MINNESOTA POLLUTION CONTROL AGENCY
520 Lafayette Road North
St. Paul, MN 55155-4194

MS4 question worksheet for 2020 annual report

Municipal Separate Storm Sewer Systems (MS4s)

Reporting period January 1, 2020 to December 31, 2020

Due June 30, 2021

*Copy of questions – **Not for submittal***

Instructions: This form is for your personal use only. Complete the online Annual Report to provide a summary of your activities under the 2013 MS4 Permit (Permit) between January 1, 2020, and December 31, 2020. The online Annual Report and additional information can be found on the Minnesota Pollution Control Agency's (MPCA) website at: https://stormwater.pca.state.mn.us/index.php?title=MS4_Annual_Report.

Questions: Contact Cole Landgraf (cole.landgraf@state.mn.us, 651-757-2880)

Contact information

MS4 General contact information

Full name: Tina Carstens Title: Administrator

Mailing address: 2665 Noel Drive

City: Little Canada State: MN Zip code: 55117

Phone: 651-792-7960 Email: tina.carstens@rwmwd.org

Preparer contact information *(if different from the MS4 General contact)*

Full name: Nicole Soderholm Title: Permit Coordinator

Mailing address: 2665 Noel Drive

City: Little Canada State: MN Zip code: 55117

Phone: 651-792-7976 Email: nicole.soderholm@rwmwd.org

Minimum Control Measure (MCM) 1: Public education and outreach

The following questions refer to Part III.D.1. of the Permit.

2. Did you select a stormwater-related issue of high priority to be emphasized during this Permit term? [Part III.D.1.a.(1)] ☒ Yes ☐ No

3. If '***Yes***' in **Q2**, what is your stormwater-related issue(s)? *Check all that apply.*
   - ☒ Total Maximum Daily Loads (TMDLs)
   - ☐ Local businesses
   - ☒ Residential best management practices (BMPs)
   - ☒ Pet waste
   - ☐ Yard waste
   - ☒ Deicing materials
   - ☐ Household chemicals
   - ☒ Construction activities
   - ☐ Post-construction activities
   - ☒ Other (describe): IDDE

4. Have you distributed educational materials or equivalent outreach to the public focused on illicit discharge recognition and reporting? [Part III.D.1.a.(2)] ☒ Yes ☐ No

5. Do you have an implementation plan as required by the Permit? [Part III.D.1.b.] ☒ Yes ☐ No

6. How did you distribute educational materials or equivalent outreach? [Part III.D.1.a.] *Check all that apply in table below.*

7. For the items checked in **Q6** below, who is the intended audience? *Check all that apply in table below.*

8. For the items checked in **Q6** below, enter the total circulation/audience in table below (if unknown, use best estimate).

Q6. How did you distribute educational materials? *(Check all that apply):*	**Q7. Intended audience?** *(Check all that apply.)*						**Q8. Total circulation /audience:**
	Residents	***Local businesses***	***Developers***	***Students***	***Employees***	***Other***	
☐ ***Brochure***	☐	☐	☐	☐	☐	☐	
☒ ***Newsletter***	☒	☐	☐	☒	☐	☒	1,605 (RWMWD newsletter) + 123,727 (Washington Co newsletter)
☐ ***Utility bill insert***	☐	☐	☐	☐	☐	☐	
☐ ***Newspaper ad***	☐	☐	☐	☐	☐	☐	
☐ ***Radio ad***	☐	☐	☐	☐	☐	☐	
☐ ***Television ad***	☐	☐	☐	☐	☐	☐	
☐ ***Cable access channel***	☐	☐	☐	☐	☐	☐	
☒ ***Stormwater-related event***	☒	☐	☐	☒	☐	☐	200
☒ ***School presentation or project***	☐	☐	☐	☒	☐	☐	444
☒ ***Website***	☒	☐	☒	☒	☐	☒	25,323
☒ ***Other (1): describe*** *Social media*	☒	☒	☒	☐	☐	☒	1,008 (Facebook), 595 (Instagram), 998 (Twitter)
☒ ***Other (2): describe*** *Community engagement activities (ex: Adopt-a-Drain)*	☒	☐	☐	☐	☐	☐	410 storm drain adopters, 21 Water Stewards
☒ ***Other (3): describe*** *Workshops (water protection, smart salting, water friendly landscaping)*	☒	☐	☐	☐	☐	☒	326

For **Q9** and **Q10**, provide a brief description of each activity related to public education and outreach (e.g., rain garden workshop, school presentation, public works open house) held and the date each activity was held from January 1, 2020, to December 31, 2020. [Part III.D.1.c.(4)]

9. Date of activity *in table below*

10. Description of activity *in table below*

Q9. Date of activity	**Q10. Description of activity**
Throughout 2020	See addendum for details

11. Between January 1, 2020, and December 31, 2020, did you modify your BMPs, measurable goals, or future plans for your public education and outreach program? [Part IV.B.] ☒ Yes ☐ No

If '***Yes,***' describe these modifications:

Our public education and outreach programs had to be modified considerably this year due to Covid. The pandemic required more online education - Zoom workshops instead of in person workshops . Our largest oublic education event of the year, WaterFest which nornally engages several thousand people in person had to be cancelled due to Covid. The schools closed in late March because of Covid, cutting out several months of in person educational activities and field projects in the spring, fall and early winter.

MCM 2: Public participation/involvement

The following questions refer to Part III.D.2.a. of the Permit.

12. You must provide a minimum of one opportunity each year for the public to provide input on the adequacy of your Stormwater Pollution Prevention Program (SWPPP). Did you provide this opportunity between January 1, 2020, and December 31, 2020? [Part III.D.2.a.(1)] ☒ Yes ☐ No

13. If '***Yes***' in **Q12**, what was the opportunity that you provided? *Check all that apply.* ☒ Yes ☐ No

    ☒ Public meeting
    ☐ Public event
    ☐ Other

14. If '***Public meeting***' in **Q13**, did you hold a stand-alone meeting or combine it with another event?

    ☐ Stand-alone
    ☒ Combined

    Enter the date of the public meeting: 6/3/21

    Enter the number of citizens that attended and were informed about your SWPPP: 3

15. If '***Public event***' in **Q13**, describe:

    Enter the date (mm/dd/yyyy) of the public meeting:

    Enter the number of citizens that attended and were informed about your SWPPP:

16. If '***Other***' in **Q13**, describe:

    Enter the date (mm/dd/yyyy) of the public meeting:

    Enter the number of citizens that attended and were informed about your SWPPP:

17. Between January 1, 2020, and December 31, 2020, did you receive any input regarding your SWPPP? ☐ Yes ☒ No

    If '**Yes**,' enter the total number of individuals or organizations that provided comments on your SWPPP.

18. If '***Yes***' in **Q17**, did you modify your SWPPP as a result of written input received? [Part III.D.2.b.(2)] ☐ Yes ☐ No

    If '***Yes***,' describe those modifications.

19. Between January 1, 2020, and December 31, 2020, did you modify your BMPs, measurable goals, or future plans for your public participation/involvement program? [Part IV.B.] ☐ Yes ☒ No

    If '**Yes**,' describe those modifications.

MCM 3: Illicit discharge detection and elimination

The following questions refer to Part III.D.3. of the Permit.

20. Do you have a regulatory mechanism which prohibits non-stormwater discharges to your MS4? [Part III.D.3.b.] ☒ Yes ☐ No

21. Did you identify any illicit discharges between January 1, 2020, and December 31, 2020? [Part III.D.3.h.(4)] ☒ Yes ☐ No

22. If '***Yes***' in **Q21**, enter the number of illicit discharges detected. 7

23. If '***Yes***' in **Q21**, how did you discover these illicit discharges? Check all that apply and enter the number of illicit discharges discovered by each category.

☒ Public complaint
☒ Staff

24. If '***Public complaint***' in **Q23**, enter the number discovered by the public: 0

25. If '***Staff***' in **Q23**, enter the number discovered by staff: 2

26. If '***Yes***' in **Q21**, did any of the discovered illicit discharges result in an enforcement action (this includes verbal warnings)? ☒ Yes ☐ No

27. If '***Yes***' in **Q26**, what type of enforcement action(s) was taken and how many of each action were issued between January 1, 2020, and December 31, 2020? ***Check all that apply.*** *For each of the below checked, enter the number that were issued.* ☒ Yes ☐ No

☒ Verbal warning: 1
☒ Notice of violation: 2
☐ Fine: _____
☐ Criminal action: _____
☐ Civil penalty: _____
☒ Other: describe

In 5 out of 7 illicit discharge incidents, self-reporting by the owner/contractor or notification from other public entities alerted the District (i.e.: City of Woodbury, City of Oakdale, MnDOT) and/or the MN Duty Officer prior to any opportunity for staff or public discovery. Discharges occurred in infrastructure owned by other MS4s. The District completes follow-up for water resource protection purposes.

In 1 illicit discharge incident, deductions of held surety (2) occurred. While not structured as a punitive fine, the non-compliance in this case resulted in an increase of staff time and resources for enforcement so charges were deducted from previously collected escrow as allowed in the RWMWD grading permit general provisions.

28. If '***Yes***' in **Q26**, did the enforcement action(s) taken sufficiently address the illicit discharge(s)? ☒ Yes ☐ No

29. If '***No***' in **Q28**, why was the enforcement not sufficient to address the illicit discharge(s)?

30. Do you have written Enforcement Response Procedures (ERPs) to compel compliance with your illicit discharge regulatory mechanism(s)? [Part III.B.] ☒ Yes ☐ No

31. Between January 1, 2020 and December 31, 2020, did you train all field staff in illicit discharge recognition (including conditions which could cause illicit discharges) and reporting illicit discharges for further investigations? [Part III.D.3.e.] ☒ Yes ☐ No

32. If '***Yes***' in **Q31**, how did you train your field staff? ***Check all that apply.***

☐ Email
☐ PowerPoint
☐ Presentation
☒ Video
☐ Field training
☐ Other: describe

The following questions refer to Part III.C.1. of the Permit.

33. Did you update your storm sewer system map between January 1, 2020, and December 31, 2020? [Part III.C.1.] ☒ Yes ☐ No

34. Does your storm sewer map include all pipes 12 inches or greater in diameter and the direction of stormwater flow in those pipes? [Part III.C.1.a.] ☒ Yes ☐ No

35. Does your storm sewer map include outfalls, including a unique identification (ID) number and an associated geographic coordinate? [Part III.C.1.b.] ☒ Yes ☐ No

36. Does your storm sewer map include all structural stormwater BMPs that are part of your MS4? [Part III.C.1.c.] ☒ Yes ☐ No

37. Does your storm sewer map include all receiving waters? [Part III.C.1.d.] ☒ Yes ☐ No

38. In what format is your storm sewer map available:

☐ Hardcopy only
☒ GIS
☐ CAD
☐ Other: describe

39. Between January 1, 2020, and December 31, 2020, did you modify your BMPs, measurable goals, or future plans for your illicit discharge detection and elimination program? [Part IV.B.] ☐ Yes ☒ No

If '**Yes**,' describe those modifications.

MCM 4: Construction site stormwater runoff control

The following questions refer to Part III.D.4. of the Permit

40. Do you have a regulatory mechanism that is at least as stringent as the Agency's general permit to Discharge Stormwater Associated with Construction Activity (CSW Permit) No. Minn. R. 100001 (http://www.pca.state.mn.us/index.php/view-document.html?gid=18984) for erosion and sediment controls and waste controls? [Part III.D.4.a.]
(Permit can be found on the MPCA website at https://www.pca.state.mn.us/water/construction-stormwater (titled 'Minnesota NPDES/SDS Construction Stormwater General Permit'). ☒ Yes ☐ No

41. Have you developed written procedures for site plan reviews as required by the Permit? [Part III.D.4.b.] ☒ Yes ☐ No

42. Have you documented each site plan review as required by the Permit? [Part III.D.4.f.] ☒ Yes ☐ No

43. Enter the number of site plan reviews conducted for sites an acre or greater between January 1, 2020, and December 31, 2020. 40

44. What types of enforcement actions do you have available to compel compliance with your regulatory mechanism? Check all that apply and enter the number of each used from January 1, 2020, to December 31, 2020.

☒ Verbal warning, Number that were issued: 4
☒ Notice of violation, Number that were issued: 62
☐ Administrative order, Number that were issued: _____
☒ Stop-work order, Number that were issued: 0
☐ Fine, Number that were issued: _____
☒ Forfeit of security of bond money: 30
☐ Withholding of certificate of occupancy _____
☐ Criminal action, Number that were issued: _____
☒ Civil penalty, Number that were issued: 0
☒ Other: describe. Compliance letter from attorney, Number that were issued: 1

45. Do you have written ERPs to compel compliance with your construction site stormwater runoff control regulatory mechanism(s)? [Part III.B.] ☒ Yes ☐ No

46. Enter the number of active construction sites an acre or greater that were in your jurisdiction between January 1, 2020, and December 31, 2020: 64

47. Do you have written procedures for identifying priority sites? [Part III.D.4.d.(1)] ☒ Yes ☐ No

48. If '**Yes**,' in **Q47**, How are sites prioritized? *Check all that apply.*

- ☒ Site topography
- ☐ Soil characteristics
- ☒ Types of receiving water(s)
- ☒ Stage of construction
- ☒ Compliance history
- ☐ Weather conditions
- ☒ Citizen complaints
- ☐ Project size
- ☐ Other: describe

49. Do you have a checklist or other written means to document site inspections when determining compliance? [Part III.D.4.d.(4)] ☒ Yes ☐ No

50. Enter the number of site inspections conducted for sites an acre or greater between January 1, 2020, and December 31, 2020. 492

51. Enter the frequency at which site inspections are conducted (e.g., daily, weekly, monthly). [Part III.D.4.d.(2)] Weejkly, biweekly, monthly, or seasonally depending on project stage and priority.

52. Enter the number of trained inspectors that were available for construction site inspections between January 1, 2020, and December 31, 2020. 3

53. Provide the contact information for the inspector(s) and/or organization that conducts construction stormwater inspections for your MS4. List your primary construction stormwater contact first if you have multiple inspectors.

(1) Inspector name:

Organization: Mary Fitzgerald, RWMWD
Phone (office): 651-792-7956
Phone (work cell):
Email: mary.fitzgerald@rwmwd.org
Preferred contact method: Phone or e-mail

(2) Inspector name:

Organization: Nicole Soderholm, RWMWD
Phone (office): 651-792-7976
Phone (work cell):
Email: nicole.soderholm@rwmwd.org
Preferred contact method: Phone or e-mail

(3) Inspector name:

Organization: Paige Ahlborg, RWMWD
Phone (office): 651-792-7964
Phone (work cell):
Email: paige.ahlborg@rwmwd.org
Preferred contact method: Phone or e-mail

54. What training did inspectors receive? ***Check all that apply.***

☒ University of Minnesota Erosion and Stormwater Management Certification Program
☐ Qualified Compliance Inspector of Stormwater (QCIS)
☐ Minnesota Laborers Training Center Stormwater Pollution Prevention Plan Installer or Supervisor
☐ Minnesota Utility Contractors Association Erosion Control Training
☐ Certified Professional in Erosion and Sediment Control (CPESC)
☐ Certified Professional in Stormwater Quality (CPSWQ)
☐ Certified Erosion Sediment and Storm Water Inspector (CESSWI)
☐ Other: describe

55. Between January 1, 2020, and December 31, 2020, did you modify your BMPs, measurable goals, or future plans for your construction site stormwater runoff control program? [Part IV.B.] ☐ Yes ☒ No

If '**Yes**,' describe those modifications:

MCM 5: Post-construction stormwater management in new development and redevelopment

The following questions refer to Part III.D.5. of the Permit.

56. Do you have a regulatory mechanism which meets all requirements as specified in Part III.D.5.a. of the Permit? ☒ Yes ☐ No

57. What approach are you using to meet the performance standard for Volume, Total Suspended Solids (TSS), and Total Phosphorus (TP) as required by the permit? [Part III.D.5.a.(2)] *Check all that apply.* Refer to the Technical Support Document at http://www.pca.state.mn.us/index.php/view-document.html?gid=17815 for guidance on stormwater management approaches. *The TSD can be found on the MPCA website at https://www.pca.state.mn.us/water/municipal-stormwater-ms4 (refer to the Post Construction Stormwater Management section under the 'Guidance and BMPs' tab).*

☐ Retain a runoff volume equal to one inch times the area of the proposed increase of impervious surfaces on-site
☐ Retain the post-construction runoff volume on site for the 95th percentile storm
☒ Match the pre-development runoff conditions
☐ Adopt the Minimal Impact Design Standards
☐ An approach has not been selected
☒ Other method (Must be technically defensible - e.g., based on modeling, research and acceptable engineering practices)

If 'Other method,' describe:

Retain a volume of 1.1" times the area of new and reconstructed impervious surfaces onsite. All stormwater BMPs require pretreatment method(s) for TSS removal. Runoff rates for the 2, 10, and 100-year critical storm events must not exceed existing conditions.

58. Do you have written ERPs to compel compliance with your post-construction stormwater management regulatory mechanism(s)? [Part III.B.] ☒ Yes ☐ No

59. Between January 1, 2020, and December 31, 2020, did you modify your BMPs, measurable goals, or future plans for your post-construction stormwater management program? [Part IV.B.] ☒ Yes ☐ No

If '***Yes***,' describe those modifications.

On Jan 1, 2020 in-lieu fee increases went into effect as approved by the RWMWD Board of Managers in June 2019. The 6-month delay in implementation was intentional to offer permittees some flexibility for budgeting future projects.

MCM 6: Pollution prevention/good housekeeping for municipal operations

The following questions refer to Part III.D.6. of the Permit.

60. Enter the total number of **structural stormwater BMPs**, **outfalls** (excluding underground outfalls), and **ponds** within your MS4 (exclude privately owned). Enter the number for each category below:

Structural stormwater BMPs: 21

Outfalls: 19

Ponds: 20

61. Enter the total number of **structural stormwater BMPs**, **outfalls** (excluding underground outfalls), and **ponds** that were inspected from January 1, 2020 to December 31, 2020 within your MS4 (exclude privately owned) [Part III.D.6.e.]. Enter the number for each category below:

    Structural stormwater BMPs: 21

    Outfalls: 19

    Ponds: 20

62. Have you developed an alternative inspection frequency for any structural stormwater BMPs, as allowed in Part III.D.6.e.(1) of the Permit? ☐ Yes ☒ No

63. Based on inspection findings, did you conduct any maintenance on any structural stormwater BMPs? [Part III.D.6.e.(1)] ☒ Yes ☐ No

64. If '***Yes***' in **Q63**, briefly describe the maintenance that was conducted:

    Removed 9 cubic yards (CY) of sediment/muck from Maplewood Mall sumps, removed 1 CY sediment/muck from Battle Creek sump, removed 1 CY sediment/muck from Owasso low flow sump, removed 1 CY sediment/muck from Tanners Lake Alum Plant sump, removed 1 CY sediment/muck from ABI Pond sump, removed 1 CY sediment/muck from PCU (Target) Pond sump, removed 1 CY sediment/muck from Frost-Kennard spent lime chamber sump, removed 100 tons sediment/muck and replaced filter rock outlets at Tamarack Swamp PFS pavers, cleaned 580 lineal feet (LF) permeable weirs at Tanners wetland/Horseshoe Park, cleaned 65 LF permeable weirs at 5th Street wetland, removed/replaced 50 tons of filter rock at Gervais Mill Pond filter strip, removed 10 tons of sediment/muck from Lower Afton Road sediment trap, removed 643 tons of sediment/muck from Casey Lake inlet

65. Do you own or operate any stockpiles, and/or storage and material handling areas? [Part III.D.6.e.(3)] ☐ Yes ☒ No

66. If '***Yes***' in **Q65**, did you inspect all stockpiles and storage and material handling areas quarterly? [Part III.D.6.e.(3)] ☐ Yes ☐ No

67. If '***Yes***' in **Q66**, based on inspection findings, did you conduct maintenance at any of the stockpiles and/or storage and material handling areas? ☐ Yes ☐ No

68. If '***Yes***' in **Q67**, briefly describe the maintenance that was conducted:

69. Between January 1, 2020, and December 31, 2020, did you modify your BMPs, measurable goals, or future plans for your pollution prevention/good housekeeping for municipal operations program? [Part IV.B.] ☐ Yes ☒ No

    If '***Yes***,' describe those modifications:

Discharges to impaired waters with a EPA-approved TMDL that includes an applicable WLA

If you have been assigned a Waste Load Allocation (WLA) in a TMDL that was approved by the U.S. Environmental Protection Agency (EPA) prior to August 1, 2013, and were not meeting WLA(s) at the time of your permit application, you must complete the **TMDL Annual Report Form**, available on the MPCA website at: https://stormwater.pca.state.mn.us/index.php?title=Download_page_with_TMDL_forms.

Attach your completed TMDL Annual Report Form to the actual Annual Report as instructed within that document. [Part III.E.]

71. [question left blank for you to attach a file]

Alum or Ferric Chloride Phosphorus Treatment Systems

The following questions refer to Part III.F.3.a. of the Permit. Provide the information below as it pertains to your alum or ferric chloride phosphorus treatment system.

72. Date(s) of operation:

Month	Date(s) of operation (mm/dd/yyyy – mm/dd/yyyy)
January	N/A
February	N/A

Month	Date(s) of operation (mm/dd/yyyy – mm/dd/yyyy)
March	N/A
April	4/28-4/30
May	5/1-5/31
June	6/1-6/30
July	7/1-7/31
August	8/1-8/6, 8/14-8/31
September	9/1-9/30
October	10/1-10/6, 10/26-10/30
November	N/A
December	N/A

Month	Q73 Chemical(s) used for treatment	Q74 Gallons of alum or ferric chloride treatment	Q75 Gallons of water treated	Q76 Calculated pounds of phosphorus removed
January	N/A	0	0	0
February	N/A	0	0	0
March	N/A	0	0	0
April	Alum	350	3,246,828	3.8
May	Alum	422	26,732,008	27.9
June	Alum	1,663	21,789,437	23.8
July	Alum	4,365	27,654,095	68.7
August	Alum	917	6,322,397	7.1
September	Alum	428	3,430,718	2.1
October	Alum	205	1,797,152	0.9
November	N/A	0	0	0
December	N/A	0	0	0

77. Any performance issues and corrective action(s), including date(s) when corrective action(s) were taken, between January 1, 2020, and December 31, 2020:

The alum treatment facility was shut down on two occasions for maintenance. The alum pump malfunctioned and was pumping at an incorrect rate in August. The alum plant was shut down during August 7 through August 13 while a new pump was installed. The alum plant was shut down during October 7 through October 25 while a new pH probe was installed. See addendum for additional details.

Partnerships

78. Did you rely on any other regulated MS4s to satisfy one or more permit requirements? ☐ Yes ☒ No

79. If '***Yes***' in **Q78**, describe the agreements you have with other regulated MS4s and which permit requirements the other regulated MS4s help satisfy: [Part IV.B.6.]

Additional information

If you would like to provide any additional files to accompany your Annual Report, use the space below to upload those files. For each space, you may attach one file.

80. [Optional space for you to attach a file]
81. [Optional space for you to attach a file]
82. [Optional space for you to attach a file]
83. Optional, describe the file(s) uploaded:

Attached: 'MCM 1_2020 Addendum,' '2020 Alum Plant Report Addendum'

Owner or Operator Certification

The person with overall administrative responsibility for SWPPP implementation and permit compliance must certify this MS4 Annual Report. This person must be duly authorized and should be either a principal executive (i.e., Director of Public Works, City Administrator) or ranking elected official (i.e., Mayor, Township Supervisor).

☒ Yes - *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete (Minn. R. 7001.0070). I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment (Minn. R. 7001.0540).*

By typing my name in the following space, I certify the above statements to be true and correct, to the best of my knowledge, and that information can be used for the purpose of processing my MS4 Annual Report.

Name of certifying official: The certifying official must electronically sign the online Annual Report form.

Title: Administrator Date: 5/5/21
(mm/dd/yyyy)

Note: In the online form, you will be prompted to provide the email(s) of the individual(s) you would like to receive the MS4 Annual Report for 2020 submittal confirmation email from the MPCA. After you submit the form, please allow up to three business days to receive this confirmation email.

Email (1) nicole.soderholm@rwmwd.org

Email (2)

Email (3)

2020 Public Education/Outreach Events, Education Programs and Projects

Schools and Youth Engagement: classroom education, field trips and projects about water pollution, water quality monitoring, native plants for water quality
Schools: Mounds Park Academy, Farnsworth, Weaver, St. Peter, L'Etoile du Nord 18 classes, and 1 youth team , January-March
Total Youth/Students involved: 444

Community Outreach/Education/Stewardship Events:

Osher Life-Long Learning Classes -The State of our Waters in the Land of Mostly Frozen 10,000+ Lakes watershed education series, 40 senior citizens **–** classes: Jan. 6, Jan. 27, Feb. 3, Feb.10

Phalen Freeze Fest – February 29, 2020, smart salting education, promotion of stewardship grants, watershed education 200 participants

Lawns to Legumes landscaping workshop, February 20, 2020 planting for clean water and pollinators, workshop for 42 residents

Ames Lake Water Quality Monitoring – 4th grade field trip including chloride monitoring– February 27, 2020 (50 youth) L'Etoile du Nord

Water Stewards Clean-Up at Ames Lake - April 22, 2020

Water Pollution Mystery Game for families at three locations
Oakdale, Tanners Lake Park – June 19, 2020
Woodbury, Carver Lake Park – August 11, 2020
Woodbury Tamarack Nature Preserve – October 10-11, 2020

Smart Salting Roads Training (online) 9/30/2020 – 27 attendees

Smart Salting for Property Management (online) 10/21/2020 **-**7 attendees

Planting for Clean Water Workshops (online) March 25, April 17, June 10, 140 participants

Roseville tour/training for Roseville League of Women Voters environmental committee in person 8 participants 6/23/2020

Online workshops about Pollinators and water friendly landscaping 8/26/2020 and 9/8/2020 70

Adopt-A-Drain: 140 new participants signed up to adopt drains and 239 additional drains were adopted in RWMWD in 2020. **A total of 715 drains had been adopted by the end of 2020.** Distribution of 153 Adopt-A-Drain yard signs to residents in fifteen subwatersheds in eight cities in RWMWD. Emails

sent to these 153 residents educating them about which water body they are protecting and expressing thanks for their efforts.

Master Water Stewards

5 new Water Stewards participated in 3 Water Stewards course education sessions, 1/11/2020, 2/8/2020, 3/7/2020 to become certified

This team met weekly or bi-weekly from June-August on Zoom to plan educational activities for their neighborhood around Willow Pond in Roseville. Activities include tours, education, community outreach, sign design and projects related to stormwater management, storm drain pollution, BMPs, water quality, and ecological restoration to prevent erosion and sustainable yard design to reduce chemical use, conserve water and protect downstream waters from run-off and pollution.

A total of 21 Water Stewards were active in 2020 doing community engagement and assisting with watershed related education and water quality projects in the field.

Media

Website: users: 25,323 and **Page Views: 64,064**
Newsletter (blog) subscribers: 1,605
Followers:

Facebook: 1,008
Instagram: **595**
Twitter: 998

RWMWD blog on rwmwd.org

April 29, 2020 "Adopt-A-Drain: Clean Water Begins at Your Curb"
June 3, 2020 "Public Notice: Stormwater Prevention Plan (SWPPP) Report Annual Meeting

Facebook posts on these themes

Salt pollution 1/9, 10/21, 12/13
Adopt-A-Drain 3/20, 4/17, 5/11, 8/12, 9/25, 10/30, 11/17
Biologs for sediment control 11/24

Newsletters: content for city, watershed and Washington Conservation District newsletters

- Oakdale (pop. 28,083) –newsletter
  - Summer – Adopt-A-Drain
- White Bear Lake (pop. 25,888) - newsletter
  - Spring edition– full feature on native plants + upcoming workshops; Adopt a Drain; IDDE reporting
  - Fall edition – Heiner Pond buffer planting and Adopt a Drain
- Woodbury (pop. 69,756)
  - Feb. – Dog poop

Annual Report

Prepared for the Ramsey Washington Metro Watershed District for Submittal to the Minnesota Pollution Control Agency to Fulfill the Reporting Requirements for the Tanners Alum Treatment Facility permitted under the General NPDES/SDS Permit for Municipal Separate Storm Sewer Systems, Permit MNR040000

Barr Engineering Co.

April 2021

1.0 Report Overview

Discharge from the Tanner's Lake Alum Treatment Facility is permitted under the Ramsey Washington Metro Watershed District (RWMWD) Municipal Separate Storm Sewer Systems (MS4) permit which is covered by the Minnesota Pollution Control Agency (MPCA) Small MS4 General Permit MNR040000. Submission of an annual report is required by the MS4 permit. Included in this 2020 annual report are:

- Operation details including volume of water treated, gallons of alum used, and average alum dose.
- Summaries of data collected from the inflow to the facility and outflow from the facility (i.e., floc pond discharge), and
- Phosphorus load removed by the alum treatment facility, estimated from FLUX modeling,

Tanner's Lake was not monitored in 2020 due to safety precautions during the COVID-19 pandemic. There were no sludge management activities in 2020.

2.0 Operation in 2020

In 2020, the Tanner's alum treatment facility operated for a total of 160 days during April 28 through October 30. The alum plant was shut down for maintenance on two occasions during 2020. The alum plant did not operate during August 7 through August 13 while a new pump was installed and during October 7 through October 25 while a new pH probe was installed. Total water flows treated by the Tanners alum treatment facility in 2020 were 90,972,635 gallons. Total alum application in 2020 was 8,350 gallons. The average aluminum dose applied in 2020 was 5.3 mg/L Al.

3.0 Tabular Summary of 2020 In-Stream Data

Data collected from permitted monitoring points SW001 (upstream of treatment plant), and SD002 (discharge from floc pond) during April 28 through October 31, 2020 are summarized in Tables 1 and 2.

The 2020 data collected from permitted monitoring points SW001 and SD002 have been electronically submitted to the MPCA in EQUIS format.

Table 1 **Water Quality Data Summary: Upstream Inflow to the Alum Treatment Facility (SW001)**

Date	Sample	Aluminum (µg/L)		Phosphorus (mg/L)			pH (SU)
		Total	Dissolved	Total	Dissolved	Ortho	
4/30/2020	Storm	1,390	10.3*	0.33	0.010	0.0022	7.56
5/7/2020	Grab	99.6	10.3*	0.065	0.0069	0.0024	7.97
5/14/2020	Grab		11.1*	0.063	0.0099	0.0028	7.99
5/18/2020	Storm		<8.1	0.53	0.016	0.011	7.58
5/28/2020	Grab		10.7	0.10	0.040	0.032	7.67
6/04/2020	Grab	105	9.6*	0.12	0.037	0.027	7.85
6/11/2020	Grab		8.3	0.18	0.039	0.032	7.80
6/19/2020	Grab		12.2*	0.16	0.044	0.026	7.74
6/25/2020	Grab		<8.1	0.13	0.0058	0.016	7.85
6/30/2020	Storm		22.6	0.34	0.036	0.026	7.13
7/9/2020	Grab	90.4	9.7*	0.31	0.080	0.073	7.64
7/16/2020	Grab		<8.1	0.19	0.044	0.046	7.77
7/20/2020	Storm		8.5*	0.66	0.050	0.041	7.62
7/23/2020	Storm		<8.1	0.60	0.057	0.044	7.55
7/28/2020	Storm		10.4*	0.31	0.048	0.040	7.52
8/6/2020	Grab	444	<7.1	0.66	0.023	0.018	7.45
8/19/2020	Grab		<7.1	0.20	0.027	0.020	7.62
8/27/2020	Grab		<7.1	0.096	0.028	0.021	7.77
9/3/2020	Grab	32.3	<7.1	0.094	0.023	0.016	8.07
9/10/2020	Grab		<7.1	0.089	0.020	0.011	7.97
9/17/2020	Grab		<7.1	0.069	0.020	0.016	8.08
9/25/2020	Grab		<7.1	0.082	0.025	0.021	7.88
10/1/2020	Grab	111	<7.1	0.076	0.029	0.016	7.84
10/29/2020	Grab		<7.1	0.16	0.018	0.010	7.73

*Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

Table 2 Water Quality Data Summary: Discharge from Floc Removal Basin (SD002)

Date	Sample	Aluminum (µg/L)		Phosphorus (mg/L)			pH (SU)
		Total	Dissolved	Total	Dissolved	Ortho	
4/30/2020	Storm	2,180	67.4	0.057	0.0058	<0.0012	7.42
5/7/2020	Grab	570	56.6	0.029	0.0040*	<0.0012	7.64
5/14/2020	Grab		43.6	0.056	0.0063	<0.0012	7.85
5/18/2020	Storm		24.1	0.076	0.020	0.014	7.58
5/28/2020	Grab		103	0.084	0.027	0.020	7.6
6/04/2020	Grab	127	34.2	0.091	0.028	0.021	7.89
6/11/2020	Grab		101	0.058	0.0056	0.0014	7.3
6/19/2020	Grab		89	0.075	0.0071	<0.0048	7.34
6/25/2020	Grab		29.1	0.040	0.019	0.0020	7.35
6/30/2020	Storm		70.4	0.097	0.0064	0.0038	7.27
7/9/2020	Grab	2,170	82	0.20	0.015	0.0093	7.19
7/16/2020	Grab		21	0.056	0.0054	0.0027	7.45
7/20/2020	Storm		91.7	0.11	0.010	0.0022	7.46
7/23/2020	Storm		67.8	0.10	0.010	0.0035	7.35
07/28/2020	Storm		86.3	0.10	0.0065	0.0016*	--
8/6/2020	Grab	2,210	48.4	0.059	0.0053	0.0018*	7.02
8/19/2020	Grab		26.1	0.066	0.0070	0.0025*	7.41
8/27/2020	Grab		17.1*	0.097	0.0056	0.0062	7.31
9/3/2020	Grab	1,200	18.8*	0.11	0.0066	0.0015*	7.42
9/10/2020	Grab		27.2	0.032	0.0081	<0.0012	7.38
9/17/2020	Grab		29.2	0.031	0.0046*	0.0026*	7.38
9/25/2020	Grab		17.8*	0.031	0.0081	0.0052*	7.37
10/1/2020	Grab	171	28.0	0.026	0.0057	0.0017*	7.52
10/29/2020	Grab		69.9	0.023	0.0068	0.0017*	7.03

*Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

4.0 Graphical Summary of 2020 In-Stream Data and Compare 2020 Data with Previous Years

Figures 1 through 5 present 2020 data in graphical format and compare it with data collected in previous years. The data collection location for the outflow has varied between the floc pond outflow (1998-2003 and 2007-2020) and the 7th Street wetland outflow (2004-2006). The historical graphs in this report only present the outflow data from the floc pond, the outflow specified in the MS4 permit. Inflow and outflow total aluminum data are presented in Figure 1. Inflow and outflow dissolved aluminum data are presented in Figure 2. Inflow and outflow total phosphorus data are presented in Figure 3. Inflow and outflow dissolved phosphorus data are presented in Figure 4. Dissolved phosphorus during 2008 through 2017 was measured as ortho phosphorus. During 2018, dissolved phosphorus was measured as ortho phosphorus during May 3 and May 10 and as dissolved phosphorus during all other 2018 monitoring events. All 2019 and 2020 dissolved phosphorus measurements were as dissolved phosphorus. Inflow and outflow pH data are presented in Figure 5.

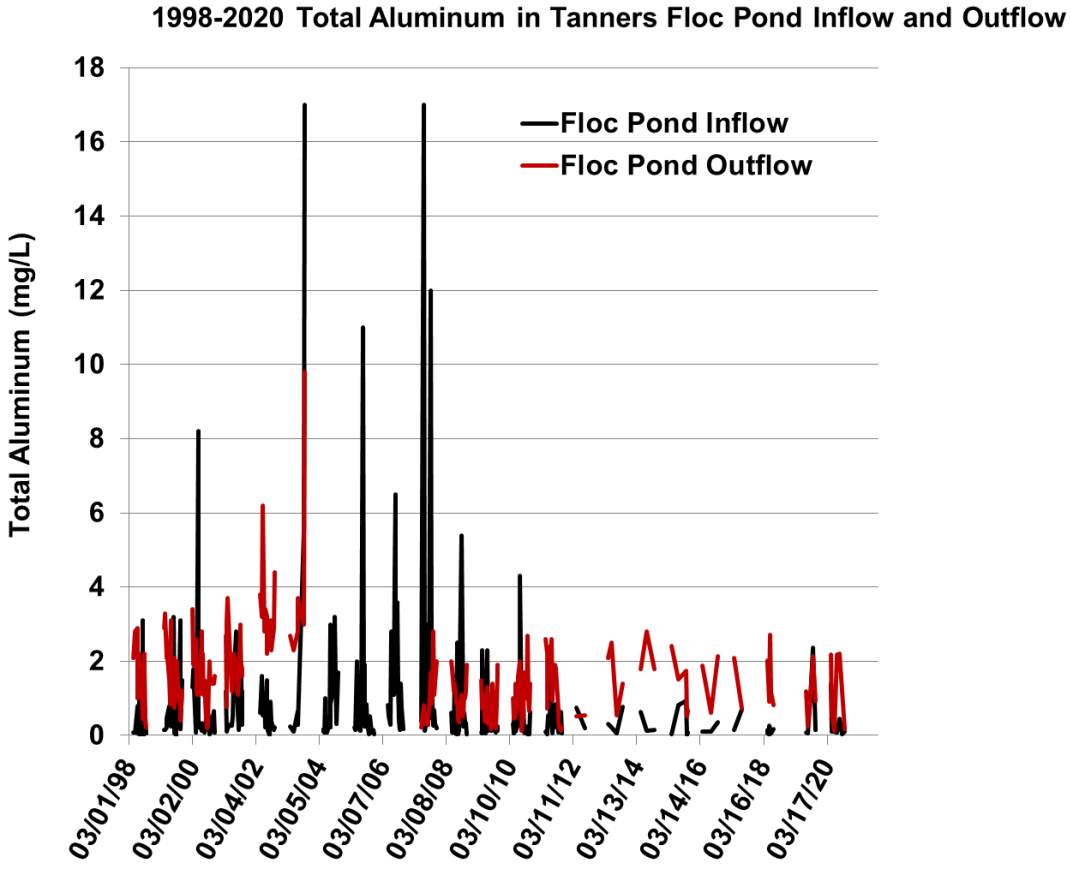

Figure 1. 1998-2020 Total Aluminum in Tanners Floc Pond Inflow and Outflow

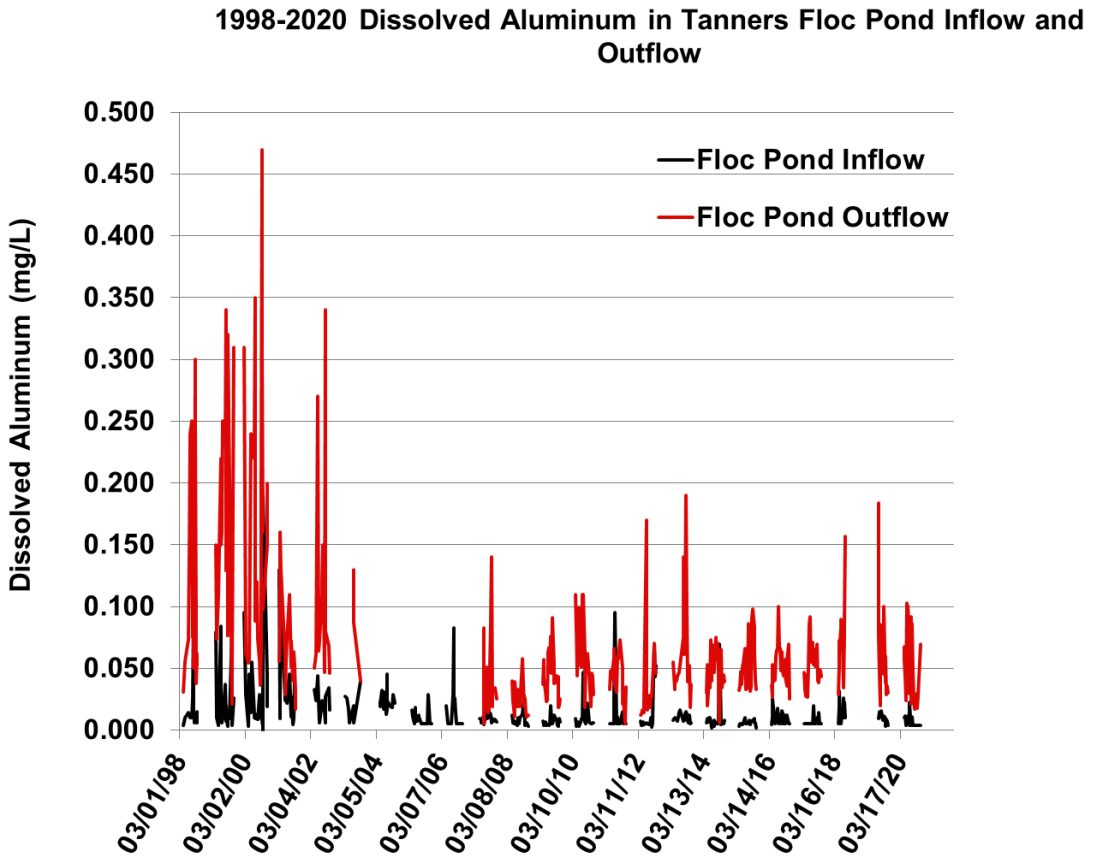

Figure 2. 1998-2020 Dissolved Aluminum in Tanners Floc Pond Inflow and Outflow

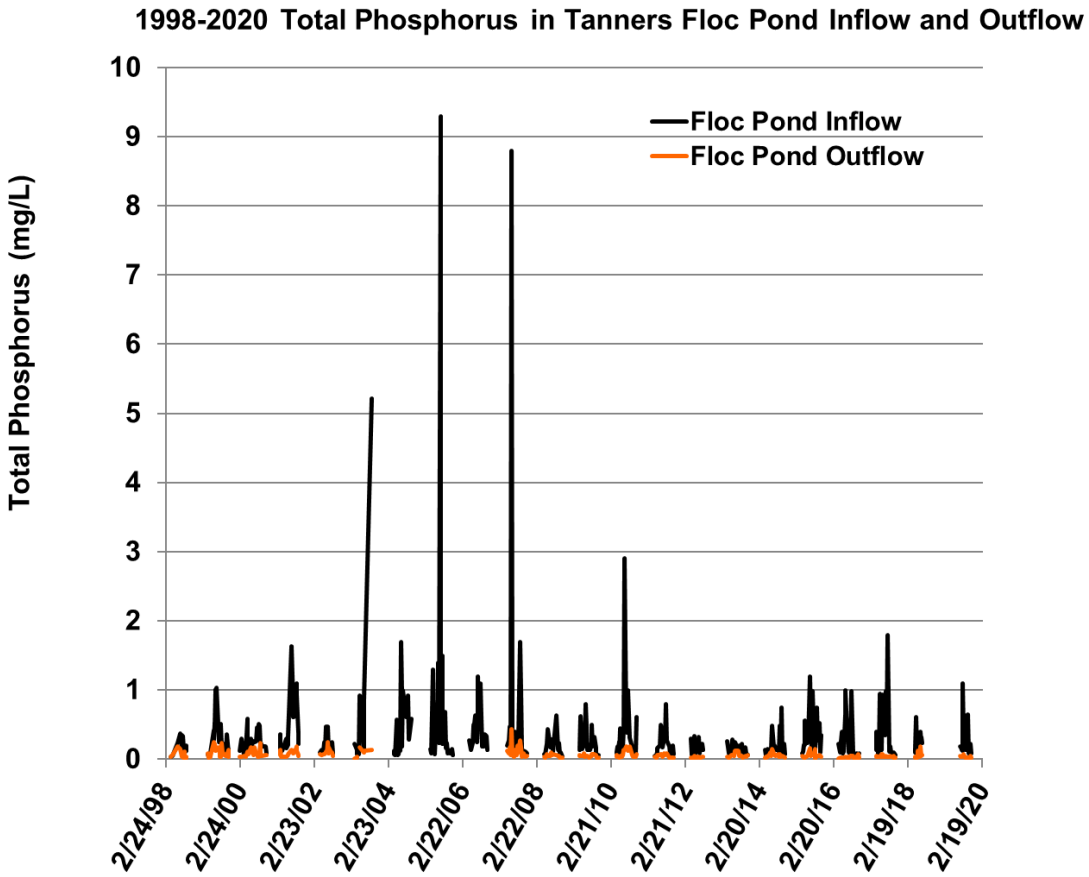

Figure 3. 1998-2020 Total Phosphorus in Tanners Floc Pond Inflow and Outflow

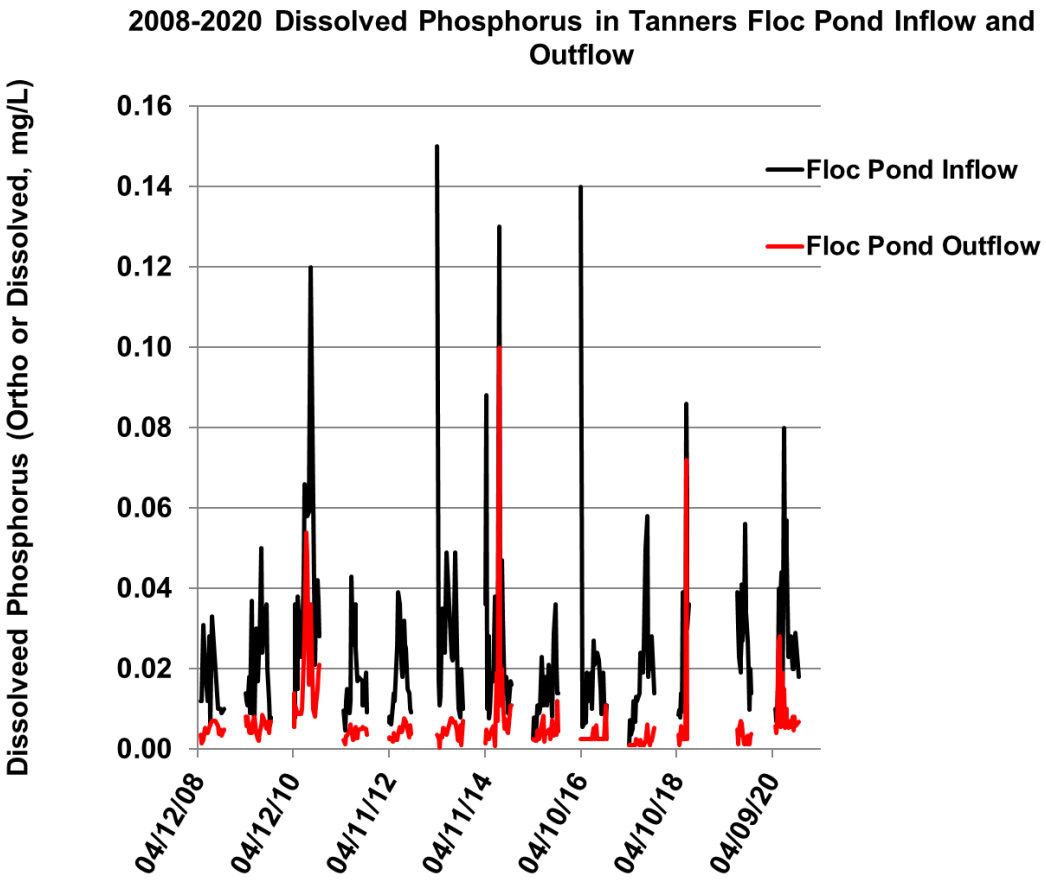

Figure 4. 2008-2020 Dissolved Phosphorus in Tanners Floc Pond Inflow and Outflow

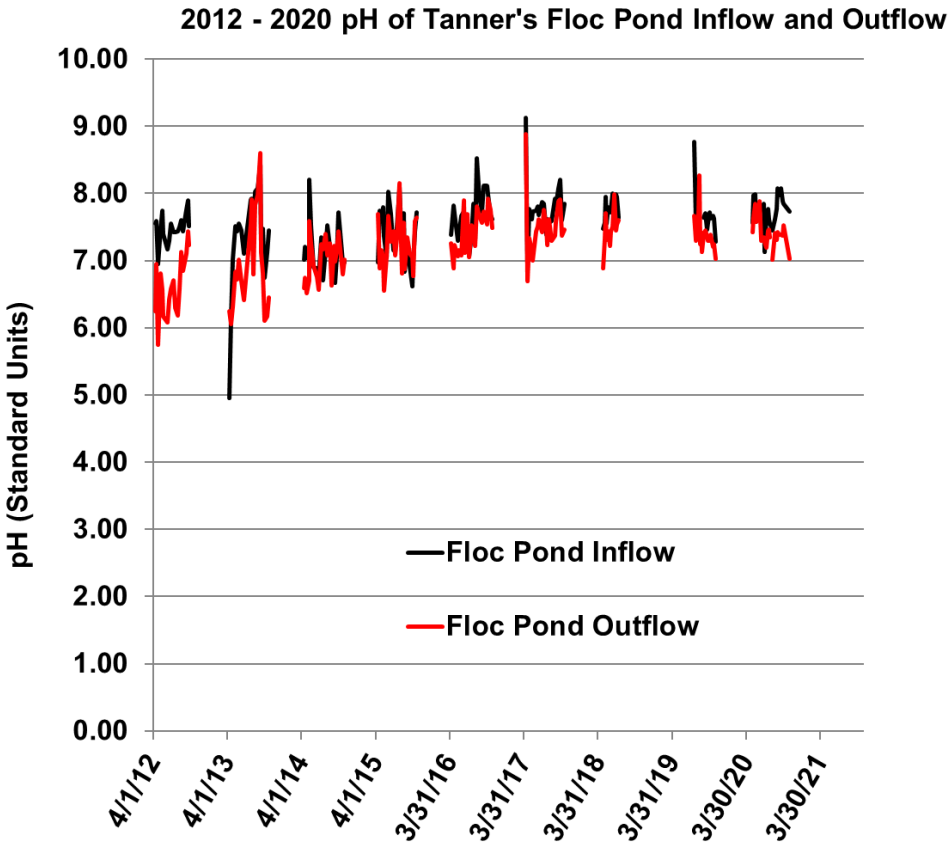

Figure 5. 2012-2020 pH of Tanners Floc Pond Inflow and Outflow

5.0 2020 Phosphorus Removal by Treatment Facility: FLUX Modeling

Total and dissolved phosphorus removal by the Tanner's Alum Treatment Facility during 2020 were estimated from FLUX modeling of inflow and outflow phosphorus load during the period of facility operation (i.e., April 28 through October 31). Continuous flow data together with inflow and outflow total and dissolved phosphorus data were input into the FLUX model to determine phosphorus load. Model results are presented in Table 3. Table 3 also presents the FLUX model results for 2012 through 2019.

In 2020, the estimated inflow total phosphorus load during the period of facility operation was 198 pounds. The treatment facility removed an estimated 134 pounds of total phosphorus. On average, 68 percent of the total phosphorus load entering the treatment facility during the 2020 period of operation was removed by alum treatment (Table 3).

During 2012 through 2019, average removal rates ranged from a low of 70 percent in 2014 to a high of 89 percent in 2016. Hence, the 2020 average removal rate of 68 percent was lower than removal rates observed during 2012 through 2019. The average alum dose applied during the 2020 period of operation was 5.3 mg/L Al which was lower than average alum doses applied during the period of operation in 2012 through 2019 (5.6 mg/L Al to 14.4 mg/L Al). During this

period, increasing average total phosphorus removal rates were generally observed with increasing average alum dose rates.

In 2020, the estimated inflow dissolved phosphorus load during the period of facility operation was 28 pounds and the treatment facility removed an estimated 18 pounds of dissolved phosphorus. Hence, on average, 65 percent of the dissolved phosphorus load entering the treatment facility was removed by alum treatment (Table 3). The 2020 dissolved phosphorus removal rate was near the low end of the range of removal rates observed during 2012 through 2019 (59 to 92 percent) (Table 3).

Monthly inflow and outflow total phosphorus loads estimated by FLUX are shown in Figure 6 and monthly inflow and outflow dissolved phosphorus loads are shown in Figure 7. A summary of gallons of water treated, gallons of alum applied during treatment, and the FLUX modeling estimate of pounds of total and dissolved phosphorus removed during the 2020 operation period is shown in Table 4.

Table 3. Tanners Alum Treatment Facility: 2012-2020 Phosphorus Removal Estimated from FLUX Modeling

Year	Parameter	Inflow Mass (lbs)	Outflow Mass (lbs)	Phosphorus Removed (lbs)	Phosphorus Removal (%)
2012	Total Phosphorus	151	21	130	86
	Dissolved Phosphorus (Ortho)	13	2	11	82
2013	Total Phosphorus	158	43	115	73
	Dissolved Phosphorus (Ortho)	35	4	32	89
2014	Total Phosphorus	350	106	244	70
	Dissolved Phosphorus (Ortho)	34.6	8.3	26.3	76
2015	Total Phosphorus	514	77	437	85
	Dissolved Phosphorus (Ortho)	19	6	13	70
2016	Total Phosphorus	509	57	452	89
	Dissolved Phosphorus (Ortho)	34	5	29	85
2017	Total Phosphorus	405	51	354	87
	Dissolved Phosphorus (Ortho)	25	2	23	92
2018	Total Phosphorus	182	52	129	71
	Dissolved Phosphorus (Dissolved and Ortho*)	23	9	13	59
2019	Total Phosphorus	193	23	169	88
	Dissolved Phosphorus (Dissolved)	21	2	19	90
2020	Total Phosphorus	198**	64**	134**	68
	Dissolved Phosphorus (Dissolved)	28**	10**	18**	65

*Ortho phosphorus was measured on 5/3/2018 and 5/10/2018 and dissolved phosphorus was measured on all other 2018 sample dates.

**FLUX estimated loads and load removed by alum treatment facility are for the operation period of the alum treatment facility. Periods when the facility was not in operation were not included in the estimated load or load removed by the alum treatment facility. The facility began operation April 28 and was shut down for the year on October 30. The facility was shut down for maintenance August 7 through 13 and October 7 through 25.

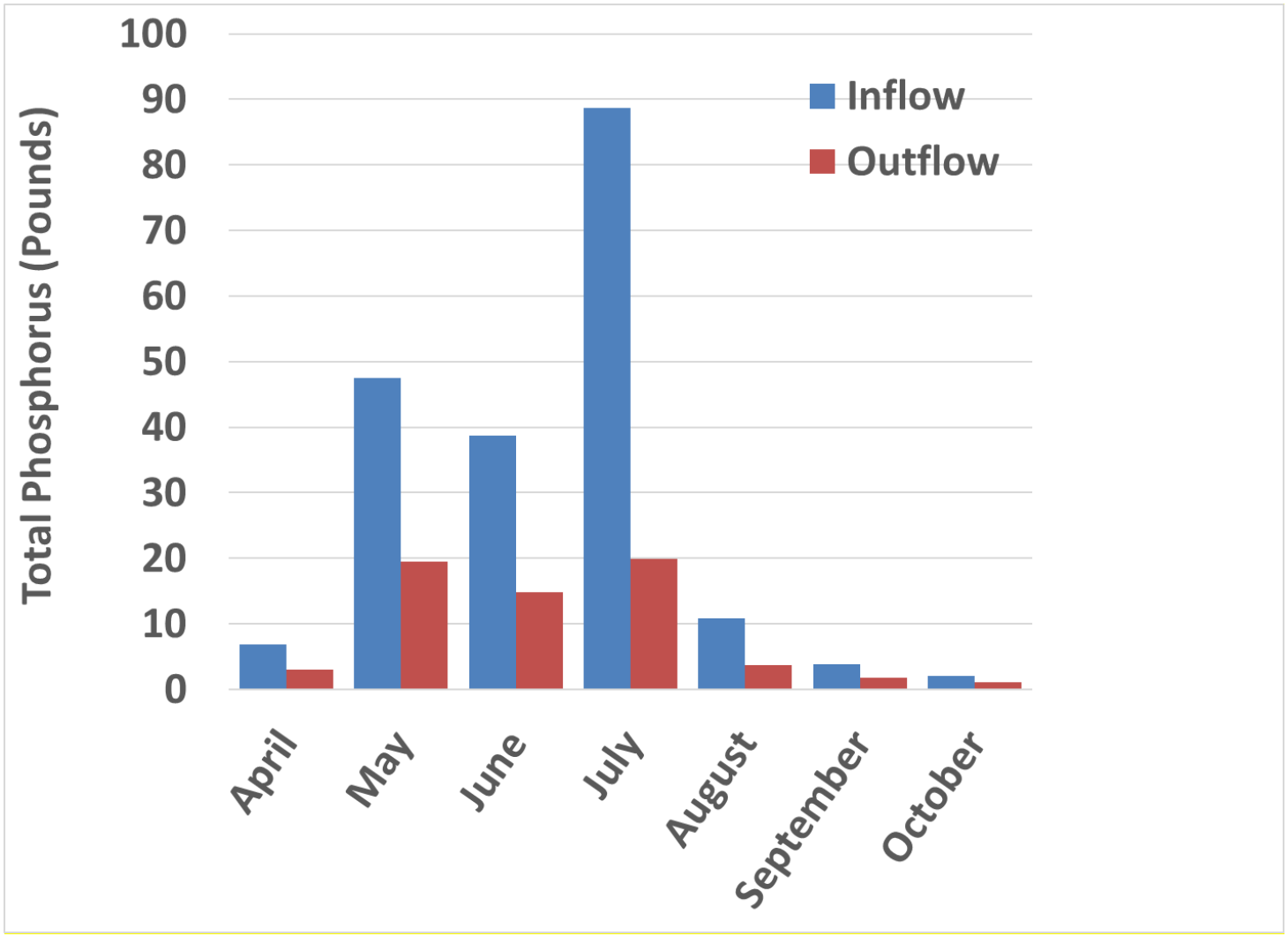

Figure 6. 2020 Inflow and Outflow Total Phosphorus Loads

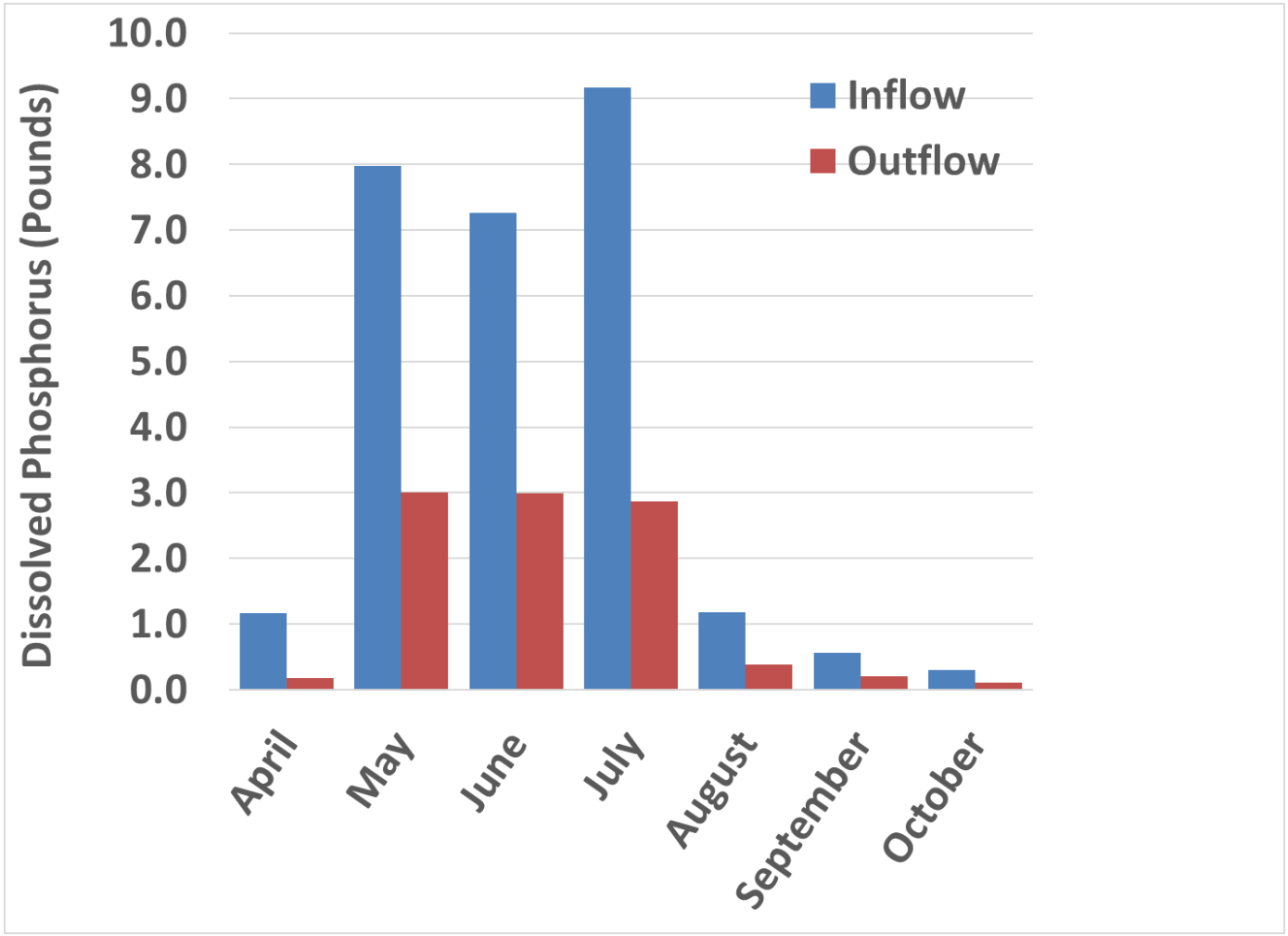

Figure 7. 2020 Inflow and Outflow Dissolved Phosphorus Loads

A monthly summary of gallons of water treated, gallons of alum applied during treatment, and pounds of phosphorus removed during the 2020 operation period for the Tanners alum treatment facility in 2020 is shown in Table 4.

Table 4. Tanners Alum Treatment Facility: Summary of Gallons of Water Treated, Gallons of Alum Applied during Treatment, and the FLUX Modeling Estimate of Pounds of Total and Dissolved Phosphorus Removed during the 2020 Operation Period*

Month	Q73 Chemical used for treatment	Q74 Gallons of alum or ferric chloride treatment	Q75 Gallons of water treated	Q76 Calculated pounds of total phosphorus removed	Q76 Calculated pounds of dissolved phosphorus removed
January	*	0	0	0	0
February	*	0	0	0	0
March	*	0	0	0	0
April	Alum	350	3,246,828	3.8	1.0
May	Alum	422	26,732,008	27.9	5.0
June	Alum	1,663	21,789,437	23.8	4.3
July	Alum	4,365	27,654,095	68.7	6.3
August	Alum	917	6,322,397	7.1	0.8
September	Alum	428	3,430,718	2.1	0.4
October	Alum	205	1,797,152	0.9	0.2
November	*	0	0	0	0
December	*	0	0	0	0

*The 2020 treatment facility operation period was April 28 through October 30. The treatment facility was shut down for maintenance August 7-13 and October 7-25. The gallons of water treated and calculated pounds of total phosphorus and dissolved phosphorus removed is only for the period of operation and does not include the periods when the treatment facility was shut down for maintenance.