality standard.



The chl- α concentrations observed result from background, point source and nonpoint sources of nutrients and internal loading. Cyanobacteria, also known as Cyanophyta or blue-green algae, are type of phytoplankton that can product toxins that can harm people, animals, and aquatic ecosystems. Intensified Cyanophyta growth due to certain environmental conditions, including light availability, water temperatures, and nutrient loading, is referred to as a Harmful Algal Bloom (HAB). Although there is currently no standard or assessment threshold for Cyanophyta, a goal of the Authority is to limit conditions that could result in an HAB. Some species of cyanobacteria convert nitrogen gas to biologically available forms of nitrogen, serving as an additional source of nitrogen to reservoir systems. No HABs were reported in 2021.

In 2021, Cyanophyta concentrations ranged from 2,143 to 98,364 algal cells/ml which are slightly lower than the Cyanophyta levels in 2020 which ranged from 229 to 153,079 algal cells/ml. The highest concentrations of Cyanophyta occurred in September, averaging 94,340 algal cells/mL (Figure 4).

A 2021 water quality study by Hydros Consulting showed elevated chl- α concentrations in 2020 were partially driven by higher dinoflagellate (Pyrrhophyta) concentrations. However, in 2021, Cyanophyta were the predominant algae observed in most of the April - October sampling events, with the exception of Bacillariophyta, which were higher than the Cyanophyta in April and May (Figure 5).

Figure 4. 2021 Phytoplankton Monthly Summary

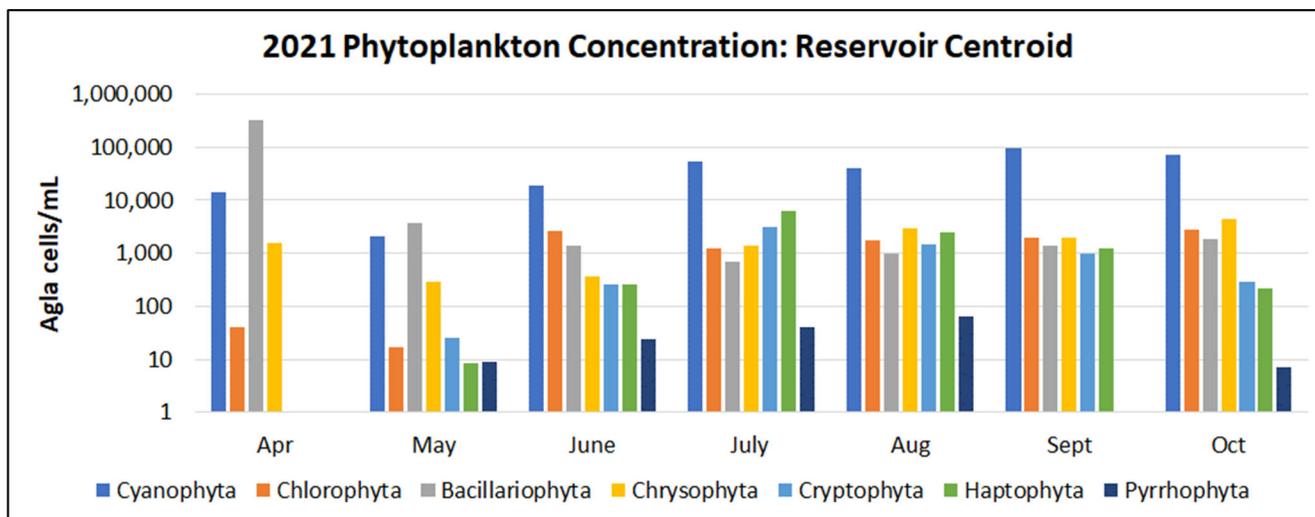
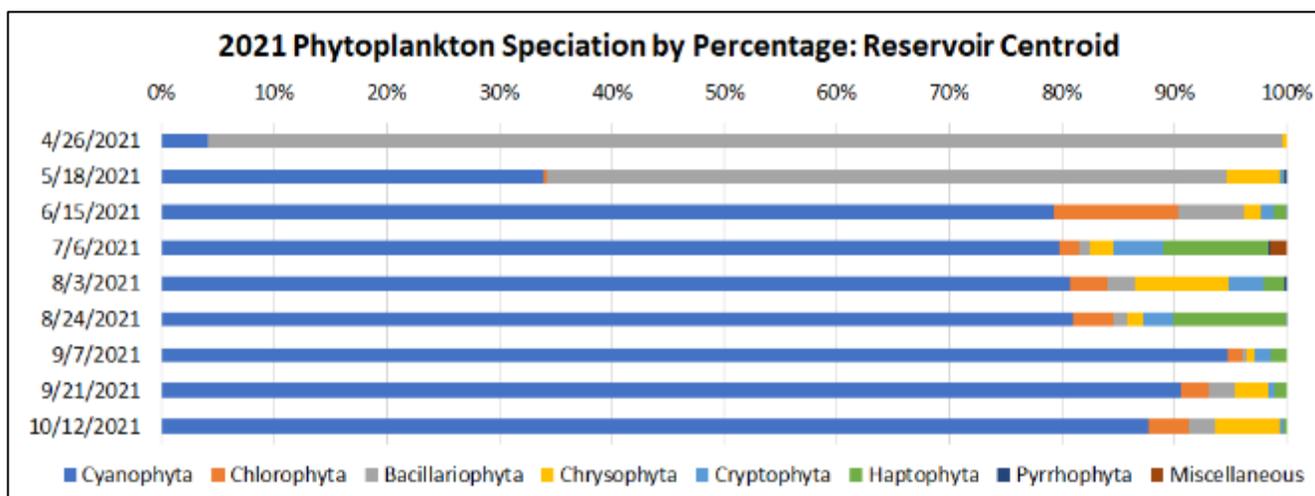


Figure 5. 2021 Phytoplankton samples taken in the reservoir during 9 sampling events from April through October 2021.



Total Phosphorus

In 2022 Chatfield Reservoir maintained compliance with the 5 CCR 1002-38 total phosphorus standard. The total phosphorus (TP) growing season (July through September) average was 17.2 µg/L, which is below the standard of 30 µg/L and below the assessment threshold of 35 µg/L. A review of TP compliance with the water quality standard from 1983 to 2022 is illustrated in **Figure 6**. The TP growing season average remained below the water quality assessment threshold of 35 µg/L, except for the 2020 concentration, since the standard changed in 2009. The monthly TP concentrations observed in 2022 in Chatfield Reservoir are shown in **Figure 7**.

Figure 6. Growing Season Average Total Phosphorus Concentrations, Chatfield Reservoir, 1983-2022.

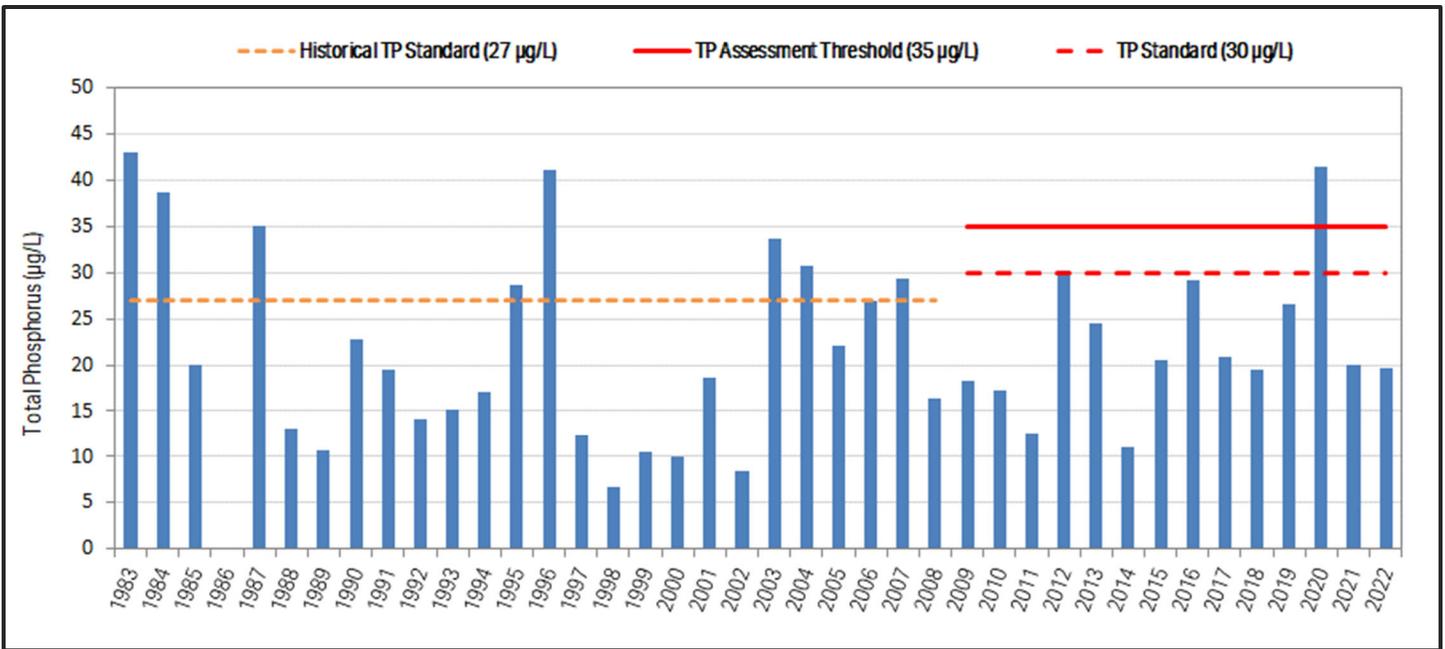
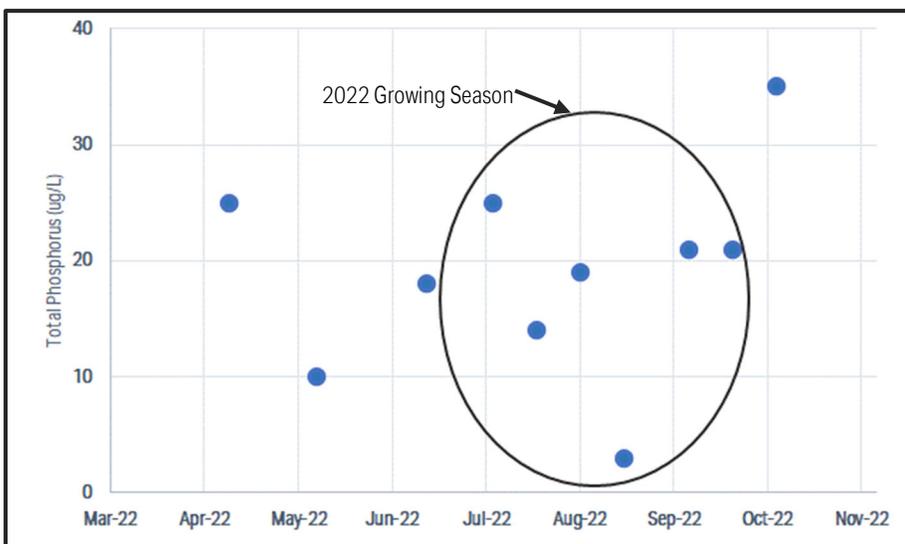
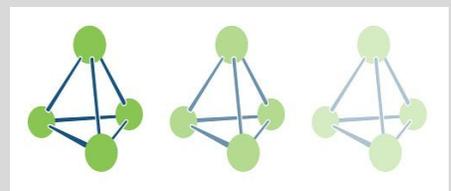


Figure 7. Monthly Total Phosphorus Concentrations, Chatfield Reservoir, 2022.



The July-September growing season TP average in 2022 was 17.2 µg/L, below the assessment threshold of 35 µg/L. In 2022, Chatfield Reservoir was in compliance with the TP water quality standard.



CHATFIELD RESERVIOR TMAL

The phosphorus Total Maximum Annual Load (TMAL) of 19,600 pounds/year at a median flow of 100,860 acre-feet/year was revised by the WQCC in 2009, based on statewide reservoir data and a probabilistic model describing the linkage between watershed TP loads and in-lake TP concentrations.

The Authority completed the development and calibration of an initial watershed model in 2016. In 2019, plans were developed for additional model runs in 2020 through 2022 to model the effects of possible improvements and other possible events in the watershed. These initial model runs started in late 2019 and continued into 2022.

The Authority continues to collect water quality data (over 20 years of monitoring) and since 2016 has collaborated with the Chatfield Reservoir Mitigation Company (CRMC) on data collection efforts pursuant to the Memorandum of Understanding between the two agencies.

The Authority continues to coordinate with the CRMC regarding Chatfield Reservoir data collection (required as part of the water quality adaptive management program). The Authority served on the Chatfield Reservoir Model Coordination Committee (RMCC), which was tasked with overseeing the development of a two-dimensional, hydrodynamic water quality model for the reservoir. Development of a model was funded by the CRMC as part of the Chatfield Storage Reallocation Project (CSRP). The independently peer-reviewed model has been calibrated for the period of 2013 through 2016. In 2018, sensitivity analysis runs were completed. The Chatfield Reservoir Water-Quality Model Documentation Report was completed by Hydros in December 2018. Future tasks will include ongoing annual model updates (with more recent data) and predictive runs to support the Chatfield Reallocation project management. Potential impacts from the Chatfield Reallocation Project, if any, will be evaluated on a yearly basis.

2022 TP Concentrations – Instream and Reservoir

Average monthly TP concentrations for 2022 at the Chatfield Reservoir Centroid, Chatfield Reservoir Outflow, Plum Creek Inflow, and South Platte Inflow are depicted in **Figure 8**. Refer to **Figure 12** for these sampling locations. Plum Creek TP concentrations were highest for all months of the year in comparison to South Platte Inflows.

Calculated TP load

The calculated annual TP load is the sum of the average monthly loads. The 2022 annual TP load to the reservoir totaled 6,548 pounds at an inflow of 66,038 acre-feet. This is compared to the TMAL of 19,600 pounds at an inflow of 100,860 acre-feet. **Figure 9** shows the calculated annual TP loads to Chatfield Reservoir from 1986 to 2022. **Figure 10** shows the Chatfield Reservoir calculated annual inflows from 1986 to 2022. A comparison of the 2022 inflows and TP load contributions per source is presented in **Figure 11**.

The relative TP loading from sources is lower than typical compared to historic TP inputs. In 2022, TP loading from Plum Creek was 2,749 pounds, or 42% of total input, compared to 3,139 pounds from the South Platte River, or 48% of total input. Direct precipitation on Chatfield Reservoir, alluvial inflows, and other direct flow sources contributed approximately 660 pounds, or 10% of total input.

Because of the unusually dry conditions in July (average monthly flow of 0.07 cfs) and September (average monthly flow of 0.57cfs) in Plum Creek, no phosphorus samplers were collected for the Plum Creek Inflow to Chatfield Reservoir. Historically, the 2019-2021 average phosphorus concentration in Plum Creek was 99.1 ug/L in July and 91.67 ug/L in September. The estimated TP loading in July and September 2022, calculated using 2019-2021 average concentrations, results in an estimated 9.71 pounds of phosphorus loading during these two months.

In addition, one sample collected in Plum Creek in August 2022 resulted in a TP concentration of 1,338 ug/L, which is 600% greater than the 2022 annual average concentration of 193.6 ug/L. The additional data collected during 2022 does not support this concentration

being representative of the conditions in Plum Creek. The data is included in the analysis below.

Figure 8. Average Monthly TP Concentrations in Chatfield Watershed and Chatfield Reservoir.

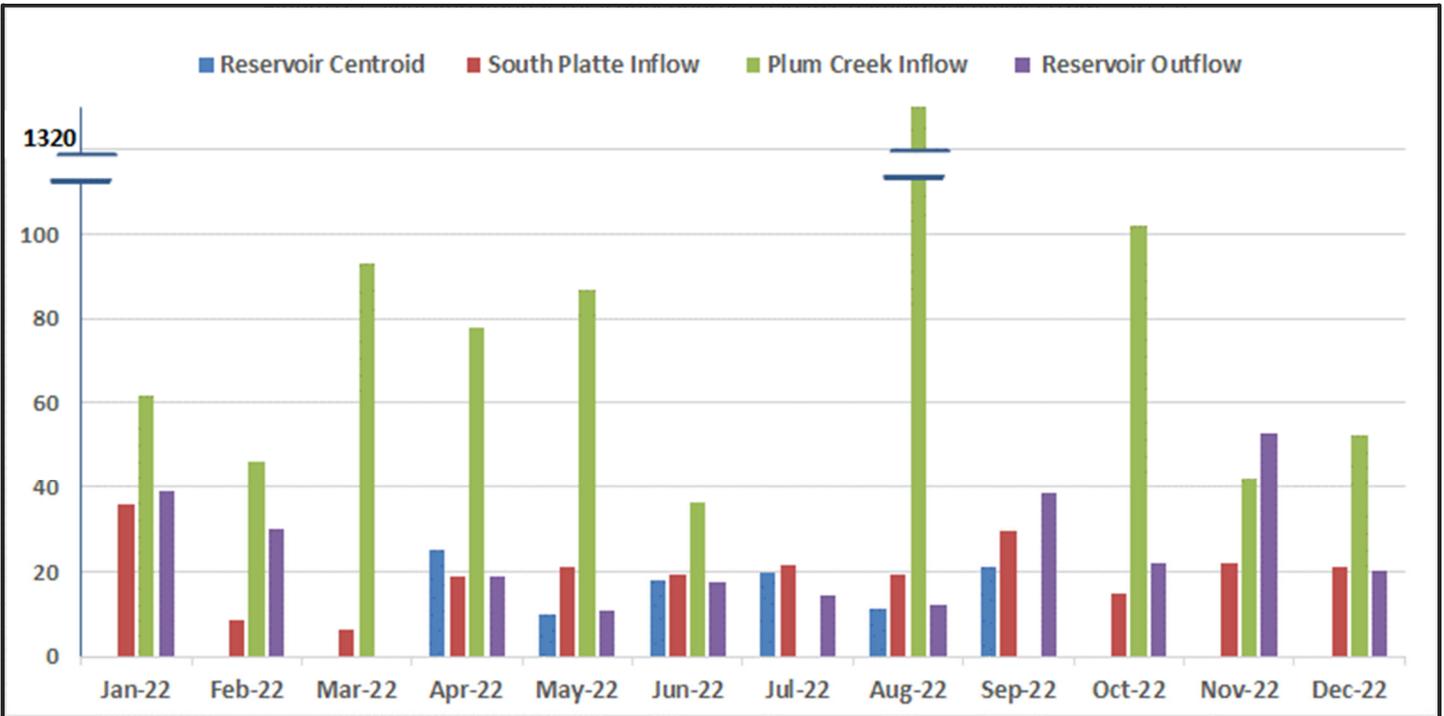


Figure 9. Calculated Annual TPLoads to Chatfield Reservoir from 1986 to 2022

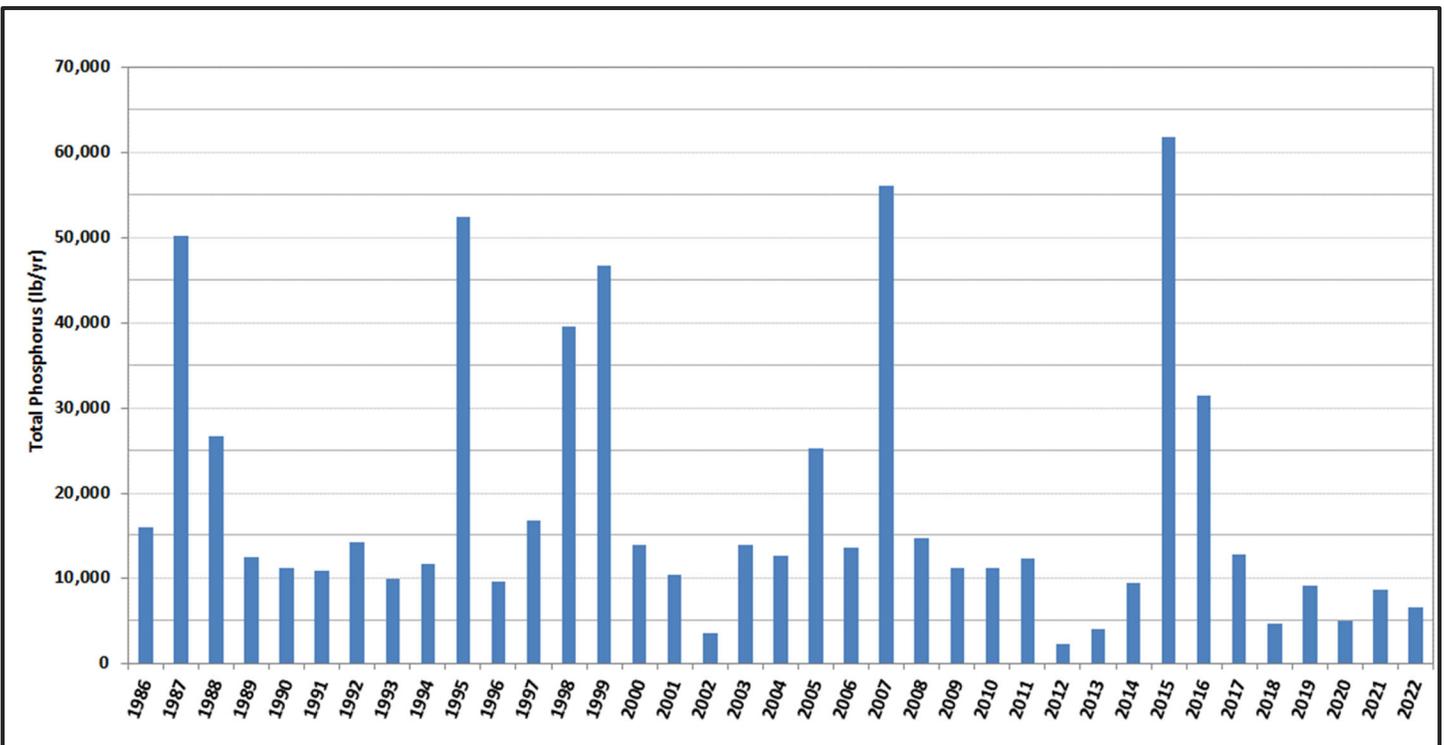


Figure 10. Chatfield Reservoir Calculated Annual Inflow (1986 – 2022)

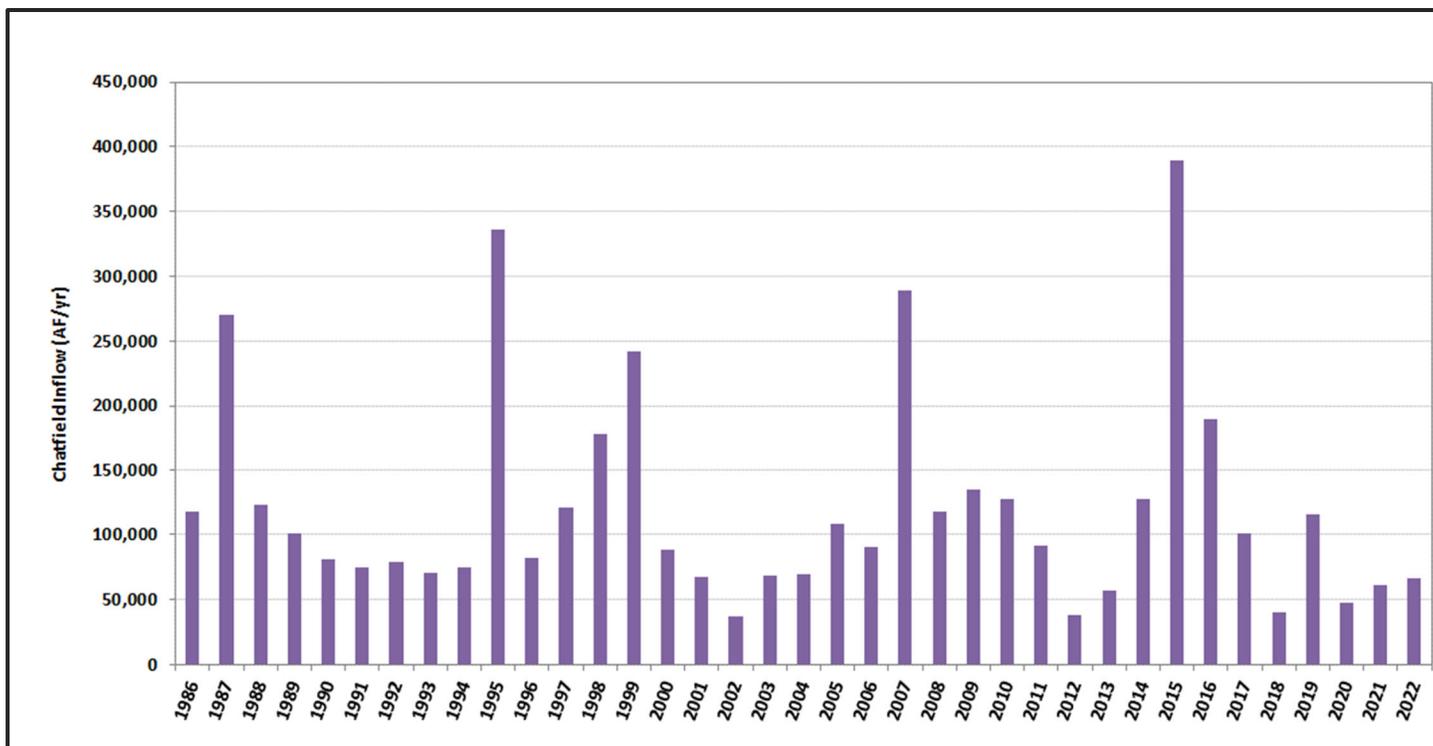
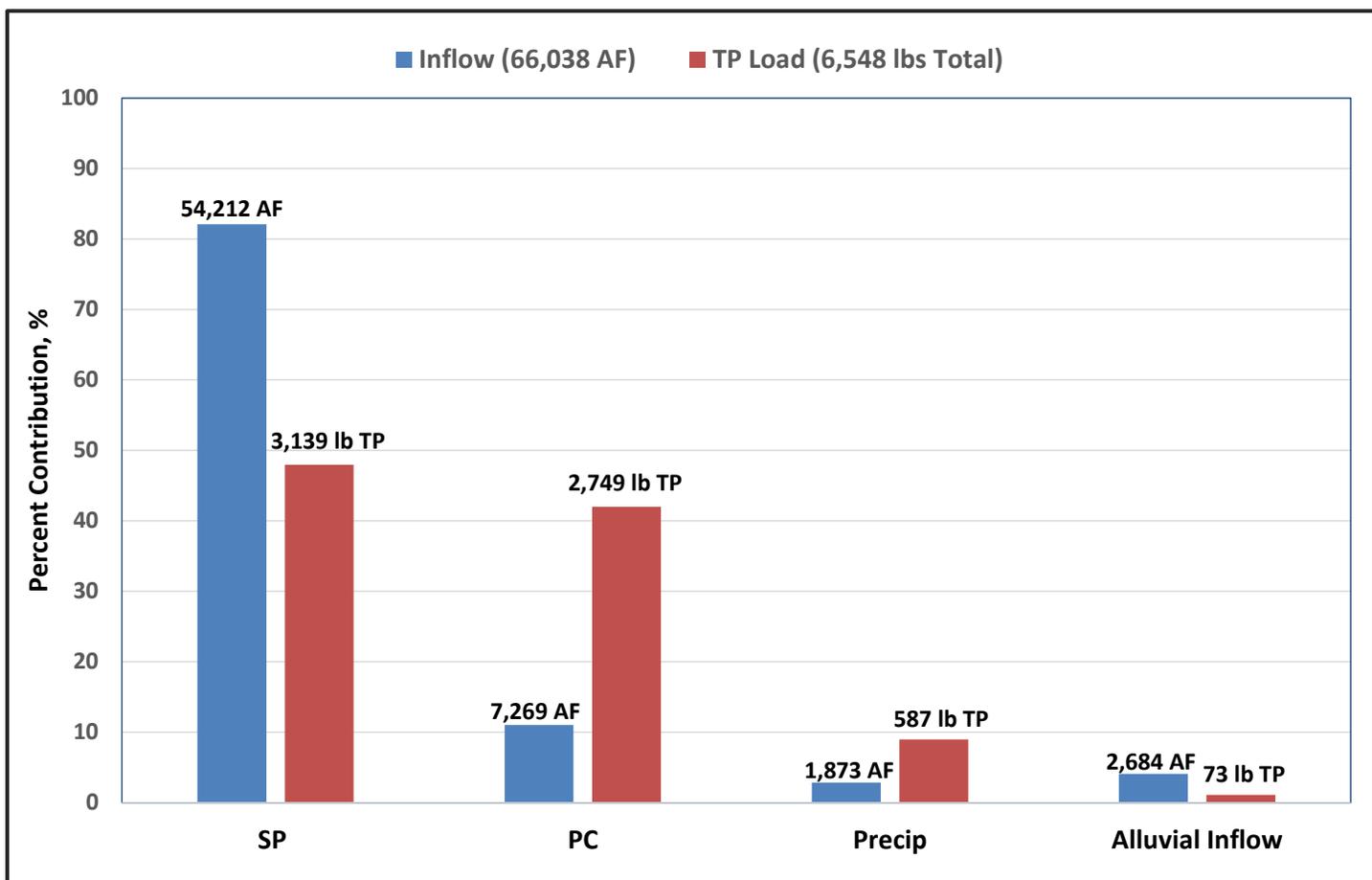


Figure 11. 2022 Chatfield Reservoir Inflows and TP Loads by Source.



WATERSHED AND RESERVOIR MONITORING PROGRAM

Since 1984, the Authority and its members have monitored water quality in the reservoir and upstream in the watershed and has undertaken measures to protect water quality in the Watershed through voluntary funding contributions and grants. The Authority, in coordination with its membership agencies, implements point source, nonpoint source and stormwater controls pursuant to the Chatfield Reservoir Control Regulation to protect water quality and beneficial uses of the reservoir.

Chatfield Reservoir

The Authority collects water quality data to determine reservoir chlorophyll levels, temperature, dissolved oxygen concentration, phosphorous concentrations, nitrogen concentrations and inflow quantities. The members develop and implement nonpoint source and stormwater projects which benefit the watershed and reservoir. The Chatfield Watershed Plan identified opportunities within the watershed to address the chemical, physical and biological constituents (pollutants) that impact the watershed. Some examples include phosphorus reductions from stabilizing degraded streambanks, mitigating runoff from agricultural lands, minimizing leachate from septic systems, controlling runoff from wildfire burn areas, and providing public education for reducing contamination from the actions of people.

The monitoring program characterizes water quality and determines regulatory compliance in the reservoir. Surface water samples are collected in the following locations:

- / South Platte Inflow
- / Plum Creek Inflow
- / South Platte Arm (in Chatfield Reservoir)
- / Plum Creek Arm (in Chatfield Reservoir)
- / Reservoir Centroid (Chatfield Reservoir)
- / Reservoir Outfall

The constituents are monitored monthly when ice has melted off the reservoir. During the growing season (July through September), reservoir sampling is conducted twice per month. To better understand reservoir dynamics, the Authority collects water column measurements, including the epilimnion and hypolimnion layers, at various depth intervals. The constituents monitored are shown in the Sampling and Analysis Plan presented in Error! Reference source not found. below. All water quality data are available on the Authority's website: www.chatfieldwatershedauthority.org



Figure 12. 2022 Chatfield Watershed Authority Sampling Locations and Constituents.

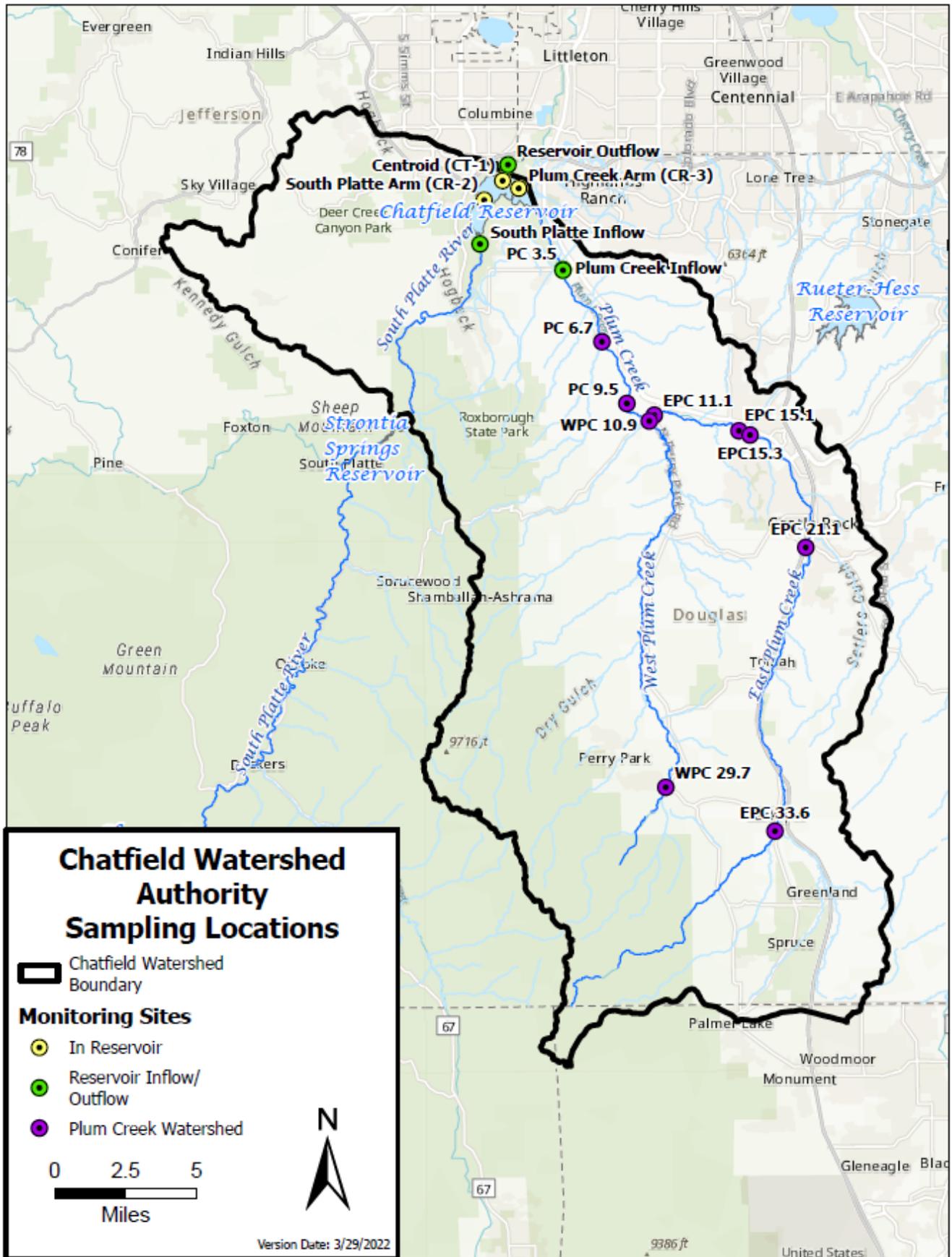


Table 1. Sampling and Analysis Plan

CONSTITUENT	PLUM CREEK WATERSHED ¹	CHATFIELD RESERVOIR ²	RESERVOIR INFLOW/OUTFLOW ²
Field Parameters			
pH	✓	✓	✓
Specific Conductance	✓	✓	✓
Temperature	✓	✓	✓
Streamflow	✓	✓	
Dissolved Oxygen	✓	✓	✓
Oxidation-Reduction Potential		✓	
Secchi Depth		✓	
Nutrients			
Total Phosphorous	✓	✓	✓
Ortho-Phosphorous	✓	✓	✓
Dissolved Phosphorous		✓	✓
Nitrate-nitrite	✓	✓	✓
Ammonia		✓	✓
Total Kjeldahl Nitrogen		✓	✓
Biological Constituents			
E. coli	✓	✓	✓
Chlorophyll <i>a</i>		✓	
Phytoplankton		✓	
Zooplankton		✓	
Metals			
Arsenic		✓	
Cadmium		✓	
Chromium		✓	
Copper		✓	
Iron		✓	
Lead		✓	
Manganese		✓	
Mercury		✓	
Nickel		✓	
Selenium		✓	
Silver		✓	
Zinc		✓	
Other Constituents			
Total Suspended Solids	✓	✓	✓
Total Dissolved Solids		✓	✓
Total Organic Carbon		✓	✓
Dissolved Organic Carbon		✓	✓
Carbonaceous Biochemical Oxygen Demand		✓	✓
Alkalinity	✓	✓	✓
Sulfate		✓	
Silica		✓	✓

¹ Plum Creek Watershed Monitoring Network Sampling and Analysis Plan (Tetra Tech, 2013)

² Chatfield Reservoir Reallocation Project and Chatfield Watershed Authority Coordinated Sampling and Analysis Plan (SAP) (Chatfield Reservoir Mitigation Company and Chatfield Watershed Authority, 2019)

Plum Creek Watershed Monitoring System

In the Plum Creek basin, watershed monitoring continued in 2022 through voluntary sampling efforts by the Plum Creek Water Reclamation Authority (PCWRA); monitoring locations are shown in **Figure 12**. The objective of the Plum Creek monitoring program is to better characterize water quality in Plum Creek and identify potential nonpoint source pollutant sources, a variety of which have already been identified in the watershed, including:

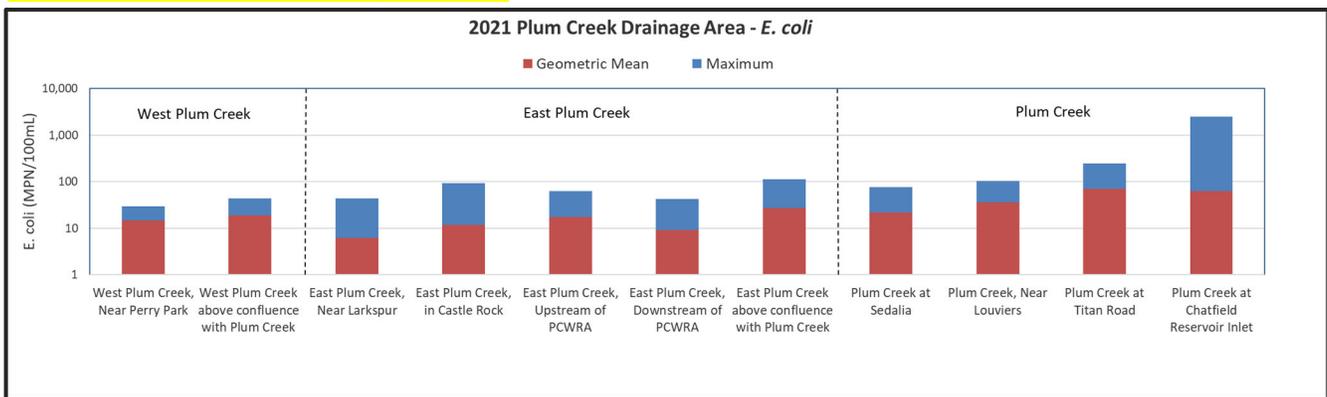
- / Stormwater runoff from historic urbanized and rural areas
- / Leachate from unmaintained septic systems, agricultural activities, including runoff from overgrazed agricultural lands
- / Runoff from wildfire burn areas
- / Runoff from impervious areas
- / Erosion from degraded streambanks (Chatfield Watershed Plan, May 2015)

Further data collection is needed, contingent on available resources, to identify and quantify phosphorus sources in the Plum Creek basin. The 2021 Plum Creek water quality observations included the following:

Stream Bank Erosion. Historically, there was significant streambank erosion on Plum Creek and its tributaries. This eroding area contributed significant sediment, and likely TP. As part of the mitigation for the CRMC reallocation project, stabilization of a portion of Plum Creek in the State Park has been completed. Additional stabilization on Plum Creek and tributaries continued to be evaluated and stabilized by watershed stakeholders.

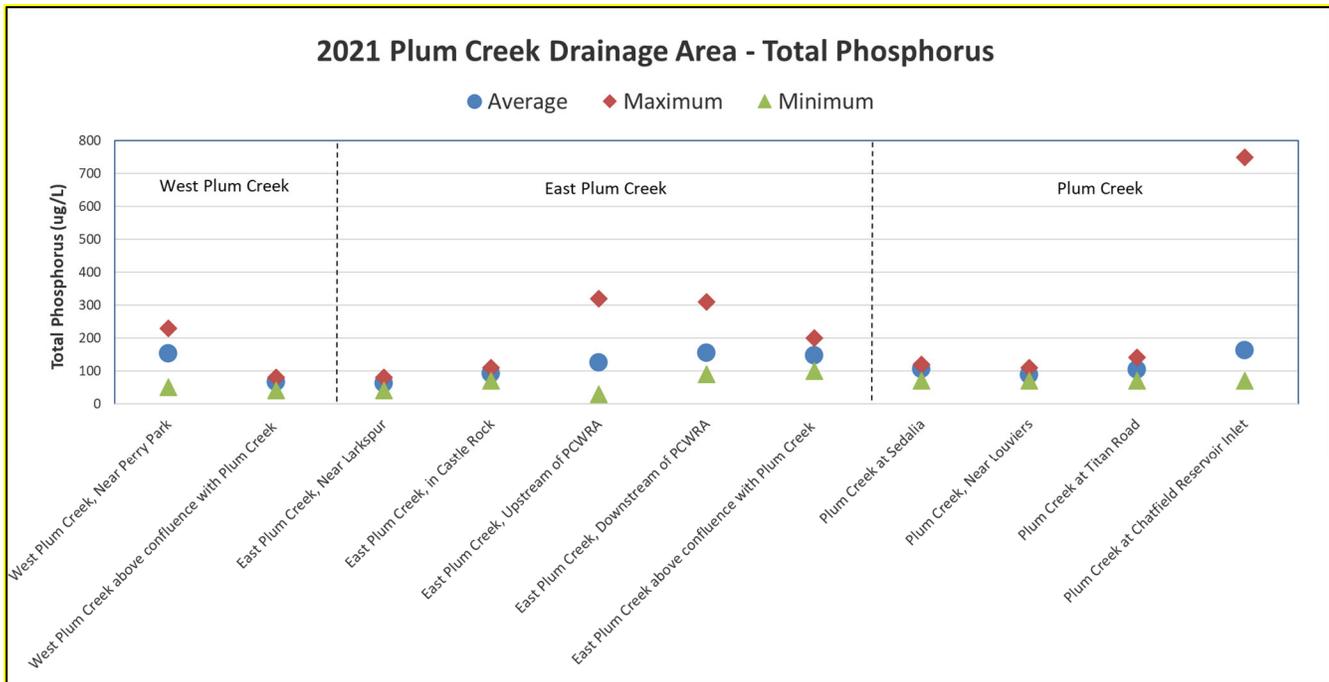
E. coli Although variability is evident at all monitoring sites, the central tendency of the 2-month geometric mean (or the geometric mean where monthly sampling is not available) of observed *E. coli* remains below the water quality standard of 126 organisms/100 mL (**Figure 13**) except at the Plum Creek at Chatfield Reservoir Inlet sampling site.

Figure 13. *E. coli* in Plum Creek Drainage Area, 2022



Total Phosphorus. TP concentration generally increases from upstream to downstream for both East Plum Creek and Plum Creek (**Figure 14**). Average TP in West Plum Creek decreased between Perry Park and the confluence with East Plum Creek. TP concentrations have historically been observed to be relatively high at East Plum Creek, downstream of PCWRA as well as East Plum Creek above the confluence with Plum Creek (Site EPC-11.1), compared to other sites in Plum Creek watershed. In 2021 the average TP at East Plum Creek, downstream of PCWRA was 154 µg/L, compared to the 2020 average of 183 µg/L. In 2021 the average TP at Site EPC-11.1 (East Plum Creek above the confluence with Plum Creek) was 147.5 µg/L, compared to the 2020 average of 130 mg/L, the 2019 average of 193 µg/L and the 2018 average of 185 µg/L.

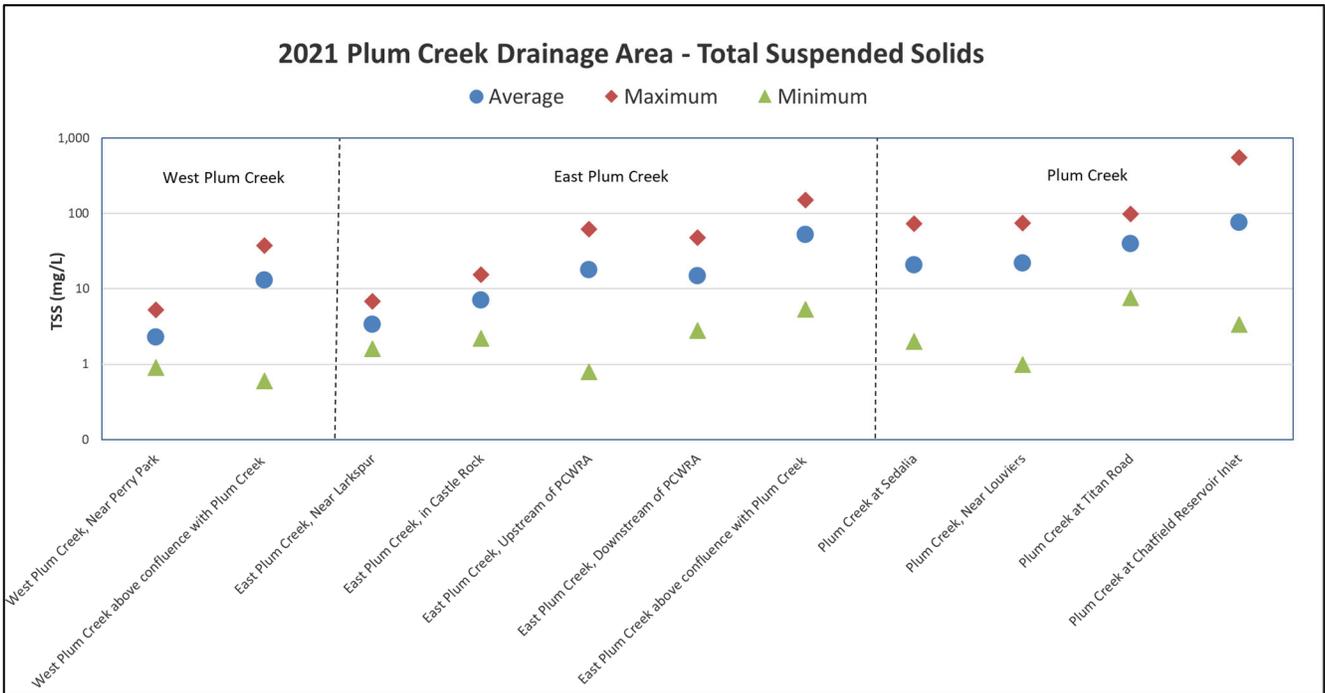
Figure 14. TP in Plum Creek Drainage Area, 2022.



Total Suspended Solids. The average Total Suspended Solids(TSS) concentration is an indicator of sediment and high precipitation events. The highest average TSS concentration observed in 2021 was at Plum Creek at Chatfield Reservoir Inlet at 76.1 mg/L TSS. In 2020, the highest TSS concentration was at Site PC-3.5 (Plum Creek at Titan Road) at 24.5 mg/L. In 2019, the highest TSS concentration was at Site EPC-11.1 (East Plum Creek above the confluence with Plum Creek) at 64.7 mg/L. This was also the highest average TSS site in 2018 (73.6mg/L) and 2017 (201.4 mg/L) (Figure 15). In 2021, the average TSS concentration at Site EPC-11.1 was 52.53 mg/L. This concentration corresponds with similar precipitation events in 2019 and 2018.

The average TSS at West Plum Creek above the confluence with Plum Creek (WPS-10.9) was 13.03 mg/L in 2021 in 2020 compared to 5.3 mg/L in 2020 and 4.3 mg/L in 2019. All the other sites increased in average TSS concentrations in 2021 compared to 2020, potentially indicating more erosion and sediment loading to Plum Creek for 2021 as a result of precipitation events.

Figure 15. Total Suspended Solids in Plum Creek Drainage Area, 2021.



Considerable monitoring has been performed in the Plum Creek watershed. This effort provides the ability to evaluate conditions on both a temporal and spatial scale.

Chatfield Watershed Plan 2015

WASTEWATER TREATMENT PLANTS

To demonstrate compliance with each respective Colorado Department of Public Health and the Environment (CDPHE) Wastewater Treatment Plants (WWTP) discharge permit, and the Chatfield Reservoir Control Regulation 73, the WWTP perform monitoring and reporting of the WWTP effluent discharge. In 2022, the total reported TP discharges from WWTPs were approximately 2,404.5 pounds out of the allowable wasteload allocation of 7,605.6 pounds. Refer to **Figure 16** for WWTP locations. During 2022, all but one WWTP maintained compliance with the permitted TP concentration limit. The WWTPs in the Chatfield watershed and their respective TP wasteload allocations are summarized in **Table 2**. The 2022 Monthly TP Concentration from WWTPs are summarized in **Table 3**.

Table 2. Phosphorus Wasteload from WWTPs in the Chatfield Watershed (Pounds).

Permittee	CDPHE Permit Number	TP Wasteload Allocation (Pounds)	TP Loading (Pounds)		
			2020	2021	2022
Plum Creek Water Reclamation Authority	CO0038547	4,256	2,142	2,044	2,135
Perry Park Water and Sanitation District	CO0022551	365	148.1	173.8	113.1
Perry Park Water and Sanitation District	CO0043044	73	52.4	59.4	64.4
Lockheed Martin Space Systems Company	CO0001511	1005	25.9	22.1	52.13
Town of Larkspur	COX632092	231	16.7	10.6	39.4
Highlands Ranch Law Enforcement Academy ^{1,2}	20060427	30	ND ³	ND ¹	ND ¹
Centennial Water and Sanitation District	CO0037966	20	ND ⁴	ND ⁴	ND ⁴
Ponderosa Retreat and Conference Center	COX047511	75	ND ^{5,6}	ND ^{4,5}	ND ^{4,5}
Louviers Water and Sanitation District	COX632098	122	ND ⁴	ND ⁶	ND ^{6,7}
Dominion Water and Sanitation District	CO0041645	1,218	ND ⁴	ND ⁴	ND ⁴
Sacred Heart Retreat	COX041874	15	0.38	ND ⁷	ND ⁸
Jackson Creek Ranch	N/A	50	ND	ND	ND
Reserve Emergency Pool	N/A	73	ND	ND	ND
Sun Jelly RV Park	COX631080	72.6	-	105.2**	ND ⁴
TP WASTELOADS		7,605.6	2,757.2	2,415.1	2,404.5

*TP loading from WWTPs is from the WWTP point of discharge; the TP load discharged from WWTPs does not equate to the TP load delivered to Reservoir due to assimilation of TP and geochemical fate and transport processes in the watershed.

**Values indicate exceedance of the TP wasteload allocation.

*** No Data (ND)

**** Not Applicable (N/A)

1. Permits for the Highlands Ranch Law Enforcement Academy Individual Sewage Disposal Systems were issued by Tri-County Health Department. Sampling is not required by the Tri-County Health Department Individual Sewage Disposal Systems discharge permit.
2. Centennial Water and Sanitation District serves as a co-management agency for the water system and has provided the Highlands Ranch Law Enforcement Academy with a wasteload allocation of 30-pounds from its 50-pound wasteload allocation.
3. Wastewater reuse is authorized under 5 CCR 1002-84 – Reclaimed water, with no discharge.
4. No reported wastewater discharge in the Chatfield watershed.
5. Ponderosa Retreat Center water quality credits are based on a trade project completed pursuant to the Authority Trading Program. Effluent phosphorus concentration was not sampled in 2022.
6. Source: Environmental Protection Agency Integrated Compliance Information System database.
7. No phosphorus samples were collected in 2022 as the compliance point lysimeters were dry during each monthly sampling event.
8. Facility is storing and transporting all wastewater to McDonald Farms for treatment, resulting in no discharge in 2022.

Table 3. 2022 Daily Average Phosphorus Concentrations by Month from WWTPs (mg/l)

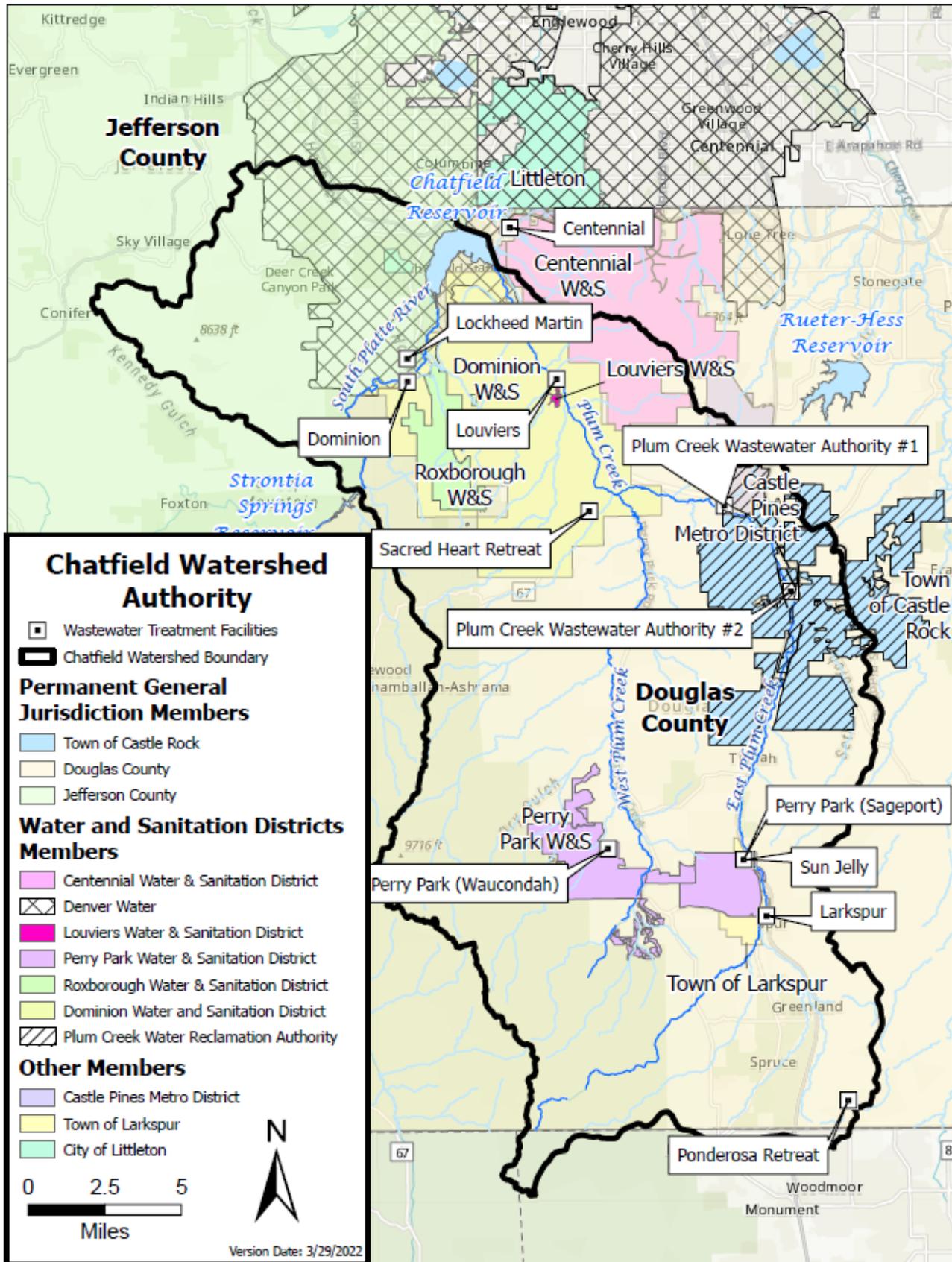
Permittee	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Plum Creek Water Reclamation Authority	0.12	0.12	0.15	0.20	0.14	0.22	0.20	0.15	0.08	0.08	0.07	0.12
Perry Park Water and Sanitation District (CO0022551)	0.20	0.01	0.22	0.10	0.29	0.64	0.23	0.34	0.23	0.14	0.12	0.43
Perry Park Water and Sanitation District (CO0043044)	0.55	0.26	0.15	0.41	0.30	0.25	0.65	0.41	0.30	0.38	0.18	0.22
Lockheed Martin Space Systems Company	< .05	0.12	< .05	0.06	0.09	0.05	0.08	0.17	0.25	0.18	0.16	0.14
Town of Larkspur	ND ¹	0.32	0.44	0.75	ND ¹	0.51	0.40	0.37	0.28	0.25	0.34	0.34
Highlands Ranch Law Enforcement Academy	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²	N/A ²
Centennial Water and Sanitation District	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³
Ponderosa Retreat and Conference Center	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}	ND ^{3,4}
Louviers Water and Sanitation District	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹	ND ¹
Dominion Water and Sanitation District	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³
Sacred Heart Retreat	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵	ND ⁵
Jackson Creek Ranch	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³
Reserve Emergency Pool	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³	ND ³
Sun Jelly RV Park	2.33*	0.93	ND ³	6.59*	0.00	0.52	0.00	0.07	0.00	0.00	ND ³	ND ³

* Non-compliance with TP concentration limits.

1. No phosphorus samples were collected in 2022 as the compliance point lysimeters were dry during each monthly sampling event.
2. Sampling is not required by the issued Tri-County Health Department discharge permit.
3. No reported wastewater discharge to the Chatfield watershed.
4. Effluent phosphorus concentration was not sampled in 2022.
5. Facility is storing and transporting all wastewater to McDonald Farms for treatment, resulting in no discharge in 2022.



Figure 16. Wastewater Treatment Plants Located within the Chatfield Watershed.



SITE LOCATION APPLICATIONS

As the 208 Management Agency, the Authority reviews site location applications and associated engineering reports for new or proposed facilities to effectively manage waste treatment works and related facilities serving Chatfield Basin.

The Authority reviews, comments, and makes recommendations to the Water Quality Control Division for site location applications for domestic wastewater treatment works, including wastewater treatment plants, individual sewage disposal systems, lift (pumping) stations, and certain interceptor sewers with a capacity of 2,000 gallons per day or greater, as well as certain facilities that produce reclaimed domestic wastewater. As required by Colorado's Site Location and Design Approval Regulations for Domestic Wastewater Treatment Works (Regulation 22), most site location applications are submitted to the Authority by the Applicant prior to submittal to the Water Quality Control Division.

Under the Chatfield Reservoir Control Regulation, the Authority is to implement the TMAL for TP loading to the reservoir. The Authority reviews site location applications for compliance with the Chatfield Reservoir Control Regulation and the Emergency Response Plan. The review primarily assesses the following criteria:

- / CDPHE WQCC Control Regulation No. 73. 73.3.2(b): "No municipal, domestic, or industrial wastewater discharge in the Chatfield Watershed shall exceed 1.0 mg/L TP as a 30-day average concentration, except as provided under section 73.3(2)(f)."
- / CDPHE WQCC Control Regulation No. 73, 73.3.2(c): "The allowed annual waste load of point source phosphorus in the Chatfield watershed is limited to 7,533 lb/year, allocated among the dischargers."
- / The likelihood of sanitary sewer overflows and contaminants reaching Chatfield Reservoir, Plum Creek, or the South Platte River and, in the event of an emergency, the ability of emergency response plans to contain the sanitary sewer overflows and contaminants, per the Cherry Creek Reservoir Watershed Site Application Review Process Emergency Response Plan Criteria (Emergency Response Plan Criteria) which have also been adopted by the Chatfield Watershed Authority.

Perry Park Water and Sanitation District – Waucondah Wastewater Treatment Facility Site Application Review

In 2022, the Authority reviewed the Perry Park Water and Sanitation District (PPWSD) Phase 2 Improvements to the Aerobic Digestion Facility at the Waucondah Wastewater Treatment Facility (WWTF) Site Application (Application) for compliance with the Chatfield Reservoir Control Regulation.

The site approval amendment application relates to physical changes to the unit processes in the solid stream treatment that could change the characteristics of the recycle stream or the biosolids. The changes are proposed to enable the facility to better treat and handle waste sludge and meet current CDPHE Policy WPC-DR-1 criteria. The existing aerobic digester facilities are over 40 years old and have reached the end of their useful life. The proposed changes are also intended to reduce odors and noise at the facility, as well as decrease ongoing operation and maintenance costs by replacing aging equipment.

The findings on the Application are as follows:

1. Phosphorus Wasteload Allocation:

A phosphorus wasteload allocation was not considered because the proposed aerobic digestion system improvements will not result in a change to the current phosphorus allocation for PPWSD. No change in phosphorus wasteload allocation is requested or expected with the proposed aerobic digestion system improvements.

2. Phosphorus Concentration Limit:

The PPWSD Waucondah WWTF is currently permitted by the CDPHE to operate the WWTP under the Colorado Discharge Permit

System (CDPS), Permit CO-0022551. This permit was reissued in 2012 and has been administratively extended since the expiration on June 30, 2017. The effluent limitation for phosphorus as a 30-day average is 1 mg/L. From January 2007 through January 2012, the reported average effluent phosphorus concentration was 0.26 mg/L, with a minimum of 0.02 mg/L and a maximum of 0.83 mg/L.

3. Emergency Response Criteria:

- a. The Application includes the replacement of the existing emergency back-up power generator.
- b. The Application identifies potential spill causes and includes the necessary systems to minimize the risk of such overflows.
- c. The Application addresses the operation and maintenance practices or engineering features to address and prevent sanitary sewer overflows.

4. Consolidation of Treatment Works:

The consolidation of treatment works was not considered because this site application is for improvements at an existing WWTF.

The proposed site application meets the Authority's Review Criteria for Site Location and Design Approvals. The Authority recommended approval of the site application to the Division.

Pine Canyon Site Application and Phosphorus Trade Application

In 2022, the Authority continued review of the following project for compliance with the Chatfield Reservoir Control Regulation:

Pine Canyon (JRW)

Project Summary: Site application for a wastewater treatment facility (0.405 mgd design capacity), and a phosphorus non-point source to point source trade application (1528 lbs./yr cattle operations elimination to 763 lbs./yr WWTF discharging to East Plum Creek). Pine Canyon proposed to remove on-site cattle operations on the JRW property as the source of the nonpoint source trade.

2020

- / The Authority's technical consultant reviewed the submitted applications and found that Pine Canyon's initial analyses which calculated the phosphorus removal effect of cattle removal did not account for the diminished effect of the change on the amount of phosphorus actually reaching the waters of East Plum Creek. On December 29, 2020, Pine Canyon revised their request to address this issue, and proposed a revised nonpoint source phosphorus credit of 380.5 lbs./yr. based upon a calculated 761 lbs./yr. of phosphorus reaching East Plum Creek from the JRW property.
- / On October 27, 2020, the Division issued a Request for Information (RFI) on the submitted Site Application for the WWTF. The RFI included, among other requests, a request of the Applicant to 1) submit an application to the Division for the phosphorus allocation approval following the final recommendation of the phosphorus allocation by the Authority, and 2) to address the phosphorus allocation with respect to the MS4 requirements in the phosphorus allocation application. The Applicant provided responses to the Division's RFI on December 10, 2020.

2021

- / On January 26, 2021, the Division issued a letter to the Applicant stating that "because the Applicant's property is subject to Douglas County MS4 permit, the discharge is a point source, not a nonpoint source. Furthermore, discussions with our MS4 workgroup have clarified that trading under an MS4 permit also is not a feasible option at this time".
- / On January 28, 2021, a separate letter from the engineering division within the Water Quality Control Division to the applicant determined: "Further consideration of the site application by the Division staff is "premature" because applicant

has not resolved the issue of a phosphorus allocation for the proposed facility”.

- / On February 18, 2021, the CWA sent a letter to the Water Quality Control Division notifying the Division that it had denied the applicants phosphorus trade at its February 2, 2021, meeting; the letter went on to say that the CWA review of the applicants site application had been put “on hold”.
- / On May 5, 2021, the CWA denied Pine Canyon’s Site Application.
- / On December 2, 2021, the Division sent a letter to the applicant “to provide more detailed information on the underlying rationale behind our initial determination that the trade is not feasible”.

2022

- / On April 6, 2022, the applicant submitted an amended site application to CWA for a proposed 0.405 MGD Pine Canyon Water Reclamation Facility (PCWRF).
- / The Authority’s Technical Consultant reviewed the site application and provided review comments to the Authority’s TAC in a Memorandum on June 7, 2022. The memorandum identified deficiencies in the site application and concerns with the practical application and implementation of the proposed Land Application Management Plan (LAMP).
- / On June 7, 2022, the Authority’s TAC took action to recommend to the Division that the Pine Canyon Site Application be denied for the reasons presented in the forementioned memorandum.
- / On December 1, 2022, notice was provided in the December 2022 Water Quality Bulletin that the site location application for the Pine Canyon Water and Sanitation District’s PCWRF was found by the Division to be in conformance with the Water Quality Control Commission’s Site Location and Design Regulations for Domestic Wastewater Treatment Works, 5 CCR 1002-22 (Regulation 22) and was approved (Regulation 22 Site Location Approval No. ES.20.SA.05399). The conditions of approval were provided in the letter dated November 16, 2022, from the Division to Jim Walker regarding the subject application.
- / On December 6, 2022, the TAC decided not to appeal the issuance of the site application approval but instead decided to formally remind the Division of the Authority’s opposition with the Division’s finding that the proposed PCWRF would be able to operate using a LAMP without the requirement of a wasteload allocation under the requirements of Regulation #73.



WATERSHED MODELING

The Authority contracted with Lynker to use the watershed model to further explore model assumptions and inputs on the model results. The purposes of the modeling efforts started in 2022 were to:

- / Simulate the watershed response to removal of modeled point source discharges
- / Simulate the watershed response to wastewater facilities operating in the future at their full wasteload allocations

The model was calibrated using water quality records from 2000 to 2015. The model currently simulates five point source discharges in the watershed: PCWRA, Lockheed Martin, Sageport WWTF, Waucondah WWTF, and the Roxborough WWTF. In most instances the point sources are simulated in the model from 2000 to 2015 using average monthly data. The Louviers and Town of Larkspur WWTFs were not included in the model because they had not recently discharged to the watershed when the model was built (Leonard Rice Engineers and Lynker Technologies, 2016).

In the first analysis, to evaluate the impact of these point sources on TP loading in the Chatfield Reservoir watershed, the model was evaluated with these five point source discharges turned off and compared the results to the watershed model representing historical conditions with point sources operating normally. In the second analysis, the model was run with the point source dischargers set to their full wasteload allocation and we compared the results with the watershed model representing historical conditions.

Analysis 1: No Discharge from the Point Sources

The Chatfield watershed model ran two scenarios with the point sources operating normally (the historical model) and with the point sources turned off. On average, the TP contribution from the South Platte River decreased by 360 pounds per year and the TP contribution from Plum Creek decreased by 1,740 pounds per year when the model simulates the watershed without point source discharges.

Figure 17. Point Sources and Water Quality Sites.

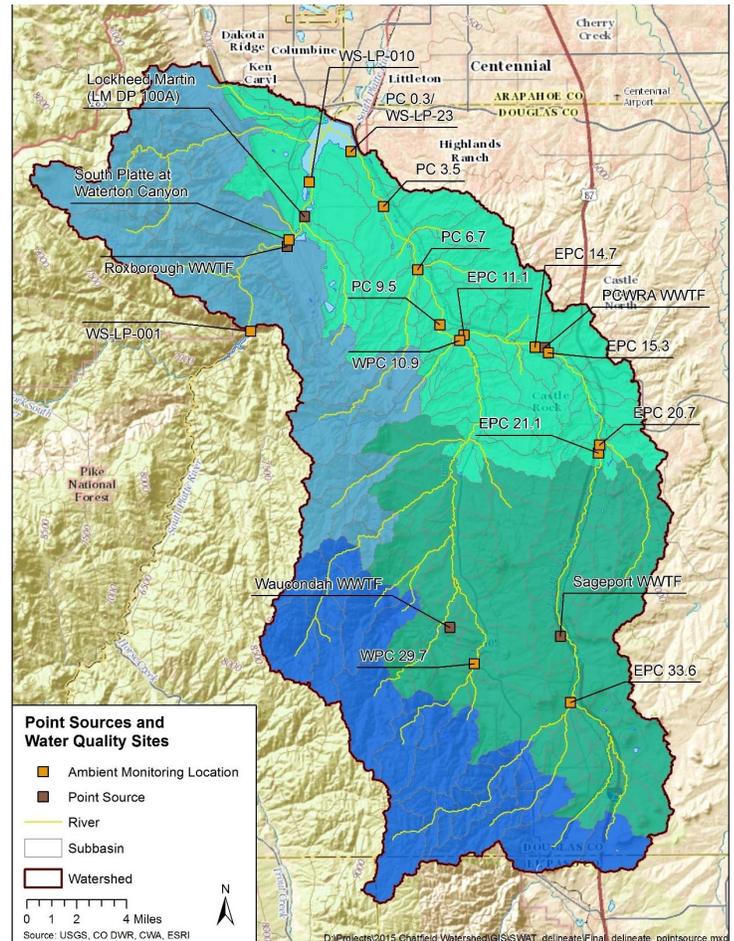


Table 4. Simulated Annual TP Load

Year	South Platte River TP Load (lbs)			Plum Creek TP Load (lbs)		
	Historical Model	Point Sources Off	Difference	Historical Model	Point Sources Off	Difference
2000	5,600	5,000	590	3,420	2,680	730
2001	2,970	2,650	320	3,510	2,500	1,010
2002	3,480	3,030	450	2,800	1,070	1,720
2003	7,230	6,590	640	8,540	6,050	2,490
2004	6,980	6,260	720	6,300	3,220	3,080
2005	8,720	7,750	970	5,890	3,800	2,090
2006	4,300	3,690	610	5,110	3,440	1,670

Year	South Platte River TP Load (lbs)			Plum Creek TP Load (lbs)		
	Historical Model	Point Sources Off	Difference	Historical Model	Point Sources Off	Difference
2007	16,800	15,830	970	16,220	14,390	1,830
2008	4,050	3,970	70	4,700	2,690	2,010
2009	5,080	5,060	20	6,770	4,610	2,160
2010	3,980	3,970	20	11,690	10,300	1,390
2011	1,580	1,560	10	4,240	2,650	1,590
2012	640	630	10	3,840	2,100	1,750
2013	2,030	2,010	10	3,440	2,180	1,260
2014	5,950	5,920	20	4,250	2,920	1,340
Average	5,290	4,930	360	6,050	4,310	1,740

Analysis 2: Full Wasteload Allocation Simulation

The Chatfield watershed model ran scenarios with four of the five-point sources discharging their full wasteload allocation to represent future potential buildout conditions in the Chatfield Reservoir watershed. In this scenario the Roxborough point source does not discharge into the watershed due to a change in ownership of the wasteload. The TP load simulated by the model in the wasteload allocation scenario is 5,699 pounds (lbs)/year, which represents 75% of the TP wasteload allocation for all point sources in the watershed (7,605 lbs/year).

Table 5. TP Annual Historical and Wasteload Allocation.

Permittee	CDPHE Permit	TP Load, lbs/yr		Wasteload Allocation (lbs/yr)
		Historical (2010-2014)	2021	
Plum Creek Water Reclamation Authority (PCWRA)	CO0038547	2,035	2,044	4,256
Lockheed Martin Space Systems Company	CO0001511	57	22.1	1,005
Perry Park Water and Sanitation District (Sageport)	CO0043044	41	59.4	73
Perry Park Water and Sanitation District (Waucondah)	CO0022551	107	173.8	365
Total		2,241	2,299	5,699

Note: Roxborough stopped discharging to the watershed in 2007, and their wasteload allocation is owned by the Dominion Water and Sanitation District, which was not modeled for this analysis.

The wasteload allocation modeling scenario simulates an increase of approximately 3,458 pounds of TP per year compared to the historical average (2005-2014), of which about 950 pounds are distributed to the South Platte River and 2,500 pounds are distributed to Plum Creek.

Table 6. TP Wasteload Allocation by River Basin (pounds).

Watershed	Wasteload Allocation	Historical (2005-2014)	Difference
South Platte	1,005	57	948
Plum Creek	4,694	2,183	2,511
Total	5,699	2,241	3,458

The TP load is the product of concentration and flow volume. Therefore, when simulating the wasteload allocation, increases to both TP concentrations and flow were evaluated. For this analysis, it was assumed that future TP concentrations would remain similar to historical TP concentrations, as dischargers are trying to meet concentration limits, so the increase in TP load comes from an increase in the total effluent (total flow) of the facility.

The historical TP concentrations and flow for each facility are shown below along with the modified TP concentrations and flow for the full wasteload allocation scenario. For each facility, historical and wasteload concentrations are similar while flows have increased,

contributing to the increase in TP load. The TP concentrations and flows were used to calculate a monthly TP load for each point source, which sum to the TP annual wasteload allocation shown above (5,699 pounds).

Table 7. Simulated TP Annual Wasteload Allocation.

Point Source	Historical TP Concentration (mg/L)	Historical Flow (ft ³ /s)	Wasteload TP Concentration (mg/L)	Wasteload Allocation Flow (ft ³ /s)
Plum Creek Water Reclamation Authority (PCWRA)	0.22	4.70	0.22	9.87
Lockheed Martin Space Systems Company	0.16	0.19	0.16	3.22
Perry Park Water and Sanitation District (Sageport)	0.24	0.23	0.26	0.71
Perry Park Water and Sanitation District (Waucondah)	0.30	0.07	0.31	0.12

Table 8. TP Monthly Wasteload Allocation (lbs).

Month	PCWRA	Lockheed	Sageport	Waucondah	Roxborough	Total
January	361	85.4	6.1	30.4	0	483
February	326	77.1	6.1	30.4	0	440
March	361	85.4	6.1	30.4	0	483
April	350	82.6	6.1	30.4	0	469
May	361	85.4	6.1	30.4	0	483
June	350	82.6	6.1	30.4	0	469
July	361	85.4	6.1	30.4	0	483
August	361	85.4	6.1	30.4	0	483
September	350	82.6	6.1	30.4	0	469
October	361	85.4	6.1	30.4	0	483
November	350	82.6	6.1	30.4	0	469
December	361	85.4	6.1	30.4	0	483
Total	4,256	1,005	73	365	0	5,699

The results from the model simulation are shown at key locations in the watershed, South Platte River at Chatfield Reservoir and Plum Creek at Chatfield Reservoir for TP and total flow. Supplementary model results are provided for the point source locations including PCWRA (reach 52), Lockheed Martin (reach 16), Sageport (reach 116), and Waucondah (reach 113).

The model simulation shows there is an average annual increase in TP of approximately 620 pounds in the South Platte River and an average annual increase in TP of approximately 1,830 pounds in Plum Creek. For the South Platte River, we note that the average annual increase is really 960 pounds (using years 2008-2014), because the Roxborough point source discharges from 2000 to 2007 in the historical model but does not discharge at all in the wasteload allocation simulation, which causes an anomalously low difference from 2000 to 2007. This increase is comparable to the increase for the South Platte shown, indicating that all of the simulated increase in TP load reaches Chatfield Reservoir. In Plum Creek, the simulation shows that on average approximately 73% of the increase in the wasteload allocation is discharged to Chatfield Reservoir, indicating there is some loss from the point source dischargers to Plum Creek before reaching the reservoir.

The simulated flows for the South Platte at Chatfield Reservoir and Plum Creek at Chatfield Reservoir are provided to show the increase in flow between the wasteload allocation scenario and the historical model results. The simulated TP loads for each reach where a point source discharges into the watershed. The results confirm that the largest increases in TP load occur in the reaches where the PCWRA and Lockheed Martin discharge into the watershed.

Table 9. TP Annual Wasteload Allocation at Chatfield Reservoir

Year	Wasteload Allocation (lbs)		Modeled Historical (lbs)		Difference (lbs) (wasteload – historical)	
	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)
	2000	6,020	6,940	5,610	4,110	410
2001	3,680	6,600	3,010	4,100	670	2,500
2002	4,080	4,810	3,550	3,090	530	1,720
2003	7,790	11,810	7,440	10,630	350	1,190
2004	7,310	7,570	7,050	6,870	270	700
2005	8,750	8,240	8,730	6,720	20	1,530
2006	4,690	7,470	4,310	5,610	380	1,870
2007	17,120	21,140	17,090	19,190	30	1,950
2008	4,930	6,590	4,020	5,110	920	1,480
2009	6,280	9,180	5,320	7,750	960	1,430
2010	5,840	17,490	4,860	15,260	970	2,220
2011	2,550	6,890	1,590	4,960	960	1,940
2012	1,630	6,130	680	4,420	950	1,720
2013	3,030	6,190	2,060	4,010	970	2,180
2014	6,920	7,260	5,950	5,070	970	2,190
Average	6,040	8,950	5,420	7,130	620	1,830

Table 10. Total Flow Annual Wasteload Allocation.

Year	Wasteload Allocation (acre-foot (af))		Modeled Historical (af)		Difference (af) (wasteload – historical)	
	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)	South Platte at Chatfield Reservoir (Reach 16)	Plum Creek at Chatfield Reservoir (Reach 15)
	2000	71,200	23,160	69,510	17,670	1,690
2001	52,910	19,390	51,260	14,210	1,650	5,180
2002	34,710	10,650	32,980	5,600	1,730	5,040
2003	53,520	30,330	51,960	25,610	1,560	4,730
2004	48,760	22,700	47,230	18,180	1,530	4,520
2005	76,180	29,400	74,780	25,190	1,400	4,220
2006	86,600	20,080	85,190	16,050	1,400	4,020
2007	258,780	65,650	257,230	62,000	1,550	3,650
2008	114,900	21,180	112,660	17,360	2,240	3,810
2009	113,850	30,010	111,610	26,560	2,240	3,450
2010	105,560	47,680	103,310	43,960	2,250	3,720
2011	61,860	17,050	59,600	13,400	2,260	3,650
2012	25,620	16,820	23,340	13,020	2,280	3,800
2013	55,900	17,010	53,630	13,720	2,270	3,300
2014	140,000	19,580	137,730	16,590	2,270	2,990
Average	86,690	26,050	84,800	21,940	1,890	4,100



Table 11. TP Annual Wasteload Allocation at Point Source Locations

Year	Modeled Wasteload Allocation (lbs)				Modeled Historical (lbs)				Difference (wasteload – historical)			
	PCWRA	Lockheed Martin	Sageport	Waucondah	PCWRA	Lockheed Martin	Sageport	Waucondah	PCWRA	Lockheed Martin	Sageport	Waucondah
2000	6,330	6,020	610	470	3,270	5,610	540	120	3,070	410	70	360
2001	6,160	3,680	600	460	3,490	3,010	530	100	2,680	670	70	360
2002	5,240	4,080	290	410	3,560	3,550	220	50	1,670	530	70	360
2003	8,310	7,790	2,210	800	7,290	7,440	2,140	430	1,020	350	70	360
2004	6,750	7,310	640	480	6,330	7,050	570	120	410	270	70	360
2005	6,860	8,750	1,090	580	5,230	8,730	1,080	320	1,630	20	10	250
2006	6,630	4,690	1,080	560	4,680	4,310	1,070	310	1,960	380	10	250
2007	12,010	17,120	4,200	1,210	9,910	17,090	4,180	1,000	2,090	30	20	210
2008	6,140	4,930	550	470	4,520	4,020	530	310	1,620	920	20	150
2009	7,130	6,280	960	520	5,730	5,320	940	260	1,400	960	30	260
2010	10,050	5,840	3,420	1,090	7,630	4,860	3,390	820	2,420	970	30	260
2011	6,470	2,550	490	450	4,410	1,590	450	170	2,070	960	40	280
2012	5,970	1,630	430	440	4,180	680	380	150	1,790	950	50	290
2013	5,970	3,030	480	450	3,550	2,060	430	170	2,430	970	50	280
2014	6,600	6,920	520	460	4,220	5,950	480	190	2,380	970	40	270
Average	7,110	6,040	1,170	590	5,200	5,420	1,130	300	1,910	620	40	290

PCWRA is located in model reach 52, Lockheed Martin is in reach 16, Sageport is in reach 116, and Waucondah is in reach 113.

REGULATED STORMWATER SOURCES

Colorado's stormwater permit program requires control of stormwater runoff in all Phase I and Phase II Municipal Separate Storm Sewer Systems (MS4) entities. These requirements are separate and distinct from the Chatfield Control Regulations and complement the TMAL's purpose. Through the efforts of the MS4s, rate payers have spent significant funds to address water quality through implementing projects to mitigate impacts from urban stormwater runoff. Authority members with Phase I and II MS4 permits in the Chatfield Basin include:

- / Statewide General Permit (COR090000)
 - / Jefferson County
 - / City of Littleton
- / Cherry Creek Reservoir General Permit (COR080000)
 - / Douglas County
 - / City of Castle Pines
 - / Town of Castle Rock
- / Individual / Other Permit
 - / Castle Pines Metropolitan District
 - / Colorado Department of Transportation
- / Non-Standard General Permit (COR070000)
 - / Douglas County School District
 - / E-470 Toll Road
 - / Regional Transportation District
 - / Castle Pines Metro District
 - / Castle Pines North Metro District
 - / Highlands Ranch Metro District
 - / Highlands Heritage Metro District
 - / Meridian Metro District
 - / Southeast Metro Stormwater Authority
 - / Stonegate Village Metro District
 - / Stonegate Village North Metro District



General MS4 permits require the permittee to develop programs that meet six minimum control measures:

- / Public education and outreach on stormwater impacts
- / Public participation and involvement
- / Detection and elimination of illicit connections and discharges
- / Construction site stormwater runoff control
- / Post-construction stormwater management in development and redevelopment
- / Pollution prevention/good housekeeping for municipal operations

MS4 permits require implementation of best management practices (BMPs) to reduce pollutants discharged to the "maximum extent practicable." A summary of 2022 MS4 permit inspection and enforcement metrics are provided in

Table 12.

Table 12. Summary of 2021 MS4 Permit Activities

Land Use Agency	Permit Number	Permit Inspection Actions			Permit Enforcement Actions		
		Illicit Discharges	Construction	Post-Construction	Illicit Discharges	Construction	Post-Construction
Douglas County	COR080003	2	5888	90	0	200	0
Jefferson County	COR090024	21	360	12	21	84	0
Town of Castle Rock	COR080012	32	3035	298	22	1515	0
City of Littleton	COR090055	6	125	6	0	0	0

Notes:

- / Castle Pines Metropolitan District inspection and enforcement action data are incorporated in Douglas County reporting; City of Castle Pines MS4 boundary is predominately in the Cherry Creek Basin; only a very small portion is located in the Chatfield Watershed.
- / Town of Castle Rock inspection and enforcement action data includes data from the Cherry Creek Basin and the Chatfield Watershed. The Town of Castle Rock MS4 boundary is predominately in the Chatfield Basin; about two-thirds of the Town is located in the Chatfield Watershed.
- / The data for the City of Littleton includes all MS4 activities within the city limits. However, the city limits of Littleton only overlap with the Chatfield watershed boundary for a small portion (i.e., the Trailmark development)
- / Data for Jefferson County includes all MS4 activities within the County limits.
- / Douglas County data included only MS4 activities within the watershed.

EDUCATION AND OUTREACH

Many Authority members were able to resume some in person events and connect with the public to educate and inform on the benefits of their stormwater programs. Authority members also continued outreach efforts via on-line programs, billing inserts, and advertisements in 2022. Programs used by Authority members are as follows:

Douglas County

Douglas County's Stormwater Management Program provides public education, tracking of stormwater system impact activities, stormwater system project reviews, and coordination between federal, state, and local government for compliance with federally mandated programs.

Through the Cooperative for Local Environmental Awareness and Responsibility (CLEAR), the county has created the "One thing is Clear: our creeks, rivers and lakes depend on you" public awareness program. The interactive website provides information for Douglas County residents on how they can work to keep pollution out of their water ways. CLEAR Members collaborated with Members of Stormwater Permittees for Local Awareness of Stream Health (SPLASH) on Nutrient Outreach and training seminars.



Douglas County's 2022 program activities:

- / Maintained a portable "Road Show" for members to use as an Education and Outreach tool with the public. "In-person" events continue to be limited due to the COVID-19 pandemic.
- / Updated & maintained the CLEAR website at <http://onethingisclear.org/>.
- / A total of 12 two-third page residential and commercial awareness advertisements ran monthly in 10 Colorado Community Media newspapers covering certain portions of Douglas, Arapahoe, Jefferson and Elbert Counties. Ads ran in the Castle Rock News Press, Castle Pines News Press, Douglas County News Press, Highlands Ranch Herald, Lone Tree Voice, Elbert County News, Parker Chronicle, Centennial Citizen, Englewood Herald, Littleton Independent and South Platte Independent.
- / Held six (6) membership meetings (February 22nd, April 26th, June 28th, August 23rd, October 25th and December 27th) to discuss the stormwater topics of the day and maintain an organized discussion on the interpretation and application of federal and state stormwater regulations. All meetings are open to the public with the opportunity to comment. Meetings were virtual due to COVID-19.
- / Douglas County contracted with Waste Management for a curbside program in 2022 which serves all DC residents even in incorporated areas. The Program started in July and had a total of 355 residential pickups and 39 drop-offs for a total of 21,127 lbs. collected.
- / Members supported and attended both general and committee meetings of the Colorado Stormwater Council (CSC).
- / Members supported the Cherry Creek Stewardship Partners.
- / Members actively participated and commented in CDPHE Stakeholder Meetings for the new Non-Standard MS4 Permit. Members prepared information and participated in December's Non-Standard MS4 Permit Workshop sponsored by SPLASH.
- / CLEAR Members continue to collaborate with Members of SPLASH on New Non-Standard MS4 Permit, Nutrient Outreach, training seminars, newspaper ads, etc.

Additional information on various topics related to Stormwater and Pollution Control can be found on Douglas County's website.

Town of Castle Rock



Spring Up the Creek has become a tradition for Castle Rock and draws residents every year to preserve our waterways by removing trash that collects along the stream banks. The event occurred on Saturday, May 7, 2022.

178 community volunteers participated, like the 2019 participation rate. Approximately 89 bags of trash were collected, as well as several large items, consisting mainly of building materials. 18 staff trail leaders from across several departments participated, as well as several family members.

To maintain social distancing, the event was not headquartered at Festival Park, but instead volunteers assembled at specific trailheads. The number of routes was increased from the previous event's 7 to 10 trails throughout Town.

The Town of Castle Rock hosted this event in partnership with Douglas County, Castle Pines Metro District, Chatfield Watershed Authority, and Plum Creek Water Reclamation Authority. Event sponsors included Burns & McDonnell, Dana Kepner, Engenuity, Jacobs, JRS Engineering, Muller, Starwood, and W. W. Wheeler & Associates, Inc. Contributions totaled \$3,550, which covered the total cost of the event.

The Town of Castle Rock also invited elementary school students to participate in a tour of the Plum Creek Water Purification Facility. The tour included a water quality presentation.

In October 2022, the Town of Castle Rock adopted a landscape ordinance that limits grass lawns for new residential and commercial properties. The ordinance prohibits grass front lawns, and limits backyards to 500 square feet of irrigated grass lawn. In addition to reducing peak water demand, this ordinance will also reduce the potential for additional fertilizer to enter the drainage system and thereby Plum Creek and Chatfield Reservoir.

Jefferson County

Jefferson County is active in the Bear Creek Watershed Association in addition to the Chatfield Watershed Authority. Both watershed groups have WQCC Control Regulations associated with nutrients and have extensive monitoring and outreach activities. Both groups evaluate the data, identify nutrient sources, hold public meetings and provide outreach to the community.

Jefferson County provides brochures and information on the website related to household hazardous waste collection, sediment and pet waste. Jefferson County hosted a public cleanup of the Clear Creek corridor on National Public Lands Day. There were 690 volunteers that removed 26,250 pounds of trash/debris along 22 miles of the corridor. In addition, Jefferson County provides illicit discharge handouts to contractors and property owners that are obtaining information or a permit related to land disturbance.

Jefferson County provides dog waste bag dispensers and educational materials at approximately 60 locations throughout the Jefferson County Open Space system. Jefferson County is a partner in the collaborative "Lets Doo It!" campaign to promote proper disposal of dog waste. In addition, there are five human waste collection bag (wag bags) dispensers associated with popular rock climbing areas in Clear Creek Canyon.

Jefferson County maintains a small-site erosion control manual that explains the basic principles of erosion and sediment control and illustrates techniques to control sediment from small development sites, and has an inspection program for illicit discharges, construction activities, and post-construction inspections.

Jefferson County regularly reports to the Authority on stormwater management practices and programs. More information about Jefferson County's municipal stormwater program is contained in their CDPS Stormwater Permit Annual Report. More information about Jefferson County's municipal stormwater program is contained in their CDPS Stormwater Permit Annual Report.

City of Littleton

The City of Littleton participated in Stormwater Permittees for Local Awareness of Stream Health (SPLASH), which supports and conducts a wide range of educational activities. In 2022, SPLASH, with Littleton staff, manned a stormwater booth at three Meet, Great, and Eat events on June 15th; July 13th, August 24th; and at the Western Welcome Week on August 20th. SPLASH also put on their first Rain Barrel Workshop.

Staff conducted stream cleanups and water quality educational outreach via the City of Littleton newspaper, at community events, and through social media sites. The City of Littleton holds an annual Hazardous Household Waste collection event with the City of Englewood.

The City of Littleton joined efforts of regional groups with radio advertisements and waterway cleanups. In addition, the City of Littleton publishes articles on water quality awareness in the Littleton Report and social media.



PROGRESS TO PROMOTE WATER QUALITY PROTECTION

While funding sources remain very limited, the Authority's collaborative role seeks out partnerships to support our water quality goals now and in the future. Donations and in-kind services from Authority members to support progress to promote water quality protection included:

- / Continued implementation of the amended Intergovernmental Agreement (IGA) and bylaws.
- / Continued water quality monitoring program in both the reservoir and the watershed.
- / Continued implementation of the Chatfield Watershed Plan.
- / Continued collaboration with Chatfield Reservoir Mitigation Company (CRMC) regarding data collection to support CRMC reservoir modeling efforts.
- / Continued Watershed modeling efforts.
- / Collaboration with local and state agencies in grant funding effort.
- / Continued Public Outreach Committee activities.

In addition, our members have been expending significant funds for drainageway and storm sewer projects to reduce erosion and flooding and improve water quality. The following are example projects completed by Authority Members.

West Plum Creek Stream Management Plan

West Plum Creek is the last relatively unaltered transition zone stream in the area and is home to several important plains fish species. The resident fish in West Plum Creek are the only surviving relics of declining plains species native to the South Platte and Arkansas River basins. Colorado Parks and Wildlife, alongside partners including US Fish and Wildlife Service, Douglas County Open Space, Chatfield Watershed Authority, and River Network, support an effort to study and assess aquatic and riparian habitat, as well as better understand hydrology and opportunities in water management with the water users. The end goal is to implement conservation actions that a diverse stakeholder group can support to help protect these fish (e.g., improving fish passage, enhancing water quality, and supporting healthy riparian conditions, as well as exploring potential opportunities for water management and flow protection).

Douglas County

Rural Culvert Repair Projects

Projects include lining over 20 roadway culverts throughout rural Douglas County, some of which are located in the Chatfield Watershed. These culverts range from 15-inch to 120-inch in size. The linings vary from slip lining to cured in place pipe, and the capacity is observed at each crossing to keep historic flow conditions.

East Plum Creek Restoration Partnership

The Douglas County Conservation District received a \$19,935.00 grant from the Colorado Healthy Rivers Fund for the East Plum Creek Restoration Partnership (EPCRP) located at the Colorado Agricultural Leadership Foundation's (CALF) Historic Lowell Ranch in southern Castle Rock, Douglas County. CALF owns the 168-acre property, and the entire stream restoration project is approximately a 1-mile-long riparian corridor containing East Plum Creek. The property has a conservation easement held by Douglas Land Conservancy in perpetuity. This project is an important link to reduce fragmentation and connect a variety of protected habitats both upstream and downstream of the project. The District in collaboration with project sponsors will work with contractors to continue the successful restoration practices implemented, which include more economical and less disruptive bank-focused lay back and stabilization methods to address bank wasting and the incised channel at the East Plum Creek Restoration Partnership. Once completed a breeding habitat will be created for waterfowl and improved habitat for a variety of Priority Wildlife Species, including beaver with the implementation of diverse plantings, woody debris and drop structures. The habitat improvement for native aquatic invertebrates, fish and amphibians will be specifically targeted as well. This project is an important link to reduce fragmentation and connect a variety of protected habitats both upstream and downstream of the project within this important wildlife corridor.

Town of Castle Rock

Craig & Gould North Infrastructure Improvement Project

Managed by David Van Dellen, P.E., Laura Kindt, P.E. and Shantanu Tiwari, the Craig and Gould North Infrastructure Improvement Project is the second phase of improvements in the oldest residential neighborhood in Historic Downtown Castle Rock. Located just south of the Rock, this project is bound by Perry Street to the west, Sunset Drive to the east and Fifth Street to the south and comprises approximately eighty residential properties and one church. The subdivision of Craig and Gould was originally platted in 1874 and the first house within the north area was built in 1897. This neighborhood was first paved in the 1980's with inverted crown streets for drainage and gravel shoulders for parking. Since that time, the Town has responded to several complaints from residents whose houses sit lower than the street and experience flooding during heavy rain events. The Town has addressed this over the years by adding curbing and inlets where necessary to reduce the occurrence of flooding. These solutions were temporary and the neighborhood ultimately needed an overhaul to bring it up to current standards for drainage and safety.



The objectives of the Craig and Gould North Infrastructure Improvement Project were to add storm sewer within the public right-of-way to capture stormwater runoff, replace aging water and sewer infrastructure and upgrade the streets to current residential standards for safety. This includes two travel lanes on all residential streets, parking lanes, curb, gutter and sidewalks throughout the majority of the project. Existing alleyways that remained dirt up to this point were paved with concrete. In order to convey stormwater runoff, an outfall system was needed crossing the railroad. This outfall includes an underground **water quality chamber** to remove pollutants prior to discharging to East Plum Creek.

Construction began in November 2021 and will be completed no later than August 2023. JBS Pipeline, LLC was contracted by the Town to construct the project. Funding is provided by Castle Rock Water and Public Works, with a construction budget of \$7.6 million. All properties within the project limits received new service line connections for water and sewer up to the property line. All water services were checked and determined not to have lead piping. Should this have been identified, lead piping services would have been replaced up to the house.

The current cost of the project is \$7,217,052, which is within the budget. The project was extended by three weeks due to some necessary changes to the project scope. It is scheduled for completion by August 2023.



Omni Tributary - Prairie Hawk Dr. to Red Hawk Dr.

Lead by Erik Dam, P.E., this project consisted of Stormwater Master Plan improvements for the Omni Tributary drainageway between Prairie Hawk Dr. and Red Hawk Dr. to repair damage to the channel as a result of development runoff, reduce flood risk to adjacent residential properties, decrease sediment transport downstream, and prevent further loss of existing vegetation and trees to the maximum extent possible. Additional channel stabilization measures are also included along the nearby Unnamed Tributary adjacent to Red Hawk Ridge Golf Course Hole No. 6.



Drainageway improvements on Omni Tributary consisted of importing and placing approximately 2,000 CY of fill material and 2,470 CY of topsoil, construction of five grouted boulder drop structures, and installation of riprap at various locations for culvert outlet protection and bank stabilization. Additionally, seven deciduous and fifteen evergreen trees will be planted at the end of the project to offset some of those lost during construction.

On Unnamed Tributary the scope of work is similar, with construction of one grouted boulder drop structure, riprap installed for bank stabilization and a steel sheet pile cutoff wall added to control the channel slope. Additionally, an existing triple 30" corrugated metal pipe crossing of a neighborhood paved trail was replaced with reinforced concrete pipe and new metal handrails for safety, and an existing raw water line crossing the channel was protected by raising the invert to provide more cover.

The contractor was 53 Corporation, LLC. The cost was \$1,345,275, and the project was completed under budget. The project was completed in October 2022 (on time).



Plum Creek Streambank Stabilization

In collaboration with the Authority, Castle Rock Water is managing several current and proposed drainageway improvements along East and West Plum Creek. These projects enhance and, in some cases, reconstruct the natural floodplains in the Town of Castle Rock. This infrastructure serves to reduce public risk from stream channel erosion and flooding. These projects also have a water quality component that ensures our renewable drinking water supplies are preserved and protected.



FUNDING OF NON-POINT SOURCE PROJECTS

Hilldale Pines Fire Mitigation (Total Cost \$70,000, of which \$5,000 contributed by CWA)

This is a fire mitigation project in Hilldale Pines, a 300-home community on less than 1 square mile near Conifer, partially in the drainage for Deer Creek Canyon into Chatfield. The goal of the Hilldale Pines Project is to construct and complete a 2,700-foot shaded fuel break along the ridge from South Crystal Way to the planned Denver Mountain Parks fuel mitigation project on the north. The fuel break will consist of tree density thinning according to a prescription by the Technical Advisory Committee.

The project benefits include the reduction of risk to lives, property, infrastructure, and watershed values from catastrophic wildfire. Specifically, within the project watershed, thousands of homes, millions of dollars of infrastructure (roads, utilities, and communication towers), and water sources used by thousands of residents are located. The project aims to protect these resources by reducing continuous tree cover, reducing ground vegetation, improving options for wildfire suppression by reduction the potential for crown fire, and reducing wildfire intensity and rate of spread near evacuation routes.

West Plum Creek Stream Management Plan (Total Cost \$265,786 with \$31,000 in-kind match funding, of which \$5,000 cash and \$5,000 in-kind services contributed by CWA).

This project aims to fully document existing conditions and identify risks to fish populations along West Plum Creek, the last relatively unaltered transition zone stream in the South Platte Basin and perhaps the best example of a nearly intact fish assemblage along Colorado's Front Range. Colorado Parks and Wildlife, alongside partners including River Network, US Fish and Wildlife Services, Douglas County's Division of Open Space and Natural Resources, Chatfield Watershed Authority, and others will participate in the creation of a Stream Management Plan to assess native fish habitat, improve water quality, and better understand hydrology and opportunities in water management with the water users. Of primary importance is documenting fish passage barriers and understanding the hydrologic regime of the watershed, and how to maintain its integrity into the future.

Phase I will focus on stream condition assessment and characterization, development of objectives to reduce risk to native fish populations, identification of priority projects for fish passage, and landowner engagement. A subsequent phase will identify and prioritize opportunities in water management, water quality, and river/riparian restoration alongside water users.

CHATFIELD WATERSHED AUTHORITY MEMBERS

www.chatfieldwatershedauthority.org

Members consist of water and sanitation districts, water providers, municipalities, metropolitan districts and other area stakeholders within the Chatfield Watershed. The membership representation consists of organization staff and elected officials. Membership dues assist with collaborative projects and water quality testing.

Chatfield Watershed Authority Members

City of Littleton
City and County of Denver (acting through its Board of Water Commissioners)
Douglas County
Jefferson County
Roxborough Water & Sanitation District
Town of Castle Rock
Perry Park Water & Sanitation District
Centennial Water & Sanitation District
Town of Larkspur
Castle Pines Metropolitan District
Dominion Water & Sanitation District
Louviers Water & Sanitation District
Plum Creek Water Reclamation Authority

Ex-Officio Participants

Colorado Agricultural Leadership Foundation (CALF)
Colorado Parks and Wildlife Commission (Chatfield State Park)
Colorado Department of Transportation
Colorado Water Conservation Board
Ken Caryl Ranch Master Association
The Law Enforcement Foundation
Ponderosa Retreat
Sacred Heart Retreat
Tri-County Health Department (dissolved on December 31, 2022)
U.S. Army Corps of Engineers
Chatfield Reservoir Mitigation Company
Water Quality Control Division of the Colorado Department of Public Health and Environment

Watershed Manager

Colorado Watershed Assembly

Financials

TWS Financial, Inc.

Technical Consultant

RESPEC Company, LLC



Attachment 15

CHATFIELD WATERSHED AUTHORITY WATER QUALITY PROJECTS : 2024 - 2028									
11/10/2022 DRAFT									
PROJECT CATEGORY	DESCRIPTION	ACTIVITY	2024	2025	2026	2027	2028	TOTAL COST	PRIORITY
WATER QUALITY PROTECTION									
1	TMAL Allocation Development	Perform calculations and analysis needed to establish revised total annual maximum loads (TMAL) for all point source dischargers in the watershed.		\$50,000	\$50,000			\$100,000	1
2	Site-Specific Nitrogen Standard Development	Perform calculations and analysis needed to establish a site specific standard for total nitrogen in the reservoir.			\$35,000	\$35,000	\$35,000	\$105,000	1
3	Watershed Modeling	Use and upgrade the existing watershed model to: 1. Keep model current; 2. Predict the effectiveness and potential changes in stream and reservoir inflow pollutant loads and concentrations from proposed water quality improvements; and 3. Support regulatory compliance.	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$150,000	1
4	Reservoir Modeling	Contract with the CRMC to use and upgrade the existing reservoir model to: 1. Predict the effectiveness and potential changes in reservoir water quality from constructed and proposed water quality improvements; 2. Understand the role of each pollutant source (i.e. internal loading, stream inflow loading, etc.) on reservoir water quality; 3. Understand how the reallocation project may change the needed site specific standards, and 4. Support regulatory compliance.	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$175,000	1
5	Wildfire Mitigation	Participate in wildfire mitigation projects to minimize and mitigate the risk and effect on water quality of future wildfires in the watershed.	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$75,000	3
6	Watershed Plan Update	Continue to document the progress made in improving watershed and reservoir water quality and develop and prioritize future watershed programs and projects.	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000	3
7	Reservoir Beneficial Use Monitoring	Support CPW in collecting, monitoring, and documenting, as applicable, the quantity and quality of reservoir beneficial uses (i.e. fishery biodiversity, swimmer satisfaction, etc.) over time.	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000	3
8	Stream Management Planning	Participate in stream management plans to identify opportunities for water quality improvement projects.	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000	2
9	Landowner Engagement	Continue engagement efforts with landowners abutting and/or crossing watershed streams to educate on best management practices for stream interaction and protection.	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000	3
SUB-TOTAL			\$97,000	\$147,000	\$182,000	\$132,000	\$132,000	\$690,000	
WATER QUALITY MONITORING									
1	Chatfield Reservoir Monitoring	Collect water quality data in the reservoir to support water quality protection measures.	\$35,000	\$35,000	\$35,000	\$35,000	\$35,000	\$175,000	1
2	Watershed Streams Monitoring	Collect water quality data in the tributary watershed streams (both base flows and storm flows) to understand existing sources and magnitudes of pollutant loads and concentrations.	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$225,000	1
3	Water Quality Improvement Project Monitoring	Collect pre-project and post-project water quality data upstream and downstream of water quality projects to document their effectiveness over time in improving water	\$2,000	\$3,000	\$4,000	\$5,000	\$6,000	\$20,000	2
4	Sediment Sampling and Testing	Perform watershed wide sediment testing to map and pinpoint hotspots of phosphorus rich soils for future project identification and prioritization.	\$20,000					\$20,000	3
SUB-TOTAL			\$102,000	\$83,000	\$84,000	\$85,000	\$86,000	\$440,000	
WATER QUALITY IMPROVEMENTS									
1	Wastewater Treatment Improvements	Engage with wastewater treatment providers to assist in promoting improved treatment for continued nutrient reduction.	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$10,000	3
2	Agricultural Mitigation	1. Participate in the implementation of agricultural best management practices (BMPs) and demonstrations at Colorado Agricultural Leadership Foundation (CALF) at Lowell Ranch to educate members of the public that visit the working ranch on the water quality and cost efficiencies associated with implementing various agricultural management practices; and 2. Participate with the Douglas County Conservation District to educate agricultural users on state-of-the-art practices to reduce pollutant impacts from agricultural activities.	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000	3
3	Septic Systems Mitigation	Contribute to and participate in the implementation of a rebate program for septic system upgrades that use new technology to reduce pollutant loads in critical stream	\$4,000	\$4,000	\$4,000	\$4,000	\$4,000	\$20,000	3
4	Non-point Source Mitigation Projects	Contribute to and participate in the construction of retrofits to existing detention ponds and other stormwater facilities to improve nutrient and pollutant reduction efficiencies.	\$15,000	\$15,000	\$15,000	\$15,000	\$15,000	\$75,000	2
5	Stream Improvements	Contribute to and participate in the implementation of stream improvements identified in stream management plans that improve water quality in the streams tributary to the reservoir.	\$30,000	\$30,000	\$30,000	\$30,000	\$30,000	\$150,000	1
6	Erosion Mitigation	Contribute to and participate in the construction of stream reclamation along critical degraded watershed stream reaches to enhance water quality and reduce streambank erosion.	\$45,000	\$45,000	\$45,000	\$45,000	\$45,000	\$225,000	1
7	Grant Funding Opportunities	Partner with government and non-profit agencies to identify and apply for grant funding for implementation of water quality improvement projects and programs.	\$5,000	\$5,000	\$5,000	\$5,000	\$5,000	\$25,000	1
SUB-TOTAL			\$106,000	\$106,000	\$106,000	\$106,000	\$106,000	\$530,000	
GRAND TOTAL			\$305,000	\$336,000	\$372,000	\$323,000	\$324,000	\$1,660,000	
								PRIORITY 1	\$1,330,000
								PRIORITY 2	\$120,000
								PRIORITY 3	\$210,000

Attachment 16

MEMORANDUM

TO: Chatfield Watershed Authority (“CWA”) Technical Advisory Committee (“TAC”)
FROM: Michael Daugherty, Somach Simmons & Dunn (“SSD”)
SUBJECT: Legal Report – April 4, 2023, TAC meeting
DATE: March 29, 2023

I. Lakes Reservoirs Nutrients Criteria Rulemaking Update

CWA filed its rebuttal statement (“Rebuttal”) in the Colorado Water Quality Control Commission’s (the “Commission”) ongoing rulemaking proceeding for revised nutrients criteria for the state’s lakes and reservoirs (Regulations 85 and 31-38) on February 15, 2023.

A. CWA’s Rebuttal Requests a Delayed Site-Specific Standard for Chatfield Reservoir

As approved by CWA’s Technical Advisory Committee (“TAC”), CWA’s Rebuttal reaffirms its request for a delayed site-specific total nitrogen (“TN”) standard. Specifically, CWA requests in its responsive prehearing statement and its Rebuttal that the Commission take the following action:

- Decline to impose the Colorado Water Quality Control Division’s (the “Division”) proposed cold-water table value TN standard on Chatfield Reservoir in 2023;
- Allow for the development of a site-specific TN standard for Chatfield Reservoir once CWA has completed work on its revised TMAL (expected in 2026); and
- Refrain from imposing any TN standard on Chatfield Reservoir until a site-specific standard is in place.

CWA’s Rebuttal also responds to the U.S. Environmental Protection Agency’s (“EPA”) and the Plum Creek Water Reclamation Authority’s (“PCWRA”) responsive prehearing statements, both of which specifically addressed the Division’s proposal for Chatfield Reservoir. CWA appreciates EPA pointing out that Chatfield Reservoir has site specific standards for both chlorophyll a and phosphorus, which supports CWA’s request for a site-specific nitrogen standard as well. CWA disagrees with EPA’s assertion that adopting a

standard now and changing it in the future is the preferable action, arguing that this is inappropriate and unfair to the regulated community and the public. CWA supports PCWRA’s request that the Commission develop a site-specific TN standard for Chatfield Reservoir, and also raises concerns regarding PCWRA’s (which is a dues-paying member of CWA) estimated cost of complying with the proposed nutrient standards.

Finally, as requested by TAC, CWA’s Rebuttal emphasizes the fact that Chatfield Reservoir is one of only four reservoirs in Colorado subject to a control regulation promulgated by the Commission pursuant to C.R.S. 25-8-205, and that CWA has been working to improve the reservoir’s water quality for nearly four decades.

B. The Rebuttal Statements of Other Parties Relevant to CWA and Chatfield Reservoir

Numerous other parties filed rebuttal statements in this rulemaking, all of which are available [here](#). Those of the Division, EPA, Colorado Parks and Wildlife (“CPW”), PCWRA, and Centennial Water and Sanitation District (“CWSD”) are of particular relevance to CWA.

i. Division’s Rebuttal Statement

The Division acknowledges in its 177-page Rebuttal that the Commission has adopted four watershed protection control regulations, including Regulation 73 for Chatfield Reservoir. The Division reiterates its proposal to apply the table value TN standard on Chatfield Reservoir immediately “to protect the public swim beach.” Division’s Rebuttal, pg. 136. The Division also acknowledges EPA’s request in its responsive prehearing statement for the Division to reevaluate the standard proposed for Chatfield Reservoir to consider the site-specific chlorophyll a standard that has already been adopted. *Id.* at 137. The Division did increase the table value TN standard for warm-water reservoirs from 610 ug/L to 670 ug/L, but did not change the table value TN standard for cold-water reservoirs. *Id.* at 17. The Division also provides details regarding the future development of site-specific nutrient standards, but ultimately concludes that “no unreasonable practical effects would be expected by adoption of the [D]ivision’s proposal.” *Id.* at 139-142.

The Division concedes that “[a]s with Cherry Creek Reservoir, the division agrees that information to support an appropriate and protective site-specific standards proposal . . . could be developed for consideration by the [C]ommission at an upcoming Regulation No. 38 triennial review rulemaking hearing.” Division’s Rebuttal, pg. 143. The Division, however, rejects CWA’s request for the Commission to refrain from imposing the proposed table value TN standard on Chatfield Reservoir. The Division argues that “[t]o do so would not be protective of the uses in Chatfield Reservoir, and, based on CWA’s absence of a plan to develop site-specific standards as soon as possible, this lack of protection would be indefinite.” *Id.* The Division does not acknowledge CWA’s limited resources in its request to begin work on a site-specific TN standard once work on the revised TMAL is completed.

In response to EPA’s request for the Division to reevaluate the proposed nutrient standards for Chatfield Reservoir, the Division provides an “approximate outcome of site-specific standards derived using a method that would be expected to maintain the site-specific chlorophyll a standards.” *Id.* The Division concedes that this calculation results in a site-specific TN standard for Chatfield Reservoir (530 ug/L) that is well above the proposed table value cold-water reservoir standard of 380 ug/L. *Id.* at 144. The Division does not propose this standard be adopted by the Commission, but indicates that any future site-specific standards “should be developed in close collaboration with stakeholders.” *Id.*

The Division’s Rebuttal indicates that its original notice provides for the expectation that a site-specific TN standard would be sought for Chatfield Reservoir, and also indicates that “there are relatively few lakes that are expected to have existing quality where chlorophyll a and one nutrient are in attainment, but the other is not. In such cases, site-specific standards may be appropriate.” Division’s Rebuttal, pg. 23. This is promising in the event that CWA indeed does move forward with proposing a site-specific TN standard for Chatfield Reservoir in the future.

ii. EPA’s Rebuttal Statement

EPA’s Rebuttal indicates that EPA “see[s] no compelling reason not to assign a TN standard” to Chatfield Reservoir immediately. EPA’s Rebuttal, pg. 30. Overall, EPA requests “application of a TN standard to Chatfield Reservoir as an outcome of the current rulemaking action with the understanding that, in the future, site-specific standards can be developed and adopted if they are shown to be appropriate.” *Id.*

EPA’s Rebuttal also responds to numerous parties’ (including CWA) argument that the Division’s chosen method of classifying lakes and reservoirs may not be appropriate for nutrient standard determinations. EPA “support[s] the Division’s classification approach that derives separate cross-lake relationships for cold and warm lakes,” but also indicates that “the Division is doing some additional work to evaluate whether classification results are similar using the initial and final versions of the lakes dataset.” EPA’s Rebuttal, pg. 4.

iii. CPW’s Rebuttal Statement

CPW indicates in its Rebuttal that “CPW supports the addition of TN standards [for Chatfield Reservoir], but would not oppose a 2-year delayed effective date to give time for site-specific standards at the next South Platte hearing. CPW Rebuttal, pg. 3. CPW confirms that “Chatfield occasionally has algae blooms, but has never tested positive for algal toxins.” *Id.* at 18. CPW also states that it “is concerned that CWA has not shared its most recent TN data with [the Division].” *Id.* at 19.

iv. PCWRA’s Rebuttal Statement

In its Rebuttal, PCWRA agrees “with the CWA’s proposal that a site-specific nitrogen standard be developed once the CWA completes its work on its revised TMAL in 2026.” PCWRA Rebuttal, pg. 7. PCWRA specifically addresses EPA’s general assertion that the Commission should adopt a standard immediately, even if not the correct standard, and fix it later. According to PCWRA, “[r]ushing to adopt an improper standard that is not supported by the scientific evidence or conditions in Chatfield Reservoir, based on the promise of future ‘fine-tuning,’ has serious implications.” *Id.* at 8.

PCWRA also supports CWA’s concern with the method of lake classification chosen by the Division. PCWRA Rebuttal, pg. 5. Specifically, PCWRA’s Rebuttal provides that “Chatfield Reservoir demonstrates why it was inappropriate to rely on a single method of categorizing lakes.” *Id.* PCWRA argues that “had the Division more appropriately partitioned the data based on temperature, and had the Division considered other site-specific conditions, it may have significantly altered the proposed total nitrogen limit for Chatfield Reservoir.” *Id.*

PCWRA also reiterates its concern regarding the enormous estimated cost that PCWRA would have to endure to comply with the proposed nutrient standards. Accordingly, PCWRA argues that “the Commission should reject the proposed nitrogen standard for Chatfield Reservoir because of its enormous costs compared to no water quality benefits.” PCWRA’s Rebuttal, pgs. 5-6.

v. *CWSD’s Rebuttal Statement*

CWSD’s Rebuttal points out that Chatfield Reservoir “attains both the phosphorus and chlorophyll a standards,” indicating that water quality is protected “through the regulation of phosphorus alone.” CWSD’s Rebuttal, pg. 5. CWSD uses Chatfield Reservoir as an example of the Division’s failure to consider site-specific conditions and instead require that all three nutrient standards be attained in every lake with proposed standards involved in the hearing, “even where it is unnecessary to protect a waterbody’s classified uses and would require the expenditure of hundreds of millions of dollars to implement needless treatment.” *Id.*

C. Motions and Orders

Two motions were filed this month in this rulemaking: (1) the first by the Lower Arkansas Valley Water Conservancy District (LAVWCD) requesting leave to file a rebuttal statement, and (2) the second by numerous parties requesting the Commission to extend the deadline to file motions.

i. *LAVWCD’s Motion to Admit Rebuttal Statement*

LAVWCD’s motion requests the Commission to admit LAVWCD’s rebuttal statement despite not filing a responsive prehearing statement. To support its motion, LAVWCD explains that EPA and Colorado Parks and Wildlife (“CPW”) raised in their responsive prehearing statements for the first time in this hearing the issue of environmental justice and the Division’s failure to include disproportionately impacted communities (“DICs”) in this rulemaking’s stakeholder process. LAVWCD encompasses five counties that qualify as disproportionately impacted communities under the Colorado Environmental Justice Act. LAVWCD alleges that “EPA has not accurately represented the interests of DICs in environmental justice in the Lower Arkansas Valley” and that the “Valley’s DICs deserve to be heard in this proceeding themselves, rather than misrepresented by a third party without consultation.” LACWCD’s Motion, pgs. 2-3.

ii. Motion to Extend Motions Deadline

The second motion, which requests the Commission extend the deadline for filing motions in this rulemaking, was filed by Arapahoe County Water and Wastewater Authority, the City of Aurora, Parker Water & Sanitation District, Denver Water, the City of Fort Collins, the City of Loveland, Centennial Water and Sanitation District, Colorado Wastewater Utility Council, East Cherry Creek Valley Water and Sanitation District, Morrison Creek Water and Sanitation District, Plum Creek Water Reclamation Authority, Northern Colorado Water Conservancy District, Lower Arkansas Valley Water Conservancy District, the City of Colorado Springs, and United Water and Sanitation District. The motion indicates that the filing parties “have requested a cost-benefit analysis and regulatory analysis from the [Division], and a consultation report from the State Engineer’s Office and the Colorado Water Conservation Board to better understand—and allow the Commission to consider—the economic impacts and potential for material injury to water rights resulting from the Commission’s adoption of the Division’s proposal.” Joint Motion to Extend the Motions Deadline, pg. 1. The motion requests the Commission to extend the motions deadline until three days after the last of the cost-benefit analysis, regulatory analysis, and consultation report are issued “in order to receive and consider any motions arising from these reports.” *Id.* at 2.

iii. Commission’s Order(s)

The Hearing Officer issued an Order on February 16, 2023, that addressed two concerns: (1) the Division’s late filing of its rebuttal statement and (2) LACWCD’s motion. The Hearing Officer determined that good cause was shown for the Division’s late submittal, but did not make a determination regarding LACWCD’s request to file a rebuttal statement without having filed a responsive prehearing statement. The Order imposed a deadline for parties to object to admitting either rebuttal statement by February 22, 2023. No parties formally opposed the admission of either rebuttal statement.

The Hearing Office issued another Order on February 24, 2023, that ordered the Division’s and LAVWCD’s rebuttal statements be admitted into the hearing record, and denied the motion to extend the motions deadline. The Hearing Officer explained the decision to deny the request by indicating that “[p]arties will be able to provide testimony on information entered into the hearing record during the rulemaking hearing.” Fifth Procedural Order, ¶ 3. The February 24, 2023, Order also indicates that parties need not complete an outstanding issues index form.

The Commission issued a Prehearing Order on March 10, 2023, which provides for the submittal of Surrebuttals—the only opportunity for parties to respond to the Division’s revised proposal to delay the effective date of the nutrient standards adopted in this proceeding until December 31, 2027. CWA plans to submit a Surrebuttal to respond to the Division’s revised proposal, and a draft is included in this meeting packet. The Prehearing Order provides CWA with seven (7) minutes to present at the hearing, which is currently scheduled for April 10, 2023.

D. Procedural Timeline

The rulemaking hearing is currently scheduled for April 10, 2023. A number of parties have submitted a letter to the Governor’s Office requesting further delay of the rulemaking hearing. SSD will provide an update if the Commission makes any further modifications to the rulemaking timeline and schedule of deadlines.

E. Application for Reconsideration and Judicial Review

The Commission’s final determination with regard to the proposed nutrient standards will be subject to judicial review. Any such proceeding for judicial review must be filed within thirty days after the Commission has made a final determination and shall be filed in the district court for the either Douglas County or Jefferson County. C.R.S. 25-8-404. During the time permitted for seeking judicial review of any final order or determination of the commission, CWA may also request the Commission reconsider its initial determination. The Commission must either grant or deny the application for a hearing, rehearing, or reconsideration within ten days after receipt of the application. If the application is granted, the initial determination by the Commission will not be considered final, and the Commission may affirm, reverse, or modify the pertinent order or determination. C.R.S. 25-8-403.

Accordingly, if CWA is not satisfied with the Commission’s determination at the conclusion of the rulemaking proceeding, CWA may file an application for reconsideration or seek judicial review within thirty days. Assuming the Commission issues a decision on the day of the rulemaking hearing (which is scheduled for April 10, 2023), CWA would have until May 10, 2023, to file an application for reconsideration or to seek judicial review. It is unlikely that the Commission will make a determination on the day of the rulemaking hearing, however. Given the complexity of the Division’s proposal, the number of parties involved,

and the economic ramifications, the Commission will likely take its time in issuing a final decision.

CWA has a Board of Directors meeting schedule on April 17, 2023, and a TAC meeting on May 2, 2023, during which the opportunity for appeal should be discussed (assuming the Commission has rendered its decision by that time). SSD recommends that the lakes-nutrients subcommittee hold a meeting as soon as possible once the Commission has made a determination to discuss the final result and CWA's options.

II. Regulation No. 93 (Colorado's Section 303(d) List of Impaired Waters) – Rulemaking Hearing

The Commission submitted a notice of upcoming hearings indicating that a rulemaking hearing regarding Regulation No. 93 (Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List), 5 C.C.R. 1002-93, is scheduled for May 8, 2023. The list included in the Division's prehearing statement recommends retaining in the 2023 list all of the water bodies and pollutants related to Chatfield Reservoir presented in the 2019 list. Because CWA determined not to participate in the 2019 rulemaking, SSD and RESPEC do not recommend that CWA participate in this 2023 rulemaking proceeding.

Attachment 17

Chatfield Watershed Authority

Financial Recap

February 28, 2023

Current Month:

1. In kind membership dues recorded from Denver Water in the amount of \$ 2,125.00, Plum Creek in the amount of \$ 1666.67, Roxborough Water and Sanitation in the amount of \$ 266.67 and Centennial in the amount of \$ 1953.83 for monitoring services.
2. TWS Financial billed \$ 750 for February 28, 2023 accounting expenses.
3. Somach Simmons and Dunn billed \$ 4,130 for February 2023 legal fees
4. Lobbyists billed \$ 3000 for February 2023
5. RESPEC billed \$ 3687.50 for February 2023
6. Cash in bank as of 02/28/23- \$ 430,770.60
7. Accounts payable as of 02/28/23 - \$ 17,120.36
8. Outstanding dues as of 02/28/23 \$ 38,586. We have collected \$ 31,386 of that amount to date leaving a balance of unpaid dues at \$ 7200.00.

Chatfield Watershed Authority
Interim Financial Statements
Substantially all Disclosures Omitted
February 28, 2023

Chatfield Watershed Authority
Balance Sheet
As of February 28, 2023

	<u>Feb 28, 23</u>
ASSETS	
Current Assets	
Checking/Savings	
1000 · 1st Bank	430,770.60
Total Checking/Savings	<u>430,770.60</u>
Total Current Assets	<u>430,770.60</u>
TOTAL ASSETS	<u><u>430,770.60</u></u>
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Accounts Payable	
2000 · Accounts Payable	17,120.36
Total Accounts Payable	<u>17,120.36</u>
Total Current Liabilities	<u>17,120.36</u>
Total Liabilities	17,120.36
Equity	
32000 · Retained Earnings	267,612.19
Net Income	146,038.05
Total Equity	<u>413,650.24</u>
TOTAL LIABILITIES & EQUITY	<u><u>430,770.60</u></u>

Chatfield Watershed Authority
Profit & Loss
January through February 2023

	Jan 23	Feb 23	TOTAL
Income			
4000 · Operating Revenues - Membership			
4002 · Douglas County	0.00	75,510.00	75,510.00
4004 · Town of Castle Rock	0.00	75,510.00	75,510.00
4005 · Plum Creek Wastewater	0.00	2,400.00	2,400.00
4006 · Roxborough Park	2,400.00	0.00	2,400.00
4008 · Perry Park W&S District	0.00	2,400.00	2,400.00
4009 · Denver Water Department	0.00	2,400.00	2,400.00
4010 · City of Littleton	0.00	2,400.00	2,400.00
4012 · Town of Larkspur	2,400.00	0.00	2,400.00
4014 · Louviers Water & San. District	2,400.00	0.00	2,400.00
4016 · Sacred Heart Retreat House	0.00	2,400.00	2,400.00
4038 · Denver Water- In Kind	2,125.00	2,125.00	4,250.00
4039 · Plum Creek - In Kind	1,666.67	1,666.67	3,333.34
4040 · Centennial - In Kind	1,953.83	1,953.83	3,907.66
4045 · Roxborough In Kind	266.67	266.67	533.34
Total 4000 · Operating Revenues - Membership	13,212.17	169,032.17	182,244.34
4103 · Interest Income	46.99	29.87	76.86
Total Income	13,259.16	169,062.04	182,321.20
Expense			
5000 · Expenditures - Operational			
5001 · Management Fees Technical	4,552.86	3,687.50	8,240.36
5004 · NPS projects and Consultants	3,000.00	3,000.00	6,000.00
5005 · Legal - Admin	3,888.45	4,130.00	8,018.45
5007 · Professional Fees-Financial	750.00	750.00	1,500.00
Total 5000 · Expenditures - Operational	12,191.31	11,567.50	23,758.81
5100 · Expenditures - Contractual			
5111 · Monitoring- in Kind	6,012.17	6,012.17	12,024.34
5117 · Public Outreach Sponsorships	250.00	250.00	500.00
Total 5100 · Expenditures - Contractual	6,262.17	6,262.17	12,524.34
Total Expense	18,453.48	17,829.67	36,283.15
Net Income	-5,194.32	151,232.37	146,038.05

Chatfield Watershed Authority
Profit & Loss Budget vs. Actual
 January through February 2023

	Jan - Feb 23	Budget	\$ Over Budget	% of Budget
Income				
4000 · Operating Revenues - Membership				
Voluntary Dues	0.00	2,400.00	-2,400.00	0.0%
4001 · Jefferson County	0.00	28,986.00	-28,986.00	0.0%
4002 · Douglas County	75,510.00	75,510.00	0.00	100.0%
4004 · Town of Castle Rock	75,510.00	75,510.00	0.00	100.0%
4005 · Plum Creek Wastewater	2,400.00	2,400.00	0.00	100.0%
4006 · Roxborough Park	2,400.00	2,400.00	0.00	100.0%
4007 · Castle Pines Metro District	0.00	2,400.00	-2,400.00	0.0%
4008 · Perry Park W&S District	2,400.00	2,400.00	0.00	100.0%
4009 · Denver Water Department	2,400.00	2,400.00	0.00	100.0%
4010 · City of Littleton	2,400.00	2,400.00	0.00	100.0%
4011 · Centennial W&S District	0.00	2,400.00	-2,400.00	0.0%
4012 · Town of Larkspur	2,400.00	2,400.00	0.00	100.0%
4014 · Louviers Water & San. District	2,400.00	2,400.00	0.00	100.0%
4016 · Sacred Heart Retreat House	2,400.00	2,400.00	0.00	100.0%
4019 · Dominion W&S District	0.00	2,400.00	-2,400.00	0.0%
4038 · Denver Water- In Kind	4,250.00	25,500.00	-21,250.00	16.7%
4039 · Plum Creek - In Kind	3,333.34	20,000.00	-16,666.66	16.7%
4040 · Centennial - In Kind	3,907.66	23,446.00	-19,538.34	16.7%
4045 · Roxborough In Kind	533.34	3,200.00	-2,666.66	16.7%
Total 4000 · Operating Revenues - Membership	182,244.34	280,952.00	-98,707.66	64.9%
4103 · Interest Income	76.86			
Total Income	182,321.20	280,952.00	-98,630.80	64.9%
Expense				
5000 · Expenditures - Operational				
5001 · Management Fees Technical	8,240.36	81,426.00	-73,185.64	10.1%
5002 · Management Fees- Authority	0.00	39,655.00	-39,655.00	0.0%
5003 · Website Hosting/Maint	0.00	3,930.00	-3,930.00	0.0%
5004 · NPS projects and Consultants	6,000.00	92,000.00	-86,000.00	6.5%
5005 · Legal - Admin	8,018.45	58,640.00	-50,621.55	13.7%
5006 · Misc. Admin.	0.00	546.00	-546.00	0.0%
5007 · Professional Fees-Financial	1,500.00	9,750.00	-8,250.00	15.4%
Total 5000 · Expenditures - Operational	23,758.81	285,947.00	-262,188.19	8.3%
5100 · Expenditures - Contractual				
5103 · Monitoring	0.00	5,459.00	-5,459.00	0.0%
5111 · Monitoring- in Kind	12,024.34	72,146.00	-60,121.66	16.7%
5115 · Public Outreach Consultants	0.00	35,000.00	-35,000.00	0.0%
5117 · Public Outreach Sponsorships	500.00	546.00	-46.00	91.6%
Total 5100 · Expenditures - Contractual	12,524.34	113,151.00	-100,626.66	11.1%
Total Expense	36,283.15	399,098.00	-362,814.85	9.1%
Net Income	146,038.05	-118,146.00	264,184.05	-123.6%

Chatfield Watershed Authority
Transaction Detail By Account
 January through February 2023

Type	Date	Num	Adj	Name	Memo	Class	Cir	Split	Debit	Credit	Balance
4000 · Operating Revenues - Membership											
4002 · Douglas County											
Deposit	02/10/2023				Deposit			1000 - 1st Bank		75,510.00	75,510.00
Total 4002 · Douglas County									0.00	75,510.00	75,510.00
4004 · Town of Castle Rock											
Deposit	02/10/2023				Deposit			1000 - 1st Bank		75,510.00	75,510.00
Total 4004 · Town of Castle Rock									0.00	75,510.00	75,510.00
4005 · Plum Creek Wastewater											
Deposit	02/10/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4005 · Plum Creek Wastewater									0.00	2,400.00	2,400.00
4006 · Roxborough Park											
Deposit	01/20/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4006 · Roxborough Park									0.00	2,400.00	2,400.00
4008 · Perry Park W&S District											
Deposit	02/03/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4008 · Perry Park W&S District									0.00	2,400.00	2,400.00
4009 · Denver Water Department											
Deposit	02/10/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4009 · Denver Water Department									0.00	2,400.00	2,400.00
4010 · City of Littleton											
Deposit	02/24/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4010 · City of Littleton									0.00	2,400.00	2,400.00
4012 · Town of Larkspur											
Deposit	01/27/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4012 · Town of Larkspur									0.00	2,400.00	2,400.00
4014 · Louviers Water & San. District											
Deposit	01/27/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4014 · Louviers Water & San. District									0.00	2,400.00	2,400.00
4015 · Sacred Heart Retreat House											
Deposit	02/03/2023				Deposit			1000 - 1st Bank		2,400.00	2,400.00
Total 4015 · Sacred Heart Retreat House									0.00	2,400.00	2,400.00
4038 · Denver Water- In Kind											
General Journal	01/01/2023	Ted-Aj...	*					5111 - Monitorin...		2,125.00	2,125.00
General Journal	02/28/2023	Ted-Aj...	*					5111 - Monitorin...		2,125.00	4,250.00
Total 4038 · Denver Water- In Kind									0.00	4,250.00	4,250.00
4039 · Plum Creek - In Kind											
General Journal	01/08/2023	Ted-Aj...	*					5111 - Monitorin...		1,666.67	1,666.67
General Journal	02/08/2023	Ted-Aj...	*					5111 - Monitorin...		1,666.67	3,333.34
Total 4039 · Plum Creek - In Kind									0.00	3,333.34	3,333.34
4040 · Centennial - In Kind											
General Journal	01/08/2023	Ted-Aj...	*							1,953.83	1,953.83
General Journal	02/08/2023	Ted-Aj...	*							1,953.83	3,907.66
Total 4040 · Centennial - In Kind									0.00	3,907.66	3,907.66
4045 · Roxborough In Kind											
General Journal	01/16/2023	Ted-Aj...	*					5111 - Monitorin...		266.67	266.67
General Journal	02/16/2023	Ted-Aj...	*					5111 - Monitorin...		266.67	533.34
Total 4045 · Roxborough In Kind									0.00	533.34	533.34
Total 4000 · Operating Revenues - Membership									0.00	182,244.34	182,244.34
4103 · Interest Income											
Deposit	01/31/2023				Interest			1000 - 1st Bank		46.99	46.99
Deposit	02/28/2023				Interest			1000 - 1st Bank		29.87	76.86
Total 4103 · Interest Income									0.00	76.86	76.86
5000 · Expenditures - Operational											
5001 · Management Fees Technical											
Bill	01/31/2023	INV-01...		RESPEC	January 2023 C...			2000 - Accounts ...	4,552.88		-4,552.88
Bill	02/28/2023	INV-02...		RESPEC	February 2023 ...			2000 - Accounts ...	3,687.50		-8,240.36
Total 5001 · Management Fees Technical									8,240.36	0.00	-8,240.36
5004 · NPS projects and Consultants											
Bill	01/31/2023	22-03		Steve Balcerovich	January 2023 P...			2000 - Accounts ...	1,500.00		-1,500.00
Bill	01/31/2023			Altwood Public Affairs	January 2023 P...			2000 - Accounts ...	1,500.00		-3,000.00
Bill	02/28/2023	Invoice...		Steve Balcerovich	February 2023 ...			2000 - Accounts ...	1,500.00		-4,500.00
Bill	02/28/2023	Invoice...		Altwood Public Affairs	February 2023 ...			2000 - Accounts ...	1,500.00		-6,000.00
Total 5004 · NPS projects and Consultants									6,000.00	0.00	-6,000.00
5005 · Legal - Admin											
Bill	01/30/2023	301665...		Sornach Simmons & D...	Legal			2000 - Accounts ...	3,888.45		-3,888.45
Bill	02/28/2023	Invoice...		Sornach Simmons & D...	Legal			2000 - Accounts ...	4,130.00		-8,018.45
Total 5005 · Legal - Admin									8,018.45	0.00	-8,018.45
5007 · Professional Fees-Financial											
Bill	01/31/2023	23056		TWS Financial Inc.	December 2022			2000 - Accounts ...	750.00		-750.00
Bill	02/28/2023	23057		TWS Financial Inc.	December 2022			2000 - Accounts ...	750.00		-1,500.00
Total 5007 · Professional Fees-Financial									1,500.00	0.00	-1,500.00
Total 5000 · Expenditures - Operational									23,758.81	0.00	-23,758.81
5100 · Expenditures - Contractual											
5111 · Monitoring- in Kind											
General Journal	01/01/2023	Ted-Aj...	*					4038 - Denver ...	2,125.00		-2,125.00
General Journal	01/08/2023	Ted-Aj...	*						1,953.83		-4,078.83
General Journal	01/08/2023	Ted-Aj...	*					4039 - Plum Cre...	1,666.67		-5,745.50
General Journal	01/16/2023	Ted-Aj...	*					4045 - Roxborou...	266.67		-6,012.17
General Journal	02/08/2023	Ted-Aj...	*						1,953.83		-7,966.00

Chatfield Watershed Authority
Transaction Detail By Account
 January through February 2023

Type	Date	Num	Adj	Name	Memo	Class	Cir	Split	Debit	Credit	Balance
General Journal	02/08/2023	Ted-AJ	*					4039 Plum Cre...	1,686.67		-9,632.67
General Journal	02/16/2023	Ted-AJ	*					4045 Roxborou...	266.67		-9,899.34
General Journal	02/28/2023	Ted-AJ	*					4038 Denver ...	2,125.00		-12,024.34
Total 5111 Monitoring- in Kind									12,024.34	0.00	-12,024.34
5117 Public Outreach Sponsorships											
Bill	01/31/2023	2023 R...		Town of Castle Rock P...	2023 Renewal			2000 Accounts ...	250.00		-250.00
Bill	02/28/2023	2023 S ...		the Town of Castle Rock	Pet Waste Statl...			2000 Accounts ...	250.00		-500.00
Total 5117 Public Outreach Sponsorships									500.00	0.00	-500.00
Total 5100 Expenditures - Contractual									12,524.34	0.00	-12,524.34
TOTAL									36,283.16	182,321.20	146,038.05



FIRSTBANK
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 LAKEWOOD CO 80215-0097

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6500 0100 OO RP 28 03012023 NNNNNN 01 003483 0009
 CHATFIELD WATERSHED AUTHORITY
 C/O TWS FINANCIAL INC
 6901 S PIERCE ST STE 200
 LITTLETON CO 80128-4557

ACCOUNT NUMBER	XXX-XXX-1336
STATEMENT DATE	2-28-2023
INTEREST EARNED THIS YEAR	76.86



ACCOUNT SUMMARY -- MONEY MARKET CHECKING ACCOUNT - SAFEKEEPING \$5,000 MINIMUM

CLOSING BALANCE FROM PREVIOUS STATEMENT	DATE:	1-31-2023	307,085.68
4 DEPOSITS AND OTHER ADDITIONS TOTALING			163,049.87+
5 CHECKS AND OTHER WITHDRAWALS TOTALING			16,264.00-
CLOSING BALANCE FOR THIS STATEMENT	DATE:	2-28-2023	453,871.55
MINIMUM BALANCE OF	302,571.68	ON	2-08-2023
NUMBER OF DAYS IN PERIOD			28
INTEREST EARNED			29.87

CHECKS AND OTHER WITHDRAWALS * SHOWS BREAK IN CHECK NUMBER # SHOWS NOT MACHINE READABLE

CHECK#.....AMOUNT....DATE	CHECK#.....AMOUNT....DATE	CHECK#.....AMOUNT....DATE
5758 2,960.00 2-10	5764 3,990.00 2-15	5766 1,500.00 2-06
5763* 1,500.00 2-01	5765 6,314.00 2-08	

DEPOSITS AND OTHER ADDITIONS

DATE.....TYPE.....AMOUNT	DATE.....TYPE.....AMOUNT	DATE.....TYPE.....AMOUNT
2-03 DEPOSIT 4,800.00	2-24 DEPOSIT 2,400.00	2-28 INTEREST 29.87
2-10 DEPOSIT 155,820.00		

DAILY BALANCE SUMMARY

DATE.....BALANCE	DATE.....BALANCE	DATE.....BALANCE
2-01 305,585.68	2-08 302,571.68	2-24 453,841.68
2-03 310,385.68	2-10 455,431.68	2-28 453,871.55
2-06 308,885.68	2-15 451,441.68	

RATE DISCLOSURE -- RATE BASED ON AVERAGE COLLECTED BALANCE

EFFECTIVE DATES	\$500 UP TO \$20,000 RATE	\$20,000 AND ABOVE RATE
2/01 THROUGH 2/28	0.05%	0.10%

SPECIAL MESSAGES AND IMPORTANT NOTICES

MoneyPass is a fee-free ATM network with access to withdrawals at over 37,000 ATMs nationwide and is now available for FirstBank debit and ATM card holders. With this enhancement, beginning April 1, 2023, FirstBank will no longer have fee-free ATMs in select King Soopers & CVS locations. Customers living outside of Colorado, Arizona and Riverside County, CA will no longer receive fee-free ATM withdrawals or refunds of the ATM owner's fee. Additionally, customers in Riverside, CA will no longer have the non-FirstBank ATM withdrawal fees waived. FirstBank's fee for using an out of network ATM is \$2.50.



FIRSTBANK
 PO BOX 150097
 LAKEWOOD CO 80215-0097

24-Hour Customer Service: 1-800-964-3444
 New Account or Loan: 1-877-933-9800
 www.efirstbank.com

6500 0100 OO RP 31 02012023 NNNNNN 01 002596 0006
 CHATFIELD WATERSHED AUTHORITY
 C/O TWS FINANCIAL INC
 6901 S PIERCE ST STE 200
 LITTLETON CO 80128-4557

ACCOUNT NUMBER	XXX-XXX-1336
STATEMENT DATE	1-31-2023
INTEREST EARNED THIS YEAR	46.99



ACCOUNT SUMMARY -- MONEY MARKET CHECKING ACCOUNT - SAFEKEEPING \$5,000 MINIMUM

CLOSING BALANCE FROM PREVIOUS STATEMENT	DATE:	12-30-2022	321,337.24
3 DEPOSITS AND OTHER ADDITIONS TOTALING			7,246.99+
6 CHECKS AND OTHER WITHDRAWALS TOTALING			21,498.55-
CLOSING BALANCE FOR THIS STATEMENT	DATE:	1-31-2023	307,085.68
MINIMUM BALANCE OF	303,738.69	ON	1-26-2023
NUMBER OF DAYS IN PERIOD			32
INTEREST EARNED			46.99

CHECKS AND OTHER WITHDRAWALS * SHOWS BREAK IN CHECK NUMBER # SHOWS NOT MACHINE READABLE

CHECK#.....	AMOUNT.....	DATE.....	CHECK#.....	AMOUNT.....	DATE.....	CHECK#.....	AMOUNT.....	DATE.....
5756	3,000.00	1-03	5759*	6,938.75	1-26	5761	750.00	1-31
5757	3,000.00	1-17	5760	7,059.80	1-25	5762	750.00	1-31

DEPOSITS AND OTHER ADDITIONS

DATE.....	TYPE.....	AMOUNT.....	DATE.....	TYPE.....	AMOUNT.....	DATE.....	TYPE.....	AMOUNT.....
1-20	DEPOSIT	2,400.00	1-27	DEPOSIT	4,800.00	1-31	INTEREST	46.99

DAILY BALANCE SUMMARY

DATE.....	BALANCE.....	DATE.....	BALANCE.....	DATE.....	BALANCE.....
1-03	318,337.24	1-25	310,677.44	1-27	308,538.69
1-17	315,337.24	1-26	303,738.69	1-31	307,085.68
1-20	317,737.24				

RATE DISCLOSURE -- RATE BASED ON AVERAGE COLLECTED BALANCE

EFFECTIVE DATES	\$500 UP TO \$20,000 RATE	\$20,000 AND ABOVE RATE
12/31 THROUGH 1/10	0.15%	0.30%
1/11 THROUGH 1/31	0.05%	0.10%

EARNINGS AND ACTIVITY CHARGE SUMMARY

INTEREST PAID CALCULATION

DATES	AVERAGE COLLECTED BALANCE	RATE	INTEREST EARNED
12/31 THROUGH 1/10	319,155	.300%	28.85
1/11 THROUGH 1/31	315,295	.100%	18.14
TOTAL INTEREST FOR 32 DAYS			46.99

ACTIVITY CHARGES (FIRST 150 ITEMS FREE)

NUMBER	DESCRIPTION	COST	CHARGE	
6	DEBITS	.50	3.00	WAIVED
2	CREDITS	.50	1.00	WAIVED
3	DEPOSITED ITEMS	.50	1.50	WAIVED
TOTAL ACTIVITY CHARGES			.00	

