NPDES Permit #IDS027561
Permit Appendix B - Annual Report Form

This Annual Report is due no later than January 30 of each year, beginning in Calendar Year 2023, and reflects the relevant reporting period, starting October 1, 2021. See Permit Part 6.4.2

Annual Reports and any attachments must be sent to IDEQ by U.S. Postal Mail to the following address:

Regional Administrator
Idaho Department of Environmental
Quality Attn: Water Quality Program
Boise Regional Office
1445 N. Orchard St.
Boise, ID 83706

Complete Sections 1 through IV. Do not leave any questions blank.

MS4 Permittee Name/Organization: Boise State University

Permit Number: IDS027561

Reporting Period:

- ○ **Year 1 Reporting Period:** Oct. 1, 2021 – Sept. 30, 2022 – **Annual Report due date:** January 30, 2023
- ◉ **Year 2 Reporting Period:** Oct. 1, 2022 – Sept. 30, 2023 – **Annual Report due date**: January 30, 2024
- ○ **Year 3 Reporting Period** Oct. 1, 2023 – Sept. 30, 2024 – **Annual Report due date:** January 30, 2025
- ○ **Year 4 Reporting Period** Oct. 1, 2024 – Sept. 30, 2025 – **Annual Report due date:** January 30, 2026
- ○ **Year 5 Reporting Period** Oct. 1, 2025 – Sept. 30, 2026 – **Annual Report due date: September 30, 2026**
- ○ Other

Certification: *"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 gather and evaluate 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. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*

Signature:

Printed Name:

Title:

Date:

Clear Page 1

Clear Page 2

Section I. General Information

MS4 Facility Site Name: Boise State University

MS4 Facility Organization Formal Name: Boise State University

MS4 Facility Contact Name: Will Reynolds

Title: Environmental Compliance Manager

MS4 Contact Telephone: 986-999-0575

MS4 Contact Email Address: willreynolds@boisestate.edu

MS4 Facility Contact Type (all that apply): ☐ Owner ☐ Operator ☑ Main Contact

MS4 Facility Site Address: 1910 W University Dr

MS4 Facility Site City, State, Zip Code: Boise, ID, 83725

MS4 Facility Site Mailing Address: ***if different from above*** 1129 S Euclid Ave., Boise, ID, 83706

Is the MS4 Facility Site Located On Tribal Land? ◯ **Yes** ◉ **No**

MS4 Facility Jurisdiction Type (check all that apply):

- ☐ Federal
- ☐ State
- ☑ College or University
- ☐ State Highway Department
- ☐ Municipal:
- ☐ County
- ☐ City or Town
- ☐ Highway District
- ☐ Tribal
- ☐ Other

List All Receiving Water(s) For the MS4 Discharges:

See Appendix 2 "Dry Weather Outfall Inspection and Sampling Summary" for receiving waters for each outfall, and Boise State University SWMP Appendix C: Boise State University MS4 Map for outfall locations.

Clear Page 3

Section II. Permittee Responsibility:
Please answer all questions. If the answer is "No," or "Not Applicable" and no other direction is provided, use the Comments field at the end of this section to explain the reason and the expected date(s) that the requirement will be met, and/or to explain why the requirement does not apply.

1. **This Permittee organization shares implementation responsibility for Permit compliance with one or more Permittees.**
   (●) *Yes* ( ) *No* ( ) *Not Applicable*

   Is the agreement between the Permittees described/cited in the Stormwater Management Program (SWMP) Document?
   (●) *Yes* ( ) *No* ( ) *Not Applicable*

2. **This Permittee organization shares implementation responsibility for Permit compliance with one or more outside (non-Permittee) entities.**

   Is the agreement with these other entity(ies) described/cited in the SWMP Document?
   ( ) *Yes* (●) *No* ( ) *Not Applicable*

3. **This Permittee organization maintains relevant ordinances or other regulatory mechanisms to control pollutant discharges into and from the MS4 to meet the requirements of the ermit**.
   (●) *Yes* ( ) *No* ( ) *Not Applicable*

   (If "No," use the Comment field to specify on overall progress to adopt adequate ordinances or utilizing available regulatory mechanisms.)

4. **This Permittee organization's SWMP Document is posted on a publicly accessible website**.
   (●) *Yes*

   Identify the URL for the webpage where the SWMP Document can be accessed:

   http:// partnersforcleanwater.org/aboutpartners/boise-state

   ( ) *No*
   ( ) *Not Applicable*

5. **The Permittee organization provided a summary of total costs associated with SWMP implementation over the reporting period.**

   (●) *Yes;*

   Note: Permit Part 6.4.2.2.5 requires Permittees to provide annual expenditures for the reporting period, and estimated budget for the reporting period following each Annual Report.

   ( ) *No*
   ( ) *Not Applicable*

Clear Page 4

6. **This Permittee organization regularly tracks certain activities to set priorities and assess compliance with the Permit requirements.**

(●) *Yes* ( ) *No* ( ) *Not Applicable*

7. During the reporting period, responsibility for SMWP implementation has changed due to a Transfer of Ownership or Operational Authority over a geographic portion of the MS4.

This Permittee's SWMP Document has been updated to reflect these changes in responsibility for any new or transferred areas served by the MS4.

( ) *Yes*

If yes, use the Comments field to provide a brief statement summarizing the change in ownership or operational authority.

( ) *No*

(●) *Not Applicable*

Section II Comments:

See Appendix 10 - Phase I MS4 Permit Annual Report Responses

Clear Page 5

Section III. Status of SWMP Control Measures
Please answer all questions for each SWMP control measure and associated component activity. In the Comments field, cite any relevant information and/or statistics that helps illustrate the Permittee's implementation of the required action/activity.

If the answer is "No," use the Comments field to explain the reason, and outline the expected dates that the requirement will be met.

If the requirement does not apply to the Permittee's organization, mark "NA" and explain why it does not apply in the Comments field.

Public Education, Outreach and Involvement Program (Permit Part 3.1)

8. **This Permittee organization conducts an education, outreach, and public involvement program based on stormwater issues of significance in the Permittee's jurisdiction.**

- ○ *Yes, this organization conducts the education, outreach, and involvement activities required by the Permit*
- ◉ *Yes, this organization works through contract with other entities to conduct the education, outreach, and involvement activities required by the Permit*
- ○ *No*
- ○ *Not Applicable*

9. **Target Audience: During the reporting period, this Permittee organization focused its education, outreach, and public involvement messages to the following audience(s):**

- ☑ ***General Public*** *(including homeowners, homeowner's associations, landscapers, and property managers)*
- ☑ ***Business/Industrial/Commercial/Institutions*** *(including home based and mobile businesses)*
- ☑ ***Construction/Development*** *(e.g., Engineers, Contractors, Developers, Landscape Architects, Site Design Professionals)*
- ☑ ***Elected Officials, Land Use Policy and Planning Staff***
- ☐ Other *(describe in Comments section below)*

10. **Topics: During the reporting period, this Permittee organization focused its education, outreach, and public involvement messages on the following topics** *(select all that apply):*

- ☑ General impacts of stormwater flows into surface water, and appropriate actions to prevent adverse impacts;
- ☑ Impacts from impervious surfaces, techniques to avoid adverse impacts;
- ☑ Yard care techniques protective of water quality, such as composting;
- ☐ Proper use, application & storage of pesticides, herbicides, and fertilizers;

Clear Page 6

- [x] Litter & trash control and recycling programs;
- [x] BMPs for power washing, carpet cleaning, auto repair &maintenance;
- [x] Low Impact Development/green infrastructure techniques, including site design, pervious paving, retention of mature trees/vegetation, landscaping and vegetative buffers;
- [x] Maintenance of landscape features providing water quality benefits;
- [x] Stormwater treatment and volume control practices;
- [x] Technical standards for stormwater site plans; including appropriate selection, installation, and use of required construction site control measures
- [x] Source control BMPs and environmental stewardship;
- [x] Impacts of illicit discharges and how to report them;
- [x] Actions and opportunities for pet waste control/disposal,
- [x] Water wise landscaping, water conservation, water efficiency
- [x] BMPs for use and storage of automotive chemicals, hazardous cleaning supplies, vehicle wash soaps and other hazardous materials;

11. During the reporting period, this Permittee organization began and/or continued distribution of the selected messages/activities to the intended target audience.

(●) *Yes*

Please summarize the message/activity conducted during the reporting period in the Comments section below.

( ) *No*

Note: Permit Part 3.1.3 requires Permittees to conduct at least eight (8) educational messages or activities no later than ***September 30, 2026.***

( ) *Not Applicable*

12. During this reporting period, this Permittee organization assessed, or participated in efforts to assess, the understanding and adoption of intended behaviors by the target audience.

(●) *Yes; In the Comments section below, please summarize efforts to assess the selected education, outreach and public involvement activities conducted during the reporting period. If information is available, describe how this information is used to improve the education/outreach efforts.*

( ) *No*

( ) *Not Applicable*

Clear Page 7

13. During this reporting period, this Permittee organization offered (or worked with others to offer) training/education regarding construction site runoff control measures to site operators working in the Permittee's jurisdiction.

(●) *Yes*

( ) *No*

Note: Permit Part 3.1.7.1 requires Permittees to offer outreach/training on construction site control measures at least once per year during the permit term, no later than ***September 30, 2026.***

( ) *Not Applicable*

14. During this reporting period, this Permittee organization offered (or worked with others to offer) training/education regarding permanent stormwater controls to audiences working in the Permittee's jurisdiction.

(●) *Yes*

( ) *No*

Note: Permit Part 3.1.7.2 requires Permittees to offer outreach/training on permanent stormwater controls at least once per year during the permit term, no later than ***September 30, 2026.***

( ) *Not Applicable*

15. This Permittee organization maintains and promotes a publicly-accessible website that provides current SWMP-related information cited in Permit Part 3.1.8. This website was recently updated prior to submitting this Report.

(●) *Yes*

URL for the Permittee's webpage:

http:// partnersforcleanwater.org

( ) *No*

( ) *Not Applicable*

Comments on Public Education, Outreach, and Involvement Program:
Use this Comments field to explain or discuss unique implementation schedules, summarize nature of the education, outreach, and public involvement activities conducted during the reporting period

See Appendix 10 Phase I MS4 Permit Annual Report Responses

Clear Page 8

Illicit Discharge Detection and Elimination Program (Permit Part 3.2)

16. **To the extent allowable pursuant to authority granted under Idaho law, this Permittee organization conducts and enforces a program to detect and eliminate illicit discharges into the MS4.**

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary to comply with Permit Parts 3.2.2 through 3.2.9 no later than ***April 3, 2026.***

- ( ) *Not Applicable*

17. **This Permittee organization maintains a current MS4 Map and Outfall Inventory as described in Permit Part 3.2.2.**

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.2 requires Permittees to update their Map(s) and Inventory no later than ***April 3, 2026.***

- ( ) *Not Applicable*

18. **To the extent allowable pursuant to authority granted under Idaho law, this Permittee organization prohibits non-storm water discharges into the MS4 (*except those identified in Permit Part 2.4*) through an ordinance or other regulatory mechanism.**

- (●) *Yes – if yes, please provide citation/web address to the ordinance/regulatory mechanism:*

  https://www.boisestate.edu/policy/facilities-planning-campus-safety/policy-title-environmental-health-and-safety/

- ( ) *No*

  Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary no later than ***April 3, 2026.***

- ( ) *Not Applicable*

19. **This Permittee organization maintains a dedicated telephone number, email address, and/or other means for the public to report illicit discharges,**

- (●) *Yes – if yes, please provide phone number/web address:*

  Stormwater Pollution Prevention Hotline: 208-395-8888

- ( ) *No*

  Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary no later than ***April 3, 2026.***

- ( ) *Not Applicable*

Clear Page 9

20. **This Permittee organization responds and investigates illicit discharge complaints or reports within two working days.**

- (●) *Yes*
- ( ) *No*

  *Note: Permit Part 3.2 requires Permittees to revise and update their existing programs as necessary no later than **April 3, 2026.***
- ( ) *Not Applicable*

21. **Number of Public Complaints/Reports Received During this Reporting Period:**

~~0~~

22. **Number of Illicit Discharge Complaints/Reports Investigated through field visits, sampling or other follow-up action** 0

23. **Number of Illicit Discharge Complaints/Reports Resolved** 0

24. **This Permittee organization conducts a dry weather analytical and field screening monitoring program to identify non-stormwater flows from MS4 outfalls.**

(●) *Yes* ( ) *No* ( ) *Not Applicable*

25. **During the reporting period, this Permittee organization used its written protocols to prioritize and identify MS4 outfalls for dry weather discharge investigation.**

(●) *Yes* ( ) *No* ( ) *Not Applicable*

26. **Total Number of MS4 Outfalls in the Permittee's jurisdiction of the Permit Area:**

12

27. **During the reporting period, this Permittee organization completed visual dry weather screening on at least 20% of MS4 outfalls.**

- (●) *Yes*
- ( ) *No* – Total # outfalls < 7, so only one outfall screened this reporting period
- ( ) *Not Applicable*

28. **Of the 20% of MS4 outfalls screened during the reporting period:**

How many outfalls were discharging during dry weather? 1

How many of these identified dry weather discharges were sampled or otherwise investigated to determine the discharge source? 1

How many of the identified dry weather discharges resulted in the Permittee action to address and eliminate the discharge source? 0

Clear Page 10

29. **During this reporting period, how many of the Permittee's MS4 outfalls have been identified as having dry weather flows caused by irrigation return flow or ground water seepage?**
Number of outfalls identified this reporting period 0
Total number of MS4 outfalls identified to date, as having dry weather flows from irrigation or groundwater seepage 0

Note: Permit Part 3.2.6 requires Permittees to provide a complete list of MS4 outfalls locations identified as having dry weather flows caused by irrigation return flow or ground water seepage as part of the Permit Renewal Application no later than ***April 3, 2026.***

30. **This Permittee organization maintains written spill response procedures and coordinates appropriate spill prevention, containment and response activities with other organizations in the Permit Area to ensure maximum water quality protection at all times.**

(●) *Yes* ( ) *No* ( ) *Not Applicable*

31. **This Permittee organization coordinates with appropriate local entities to educate employees and the public of the proper management and disposal or recycling of used oil, vehicle fluids, toxic materials, and other household hazardous wastes.**

(●) *Yes* ( ) *No* ( ) *Not Applicable*

32. **This Permittee organization's staff responsible for investigating, identifying and eliminating illicit discharges, spills, and illicit connections into the MS4 are trained to conduct such activities**

(●) *Yes* ( ) *No* ( ) *Not Applicable*

Comments on Illicit Discharge Detection and Elimination Program:
Use this Comments field to explain any unique implementation schedules, highlight investigation results or follow-up actions, discuss subsequent enforcement actions, etc. that were conducted during the relevant reporting period.

See Appendix 10 Phase I MS4 Permit Annual Report Responses

Clear Page 11

Construction Site Runoff Control Program (Permit Part 3.3)

33. This Permittee organization uses an ordinance or other regulatory mechanism to require erosion, sediment, and waste material management controls at construction project site activity that results in land disturbance of one (1) or more acres and discharges to the MS4.

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than ***April 3, 2026.***

- ( ) *Not Applicable*

34. This Permittee organization requires construction site operators to submit construction site plans for Permittee review.

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than ***April 3, 2026.***

- ( ) *Not Applicable*

35. This Permittee organization inspects construction sites to ensure compliance with applicable requirements for erosion, sediment and waste material management controls.

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than ***April 3, 2026.***

- ( ) *Not Applicable*

36. This Permittee organization inspects construction sites using an inspection prioritization system.

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than ***April 3, 2026.***

- ( ) *Not Applicable*

Clear Page 12

37. **This Permittee organization implements a written escalating enforcement response policy or plan (ERP) for construction site runoff control.**

- ○ *Yes*
- ◉ *No*

  Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than ***April 3, 2026.***

- ○ *Not Applicable*

38. This Permittee organization ensures that all persons responsible for preconstruction site plan review, site inspections, and enforcement of construction site runoff control requirements are appropriately trained to conduct such activities – specifically, this organization provides orientation and training for new staff working on construction runoff control issues within the first six (6) months of employment.

- ◉ *Yes*
- ○ *No*

  Note: Permit Part 3.3 requires Permittees to update their construction site runoff control requirements no later than ***April 3, 2026.***

- ○ *Not Applicable*

Comments on Construction Site Runoff Control:
Use this Comments field to explain unique implementation schedules, summarize the number of site inspections, follow-up actions, and/or any subsequent enforcement actions, etc that were conducted during the relevant reporting period.

See Appendix 10 Phase I MS4 Permit Annual Report Responses

Clear Page 13

Post Construction Stormwater Management in New Development & Redevelopment (Permit Part 3.4)

39. Through ordinance or other regulatory mechanism, this Permittee organization requires the installation and long-term maintenance of permanent stormwater controls at new development and redevelopment project sites that result from land disturbance of 5,000 square feet or more, excluding individual one- or two-family dwelling development or redevelopment and the infill or redevelopment of public pedestrian infrastructure projects. Required controls are sufficient to retain onsite the runoff volume produced from the first 0.6 inches of rainfall from a 24-hour event preceded by 48 hours of no measurable precipitation, and/or require runoff treatment providing equal or greater level of water quality benefit as this onsite retention standard.

(●) *Yes*

Please cite to the ordinance containing the permanent stormwater control requirements:

Boise City Code 10-6-3

( ) *No*

Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than ***April 3, 2026.***

( ) *Not Applicable*

40. This Permittee organization requires permanent storm water controls through written specifications.

(●) *Yes*

Please cite to the document containing the permanent stormwater control requirements:

https://achdidaho.org/Documents/Forms/ConsultantFiles/Section8200_StormwaterDesignManual_prior.pdf

( ) *No*

Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than ***April 3, 2026.***

( ) *Not Applicable*

41. This Permittee organization requires preconstruction site plan review and approval for permanent storm water controls at new development and redevelopment sites.

(●) *Yes*

( ) *No*

Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than ***April 3, 2026.***

( ) *Not Applicable*

Clear Page 14

41.b This Permittee organization cooperates in the implementation of the Green Infrastructure Strategy to employ innovative approaches to control stormwater quality and quantity in the Lower Boise River watershed.

Use this field below to describe any relevant Permittee actions during the reporting period, as applicable. .

Boise State University cooperates with its co-permitees to employ innovative approaches to control stormwater quality and quantity in the Lower Boise River watershed, but has yet to formalize its Green Infrastructure Strategy. In line with the permit, part 3.4.2.3, Boise State University will submit the updated document as part of the Permit Renewal Application no later than April 3, 2026.

42. This Permittee organization has identified high priority locations in the jurisdiction where the Permittee regularly inspects the installation, and long-term operation, of permanent stormwater controls.

- ( ) *Yes*
- ( ) *No*

  *Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026.***

- (•) *Not Applicable*

43. This Permittee organization has an enforcement strategy to ensure and maintain the functional integrity of permanent stormwater controls within this jurisdiction.

- (•) *Yes*
- ( ) *No*

  *Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026.***

- ( ) *Not Applicable*

44. This Permittee organization uses a database inventory to track and manage the operational condition of permanent stormwater controls within this jurisdiction.

- (•) *Yes*
- ( ) *No*

  *Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026.***

- ( ) *Not Applicable*

45. This Permittee organization requires enforceable and transferable O&M Agreements, where parties other than this Permittee organization are responsible for operation and maintenance of permanent storm water controls?

- ( ) *Yes*
- ( ) *No - Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026.***
- (•) *Not Applicable*

46. This Permittee organization ensures that all persons responsible for reviewing site plans for permanent stormwater controls and/or for inspecting the installation and operation of permanent controls are trained to conduct such activities

- (•) *Yes*
- ( ) *No - Note: Permit Part 3.4 requires Permittees to update their permanent stormwater control requirements no later than **April 3, 2026.***
- ( ) *Not Applicable*

Clear Page 16

Comments on Post Construction Stormwater Management in New Development and Redevelopment

Use this Comments field as necessary to explain any unique implementation schedules, summarize inspections, actions, etc. that were conducted during the relevant reporting period.

See Attachment 10 - Phase I MS4 Permit Annual Report Responses.

See Boise State University's SWMP Section 3.2 and the subsequent table, as well as Appendices 3 & 4 for PSC inspection summaries.

Clear Page 17

Stormwater Infrastructure and Street Management (Permit Part 3.5)

47. This Permittee organization inspects all MS4 catch basins and inlets in the jurisdiction at least once every two years and takes appropriate maintenance or cleaning action based on those inspections.

- (●) *Yes*
- ( ) *No – Permittee uses an alternate inspection & maintenance schedule as outlined in the SWMP Document.*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their pollution prevention and good housekeeping *as needed to properly operate and maintain their MS4s no later than* ***April 3, 2026.***
- ( ) *Not Applicable*

Total Number of catch basins and inlets inspected this reporting period 158.0

48. This Permittee organization operates and maintains Streets, Roads, Highways and/or Parking Lots in its jurisdiction in a manner that protects water quality and reduces the discharge of pollutants through the MS4.

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than ***April 3, 2026***
- ( ) *Not Applicable*

49. This Permittee organization operates all street/road maintenance material storage locations in a manner that prevents pollutants in stormwater runoff from discharging to the MS4 or into any receiving waterbody. A description of each Material Storage Location is included in the SWMP Document, as required by Permit Part 3.5.4

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than ***.***
- ( ) *Not Applicable*

50. This Permittee organization sweeps all streets, roads, highways, and parking lots according to a sweeping management plan and the sweeping schedule outlined in Permit Part 3.5.5.

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than ***April 3, 2026***

- ( ) *Not Applicable*

51. This Permittee organization has reviewed its operation and maintenance activities for the types of activities listed below and confirms that all such activities are conducted in a manner that protects water quality and reduces the discharge of pollutants through the MS4. Municipal Activities to be addressed include: *grounds/park and open space maintenance operations; fleet maintenance and vehicle washing operations; building maintenance; snow disposal site operation and maintenance; solid waste transfer activities; municipal golf course maintenance; materials storage; hazardous materials storage; used oil recycling; and spill control and prevention measures for municipal refueling facilities.*

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than ***April 3, 2026***

- ( ) *Not Applicable*

52. **This Permittee organization ensures appropriate practices to reduce the discharge of pollutants to the MS4 associated with the application, storage and disposal of pesticides, herbicides and fertilizers. All employees or contractors applying pesticides, etc. are instructed to follow all label requirements, including those regarding application methods, rates, number of applications allowed, and disposal of the pesticide/herbicide/fertilizer and rinsate.**

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than ***April 3, 2026.***

- ( ) *Not Applicable*

Clear Page 19

53. This Permittee organization uses site specific Storm Water Pollution Prevention Plans for all Permittee-owned material storage facilities, heavy equipment storage areas, and maintenance yards located in the Permit Area.

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than ***April 3, 2026.***

- ( ) *Not Applicable*

54. This Permittee organization ensures that all persons responsible for municipal operations and maintenance activities are trained to conduct such activities

- (●) *Yes*
- ( ) *No*

  Note: Permit Part 3.5 requires Permittees to update their requirements pollution prevention/good housekeeping for MS4 Operations no later than ***April 3, 2026.***

- ( ) *Not Applicable*

Comments on Stormwater Infrastructure and Street Management
Use this Comments field as necessary to explain any unique implementation schedules, summarize inspections, actions, etc. that were conducted during the relevant reporting period

See Attachment 10 - Phase I MS4 Permit Annual Report Responses

Clear Page 20

Industrial and Commercial Stormwater Discharge Management (Permit Part 3.6)

55. ***This Permittee organization maintains an inventory of industrial & commercial facilities within the Permit Area, and inspects such facilities on a prioritized basis as required by Permit Part 3.6.***

Use this comment box to summarize Permittee activities related to Permit Part 3.6.

The objective of the Industrial and Commercial Stormwater Discharge Management Program is to actively engage dischargers in protecting the quality of runoff and managing facilities and activities to prevent the discharge of pollutants associated with industrial and commercial facilities and activities. Boise State University relies on ACHD, Garden City, and the City of Boise to fulfill these objectives using the appropriate ordinance or control.

Clear Page 21

Section V. Response To Excursions Above Idaho Water Quality Standards

56. During this or any prior reporting period, did the Permittee submit written notification to EPA and IDEQ regarding MS4 discharge that are causing or contributing to an excursion above the WQS as directed by Permit Part 5.1?

- ○ *Yes – if yes, proceed to Q.56*
- ◉ *No*
- ○ *Not Applicable*

57. During this or any prior reporting period, did the Permittee submit an Adaptive Management Report to EPA and IDEQ, as directed by Permit Part 5.2?

- ○ *Yes – if yes, proceed to Q.57*
- ○ *No*
- ◉ *Not Applicable*

58. Provide a summary of the Permittee's efforts to date that address the MS4 discharges contributing to the original water quality excursion, including the results of any monitoring, assessment, or evaluation efforts conducted during the reporting period.

See Attachment 10 - Phase I MS4 Permit Annual Report Responses

Clear Page 22

59. List any attachments submitted as part of this Annual Report:

Note: Part 6.2.1 requires an updated *Stormwater Outfall Monitoring Plan* to be submitted as part of the Year 1 Annual Report, due January 30, 2023.

Appendix 1 Boise State University SWMP - 2023
Appendix 2 Dry Weather Outfall Inspection and Sampling Summary
Appendix 3 Vortex Structure Inspection Summary
Appendix 4 Sand and Grease Structure Inspection Summary
Appendix 5 Boise State University Storm Water Pollution Prevention Plan
Appendix 6 2023 Public Education, Outreach and Involvement Program
Appendix 7 Stormwater Outfall Monitoring Summary WY 2023
Appendix 8 Americana Subwatershed Monitoring Summary WY 2023
Appendix 9 Temperature Monitoring Summary WY 2023
Appendix 10 Phase I MS4 Permit Annual Report Responses

Appendix 1

Boise State University SWMP – 2023

BOISE STATE UNIVERSITY

Boise State University
Storm Water Management Program
NPDES Permit No.: IDS-027561

Contents

Acronyms 2
1 Introduction 3
1.1 Scope and Purpose 3
1.2 Applicability 3
1.3 Program Administration 4
2 Physical Description of the Boise State University MS4 4
2.1 ACHD MS4 in Boise State University 5
2.2 Boise State University MS4 5
3 Storm Water Management Program Minimum Control Measures 6
3.1 Construction Site Runoff Control Program 6
3.2 Storm Water Management for Areas of New Development and Redevelopment 7
3.3 Industrial and Commercial Storm Water Discharge Management 10
3.4 Storm Water Infrastructure and Street Management 10
3.5 Illicit Discharge Management 12
3.6 Education, Outreach, and Public Involvement 13
4 Discharges to Water Quality Impaired Receiving Waters 14
5 Monitoring, Recordkeeping and Reporting Requirements 15
6 Legal Authority 16
Appendices .....

A. Authorization to Discharge Municipal Stormwater to the Boise River under the National Pollutant Discharge Elimination System (NPDES) Permit No.: IDS-027561
B. Updated Intergovernmental Agreement among NPDES Permittees and Operating Guidelines
C. Boise State University MS4 Map
D. Boise State University Policy #9140 – Environmental Health and Safety

Acronyms

The following acronym list is provided for those reading the Boise State University Storm Water Management Program.

ACHD	Ada County Highway District
BMP	Best Management Practice
CGP	Construction General Permit
CWA	Clean Water Act
EPA	Environmental Protection Agency
ERP	Enforcement Response Policy
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
IDEQ	Idaho Department of Environmental Quality
LID	Low Impact Development
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
POC	Pollutant(s) of Concern
SPCC	Spill Prevention, Control and Countermeasure
SBOE	State Board of Education
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan

1 Introduction

1.1 Scope and Purpose

Boise State University's Storm Water Management Program (SWMP) is a comprehensive program plan designed to reduce the discharge of pollutants from Boise State's Municipal Separate Storm Sewer System (MS4) to the Maximum Extent Practicable (MEP). The goals of the program are to restore and protect the quality of the Boise River and its tributaries through control measures, Best Management Practices (BMPs), stormwater drainage system design, and engineering methods to control and minimize the discharge of pollutants from the MS4.

1.2 Applicability

Boise State University holds authority with the other Boise metropolitan area jurisdictions to discharge stormwater and allowable non-stormwater from MS4 outfalls to the Boise River and its tributaries under the National Pollutant Discharge Elimination System (NPDES) Permit IDS-027561, in compliance with the Clean Water Act (CWA). The newly issued and revised Permit IDS-027561 became effective October 1, 2021, and includes next generation MS4 program requirements for incremental implementation and applies to Ada County Highway District (ACHD), Boise State University, City of Boise, Idaho Transportation Department #3, Garden City, and Drainage District #3. A copy of the NPDES Permit IDS-027561 is provided in Appendix A.

This program document outlines the SWMP activities to be developed and implemented by the new permit, including: inventory of MS4 facilities and outfalls Boise State owns and operates, the control measures and program activities implemented to reduce the discharge of pollutants to the Boise River and its tributaries, related regulatory controls, and Boise State's participation and cooperation with other jurisdictions under the permit to ensure compliance with the conditions of the permit. Boise State's roles and responsibilities under the MS4 permit have been established by the updated Intergovernmental Agreement and Operating Guidelines among the Permittees in Appendix B.

1.3 Program Administration

The SWMP for Boise State University shall undergo annual evaluation and update, and revised SWMP documentation shall be included in each Annual Report submitted to the Environmental Protection Agency (EPA) and the Idaho Department of Environmental Quality (IDEQ), and made available electronically via the Partners for Clean Water and Environmental Health, Safety and Sustainability websites. The annually updated version of the SWMP is available to the public via online sources and is submitted in the Annual Report every January 30th.

2 Physical Description of the Boise State University MS4

Boise State University is Idaho's metropolitan university located next to the south bank of the Boise River, near the center of downtown Boise. Boise State University's 215-acre main campus is bordered to the north by the Boise River, to the south by Beacon Avenue, to the east by Broadway Avenue, and to the west by Ann Morrison Park with the majority of parcels between Beacon, University and Boise Avenues. Boise State University also maintains and oversees operations at two off site locations. The Boas Tennis Complex (10.5 acres) on Highland Avenue and the Yanke Research Park (8 acres) on Parkcenter Boulevard, both of which have impervious surface and drain to either the Boise River or a surface water canal system. Boise State manages twelve active storm water outfalls which drain impervious surfaces such as parking lots and rooftops. Boise State has a number of onsite infiltration amenities for stormwater treatment on the premises rather than direct discharge to the storm drain system. Boise State University's main campus and off site areas are composed of buildings, maintained lawns, landscaped areas, concrete sidewalks, asphalt-paved driveways and parking areas, parking garages, certain streets owned by Boise State University, a sports stadium with roof areas and multiple artificial turf fields. A current map of the campus is included as Appendix C.

2.1 ACHD MS4 in Boise State University

All MS4 structures, facilities, and outfalls draining public streets and roadways adjacent to the campus and various streets and alleys within the interior campus are owned and operated by ACHD. ACHD is responsible for management, maintenance, and monitoring of the MS4 that are strictly in their right of way before they pass into the sections of the MS4 owned by Boise State University. The SWMP control measures designed specifically to accomplish the task of reducing pollutant discharges in the sections of the MS4 owned and operated by Boise State to the MEP are discussed in Section 3 of this SWMP. Additionally, the Intergovernmental Agreement and Operating Guidelines documents provide the necessary authority to manage, maintain, and monitor respective jurisdictional areas of responsibility.

2.2 Boise State University MS4

Separate from the ACHD MS4, Boise State University owns and operates municipal stormwater facilities and outfalls to the lower Boise River and its tributaries. Boise State currently has a total of twelve storm water outfalls which drain 233.5 impervious acres of surfaces such as parking areas, sidewalks, and rooftops. In addition, Boise State has a number of onsite infiltration amenities for stormwater treatment on the premises rather than direct discharge to the storm drain system. The main campus and both offsite locations at Highland Street and Parkcenter Boulevard, with drainage to the Boise River or a tributary, are comprised of ten sub-basin drainage areas which drain impervious surface to twelve separate outfalls. There are multiple permanent stormwater controls which are checked on a regular basis, including: five vortex treatment of sediment and debris, twenty-seven sand and grease separators, eight onsite infiltration systems, and 158 catch basins. Inspection frequency for all structures occurs on an annual basis and results of the inspections are included in the Annual Report. Structures are cleaned on an as-needed basis.

3 Storm Water Management Program Minimum Control Measures

This section describes the six minimum control measures that must be met by Boise State University's SWMP according to the NPDES permit Part II.B. The six minimum control measures are:

- Construction Site Runoff Control Program
- Storm Water Management for Areas of New Development and Redevelopment
- Industrial and Commercial Storm Water Discharge Management
- Storm Water Infrastructure and Street Management
- Illicit Discharge Management
- Education, Outreach, and Public Involvement

For each required control measure for which Boise State University holds responsibility, a description of existing or soon to be implemented activities that meet permit requirements are provided as well as schedules of implementation.

3.1 Construction Site Runoff Control Program

Boise State has implemented a program to reduce discharges of pollutants from all state owned construction activity occurring on the main campus or any of the satellite areas that are less than one acre. Projects which occur on state land and are greater than or equal to one acre are operated by the Division of Public Works and covered under the terms of the EPA issued *NPDES General Permit for Stormwater Discharge from Construction Activities in Idaho*, Permit #IDR12-0000, which manages pollutants in discharges to meet Idaho water quality standards.

Boise State University requires all projects on state land less than 1 acre in size to develop an Erosion and Sediment Control Plan (ESCP), which contains the same elements of a SWPPP. Enforcement authority is delegated by Boise State Policy number 9140. The *Catalog for Stormwater Best*

Management Practices for Cities and Counties produced by IDEQ serves as the required manual for construction storm water management controls. All ESCPs must be drafted and administered by an appropriately trained and educated Responsible Person / Plan Designer. The Intergovernmental Agreement outlines the cost share agreement for activities related to Public Education and Outreach lead by the City of Boise and Boise State participates for all aspects related to education of stormwater policies, regulations and requirements.

3.2 Storm Water Management for Areas of New Development and Redevelopment

New development and redevelopment on land owned by the State of Idaho for Boise State University is required by state policy to be designed to manage stormwater runoff and shall include permanent controls to protect water quality and restrict discharges to surface waters of the MS4. In general, the rate of stormwater runoff from any proposed land development shall not exceed the runoff rate prior to the development regardless of the storm event evaluated.

The IDEQ *Catalog for Stormwater Best Management Practices for Cities and Counties* shall be the adopted manual for which construction projects on Boise State University property shall comply.

Along with the other Permittees, Boise State shall develop a strategy to incentivize the increased use of LID. Boise State will evaluate the feasibility of incorporating runoff reduction techniques into the repair of streets, roads or parking areas by using canopy interception, bioretention, soil amendments, evaporation, rainfall harvesting, engineering infiltration, rain gardens, infiltration trenches, extended filtration and/or evapotranspiration and/or a combination of the aforementioned practices. If any practice is found to be feasible for a project with a start date after the effective date of this permit, all aspects of the project(s) will be reported in the Annual Report.

Developments with stormwater designs that require permanent controls are tracked and designated for inspection. Based on information gathered during the plan review process, permanent

controls to be installed are included on an inventory of existing permanent stormwater controls within Boise State's jurisdictional control. Routine and final drainage system design inspections and reports are tracked and stored electronically on the network server. The summary of new structures incorporated in new projects is reported in the Annual Report.

To ensure that newly developed stormwater design systems and permanent controls are operated and maintained adequately, an Operation and Maintenance plan has been developed in conjunction with Boise State Landscape Services and the Department of Public Safety Transportation and Parking Services. Inspection, cleaning, and sweeping frequency are based on best available technology and EPA related guidance. The table on the following page shows the department and associated responsibilities.

Responsible Department	Description	Implementation	
		Inspection	Maintenance
FOM	Drop Inlets	Monthly	Cleaned as needed, after storm events, and during annual inspection.
	Retention Basins	Annually	Cleaned as needed.
	Parking Lots and Grounds	Daily	Floatables picked up daily as needed. Trash containers emptied daily or as needed.
	Sand/grease Separators, AquaSwirls	Annually	Cleaned as needed. Use appropriate equipment to remove sand, grease, floatables, and sediment accumulations.
	Catch Basins	Annually	Cleaned when appropriate.
EHSS	Sand/grease Separators, AquaSwirls	Annually	Inspected for presence of floatables, amount of grease, sediment depth and maintenance.
	Outfalls	Annually	Inspected for flow and maintenance.
	Catch Basins	Annually	Inspected for sediment depth and maintenance.
	Outdoor Liquid Storage	Annually	Inspected to verify that secondary containment is present and sufficient.
Transportation and Parking Services	Parking Structures	Three times per year	Swept by vacuum street sweeper.
	Parking Lots	Three times per year	Swept by vacuum street sweeper – Spring Break, Christmas break, beginning or end of Summer Session, or as needed.

3.3 Industrial and Commercial Storm Water Discharge Management

Boise State University has no industrial or commercial facilities which discharge into or within the operational jurisdiction of the University's MS4. Boise State University, along with the other Permittees, participates in a cost-share agreement which entails strategy development with ACHD and City of Boise to inventory and track those facility types and provide targeted education to reduce the discharge of pollutants.

3.4 Storm Water Infrastructure and Street Management

Boise State University manages its stormwater infrastructure and facilities to reduce the discharge of pollutants to the MEP. Management includes an inspection of permanent stormwater controls and structures, performing any maintenance or cleaning tasks, and implementing stormwater pollution prevention BMPs. This program does not apply to the MS4 structures and roadways in and around Boise State that are under ACHD jurisdiction. A current inventory map of Boise State owned roads and public parking lots is located in the Annual Report as Figure 1.

The Environmental Health, Safety and Sustainability office inspects all permanent stormwater structures located on Boise State owned streets, parks, and facilities once annually. If inspections reveal that maintenance is required for any structures, such as sweeping, replacing filter media, or catch basin cleaning, a work order is generated. Boise State University Facilities Operations and Maintenance and Transportation and Parking Services performs general maintenance, sweeping, and facility trash collection. An outside contractor provides pumping of the oil and water separators and catch basins. If BMPs need to be implemented to prevent the discharge of pollutants from a University facility, the Environmental Health, Safety and Sustainability office prescribes the correct BMP with guidance of the IDEQ *Catalog for Stormwater Best Management Practices for Cities and Counties.*

To manage and report on the inspection and maintenance program for Boise State stormwater infrastructure, an inventory of Boise State facilities and the stormwater structures are kept in a

spreadsheet and incorporated into facility maps. Inspections and maintenance activities are scheduled and tracked in the database to ensure an appropriate inspection frequency. All actions regarding stormwater management of Boise State's MS4 and facilities can be compiled and are summarized in the Annual Report. The current inventory of structures are: five Aqua-Swirls with vortex-type treatment of sediment and debris, twenty seven oil and water separators, eight onsite infiltration systems, and 158 catch basins.

Additional control measures intended to minimize or eliminate the discharge of pollutant from University facilities and operations include:

- Parking lot and pathway deicing – Boise State Landscape Services uses liquid calcium chloride and pelletized ice melt during periods of ice and snow conditions and apply it in a manner which preserves safety and limits environmental impact. Solid deicing materials are stored inside and liquid deicer is stored in plastic dispensing system in a locked pervious yard.
- Pesticide, herbicide and fertilizer applications – Boise State Landscape Services is responsible for applications of pesticide, herbicide, and fertilizer on Boise State properties. All Landscape Services personnel are licensed and certified with the Idaho State Department of Agriculture. Pesticides are kept in secure indoor storage areas.
- Street and Parking lot repair – Street and parking lot repairs undertaken as a standalone project are overseen by Boise State project managers. All disturbances less than one acre are subject to completion of an ESCP and applicable BMPs.
- Litter control – Boise State Landscape Services performs daily trash pickup on the main campus and satellite locations. Boise State is a committee member of the Boise RiverSweep which is an annual Boise River clean up event. In addition to daily pickup, trash is collected after major events occurring on the campus.

- Manage sand stockpiles – Boise State no longer maintains a stockpile of sand for use in traction control on sidewalks and parking lots. The Boise State Athletics department does maintain a sand stockpile, however, any runoff would not reach any portion of the MS4 or a receiving waterbody.

3.5 Illicit Discharge Management

An illicit discharge is any discharge that is not composed entirely of storm water, except discharges authorized under an alternate NPDES permit and discharges resulting from firefighting activities. Illicit discharges are prohibited in Boise State's MS4 and any illicit discharges or activities with the potential for illicit discharge are addressed accordingly and prohibited. A Treasure Valley stormwater pollution prevention hotline exists to serve the entire watershed and illicit discharge complaints are routed to the appropriate agency holding the jurisdictional responsibility for the location of the incident. The stormwater phone matrix is periodically reviewed and updated for most current contacts at each agency in the watershed area. A log is compiled by ACHD and submitted in the Annual Report following the previous reporting period. A map will be developed among the Permittees to identify the location, type and relative quantity or severity of the non-stormwater discharge to the MS4.

Boise State University received coverage under a separate NPDES Groundwater Remediation Discharge Permit (Permit # IDG911006) from EPA with an effective date of September 15, 2014 for discharges containing covered pollutants. All conditions of that permit will be reported according to those requirements and are not subject to reporting under conditions of the NPDES MS4 Phase 1 permit.

In addition to routine stormwater inspections, annual dry weather outfall screening serves to identify potentially problematic outfalls. In addition to visual observation inspections, field and lab samples will be taken in accordance with approved sampling protocol.

Boise State University also maintains a Spill Prevention, Control and Countermeasure Plan to identify all oil containing tanks or sources and maintains provisions to ensure accidental releases do not reach a navigable waterway.

3.6 Education, Outreach, and Public Involvement

Boise State University works with fellow Permittees to implement the requirements of the NPDES regarding education, outreach and public involvement. The Intergovernmental Agreement designates the City of Boise as the lead agency responsible for the Public Education program. To assist with program support, Boise State commits funding for its share of the annual costs associated with program administration, which is determined during the annual budget meeting held every January.

Working together under the name Partners for Clean Waters, the Permittees have developed a website to provide the general public and business partners' information regarding stormwater management, educational and volunteer opportunities, and to review the actions and activities completed annually by the Permittees at www.partnersforcleanwater.org . Boise State University also maintains a webpage dedicated to stormwater and environmental health documents, forms and resources located at https://www.boisestate.edu/operations/ehss/. All applicable State and local public notice requirements are met by posting on multiple online sources.

Boise State University participates in various education and outreach activities to improve awareness and increase positive impacts within the community on the local watershed. The public involvement events focus around public health promotion, river cleanup, and educational conferences for which the Stormwater Coordinator actively participates.

4 Discharges to Water Quality Impaired Receiving Waters

In the IDEQ 2010 Integrated report, sections of the Boise River were found impaired by one or more of the following Pollutants of Concern (POC) for the purposes of this permit: total phosphorus, sediment, temperature, and E. coli. Boise State University prohibits all non-stormwater discharges to the MS4 and each of the six minimum control measures described in Section 3 of this SWMP are designed to prohibit or reduce the discharge of any listed POC. The following table shows each control measure and the POC and applicable controls associated with each measure.

Control Measure	POC and their Controls
Construction Site Runoff Control Program	Sediment; Construction site inspections, ESCP and SWPPP review, Permit violation referrals, Enforcement Response Policy
Storm Water Management for Areas of New Development and Redevelopment	Total phosphorus, sediment, temperature, E. coli; ESCP and SWPPP review, On-site retention systems, *Catalog for Stormwater Best Management Practices* incorporated into projects, assess feasibility of LID techniques on repair of public streets, roads or parking lots
Industrial and Commercial Storm Water Discharge Management	Total phosphorus, sediment, E. coli; All non-stormwater discharges prohibited, updated prioritized inventory to control high-priority areas
Storm Water Infrastructure and Street Management	Total phosphorus, sediment, E. coli; Maintenance of updated structures inventory, routine cleaning, and quarterly frequency for sweeping of streets and parking areas
Illicit Discharge Management	Total phosphorus, sediment, temperature, E. coli; Dry weather screening, outfall sampling, SPCC Plan, Pollution Prevention Hotline participation
Education, Outreach, and Public Involvement	Total phosphorus, sediment, temperature, E. coli; Cost share agreement and participation in quarterly meetings to assess program goals associated with Distribution of Eddy Approved Fact sheets, Responsible Person/Plan Designer

	training sessions, Business Partners target audience

To evaluate the effectiveness of Boise State's SWMP in reducing the discharge of POC to the MEP, water quality monitoring data for sections of the Boise River impacted by Boise State University discharges from its outfalls will be periodically reviewed to detect any reductions or increases in levels of POC compared to 2010 data. Sources of monitoring data include the ACHD, IDEQ, and HDR surface water quality and outfall monitoring programs. Boise State will provide all relevant sampling data to ACHD to inform the pollutant loading reduction effectiveness.

5 Monitoring, Recordkeeping and Reporting Requirements

The Intergovernmental Agreement in Appendix B designates the ACHD as the lead agency responsible for the implementation of the MS4 monitoring program. To assist with program implementation, Boise State commits funding for its share of the annual cost of the monitoring program, which is determined during the annual budget meeting held every January.

The Environmental Health, Safety and Sustainability office at Boise State University retains records of all data and information used in the development and implementation of the SWMP. All records are stored electronically on the University's server and in hard copy format for a period not less than five years. All records are accessible to the IDEQ and EPA upon request to the Environmental Health, Safety and Sustainability office during normal business hours.

Each year Boise State compiles an Annual Report for the NPDES required reporting period of October 1 through September 30 of the previous year. The Annual Report is submitted to ACHD, the agency responsible for coordinating the preparation and submittal of all Permittees' Annual Reports to the IDEQ and EPA by January 30th of each term.

Boise State's Annual Report shall follow the guidelines described in NPDES Permit Part 6.4.2. The tracking of plan reviews, inspections, enforcement actions, and stormwater infrastructure maintenance provide data and statistics that are included in the report. The Annual Report is used in assessing Boise State's compliance with permit conditions and implementation schedule.

6 Legal Authority

Each Permittee shall operate pursuant to legal authority established by statute, ordinance, or series of contracts. The prior Annual Reports used a state trespassing statute and water quality rules, cooperation with the campus police, and the Idaho Department of Environmental Quality for justification of sound legal authority to implement the Storm Water Management Plan.

Boise State University does not maintain the equivalent of a city code to regulate storm water discharges. However, the University does operate and maintain a storm water system which collects runoff from areas involved in a wide variety of uses including student housing, academic uses, research activities, science laboratories and recreational facilities.

The University has the authority to implement its storm water management programs and to control, regulate and enforce discharges to the storm water system through the statutory framework of the Idaho Code (I.C.). In particular, I.C. §33-105 grants to the Idaho State Board of Education (SBOE), Boise State University's governing authority, the power to "make rules for its own government and the government of its executive departments of office." Further, the SBOE, by its policies (Section I, subsection A(2) and Subsection E) grants to the President of Boise State University the power and responsibility to organize, manage, direct and supervise the institution pursuant to the framework of the Board's Governing Policies and Procedures. Under this grant of authority to the President, the University has enacted a broad range of policies, including regulations for the operation, management and maintenance of the storm water system, as well as the power to control illicit discharges, spills and dumping. The current Environmental Health & Safety policy 9140 and State of Idaho contracts express

this broad authority with reference to the University's obligations under the NPDES permit. In addition, through a contract between Boise State University and the City of Boise Police Department, administrators at the University are able to call City Police for assistance in enforcement. Boise State University has authority through the Intergovernmental Agreement in Appendix B to control pollutant discharges into and from its MS4 to meet requirements of the NPDES permit Part II.G. Below is a summary of the unique legal authorities which satisfy the five legal authority criteria specifically listed in the permit:

- Criteria 1: Must have authority to prohibit discharge of pollutants to the MS4 by illicit connections and discharges.

  Satisfying legal authority: I.C. §33-105 and Boise State Policy #9140

- Criteria 2: Must have authority to control the discharge to the MS4 of spills, dumping, or disposal of materials other than stormwater.

  Satisfying legal authority: Boise State Policy #9140

- Criteria 3: Must control through interagency agreements the contribution of pollutants from one portion of the MS4 to another portion of the MS4.

  Satisfying legal authority: Intergovernmental Agreement for Roles and Responsibilities under the NPDES MS4 Permit IDS-027561 and Operating Guidelines which are attached in Appendix B.

- Criteria 4: Must have authority to require compliance with conditions.

  Satisfying legal authority: Boise State Policy #9140

- Criteria 5: Must have authority to carry out all inspection, surveillance, and monitoring procedures necessary to determine compliance and non-compliance with Permit conditions including the prohibition on illicit discharges to the MS4.

  Satisfying legal authority: I.C. §33-105 and Boise State Policy #9140

Appendix A: Authorization to Discharge Municipal Stormwater to the Boise River under the National Pollutant Discharge Elimination System (NPDES) Permit No.: IDS-027561

Available online at: https://www.boisestate.edu/operations/ehss/ehss-forms/

Appendix B: Updated Intergovernmental Agreement among NPDES Permittees and Operating Guidelines

Available online at: https://www.boisestate.edu/operations/ehss/ehss-forms/

Appendix C: Boise State University MS4 Map

SYMBOLS
- DRAIN/CATCH BASIN
- STORM DRAIN OUTLET
- PULLBOX/VAULT
- MANHOLE

NOTE: MAPS ARE FOR REFERENCE ONLY.
CALL (DIGLINE) BEFORE EXCAVATING.

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Appendix D: Boise State University Policy #9140 – Environmental Health and Safety

Available online at: https://www.boisestate.edu/policy/facilities-planning-campus-safety/policy-title-environmental-health-and-safety/

Appendix 2

Dry Weather Outfall Inspection and Sampling Summary - 2023

Outfall Inspection Summary

Outfall Name: Boas N

Receiving Waters: Drain A	**Pipe Type:** PVC **Pipe Size:** 12”			**Lat:** 43.5944 **Long:** -116.2057	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:** Outfall is surrounded by thick berry bushes. Access is through Drain A.				
Structural Condition	Good				
Sedimentation					
Staining	None				
Odor	None				
Vegetation	Inhibited				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Boas S

Receiving Waters: Drain A	**Pipe Type:** CMP **Pipe Size:** 12”			**Lat:** 43.5927 **Long:** -116.2039	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:**				
Structural Condition	Good				
Sedimentation	None				
Staining	None				
Odor	None				
Vegetation	Excessive				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: BSU IR

Receiving Waters: Boise River	**Pipe Type:** HDPE **Pipe Size:** 15”			**Lat:** 43.6049 **Long:** -116.2013	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:**				
Structural Condition	Good				
Sedimentation	Some sediment stuck to edges of pipe. Pipe is damp, but not flowing.				
Staining	None				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Outfall A

Receiving Waters: Boise River	**Pipe Type:** SMP **Pipe Size:** 24”			**Lat:** 43.6076 **Long:** -116.2074	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:** Lid was lifted to collect samples. Analytical results for ORP, Total P, and Detergents exceed benchmark values.				
Structural Condition	Good				
Sedimentation	None				
Staining	None				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	Yes	**Trash Rank**	Household	**Trash Source**	Household, School
Flow	Yes	**Amount**	Trickle	**Flow Rate(cfs)**	0.000782

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
19.19	4.07	8.25	781.5	<0.01	<0.01	<0.01	1.42

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
190.4	2.50	0.114	0.179	0.10

Illicit Discharge?	Unlikely

WATERMELON

Outfall Inspection Summary

Outfall Name: Outfall B

Receiving Waters: Boise River	**Pipe Type:** PVC **Pipe Size:** 12”			**Lat:** 43.6072 **Long:** -116.2071	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:**				
Structural Condition	Good				
Sedimentation	None				
Staining	Flow line				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Outfall D

Receiving Waters: Boise River	**Pipe Type:** RCP **Pipe Size:** 36”			**Lat:** 43.6050 **Long:** -116.2034	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:**				
Structural Condition	Good				
Sedimentation	Rocky bottom				
Staining	None				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Outfall G

Receiving Waters: Boise River	**Pipe Type:** RCP **Pipe Size:** 12”			**Lat:** 43.6052 **Long:** -116.1980	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:** The presence of detergents exceeds benchmark values				
Structural Condition	Good				
Sedimentation	None				
Staining	None				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	Yes	**Amount**	Trickle	**Flow Rate(cfs)**	0.00656

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
20.76	8.5	8.31	558.4	<0.01	<0.01	<0.01	0.42

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
<1.0	<0.900	0.0288	0.0470	0.01

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Outfall H

Receiving Waters: Boise River	**Pipe Type:** SMP **Pipe Size:** 24”			**Lat:** 43.6047 **Long:** -116.1962	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:**				
Structural Condition	Good				
Sedimentation	None				
Staining	None				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Outfall I

Receiving Waters: Boise River	**Pipe Type:** SMP **Pipe Size:** 24”			**Lat:** 43.6041 **Long:** -116.1947	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:**				
Structural Condition	Good				
Sedimentation	None				
Staining	None				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Outfall J

Receiving Waters: Drain A	**Pipe Type:** PVC **Pipe Size:** 10”			**Lat:** 43.6032 **Long:** -116.2081	
Date: 9/22/2023 **Personnel:** KC, EL	**Comments:** Outfall pipe is inaccessible due to excessive vegetation and being behind private fencing, but the pipe is visible through the fence. Since the end of pipe was not visible, the inspection was completed at the sand and grease trap before the outfall. The outfall was surcharged by Drain A, but no flow was observed.				
Structural Condition	Good				
Sedimentation	Small amount of sediment at the bottom of the pipe.				
Staining	None				
Odor	None				
Vegetation	Excessive				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Photo 1: Outfall J surcharged by Drain A.

Photo 2: Inspection completed at clean side of sand and grease trap before discharging into Drain A. Backflow from Drain A observed, but no water seen flowing into the sand and grease trap from the parking lot.

Outfall Inspection Summary

Outfall Name: Yankee East

Receiving Waters: Boise River	**Pipe Type:** CMP **Pipe Size:** 24”			**Lat:** 43.6010 **Long:** -116.1830	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:** A lot of poison ivy surrounds this outfall.				
Structural Condition	Good				
Sedimentation	None				
Staining	None				
Odor	None				
Vegetation	Excessive				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Outfall Inspection Summary

Outfall Name: Yankee West

Receiving Waters: Boise River	**Pipe Type:** CMP **Pipe Size:** 18”			**Lat:** 43.5996 **Long:** -116.1852	
Date: 7/25/2023 **Personnel:** KC, PG	**Comments:** Tree roots are growing over the top of the outfall pipe.				
Structural Condition	Fair				
Sedimentation	12” wide and .5” deep sediment layer at the bottom of the pipe.				
Staining	None				
Odor	None				
Vegetation	Typical				
Floatables (Not Trash)	None				
Trash Observed	None	**Trash Rank**	--	**Trash Source**	--
Flow	None	**Amount**	--	**Flow Rate(cfs)**	--

Results:

Temp (C)	DO (mg/L)	pH (S.U.)	Cond (uS/cm)	Chlorine	Copper	Phenols	Turbidity (NTU)
--	--	--	--	--	--	--	--

E.Coli (MPN)	TSS (mg/L)	ORP (mg/L)	Total P (mg/L)	Detergents (mg/L)
--	--	--	--	--

Illicit Discharge?	Unlikely

Appendix 3

Vortex Structure Inspections Summary

Boise State University Vortex Structure Inspections

Inspected by:	Will Reynolds	**Date:**	9/21/23					
Storm Water Structure	**Depth to static water level from rim**	**Depth to Bottom of Tank from rim**	**Depth of Water**	**Sediment Depth (Inches)**	**% of sediment depth to water depth**	**Requires Cleaning (Y/N)**	**Floatables (Y/N)**	**Location**
A-Drainage	57	91	34	0	0.0%	N	N	N. side of Multi Purpose Classroom (123)
D-Drainage	74	148	74	9	12.2%	N	Y	N. side of Albertson Library (027)
H-Drainage	170	170	0	0	0.0%	N	N	NE of Caven-Williams Complex (234)
I-Drainage	148	148	0	0	0.0%	N	N	N. of Bleymeir Football Center (332)
Lincoln Garage	76	141	65	10	15.4%	N	N	N. side of Lincoln Ave. Garage (255)

Appendix 4

Sand and Grease Structure Inspection Summary

	A	B	C	D	E	F
1	**Boise State University Sand and Grease Separators**					
2	Inspected by: Will Reynolds					
3	Date: 9/22/2023					
4	**Structure**	**Location**	**Drainage**	**1° Sediment depth (in)**	**2° Sediment depth (in)**	**Comments**
5	Oil-water separator	Health Science Riverside - West	Health Science Riverside - West	3	0	Depth to invert - 42" in secondary
6	Oil-water separator	Health Science Riverside - East	Health Science Riverside - East	3	0	Depth to invert - 40" in 1°; 40" in 2°
7	Oil-water separator	Health Science Riverside - South	Health Science Riverside - South	10	2	Depth to invert - 39" in 1°; 39" in 2°
8						
9	J-2, oil-water separator	just east of sign shop, Chrisway Drive	J-drainage, Admin parking lot	6	1	
10						
11	Oil-water separator	Gateway Center, rear parking lot	Gateway Center, parking lot, roof?	1	0	Depth to invert - 41" in 1°; 41" in 2°
12	Oil-water separator	Gateway Center, northeast corner of east parking lot	Gateway Center, east parking lot	7	0	
13	Oil-water separator	University Square in east parking lot off southeast corner	east parking lot University Square	5	0	Depth to invert - 25" in 1°, 49" in 2°
14	Oil-water separator	University Square in landscape strip off southeast corner	west parking lot University Square	6	2	Depth to invert - 24.5" in 1°; 24.5" in 2°
15						
16	A-14, Oil-water separator	parking lot N of Brady parking garage	A-drainage, parking lot N of Brady parking garage	4	1	Depth to invert - 39"
17						
18	CV-8, Oil-water separator	Capitol Village, north side of Chalet	Chalet Drive & roof drains	5	0	
19	CV-6, Oil-water separator	Capitol Village, center of parking lot	University & Earle, Chalet Drive	28	8	Depth to invert - 52" in 2°
20	CV-4, Oil-water separator	Capitol Village, west of Bookstore warehouse, south unit	Capitol Village parking lot & roof drain Bookstore warehouse	8	1	Depth to invert - 45" in 1°/ 2°
21	CV-5, Oil-water separator	Capitol Village, west of Bookstore warehouse, center unit	Capitol Village parking lot & roof drain Bookstore warehouse	9	0	45" in 1° and 45" in 2°
22	CV-11, Oil-water separator	Capitol Village, west of Bookstore warehouse, north unit	Capitol Village parking lot	6	2	
23	Pump Chamber	Capitol Village, bookstore loading dock	Capitol Village, bookstore loading dock	2	0	Trough drainage to pump chamber, then west to wet well and french drain
24						
25	Oil-water separator	University Village, west of 2570	University Village Apartments parking lot	1	0	Floatable - grease Depth to invert - 36" in 1°; 66" in 2° Primary chamber has a catch pan
26	Oil-water separator	University Village, south of 2530	University Village Apartments parking lot	1	0	Depth to invert - 40" in 1°; 79" in 2° Primary chamber has a catch pan
27						
28	Oil-water separator	Lincoln Garage	West half of Lincoln Garage interior	4	0	32" in 1° and 2°
29						
30	Oil-water separator	Bookstore plaza in the sidewalk	SUB- Bookstore plaza and roof drainage	2	0	45" in 1° and 45" in 2°
31	Oil-water separator	SUB loading dock	Loading dock and roof drainage on expansion area	3	0	45" in 1° and 45" in 2°
32	Oil-water separator	SUB plaza area	West half of Bronco Circle	3	6	36" in 2°
33						
34	B-2, Oil-water separator	North of Morrison Center	Area B	4	2	Depth to invert - 42" in 1° and 2°
35						
36	Oil-water separator	Boas Tennis Center	Parking lot south	3	0	
37	Oil-water separator	Boas Tennis Center	End of parking lot south treatment	0	0	into ditch
38	Oil-water separator	Boas Tennis Center	Parking lot north	1	0	41" in 1°
39	Oil-water separator	Boas Tennis Center	Highland/Oakland intersection street drainage	3	0	42" in 1° and 38" in 2°
40						
41	Oil-water separator	University Park Apts	Lusk St.	5	0	41" in 1° and 38" in 2°

Appendix 5

Boise State University Storm Water Pollution Prevention Plan

BOISE STATE UNIVERSITY

Boise State University
Storm Water Pollution Prevention Plan
NPDES Permit No.: IDS-027561

Table of Contents

Acronyms....2
Background and General Requirements....3
SWPPP Availability....3
SWPPP Update....3
Objectives of the SWPPP....3
NPDES Permit Coverage....4
Integration with Other Coverage....4
Facility Assessment....4
Pollution Prevention Team....5
Operations and Maintenance....6
Facility Maps....6
Receiving Water and Wetlands....6
Potential Pollutants of Concern....6
Historical Spills and Leaks....7
Monitoring Plan....8
Illicit Discharges....8
Reporting and Recordkeeping....8
Inspections....8
Concluding Statement....8
Appendix A – Facility Maps....9
Appendix B – Facility Pollution Prevention BMPs....12

Acronyms

The following acronym list is provided for those reading the Boise State University Storm Water Pollution Prevention Plan.

ACHD	Ada County Highway District
BMP	Best Management Practice
CGP	Construction General Permit
CWA	Clean Water Act
EHSS	Environmental Health, Safety and Sustainability
EPA	Environmental Protection Agency
ESC	Erosion and Sediment Control
ESCP	Erosion and Sediment Control Plan
IDEQ	Idaho Department of Environmental Quality
MEP	Maximum Extent Practicable
MS4	Municipal Separate Storm Sewer System
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
POC	Pollutant(s) of Concern
SPCC	Spill Prevention, Control and Countermeasure
SWMP	Storm Water Management Program
SWPPP	Storm Water Pollution Prevention Plan

Background and General Requirements

Boise State University is covered as a Permittee under the National Pollutant Discharge Elimination System (NPDES) Phase I Municipal Stormwater Permit number IDS-027561 along with Ada County Highway District (ACHD), Boise City, Garden City, Idaho Transportation Department, and Drainage District #3. The NPDES program is a requirement of the federal CWA and is overseen by Idaho Department of Environmental Quality (IDEQ) and EPA, Region X. The Phase I Permit requires that all Permittees develop a storm water management program (SWMP) aimed at reducing the discharge of pollutants into the Permittees' municipal separate storm sewer system (MS4).

A required component of the SWMP is the implementation of an operations and maintenance (O&M) program designed to prevent or reduce pollutant runoff from municipal operations and from Permittee-owned stormwater facilities. One requirement of the O&M program is the development of a storm water pollution prevention plan (SWPPP) for all heavy equipment maintenance and storage yards, and material storage facilities.

This SWPPP has been developed to meet the O&M requirements outlined above. This SWPPP must be implemented on the main Boise State University campus for the Landscape Services facility located at 1110 Vermont St., Boise, ID 83725, with certain elements applicable to the Facilities, Operation and Maintenance facility, located at 1311 Belmont St., Boise, ID 83725.

SWPPP Availability

A copy of this SWPPP will be kept at the Environmental Health, Safety and Sustainability office located at 1129 Euclid Ave., Boise, ID 83725 on the Boise State University campus. It will be made available to IDEQ and EPA personnel on request. A copy of this SWPPP will be made available to the public within a reasonable time frame on the Environmental Health, Safety and Sustainability website at https://www.boisestate.edu/operations/ehss/ehss-forms/.

SWPPP Update

This SWPPP will be reviewed annually and updated as necessary to reflect changed site conditions.

Objectives of the SWPPP

This document serves as the SWPPP for the Boise State University main campus for all heavy equipment maintenance and storage yards, and material storage facilities.

The objectives of this SWPPP are:

To identify locations of all materials that could cause pollution if spilled or otherwise released into the environment;

To identify all storm sewer conveyances, treatment facilities, and discharge points to aid in the isolation of contaminants should any be spilled into the system;

To identify locations of spill containment equipment and materials;

To implement and maintain best management practices (BMPs) that identify, reduce, eliminate, and/or prevent the discharge of stormwater pollutants;

To prevent violations of State surface water quality, groundwater quality, and sediment management standards; and

To eliminate unpermitted discharges and other illicit discharges to separate storm drainage systems.

Provide information to staff on BMPs for the O&M yards.

This document describes the methods and procedures that Boise State University will implement in order to reduce and/or eliminate the contamination of stormwater runoff and discharges of pollutants from Boise State facilities.

This SWPPP contains BMPs that Boise State facilities will implement to reduce or eliminate the release of pollutants to the MS4 and surface waters.

This document includes the following information:

Definition of SWPPP Coordinator requirements and responsibilities
Identification of Pollution Prevention Team personnel
Facility description and activities
Description of BMPs
Description of monitoring, inspection, and recordkeeping requirements

NPDES Permit Coverage

Boise State's stormwater discharges are authorized under the terms and conditions of the Phase I Permit; effective October 1, 2021, through September 30, 2026. Boise State is responsible for the operation and maintenance of the portions of the MS4 under our jurisdictional control, including all flow control and permanent stormwater BMP controls located at its facilities.

Integration with Other Coverage

Boise State University also operates under a separate NPDES permit for Groundwater Remediation Discharge Facilities in Idaho under Permit number IDG911000. The Permit became effective September 15, 2014 and will expire September 30, 2026. Any construction activities that occur on these sites will be assessed for NPDES CGP coverage requirements and integrated with this plan as appropriate.

Facility Assessment

Boise State University facilities requiring this SWPPP, according to NPDES Permit requirements, are:

1. Leatherman Peak (390) – Facilities, Operation and Maintenance occupies this facility, which contains a large dumpster roll off and stores deicing materials used on campus property

2. Landscape Services (099) – an operations and maintenance facility that maintains and stores heavy equipment and stores materials used on campus property.

Pollution Prevention Team

The pollution prevention team is responsible for developing the SWPPP and assisting in its implementation, maintenance, and modification. The activities and responsibilities of the pollution prevention team address all aspects of this SWPPP.
The responsibilities include:

Assigning individuals by name and title to be responsible for developing the SWPPP and assisting the SWPPP Coordinator in its implementation, maintenance, and modification;

Holding regular meetings to review the overall operation of the BMPs;

Establishing responsibilities for inspections, O&M, and emergency situations; and

Arranging the training of all team members in the operation, maintenance, and inspections of BMPs.

A list of team members, contact information, and a brief description of their primary area of responsibility regarding stormwater pollution is identified in Table 1.

Table 1. Pollution Prevention Team

Position	Name(s)	Phone Number(s)	Primary Responsibilities
SWPPP Coordinator	Will Reynolds – Environmental Compliance Manager, EHSS	(208) 426-3303	Ensure that each facility employee is in compliance with the SWPPP regarding their operations; the coordinator must certify the completeness and accuracy of the SWPPP by signing a certification statement.
O&M Support	Gabe Bishop – Landscape Services Manager	(208) 426-2342	Ensure that BMPs listed are in place, operative, and effective at all times in and around the areas where activities that impact stormwater are conducted. Maintain secondary containment and stockpiles. Report any accidental spills to the coordinator.
O&M Support	Torrance Thomas – Manager, Public Safety - Transportation	(208) 426-4331	Ensure that BMPs listed are in place, operative, and effective at all times in and around the areas where activities that impact stormwater are conducted. Maintain secondary containment and report any accidental spills to the coordinator.

Operations and Maintenance

Activities conducted at the Boise State University main campus include:

Washing and pressure washing of vehicles, equipment and building structures
Loading and unloading of liquid or solid materials
Automotive repair and maintenance
Landscaping, lawn and vegetation management
Painting of buildings
Outdoor storage or transfer of solid raw materials, byproducts or finished products
Outdoor portable container storage
Storage of liquids in permanent aboveground tanks
Parking lot maintenance and storage of vehicles and equipment
Storage of bulk dirt, sand and rock
Storage of collected street waste solids and other stormwater facility solids
Storage of miscellaneous maintenance hand-held tools and equipment

Facility Maps

Operations Facility maps are included in Appendix A of this document. The Operations Facility maps identify the facility layouts; building spill kit locations; stormwater drainage system; heavy equipment maintenance and storage areas; and material storage areas.

Receiving Water and Wetlands

In general, stormwater runoff from Boise State facilities includes runoff from buildings, parking lots, a gravel storage yard/parking lots, and other paved areas. The stormwater runoff discussed in this SWPPP is conveyed to the MS4, specifically, through outfalls to the north of the facilities on the main campus. The maintenance yards listed in this Plan are all located either on pervious dirt lots, or on areas which drain directly into onsite seepage beds. A map is included in Appendix A that shows the receiving water in relation to the campus where on site drainage is not available.

Potential Pollutants of Concern

Table 2 below lists proper management utilization of the source control BMPs. These BMPs are from the Idaho Department of Environmental Quality Catalog of Stormwater Best Management Practices, version April 2020. The BMP numbers listed are specific to the Volume and Section from which they are excerpted. Each BMP lists the description, applications, limitations, targeted pollutants, guidelines and maintenance. BMPs identified in Table 2 are included in Appendix B of this document.

Table 2. List of Relevant BMPs

Idaho Department of Environmental Quality Catalog of Stormwater Best Management Practices

Section 4: BMP Fact Sheets

- BMP 15: Oil and Water Separators
- BMP 16: Centrifugal or Vortex-Separation Structures
- BMP 43: Dust Control
- BMP 44: Stockpile Management
- BMP 46: Spill Prevention and Control
- BMP 48: Hazardous Materials Management
- BMP 51: Solid Waste Storage and Disposal
- BMP 75: Street Sweeping
- BMP 76: Storm Water System Cleaning
- BMP 77: Outdoor Storage
- BMP 78: Fertilizer Management
- BMP 79: Pesticide Management
- BMP 80: Building and Grounds Maintenance
- BMP 82: Equipment Yard Design Features
- BMP 83: Vehicle and Equipment Refueling
- BMP 84: Vehicle and Equipment Cleaning, Maintenance & Repair
- BMP 86: Non-storm water Discharges to Drains
- BMP 91: Employee Training

Historical Spills and Leaks

Boise State University will retain spill history records and maintain a copy of their own spill records for a minimum of five years. A copy of the spill records will be available for review during business hours at the Environmental Health, Safety and Sustainability office. Records will include all of the significant spills or leaks of oils and toxic or hazardous pollutants that have occurred at areas either exposed to precipitation or that drain to a stormwater conveyance.

A significant spill or leak is defined as any quantity of contaminant that enters a storm drain or receiving water or contaminates soil and/or surface water at levels above state water quality standards. Also, any spill of oil or gas that exceeds the reportable quantity as described by the US Department of Energy is considered significant and will be documented and reported as necessary. Reportable quantities of chemicals used at each facility can be determined by entering the chemical name or chemical abstract service (CAS) number into the reportable quantity calculator on the US Department of Energy website (http://homer/ornl.gov/rq/).

Monitoring Plan

Stormwater monitoring is not required for discharges leaving the Boise State facility.

Illicit Discharges

Illicit discharges are noted during annual dry weather outfall inspections occurring as part of the SWMP requirements of the MS4 Phase I Permit. When Permit required dry weather screening identifies an illicit discharge which necessitates sampling, Boise State will partner with ACHD to conduct the necessary grab samples identified in the Permit following the dry weather outfall screening guidelines established by ACHD, who leads all Permit-required monitoring.

Reporting and Recordkeeping

Records of all inspections, observations, and compliance records, as applicable, will be kept by the EHSS office on-site for a minimum of five years. Copies of these records shall be provided upon request.

Inspections

Staff identified in the pollution prevention team must regularly inspect all sites where heavy equipment maintenance or storage and material storage are exposed to stormwater and assess how well stormwater BMPs are operating. Complete, routine inspections must occur annually.

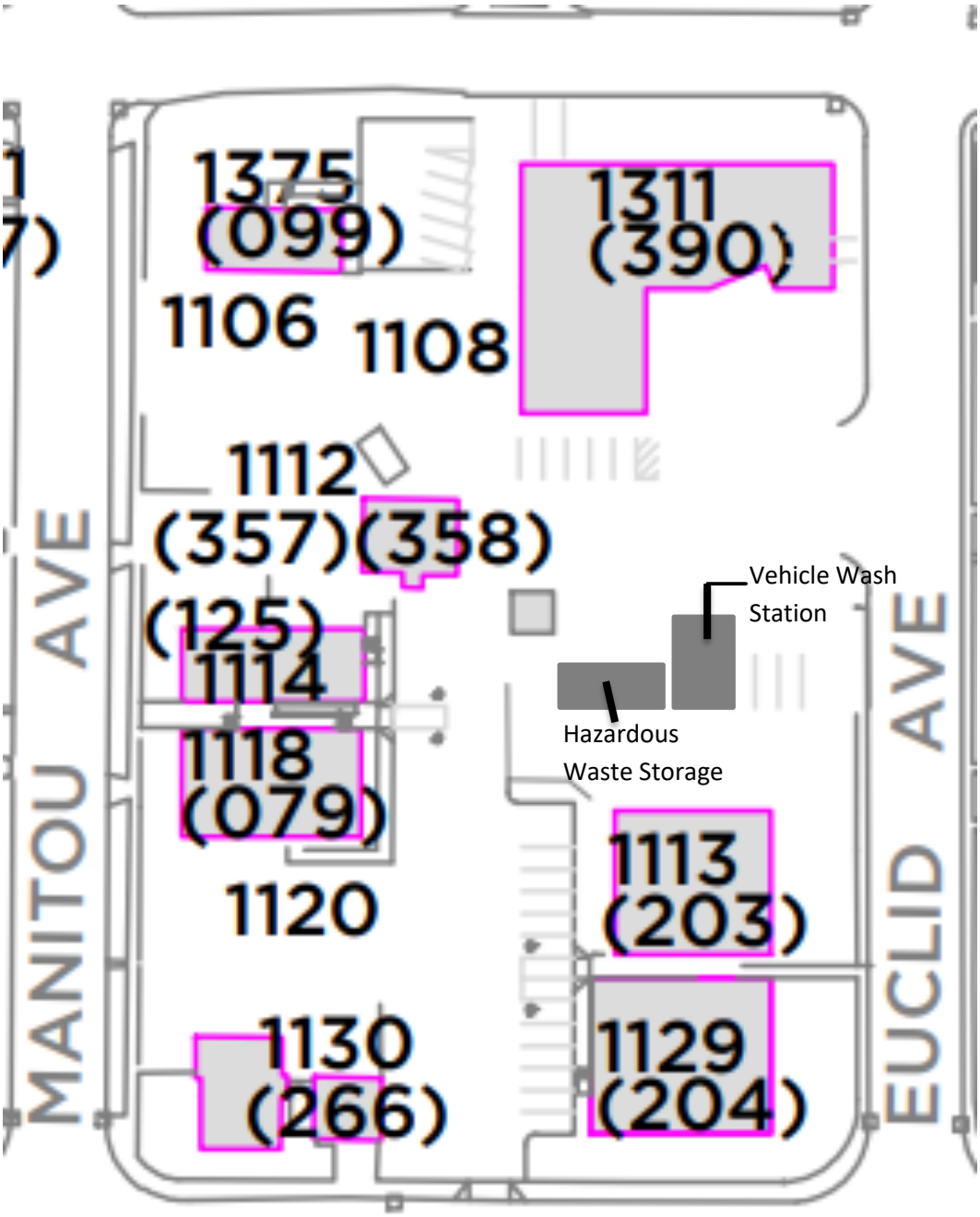
If at any time a BMP is not effective, it must be repaired or maintained before the next anticipated storm event. If maintenance prior to the next storm event is not possible, maintenance must be completed as soon as possible and documented on the form for the extended repair schedule. In the interim, back-up measures must be implemented to ensure that stormwater quality is not diminished.

Concluding Statement

The intent of this SWPPP is to prevent the introduction of pollutants into stormwater from Boise State facilities. Full implementation of this plan includes regular staff training as well as compliance checks to ensure that BMPs are being utilized consistently and correctly.

This document is considered a 'living document', meaning that it can and should be updated as often as necessary to ensure that BMPs are employed to the MEP and minimize the discharge of pollutants from these facilities.

Appendix A – Facility Maps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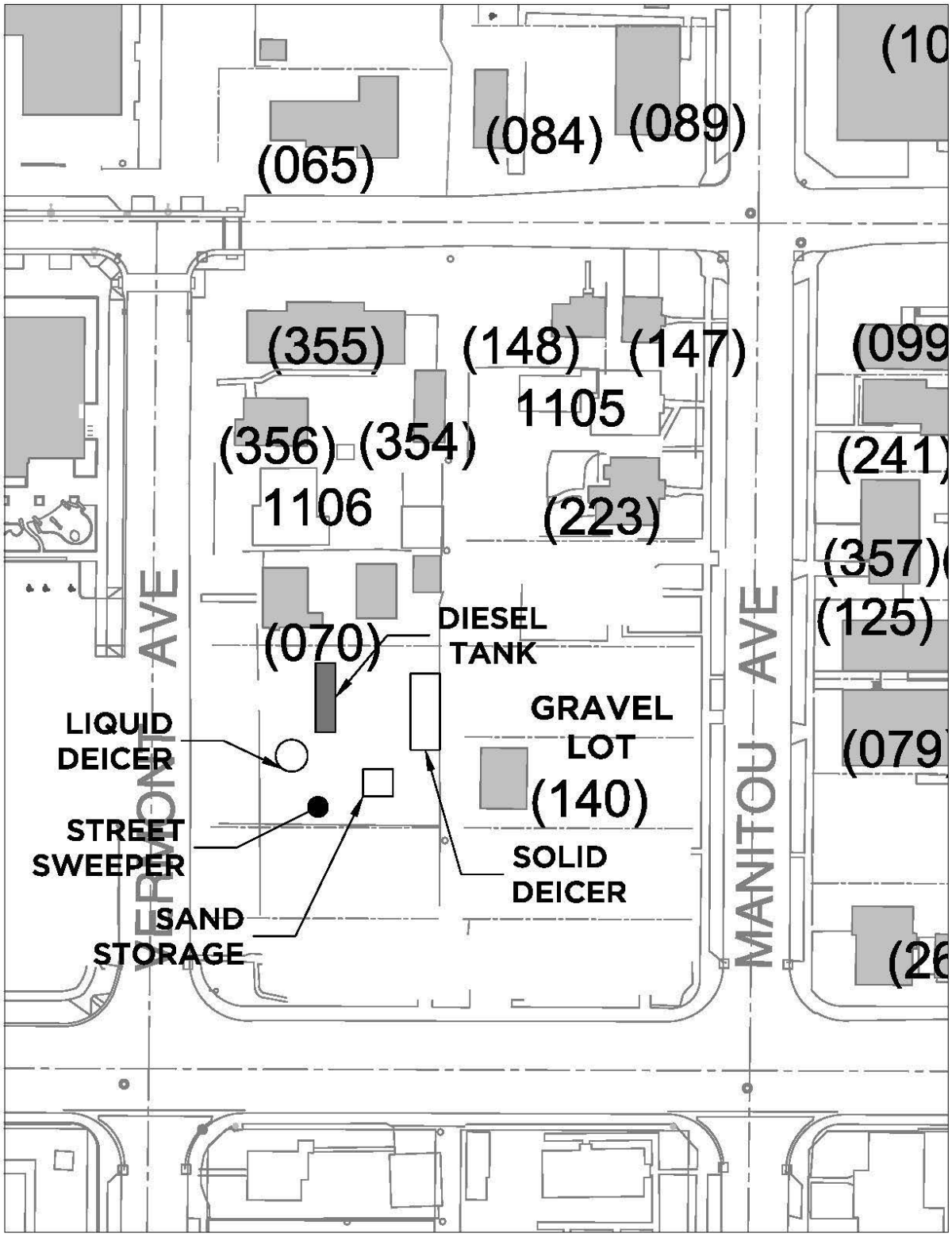
Station
Hazardous
Waste Storage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(125)
(070)
DIESEL TANK
LIQUID DEICER
GRAVEL LOT
(140)
(079)
STREET SWEEPER
SOLID DEICER
SAND STORAGE
VERMONT AVE
MANITOU AVE

Appendix B – Facility Pollution Prevention BMPs

Idaho Department of Environmental Quality Catalog of Stormwater Best Management Practices

Section 4: BMP Fact Sheets

- BMP 15: Oil and Water Separators
- BMP 16: Centrifugal or Vortex-Separation Structures
- BMP 43: Dust Control
- BMP 44: Stockpile Management
- BMP 46: Spill Prevention and Control
- BMP 48: Hazardous Materials Management
- BMP 51: Solid Waste Storage and Disposal
- BMP 75: Street Sweeping
- BMP 76: Storm Water System Cleaning
- BMP 77: Outdoor Storage
- BMP 78: Fertilizer Management
- BMP 79: Pesticide Management
- BMP 80: Building and Grounds Maintenance
- BMP 82: Equipment Yard Design Features
- BMP 83: Vehicle and Equipment Refueling
- BMP 84: Vehicle and Equipment Cleaning, Maintenance & Repair
- BMP 86: Non-storm water Discharges to Drains
- BMP 91: Employee Training

Appendix 6

2023 Public Education, Outreach and Involvement Program

1. Overview

The City of Boise, Ada County Highway District, Garden City, Ada County Drainage District #3, Idaho Transportation Department District #3, and Boise State University formed Partners for Clean Water (Partners) to develop a cooperative approach to educating the public on stormwater and water quality issues and ensure compliance with the Permit. The City of Boise is the lead agency for this control measure of the Permit with support from the other Partners. The overarching goal of the program is to educate the public on stormwater issues to change specific behaviors that contribute to nutrient, bacteria, temperature, and sediment pollution to the MS4 and local receiving waters.

The City's Stormwater Public Education and Outreach Program is guided by a step-by-step process when developing educational opportunities.

1. Define goals and desired outcomes
2. Identify and analyze target audiences
3. Create messaging for selected audiences
4. Distribute message through chosen methods of outreach
5. Assess the results in order to direct future efforts

The Partners conduct multiple outreach activities and messaging campaigns each year, designed to reach the various target audiences identified in the Permit and focus on stormwater issues of significance in the Permit area. The permittees collaborate each year on which topics and relevant messages the program will focus their efforts on. These activities and messages are further developed and built upon based on feedback and public participation.

Target audiences in Permit Year 2 included the general public, businesses, homeowners, neighborhood associations, pet owners, landscapers, property managers, engineers, contractors, developers, plan review staff, and students. Specific details that meet Permit Part 3.1 requirements can be found below.

2. Ongoing Efforts (throughout Permit term):

Annual Media Campaign

The Partners continue to participate in an annual media campaign which utilize messaging opportunities with radio advertisements and public service announcements, billboards, and online ads. The media campaign reaches all target audiences with general messages on water quality with a continued focus on pet waste and yard waste in 2023.

Manuals and Reference Materials

Manuals, fact sheets and other education and outreach reference materials are available on the Partners for Clean Water website. These materials are targeted, based on content, to all our targeted audiences. Examples of

these documents include 'Stormwater Facility Maintenance Best Management Practices', 'Stormwater Pollution Prevention: Commercial Landscaping', 'Operation and Maintenance of Stormwater Systems', 'Drainage Plan Checklist' and 'Stormwater Management Resource Guide', among others.

Website

The website (partnersforcleanwater.org) reaches all target audiences with specific messaging based on audience. Please see Section 7 below for more details.

Boise WaterShed Environmental Education Center

The Boise WaterShed Environmental Education Center opened in May, 2008, and is designed to promote water stewardship by teaching people of all ages how to protect and conserve our precious resource for future generations.

The staff at the Boise WaterShed incorporates stormwater pollution prevention and stormwater management information into the programs, water renewal facility tours, and lessons offered to visitors. Education of personal impacts to water quality via stormwater, wastewater and pollution prevention tips are integrated throughout most exhibits, lessons, tours, and the center's library resources.

Partners staff participate in events at the WaterShed, including WaterShed Weekends, Earth Day events, and summer programs.

The facility also provides an outdoor River Campus which presents a new dimension to water education with exterior exhibits that show the big picture of the Treasure Valley's water resources. Presented to simulate the workings of the Lower Boise Watershed, the interactive, walk-able, park-like setting takes visitors on a journey from Lucky Peak Reservoir and Dam, through Boise's urban streets, and the Water Renewal Facility. From here they watch cleaned water returned to the Boise River and see it flow downstream to the agricultural zone that sustains our food industry. Ultimately, visitors realize that what we do upstream not only affects downstream users, but also ultimately the overall health of the Snake River.

The Boise WaterShed is transforming into the nation's first climate and water science center. The all-ages, hands-on exhibits will explore themes of our changing watershed and how the community can take action to help make our community more resilient to the effects of climate change. The Boise Watershed is undergoing renovations and will be closed until the fall of 2024. Limited programming will be offered during renovations.

Social Media

The Partners are active on social media through a Partners Instagram page, as well as each permittee's social media pages. The City of Boise regularly posts messaging on Twitter, Facebook, and Instagram regarding stormwater, water quality, household hazardous waste collection, leaf litter pick up information, etc. to help distribute these messages to the community through a variety of avenues.

3. 2023 Outreach Events and Activities:

Media Campaign

The media campaign for 2023 included radio ads, social media posts, and online ads on websites such as BoiseDev and KTVB.

Themes highlighted in 2023 include picking up pet waste, illicit discharge reporting, and proper fertilizer use, seen in Figures 1-3 below.

Figure 1. 2023 Pet Waste Graphic

Figure 2. 2023 Illicit Discharge Reporting Graphic

Figure 3. 2023 Fertilizer Application Graphic

Around 600 radio ads were aired on radio stations including KIZN 92.3, KKGL 96.9, KQXR 100.3, KSAS 103.5, KOOL 101.5, KSRV 96.1, KDBI 106.7, KPDA 100.7, Boise State Public Radio, and Radio Boise. Radio ads were broadcast in English and Spanish.

Bus Wrap

Partners coordinated with Valley Regional Transit to create a stormwater educational bus wrap to display on a regional bus from May through August. This was a general stormwater message to help people understand that stormwater flows directly to our waterways. The stormwater hotline number was also listed on the bus to report illegal dumping into storm drains. Posters were also present on the interior of the bus.

Figure 4. 2023 Bus Wrap

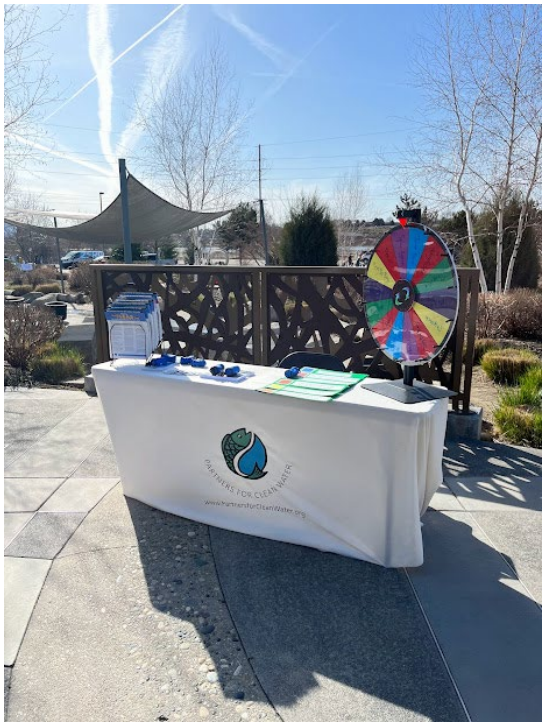
2022 Events

Several events were held during Permit Year 2 for stormwater education and outreach purposes. Each event targeted the general public and focused on general stormwater awareness, illicit discharge reporting, stormwater pollution prevention tips for homes and businesses, and water quality.

1. Fly Fishing Expo:

2. Shade City BrewFest:

3. WaterShed Earth Day:



4. Neighborhood Concert Series:

5. First Thursday:

6. BSU Engineering Course Outreach: This event was coordinated by Boise Parks and Recreation with a BSU class. Partners staff spoke about the stormwater infrastructure at the Hyatt Hidden Lakes Reserve and the pollutant removal potential of the property. We also discussed the effects of nitrogen and phosphorus on water quality, and the major water quality issues in the region.

4. Assessment

The Partners are consistently assessing the public's understanding of our public outreach messages and the adoption of behaviors that reduce stormwater pollution by our target audiences.

Assessment includes surveys at events that measure general stormwater knowledge to evaluate which topics are being conveyed already, and which topics need additional messaging and awareness. These surveys also resolve which media avenues are most useful to the respondents to guide our outreach in the future.

Data from website usage, radio ads, and billboard viewership is also used to assess which programs and messages are reaching the most people. The Partners website is updated based on which pages are most viewed and clicked on, in order to make popular topics more accessible (Appendix A).

The results of these continual assessments constantly shape the future of our public outreach and education programming. Focus will be given to programs that are successful in changing the public's behaviors and practices to reduce stormwater pollution.

A more targeted pilot program was started in Permit Year 2 in the Central Rim Neighborhood. The primary goal of this pilot project is to increase stormwater awareness, engage the target audience, and effectively promote proper leaf disposal. By isolating public education and outreach in this neighborhood, we are aiming to achieve higher participation in proper leaf disposal in the Central Rim Neighborhood.

In October 2023, postcards were sent out that outlined the benefits of raking your leaves such as flooding prevention and improved water quality. It also gave instructions for leaf pickup and provided a link to sign up for a free yard sign to encourage neighbors to rake leaves. Signs were displayed in the yards of Central Rim Neighborhood residents.

Figure 5. Outreach postcard sent to Central Rim Neighborhood residents

Next, we will send out a post-outreach survey to the Central Rim Neighborhood to evaluate the behaviors surrounding leaf collection for the pilot neighborhood. We will compare post-outreach survey results from the Central Rim neighborhood to

other neighborhoods that did not receive targeted outreach; this will allow us to assess the effectiveness of the outreach conducted. We will also compare Central Rim leaf collection data from 2021 and 2023 to measure if more leaves were collected from this neighborhood. This will provide estimates of self-reported behavior changes as well as leaf volume data from Republic Services to show behavior changes.

More information regarding the pilot program, follow-up outreach, and conclusions will be available in the Permit Year 3 Annual Report.

5. Tracking

A tracking spreadsheet is used by the City of Boise to track and maintain all records of our stormwater education and outreach activities, events, and trainings. This spreadsheet is shared with other permittees during regularly scheduled permittee meetings and is open to feedback and discussion. The tracking spreadsheet is used to compile the annual report.

6. Education on SWMP Control Measures

Construction Site Runoff Control Training

To provide the regional construction community with erosion and sediment control and stormwater pollution prevention education, the City and our Partners have developed the Erosion and Sediment Control (ESC) Responsible Person (RP) training and certification program. The class promotes awareness of the impact of polluted construction site runoff and soil erosion on the MS4 and the Boise River. The class curriculum covers local and state stormwater regulations, principles of ESC Best Management Practices (BMPs), installation and maintenance of common erosion and sediment controls, fugitive dust control, stormwater pollution prevention practices, dewatering, how to conduct the required construction site inspections and updating the ESC plan or SWPPP for the site.

The instructors for the City Responsible Person classes must be qualified and approved by the City. Instructors are required to submit a resume to the City detailing their educational history and experience in erosion control. They must also be able to demonstrate knowledge of the principles of erosion; sediment transport; erosion and sediment control technology, implementation, and maintenance; and local and federal ordinances regulating erosion and sediment control.

Courses are offered through third party entities: Engineering with a Mission LLC, Eagle One LLC, Jones Erosion Control, the College of Western Idaho, and Syman Company throughout the year in various locations in the Treasure Valley as well as online offerings. Boise State University's Construction

Management Program also presents the class material to their students, who may receive certification if desired. Additionally, the Nampa school district has a vocational construction site program that utilizes the ESC training presentation. The ESC Inspectors also present the RP course quarterly to train local agency personnel involved in construction projects so that they may implement BMPs on public projects and notify ESC Inspectors if they see runoff pollution and other violations at construction sites. As part of the training participants receive education materials including an illustrated ESC Field Guide to Best Management Practices specific to Idaho.

Construction site operators and contractors must renew their RP certification every 3 years by attending the training and passing an examination. The class is updated regularly to present new ideas and methods in ESC and SWPPP. The Planning and Development permitting system maintains a database of certified RPs. The database is utilized by the City of Boise, ACHD, Garden City, the City of Nampa, and City of Caldwell to verify that construction sites have an individual with ESC training onsite. The RP name and contact information is required to be listed prior to permit issuance, and the RP must have operational control to make corrective actions and knowledge to implement BMPs and work with ESC Inspectors to keep sites in compliance.

In 2023, 718 Responsible Person licenses were issued or renewed.

City staff provide ongoing awareness, education and outreach through the website, annual events, and also can provide site specific training as needed to interested parties and industry groups.

Permanent Stormwater Controls Training

The Partners conducted a permanent stormwater controls training in September 2023. The goal of this training was to provide guidance to local audiences on the operation and maintenance activities performed on various stormwater facilities. The training emphasized the importance of maintaining stormwater facilities to prevent stormwater pollution. It covered local ordinances, O&M requirements, and context for property O&M agreements.

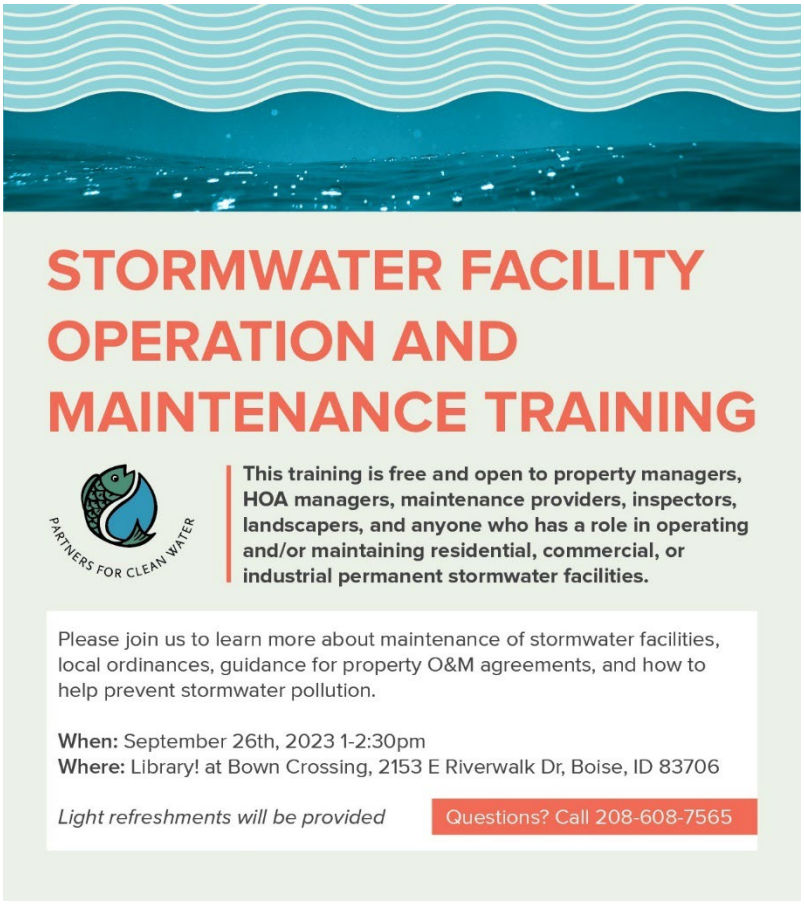


Figure 4. 2023 Permanent SW Control ad

7. Publicly Accessible Website

The City of Boise, on behalf of the Partners for Clean Water, maintains a website that educates the public on stormwater issues for multiple audiences. The website is a key source for stormwater information in Boise and the Treasure Valley.

The website contains relevant contacts for each permittee, as well as each permittee's annual reports, SWMPs, and other relevant compliance and regulation materials. The Intergovernmental Agreement (IGA) that outlines permittee responsibilities is posted, as well as the IPDES permit and the MS4 map. Regularly scheduled permittee meeting agendas and meeting notes are also posted.

The website has topics for varying target audiences, such as homeowners, pet owners, engineers, surveyors, developers, mobile businesses, landscapers, and property maintenance companies. Manuals, checklists, fact sheets and guidance documents are organized into the target audience's respective pages. Individual permittee sites are also linked for more information. Information regarding training,

events, and other topics pertinent to educating the community on how to reduce stormwater pollution is easily accessible.

The website continues to be an important way to educate our target audiences and provide a central location for public education and permit compliance information. The Partners continuously develop new outreach materials to post on the website and hand out at events. QR codes that link to the Partners website are often printed on outreach materials.

Appendix A

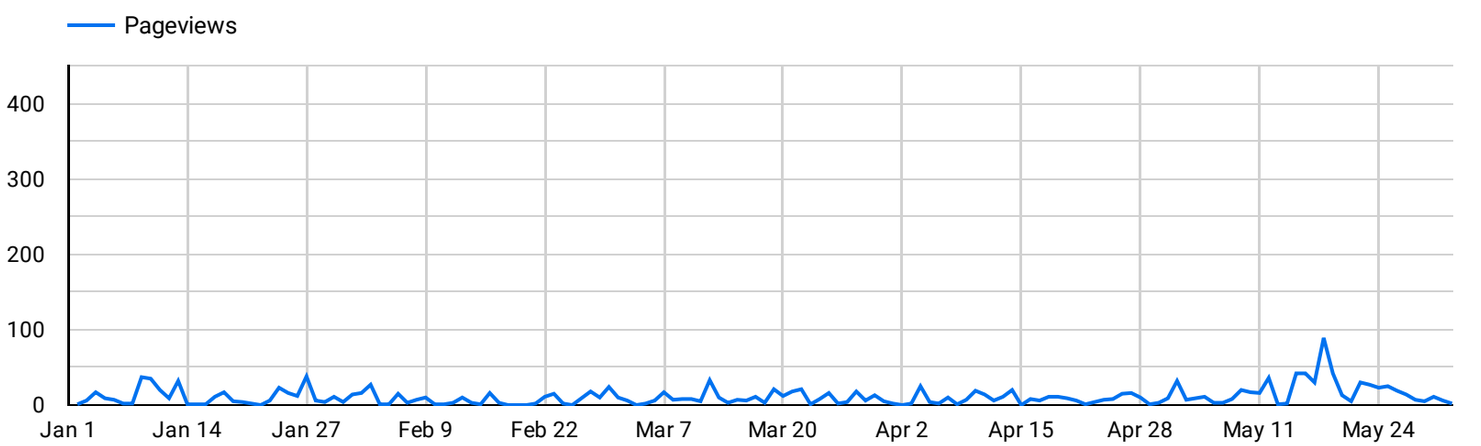
Website data

Partners for Clean Water - 2023 Report

January-June *(Google Analytics)*

Users	Pageviews	Avg. Session Duration	Bounce Rate	Pages / Session
898	1,694	00:01:01	78.32%	1.52

Source / Medium	Pageviews ❶ ▾	Avg. Session Duration	Bounce Rate ❷ ▾
(direct) / (none)			
google / organic			
BoiseDev / Display			
cityofboise.org / referral			
bing / organic			
facebook.com / referral			
baidu.com / referral			
adacountydrainagedistrict3.org ...			
usc-word-edit.officeapps.live.co...			
appsecadmintest.cityofboise.or...			
aqualisco.com / referral			
duckduckgo / organic			
city-of-trees-challenge-boise.hub...			
lens.google.com / referral			
yahoo / organic			
smithspestmanagement.com / r...			
croach.com / referral			
blancablog.online / referral			
Grand total	**1,694**	**00:01:01**	**78.32%**



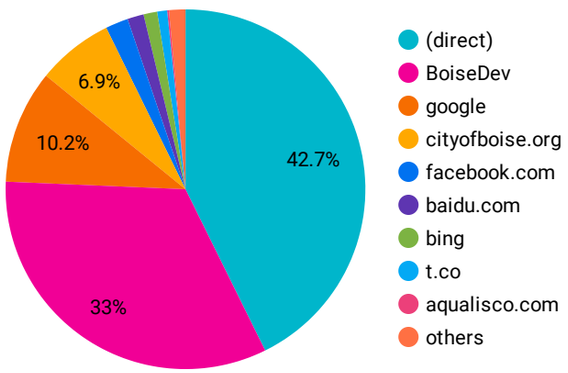
Partners for Clean Water - 2023 Report

January-June *(Google Analytics)*

VIEWS PER PAGE

	Page Title	Pageviews ▼
1.	Partners for Clean Water	1,268
2.	General Information | Partners for Clean Water	132
3.	Report an Issue | Partners for Clean Water	118
4.	Annual Report | Partners for Clean Water	72
5.	City of Boise | Partners for Clean Water	65
6.	Landscaping, Gardening and Home Maintenance | Partners for Clean Water	61
7.	ACHD | Partners for Clean Water	49
8.	Gophers | Partners for Clean Water	39
9.	Pets | Partners for Clean Water	37
10.	Drainage District #3 | Partners for Clean Water	36
11.	City of Caldwell | Partners for Clean Water	34
12.	Boise State | Partners for Clean Water	34
13.	Partners for Clean Water Meetings | Partners for Clean Water	33
14.	Contact Partners | Partners for Clean Water	32
15.	Permit Info | Partners for Clean Water	25
16.	Garden City | Partners for Clean Water	21
17.	Automobile Maintenance | Partners for Clean Water	15
18.	ITD DIST #3 | Partners for Clean Water	13
19.	Construction | Partners for Clean Water	11
20.	2018 Stormwater Conference: Growing	11

SESSION SOURCE



TOTAL USERS PER LANDING PAGE

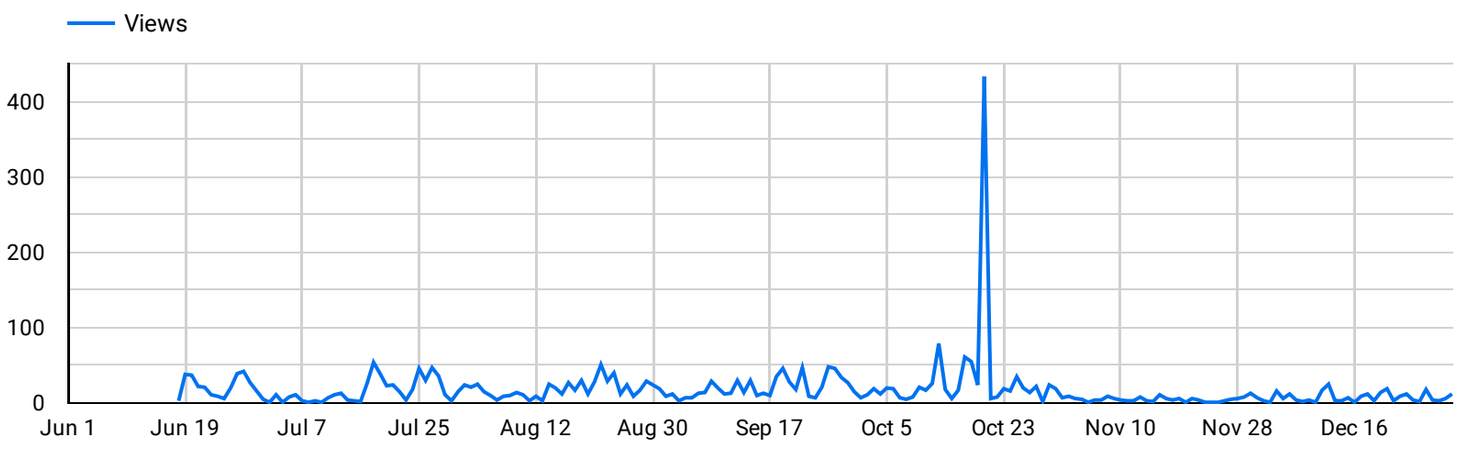
	Landing page	Total use…
1.	/	1,998
2.		126
3.	/report-an-issue	78
4.	/residents/landscaping-gardening-and-home-maintenance	40
5.	/aboutpartners/drainage-district-3	26
6.	/aboutpartners/city-of-boise	25
7.	/businesses/general-information	19
8.	/residents/general-information	18
9.	/aboutpartners/city-of-caldwell	17
10.	/meetings/partners-for-clean-water-meetings	16
11.	/report-an-issue/contact-partners	16
12.	/residents/pest-control/gophers	16
13.	/aboutpartners/achd	14
14.	/residents/pets	12
15.	/aboutpartners/boise-state	11
16.	/aboutpartners/garden-city	10
17.	/aboutpartners/annual-report	10
18.	/aboutpartners/permit-info	10
19.	/aboutpartners/itd-dist-3	9
20.	/2018-stormwater-conference-growing-our-town-improving-our-river	7
21.	/businesses/construction	6
22.	/residents/pest-control	5
23.	/home-maintenance	3
24.	/residents/pest-control/weed-control	3
25.	/businesses/engineers-surveyors	2
26.	/residents/pest-control/fleas	2
27.	/residents/pest-control/yellowjackets	2
28.	/searchresults	2
29.	/residents/automobile-maintenance	1
30.	/residents/pest-control/ants	1
31.	/residents/pest-control/roses	1
32.	/residents/pest-control/spiders	1
33.	/stormwater-management-program-plan-swmp-comments	1

Partners for Clean Water - 2023 Report

June - December *(Google Analytics 4)*

Total users	Views	Average session duration	Bounce rate	Views per session
2,462	3,419	00:00:29	88.34%	1.22

Session source / medium	Views ❶ ▾	Average session duration	Bounce rate ❷ ▾
BoiseDev / Display			
(direct) / (none)			
google / organic			
cityofboise.org / referral			
bing / organic			
statics.teams.cdn.office.net …			
baidu / organic			
duckduckgo / organic			
(not set)			
lm.facebook.com / referral			
search.brave.com / referral			
CbvffEfi / Evfcybl			
aqualisco.com / referral			
facebook.com / referral			
mix106radio.com / referral			
sites.google.com / referral			
yahoo / organic			
Grand total	**3,419**	**00:00:29**	**88.34%**



Spike: October 20, 2023, Source: BoiseDev

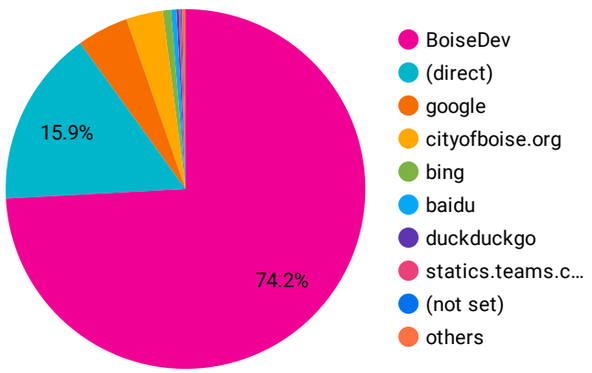
Partners for Clean Water - 2023 Report

June-December *(Google Analytics 4)*

VIEWS PER PAGE

	Session source / medium	Views ▾
1.	BoiseDev / Display	2,142
2.	(direct) / (none)	596
3.	google / organic	309
4.	cityofboise.org / referral	276
5.	bing / organic	42
6.	statics.teams.cdn.office.net / referral	22
7.	baidu / organic	12
8.	duckduckgo / organic	7
9.	(not set)	3
10.	lm.facebook.com / referral	2
11.	search.brave.com / referral	2
12.	CbvffEfi / Evfcybl	1
13.	aqualisco.com / referral	1
14.	facebook.com / referral	1
15.	mix106radio.com / referral	1
16.	sites.google.com / referral	1
17.	yahoo / organic	1

SESSION SOURCE



TOTAL USERS PER LANDING PAGE

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6.	/aboutpartners/city-of-boise	25
7.	/businesses/general-information	19
8.	/residents/general-information	18
9.	/aboutpartners/city-of-caldwell	17
10.	/meetings/partners-for-clean-water-meetings	16
11.	/report-an-issue/contact-partners	16
12.	/residents/pest-control/gophers	16
13.	/aboutpartners/achd	14
14.	/residents/pets	12
15.	/aboutpartners/boise-state	11
16.	/aboutpartners/garden-city	10
17.	/aboutpartners/annual-report	10
18.	/aboutpartners/permit-info	10
19.	/aboutpartners/itd-dist-3	9
20.	/2018-stormwater-conference-growing-our-town-improving-our-river	7
21.	/businesses/construction	6
22.	/residents/pest-control	5
23.	/home-maintenance	3
24.	/residents/pest-control/weed-control	3
25.	/businesses/engineers-surveyors	2
26.	/residents/pest-control/fleas	2
27.	/residents/pest-control/yellowjackets	2
28.	/searchresults	2
29.	/residents/automobile-maintenance	1
30.	/residents/pest-control/ants	1
31.	/residents/pest-control/roses	1
32.	/residents/pest-control/spiders	1
33.	/stormwater-management-program-plan-swmp-comments	1

Appendix 7

Stormwater Outfall Monitoring Summary WY 2023

Stormwater Outfall Monitoring Summary WY 2023

Ada County Highway District

1/12/2024

Table of Contents

1 Introduction 1

2 Monitoring Sites, Equipment, and Sample Type 1

2.1 Sample Types 2

3 Stormwater Outfall Monitoring Results 2

3.1 Wet Weather Analytical Results 3

3.2 Monitored Event Pollutant Loading Results 4

3.3 Precipitation Results 4

4 Quality Assurance/Quality Control 4

4.1 Data Quality Discussion 4

4.2 Field QA/QC Sample Results 5

4.2.1 Field Duplicate and Blank Samples 5

4.2.2 Equipment and Rinsate Blank Samples 5

Appendix A: Figures A-1

Appendix B: Tables B-1

Appendix C: Storm Event Reports C-1

Storm Event Report No. 1: October 22, 2022 ..... C-2

Storm Event Report No. 2: January 9, 2023 ..... C-68

Storm Event Report No. 3: March 10, 2023 ..... C-117

Storm Event Report No. 4: March 29, 2023 ..... C-181

Storm Event Report No. 5: May 5, 2023 ..... C-247

Storm Event Report No. 6: August 21, 2023 ..... C-288

1 Introduction

Ada County Highway District (ACHD), Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3 (Permittees) were issued a third-cycle National Pollutant Discharge Elimination System (NPDES) Phase Permit #IDS027561 (Permit) on October 1, 2021. The Permit authorizes the Permittees to discharge from municipal separate storm sewer system outfalls to the Boise River and its tributaries. According to Permit Part 6.2.1, Wet Weather Stormwater Outfall Monitoring, Permittees are required to monitor wet weather stormwater discharges according to the NPDES Phase I Stormwater Outfall Monitoring Plan (ACHD, 2022). The following summary covers wet weather outfall monitoring activities during water year (WY) 2023 (October 1, 2022–September 30, 2023). WY 2023 represents the second year of monitoring under the new Permit cycle.

The Stormwater Outfall Monitoring Program (SWOMP) was developed in line with the Quality Assurance Project Plan for NPDES Stormwater Permit Monitoring (QAPP) (ACHD, 2022) and describes the overall approach to stormwater outfall monitoring. Details about specific site characteristics, equipment, data collection and sample handling procedures, analytical methods, and quality assurance/quality control methodology are found in the SWOMP.

In WY 2023, data collection for the SWOMP included precipitation, flow, and water quality samples. Four outfall monitoring sites within the Permit area (Lucky, Whitewater, Main, and Americana) were monitored for flow and water quality. The water quality samples were collected from wet weather discharges and included grab samples with corresponding field parameters and composite samples, which were collected throughout the duration of a storm. Sampling equipment was installed up-pipe at the Main Alternate site when high river flows surcharged the Main outfall monitoring site in spring 2023. Although sampling was attempted on May 5, 2023, successful samples were not collected from this location. Additionally, four rain gauge sites (East, Front, Cynthia Mann, and Whitewater) were maintained to provide localized precipitation data. Each rain gauge location represents at least one of the monitored subwatersheds and was used to verify that storm criteria were met.

2 Monitoring Sites, Equipment, and Sample Type

The SWOMP consists of four monitored subwatersheds: Lucky, Whitewater, Main, and Americana. Monitoring stations for each subwatershed are located near the outfalls with dedicated equipment installed at each location. Table 2-1 depicts the equipment types and referenced rain gauge site for each subwatershed. A vicinity map illustrating the location of each subwatershed, monitoring station, and rain gauge site is found in Figure 1 (Appendix A).

Table 2-1. Monitoring Station Equipment

	Lucky	Whitewater	Main	Americana
Sampler type	Hach AS950	ISCO 6712	Hach AS950	ISCO 6712
Flowmeter type	Hach AV9000	ISCO Signature	Hach AV9000	ISCO Signature
Referenced rain gauge	Cynthia Mann	Whitewater	Front	Front and East
Rain gauge equipment types	Global Water tipping bucket/ HOBO event logger	Hach tipping bucket/ISCO Signature	Global Water tipping bucket/ HOBO event logger	Global Water tipping bucket/ HOBO event logger

2.1 Sample Types

The sample types collected during WY 2023 included grab samples and composite samples. Grab samples represent a discrete measurement from the overall storm discharge while composite samples represent the entire discharge.

Grab samples were manually collected using a swing sampler. The grab samples were submitted to the Boise City Water Quality Laboratory and analyzed for *E. coli*. At the time that the grab samples were collected, field parameters (temperature, pH, dissolved oxygen [DO], and conductivity) were measured using In-Situ smarTROLL or In-Situ AquaTROLL handheld instruments.

Composite samples were collected using automatic samplers, which worked in conjunction with flowmeters. After a predetermined volume of flow was discharged, the flowmeters triggered the samplers to collect a subsample. Each subsample was deposited into a 15-liter carboy, resulting in a flow-proportional composite sample. The composite samples were submitted to the Boise City Water Quality Laboratory, where they were split for analysis. The following constituents were analyzed during WY 2023: biological oxygen demand, 5-day; chemical oxygen demand; hardness as calcium carbonate; turbidity; total suspended solids (TSS); total dissolved solids (TDS); total phosphorus (TP); orthophosphate, as P (ortho-P); ammonia; nitrate + nitrite; total Kjeldahl nitrogen (TKN); total arsenic (As); dissolved and total cadmium; dissolved copper; dissolved and total lead; total mercury; and dissolved zinc.

3 Stormwater Outfall Monitoring Results

Wet weather stormwater samples were collected according to the procedures listed in the SWOMP. One of the goals in the SWOMP is to collect three accepted (unqualified) grab and composite samples from each monitoring station during each water year. In WY 2023, samples were attempted during six storms to meet this goal. A summary of the storm dates and sample types collected is shown in Table 3-1. Storm setup and sampling information are included in Table 1 (Appendix B). Storm Event Reports were created after each stormwater sampling event to monitor the status of the SWOMP and discuss the hydrological and analytical data from the grab and composite samples. These Storm Event Reports include details about the storm and weather monitoring, hydrographs, sample collection times, and water quality results. Individual Storm Event Reports for the six sampling events during WY 2023 are included in Appendix C.

Table 3-1. Storm Events and Sample Types

	Lucky	Whitewater	Main	Americana
October 22, 2022	G[1], FD, FB, C[2]	G, C[3]	G, C[2]	G, C[2]
January 9, 2023	G[4]	G[4]	G[4], FD, FB	G[4]
March 10, 2023	G, C[5]	G, C[5]	G, C[5]	G
March 29, 2023	G[6], FD, FB, C[5,6]	G[6], C[5,6]	G[6], C[6]	G, C
August 21, 2023	G, C, FD, FB	G[7], C	G[7], C[3]	C

Sample types: G = grab, C = composite

QC Sample types: FD = field duplicate, FB = field blank

[1] *E. coli* sample qualified due to exceeded holding time.

[2] Qualified due to lack of representativeness (50%–75%).

[3] Rejected due to lack of representativeness (< 50%).

[4] Rejected due to insufficient rainfall (< 0.08 inches).

[5] Incomplete water quality analysis due to low composite sample volume.

[6] Sample qualified due to insufficient rainfall (0.09–0.10 inches).

[7] Rejected due to collecting grab sample after composite sampling duration.

3.1 Wet Weather Analytical Results

Field parameter results are presented in Table 2 and analytical results are presented in Table 3 (Appendix B). Graphical representation of the analytical results is provided in Figures 2–5 (Appendix A). The following assessment provides minimum and maximum measured values for WY 2023. Qualified data are included in the range of measured/reported values as well as the data analysis. Rejected data are not included in the analysis or data discussion below; however, they are presented in the tables. All measurements were recorded in accordance with QAPP and SWOMP procedures.

DO and oxygen demand

- DO ranged from 5.90 to 11.36 milligrams per liter (mg/L).
- Biological oxygen demand, 5-day concentrations ranged from 8.04 to 225 mg/L.
- Chemical oxygen demand concentrations ranged from 62.0 to 725 mg/L.

pH, temperature, conductivity, and hardness

- pH values ranged from 6.41 to 7.93 standard units.
- Temperature ranged from 5.75 to 20.7 degrees Celsius.
- Conductivity ranged from 62.65 to 1,282.6 micro-siemens per centimeter.
- Hardness ranged from 23.1 to 207 mg/L as calcium carbonate.

Bacteria

- *E. coli* ranged from 10.7 to 20,140 most probable number per 100 milliliters.

Sediment

- Turbidity ranged from 21.6 to 550 nephelometric turbidity units.
- TSS ranged from 26.6 to 947 mg/L.
- TDS ranged from 73.5 to 592 mg/L.

Nitrogen

- Ammonia ranged from 0.211 to 1.50 mg/L as N.
- Nitrate + nitrite ranged from 0.166 to 1.08 mg/L as N.
- TKN ranged from 1.28 to 9.06 mg/L.

Phosphorus

- TP ranged from 0.205 to 1.46 mg/L
- Ortho-P ranged from 0.0678 to 0.985 mg/L as P.

Metals

- Total arsenic ranged from 1.20 to 9.60 micrograms per liter (µg/L).
- Dissolved cadmium ranged from below the method detection limit (MDL) (< 0.0250) to 0.0300 µg/L.
- Total cadmium ranged from 0.026 to 0.65 µg/L.
- Dissolved copper ranged from 2.50 to 10.2 µg/L.
- Dissolved lead ranged from 0.08 to 0.280 µg/L.
- Total lead ranged from 0.68 to 59.7 µg/L.
- Total mercury ranged from below the MDL (< 0.0100) to 0.0712 µg/L.

- Dissolved zinc ranged from 12.2 to 91.2 µg/L.

3.2 Monitored Event Pollutant Loading Results

Pollutant loading estimates in pounds per acre (lbs/ac) were calculated for the following constituents of concern: TSS, TP, ammonia, nitrate + nitrite, and TKN. The reported concentrations were combined with runoff volumes measured during the storm event at each monitoring station. Formulas that were used, including conversion factors to estimate the loading in lbs/ac, are described in the SWOMP. Table 4 (Appendix B) presents the estimated pollutant loading of the constituents for each monitored storm. The pollutant loading contributions for each site are shown graphically in Figure 6 (Appendix A). Table 5 (Appendix B) is a summary of event loading estimates in pounds per acre for comparison between monitored drainage areas. A summary of the estimated ranges of pollutant loading for the storm events monitored during WY 2023 is presented below.

- TSS loading estimates ranged from 0.151 to 7.76 lbs/ac.
- TP loading estimates ranged from 0.000136 to 0.0324 lbs/ac.
- Ammonia loading estimates ranged from 0.000183 to 0.0511 lbs/ac.
- Nitrate + nitrite loading estimates ranged from 0.000186 to 0.0231 lbs/ac.
- TKN loading estimates ranged from 0.000639 to 0.167 lbs/ac.

3.3 Precipitation Results

Precipitation data from the Front, East, Cynthia Mann, and Whitewater rain gauges were used to validate all targeted storms during WY 2023. Each monitoring station is associated with a rain gauge. Precipitation data recorded for each of the targeted storms can be found in Table 1 (Appendix B). Monthly totals for WY 2023 are shown in Figure 7 (Appendix A).

4 Quality Assurance/Quality Control

Quality assurance (QA) and quality control (QC) measures for the SWOMP are presented in detail in the QAPP and SWOMP. No deviations from the QAPP and SWOMP occurred during WY 2023. QA and QC measures conducted during the WY are discussed below.

4.1 Data Quality Discussion

A data validation review process was used to evaluate the analytical and field parameter results. These checklists were used to compare monitoring methods and monitoring data collected against performance criteria established to meet the data quality objectives described in the QAPP. Field parameter results and analytical results that were qualified are identified in Table 2 and Table 3 (Appendix B), respectively. Further information regarding qualified samples is included in the Storm Event Reports located in Appendix A.

The following program criteria are used to identify storm events and representative composite samples.

- Storm criteria are met when the precipitation amount is greater than 0.10 inch and the storm was preceded by a minimum 72 hours of dry weather from the previous measurable storm event (rainfall greater than 0.10 inch).
- Composite samples are considered representative of stormwater runoff when aliquots represent greater than 75 percent of total runoff volume from the storm or greater than 6 hours of the storm, including the first hour of runoff.

For WY 2023, the grab sample collected from the Lucky monitoring station on October 22, 2022, was

qualified due to an exceeded hold time (> 8 hours). The composite samples collected from the Lucky, Main, and Americana monitoring stations were qualified due to lack of representativeness (50%– 75%) during the same October 2022 storm event. The composite samples collected from the Whitewater monitoring station were rejected due to lack of representativeness (< 50%) during the October 2022 storm event. The grab samples collected on January 9, 2023, from each of the monitoring stations were rejected due to insufficient rainfall (< 0.08 inches) during the January 2023 storm event. The grab and composite samples collected on March 29, 2023, from each of the monitoring stations were qualified due to insufficient rainfall (0.06–0.10 inches) during the March 2023 storm event. The grab samples collected on August 21, 2023, from Whitewater and Main monitoring stations were rejected due to collecting samples after composite sampling duration. The composite samples collected from the Main monitoring station were rejected due to lack of representativeness (< 50%) during the August 2023 storm event.

4.2 Field QA/QC Sample Results

During WY 2023, field QA/QC samples collected included field blanks, field duplicate samples, equipment blanks and rinsate blanks. Sample results for all field QC samples are included in Table 6 (Appendix B).

4.2.1 Field Duplicate and Blank Samples

Field duplicates are field grab samples that were taken alongside a parent grab sample to compare the accuracy of the data. For *E. coli*, the allowable logarithmic relative percent difference (RPD) between the duplicate sample and the parent sample is 40 percent. All field duplicate samples collected during WY 2023 met the RPD standard.

Analytical results from field and composite blanks are expected to be less than the MDL. If a water quality parameter is detected in a field or composite blank, all analytical results associated with the blank that exhibit a concentration of less than five times the concentration detected in the blank, are qualified. All field blank samples collected had a result less than the MDL. No composite blanks were collected or analyzed in WY23.

4.2.2 Equipment and Rinsate Blank Samples

The equipment blank is collected before sampling for the WY begins, when new equipment is installed. For WY 2023, the equipment blank was collected on October 2, 4, and 5, 2023, at the Main, Whitewater, Americana, and Lucky monitoring stations. All composite constituents mentioned in Section 2 were detected in the sample. Dissolved copper results that were collected on March 29, 2023, and August 21, 2023, at Whitewater are less than five times the value detected in the blank; therefore, they have been qualified and are considered estimates. All other results were greater than five times the detected value in the blank and are unqualified.

The rinsate blank is collected after sampling for the WY has been completed. The rinsate blank for WY 2023 was collected on October 2, 4, and 5, 2023, at the Main, Whitewater, Americana, and Lucky monitoring stations. All composite constituents mentioned in Section 2 were detected in the sample. Dissolved copper results that were collected on March 29, 2023, and August 21, 2023, at Whitewater and Americana are less than five times the value detected in the blank; therefore, they have been qualified and are considered estimates. In addition, dissolved zinc collected on March 29, 2023, at Lucky also resulted in less than five times the value detected in the blank; therefore, it has been qualified and is considered an estimate. All other results were greater than five times the detected value in the blank and are unqualified.

Appendix A: Figures

Figure 1. Vicinity Map
Figure 2. WY 2023 *E. coli* Results
Figure 3. WY 2023 TSS, TDS, and Turbidity Results
Figure 4. WY 2023 Ammonia, Nitrate + Nitrite, and TKN Results
Figure 5. WY 2023 Total Phosphorus and Orthophosphate Results
Figure 6. WY 2023 Pollutant Loadings
Figure 7. WY 2023 Monthly Precipitation

Figure 1: Vicinity Map
Phase I NPDES Outfall Sampling Stations

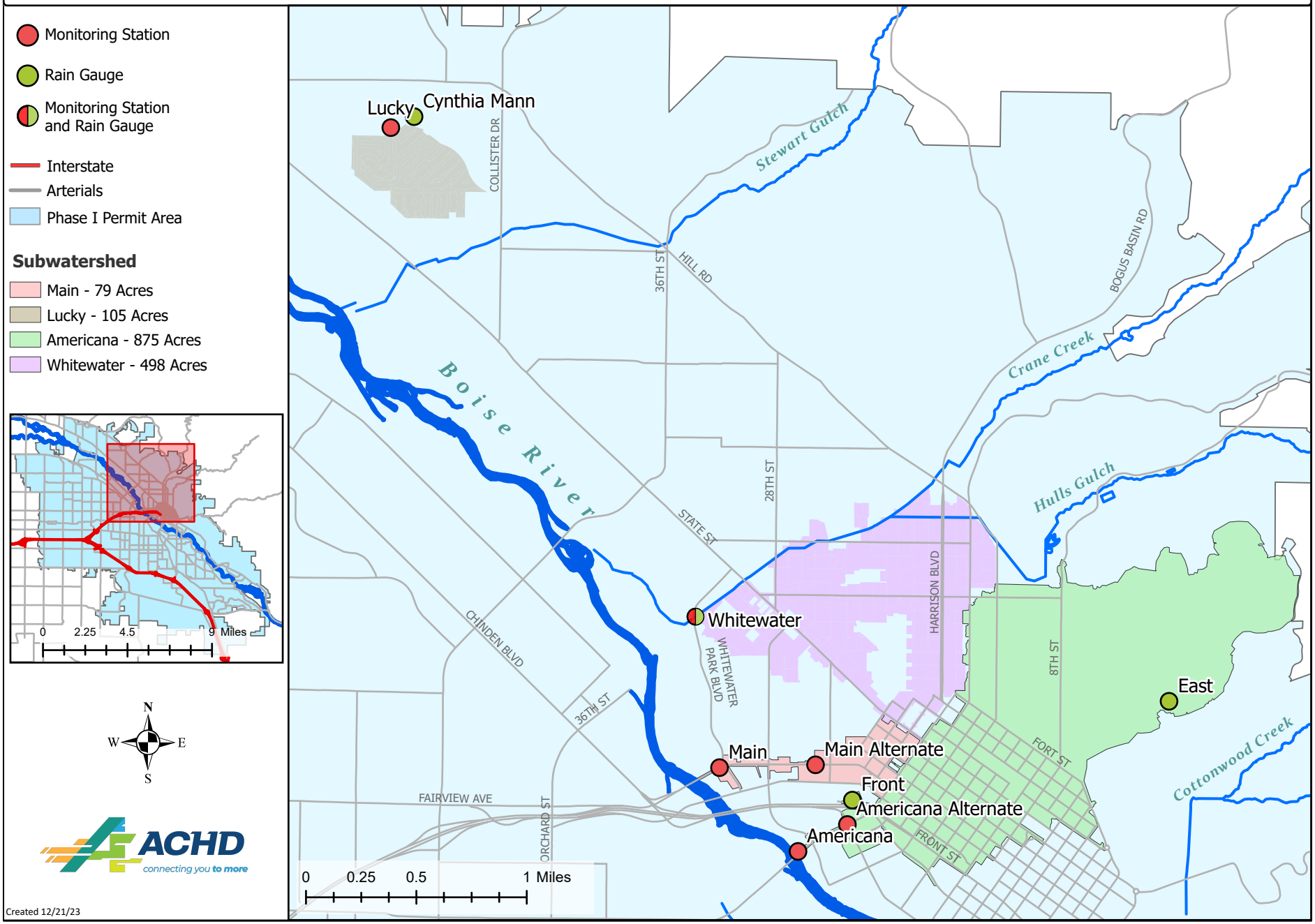


Figure 2: WY23 E. coli Results

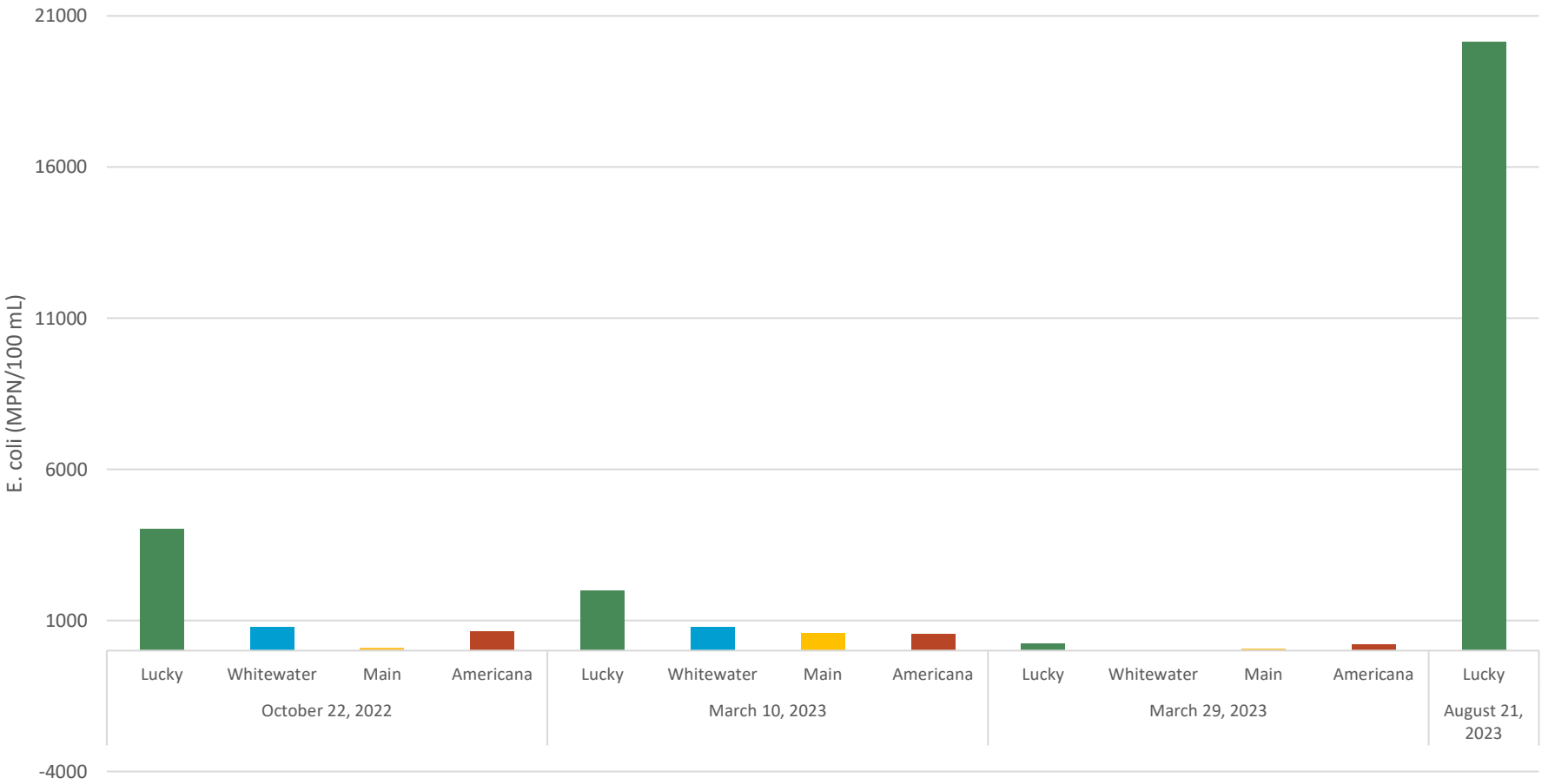
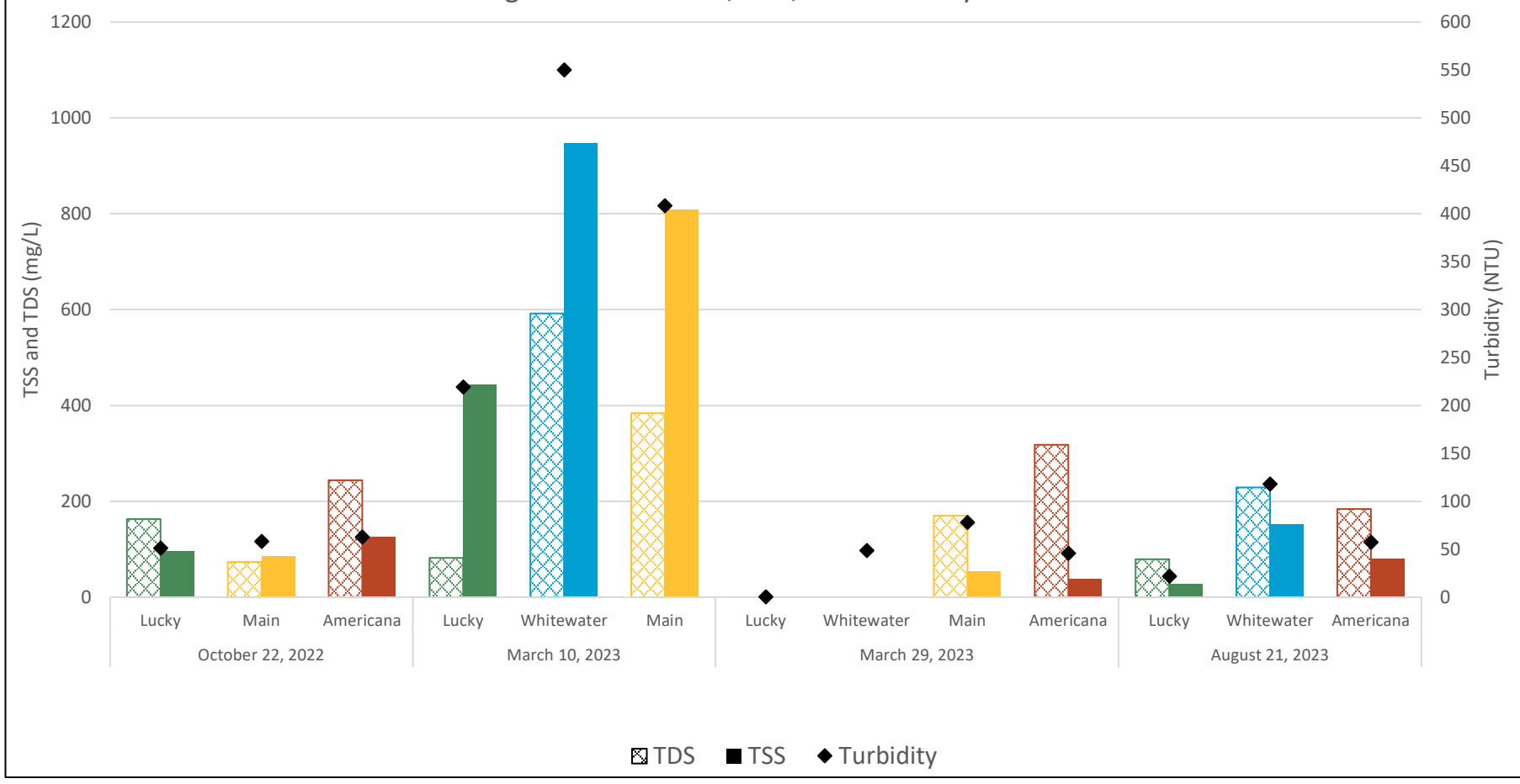


Figure 3: WY23 TSS, TDS, and Turbidity Results



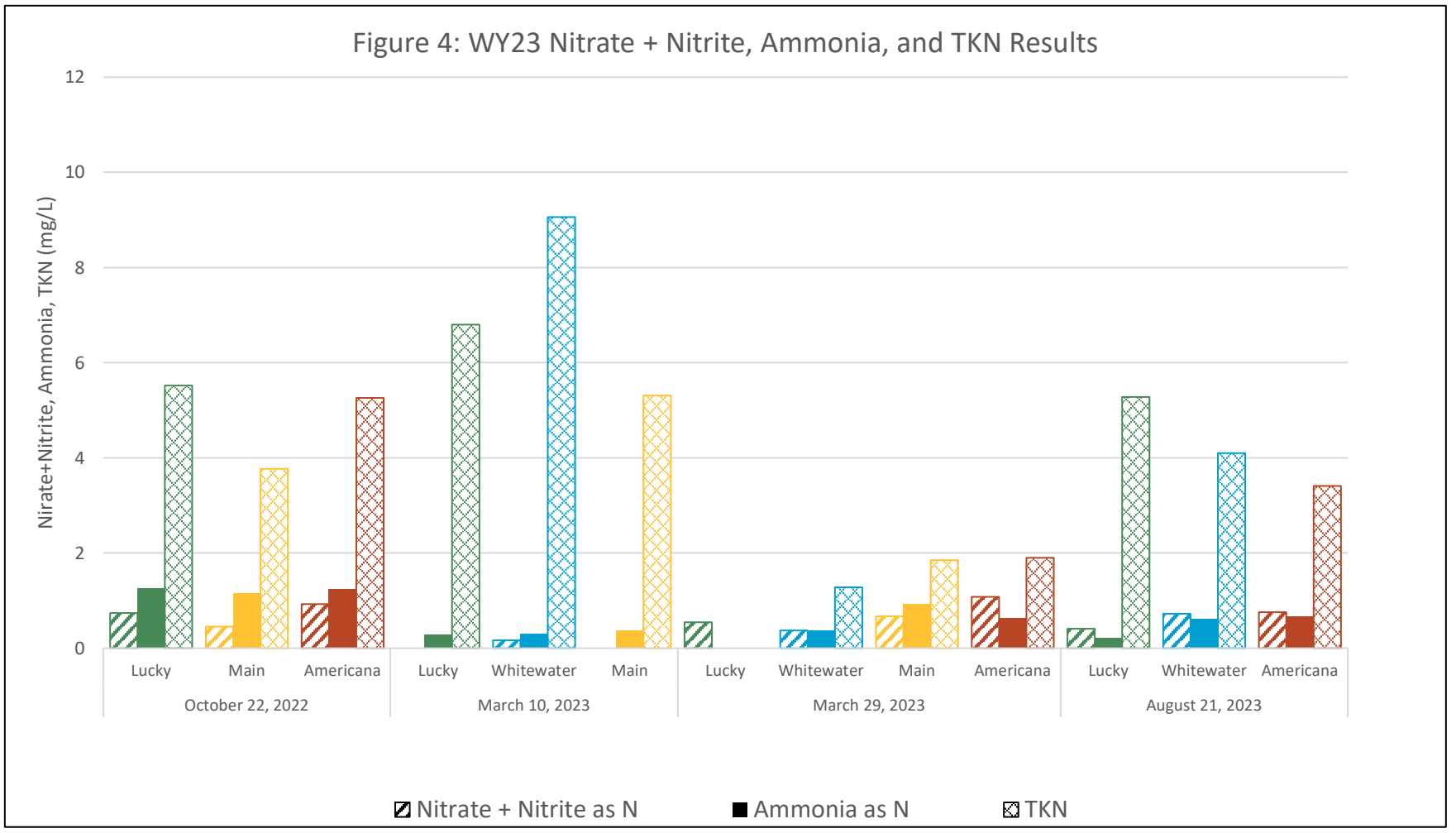


Figure 4: WY23 Nitrate + Nitrite, Ammonia, and TKN Results
Nirate+Nitrite, Ammonia, TKN (mg/L)
12
10
8
6
4
2
0
Lucky
Main
Americana
Lucky
Whitewater
Main
Lucky
Whitewater
Main
Americana
Lucky
Whitewater
Americana
October 22, 2022
March 10, 2023
March 29, 2023
August 21, 2023
Nitrate + Nitrite as N
Ammonia as N
TKN

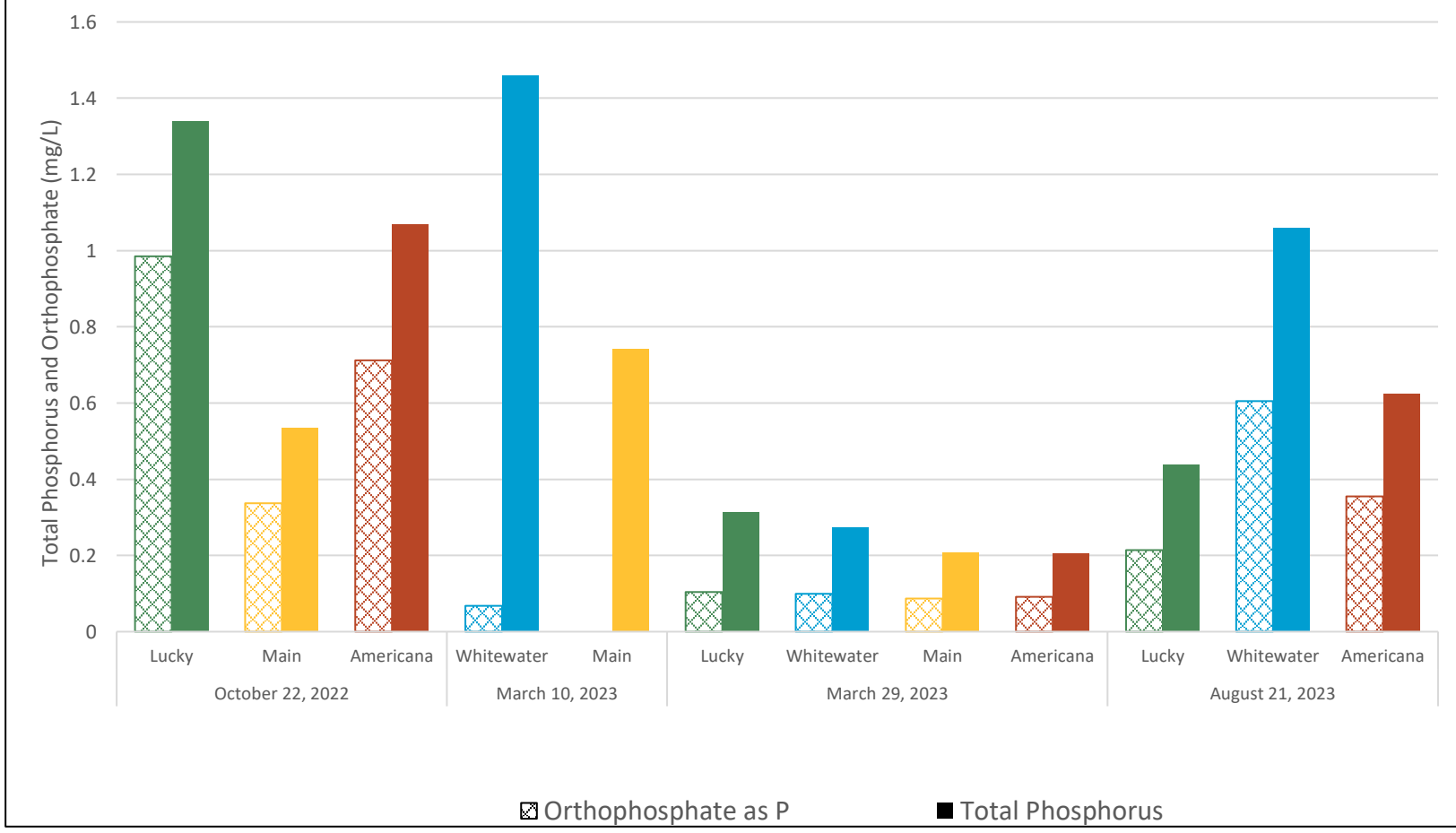


Figure 5: WY23 Total Phosphorus and Orthophosphate
Total Phosphorus and Orthophosphate (mg/L)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Lucky
Main
Americana
Whitewater
Main
Lucky
Whitewater
Main
Americana
Lucky
Whitewater
Americana
October 22, 2022
March 10, 2023
March 29, 2023
August 21, 2023
Orthophosphate as P
Total Phosphorus

Figure 6: WY23 Pollutant Loadings

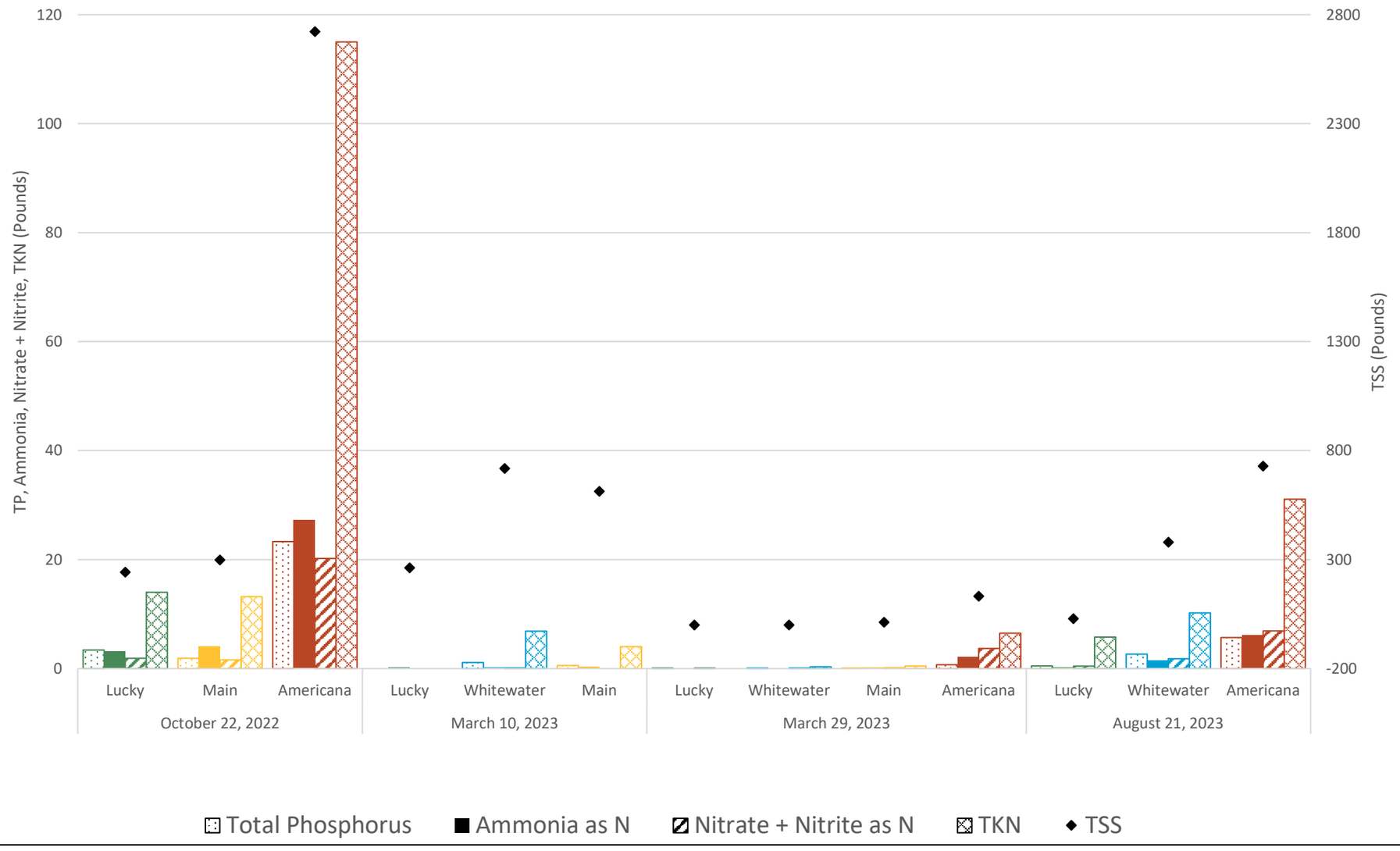
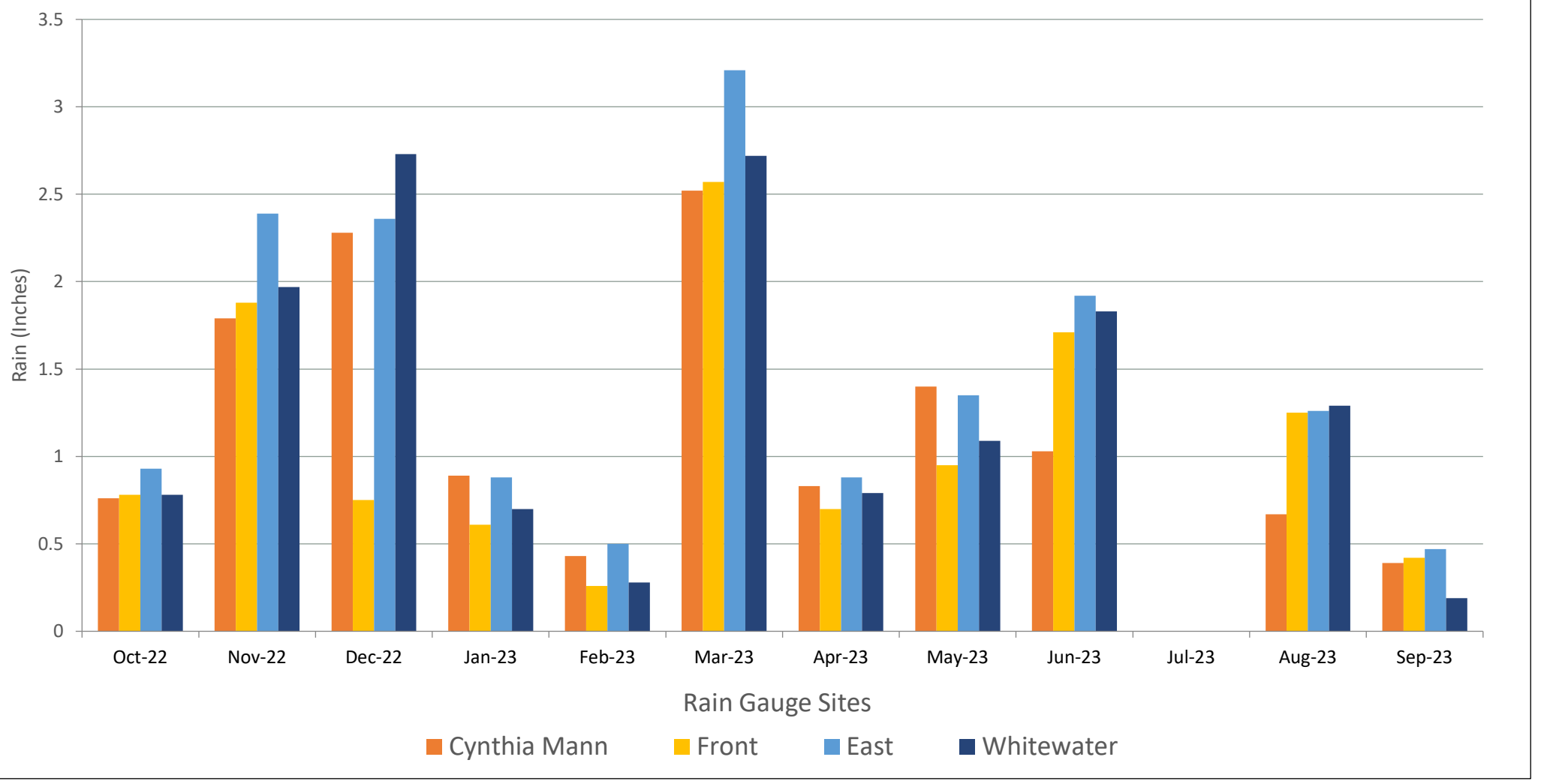


Figure 7: WY23 Monthly Precipitation



Appendix B: Tables

Table 1. Monitored Storms and Samples Collected

Table 2. Field Parameter Summary

Table 3. Analytical Results Summary

Table 4. Event Loading for Monitored Drainages in Pounds

Table 5. Event Loading in Pounds per Acre

Table 6. QC Sample Summary

Table 1. Monitored Storms and Samples Collected					
Event Date	Sampling Information	Lucky	Whitewater	Main	Americana
October 22, 2022	Grab samples collected and submitted?	YES	YES	YES	YES
	Composite samples collected and submitted?	YES	YES	YES	YES
	Trigger volume	7,899 gal	2,185 ft^3	9,313 gal	8,071 ft^3
	Sampler enable condition (in)	level > 3.6	level > 2.0	level > 2.2	level > 6.75
	Percent of storm flow sampled	67%	36%	57%	58%
	Composite sample duration (hrs.)	4.5	3.5	4.5	5.0
	Storm precipitation (in)	0.70	0.70	0.71	0.71/0.84
January 9, 2023	Grab samples collected and submitted?	YES	YES	YES	YES
	Composite samples collected and submitted?	NO	NO	NO	NO
	Trigger volume	2,895 gal	800 ft^3	3,411 gal	2,960 ft^3
	Sampler enable condition (in)	level > 3.31	level > 1.4	level > 2.25	level > 7.0
	Percent of storm flow sampled	–	–	–	–
	Composite sample duration (hrs.)	–	–	–	–
	Storm precipitation (in)	0.07	0.05	0.05	0.05/0.07
March 10, 2023	Grab samples collected and submitted?	YES	YES	YES	YES
	Composite samples collected and submitted?	YES	YES	YES	NO
	Trigger volume	7,899 gal	2,185 ft^3	9,313 gal	8,071 ft^3
	Sampler enable condition (in)	level > 2.4	level > 1.0	level > 2.25	level > 6.30
	Percent of storm flow sampled	95%	95%	92%	–
	Composite sample duration (hrs.)	2.0	3.0	1.5	–
	Storm precipitation (in)	0.13	0.16	0.13	0.13/0.13
March 29, 2023	Grab samples collected and submitted?	YES	YES	YES	YES
	Composite samples collected and submitted?	YES	YES	YES	YES
	Trigger volume	2,895 gal	800 ft^3	3,411 gal	2,960 ft^3
	Sampler enable condition (in)	level > 2.6	level > 2.5	level > 2.4	level > 6.7
	Percent of storm flow sampled	94%	81%	95%	98%
	Composite sample duration (hrs.)	5.0	3.5	4.0	5.5
	Storm precipitation (in)	0.09	0.10	0.09	0.09/0.12
August 21, 2023	Grab samples collected and submitted?	YES	YES	YES	NO
	Composite samples collected and submitted?	YES	YES	YES	YES
	Trigger volume	6,582.8 gal	1,821 ft^3	7,757.3 gal	6,726 ft^3
	Sampler enable condition (in)	level > 2.72	level > 1.30	level > 1.77	level > 4.91
	Percent of storm flow sampled	83%	90%	36%[1]	84%
	Composite sample duration (hrs.)	9.5	7.5	1.5	9.0
	Storm precipitation (in)	0.30	0.37	0.33	0.33/0.37

Notes:

-- = no data

[1] At the Main monitoring site, the volume of discharge sampled and total runoff volume were erratic and do not align with the precipitation data. The Environmental Protection Agency runoff calculation was performed to estimate the total event runoff and sampled runoff values based on impervious surface of the drainage basin to obtain the percent of storm flow sampled.

Table 2. Field Parameter Results					
Event Date	Monitoring Station	Field Parameters			
		Dissolved Oxygen	Temperature	pH	Conductivity
		mg/L	C	S.U.	µS/cm
October 22, 2022	Lucky	8.61	13.94	6.48	178.9
	Whitewater	7.41	14.85	6.89	231.9
	Main	8.18	17.07	6.41	242.3
	Americana	8.05	17.12	7.03	367.6
January 9, 2023	Lucky	9.04 [2R]	11.77 [2R]	6.90 [2R]	119.14 [2R]
	Whitewater	8.54 [2R]	10.04 [2R]	6.86 [2R]	147.42 [2R]
	Main	11.2 [2R]	6.14 [2R]	6.56 [2R]	231.0 [2R]
	Americana	9.98 [2R]	9.51 [2R]	6.60 [2R]	517.1 [2R]
March 10, 2023	Lucky	11.36	5.78	7.90	95.3
	Whitewater	10.92	6.04	6.83	462.62
	Main	10.68	7.99	7.90	420.12
	Americana	11.16	6.68	7.44	1282.6
March 29, 2023	Lucky	5.90 [3J]	10.99 [3J]	7.30 [3J]	222.85 [3J]
	Whitewater	7.70 [3J]	8.65 [3J]	7.43 [3J]	134.99 [3J]
	Main	10.10 [3J]	7.74 [3J]	7.93 [3J]	209.7 [3J]
	Americana	10.42 [3J]	7.65 [3J]	7.67 [3J]	481.7 [3J]
August 21, 2023	Lucky	7.17	20.65	7.29	62.65
	Whitewater	5.22 [3R]	23.15 [3R]	7.15 [3R]	130.88 [3R]
	Main	7.07 [3R]	22.21 [3R]	6.86 [3R]	95.3 [3R]
	Americana	–	–	–	–

Notes:

-- = no data

[2R] Data rejected due to insufficient rainfall (< 0.08 inches).

[3J] Data qualified due to insufficient rainfall (0.09–0.10 inches).

[3R] Data rejected due to collecting sample after composite sampling duration.

Table 3. Analytical Results

Event Date	Monitoring Station	Sample ID	Analytical Parameters																		
			E. coli	BOD_5	COD	Hardness as $CaCO_3$	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			MPN/100 mL	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
October 22, 2022	Lucky	221022-03-WG/WC	4040.0 [1J]	147 [2J]	323 [2J]	30.3 [2J]	51.1 [2J]	95.8 [2J]	163 [2J]	1.34 [2J]	0.985 [2J]	1.26 [2J]	0.740 [2J]	5.52 [2J]	2.6 [2J]	<0.025 [2J]	0.12 [2J]	8.6 [2J]	0.09 [2J]	2.6 [2J]	0.0125 [2J]	91.2 [2J]
	Whitewater	221022-11-WG/WC	770.1	875 [1R]	1310 [1R]	54.9 [1R]	79.6 [1R]	159 [1R]	681 [1R]	2.40 [1R]	1.71 [1R]	1.95 [1R]	1.54 [1R]	8.56 [1R]	4.2 [1R]	<0.025 [1R]	0.18 [1R]	14.6 [1R]	0.70 [1R]	11.3 [1R]	0.0344 [1R]	74.4 [1R]
	Main	221022-12-WG/WC	88.2	42.5 [2J]	146 [2J]	23.5 [2J]	58.1 [2J]	85.4 [2J]	73.5 [2J]	0.534 [2J]	0.337 [2J]	1.15 [2J]	0.454 [2J]	3.77 [2J]	2.2 [2J]	0.025 [2J]	0.14 [2J]	8.3 [2J]	0.28 [2J]	11.8 [2J]	0.0154 [2J]	65.9 [2J]
	Americana	221022-14-WG/WC	648.8	225 [2J]	416 [2J]	55.9 [2J]	62.5 [2J]	125 [2J]	244 [2J]	1.07 [2J]	0.712 [2J]	1.25 [2J]	0.927 [2J]	5.26 [2J]	5.1 [2J]	<0.025 [2J]	0.19 [2J]	10.1 [2J]	0.14 [2J]	8.2 [2J]	0.0147 [2J]	61.6 [2J]
January 9, 2023	Lucky	230109-03-WG	435.2 [2R]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Whitewater	230109-11-WG	235.9 [2R]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Main	230109-12-WG	172.2 [2R]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Americana	230109-14-WG	2850.0 [2R]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March 10, 2023	Lucky	230310-03-WG/WC	1986.3	26.4	411	–	219	444	82.0	–	–	0.283	–	6.80	–	–	–	–	–	–	0.0369	–
	Whitewater	230310-11-WG/WC	770.1	43.5	725	207	550	947	592	1.46	0.0678	0.309	0.166	9.06	9.6	–	0.65	–	–	55.7	0.0712	–
	Main	230310-12-WG/WC	579.4	19.7	540	151	408	809	384	0.743	–	0.380	–	5.31	8.3	–	0.54	–	–	59.7	0.0581	–
	Americana	230310-14-WG	547.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March 29, 2023	Lucky	230329-03-WG/WC	222.4 [3J]	–	–	34.5 [3J]	–	–	–	0.314 [3J]	0.104 [3J]	–	0.546 [3J]	–	1.9 [3J]	0.012 [3J]	0.026 [3J]	2.5 [3J]	0.096 [3J]	0.72 [3J]	–	12.2 [1,3J]
	Whitewater	230329-11-WG/WC	10.7 [3J]	8.04 [3J]	69.0 [3J]	56.6 [3J]	48.7 [3J]	–	–	0.273 [3J]	0.0993 [3J]	0.366 [3J]	0.373 [3J]	1.28 [3J]	1.8 [3J]	0.017 [3J]	0.045 [3J]	3.9 [2,3J]	0.25 [3J]	3.2 [3J]	<0.0100 [3J]	29.4 [3J]
	Main	230329-12-WG/WC	52.8 [3J]	12.1 [3J]	105 [3J]	44.7 [3J]	77.7 [3J]	54.0 [3J]	170 [3J]	0.209 [3J]	0.0869 [3J]	0.929 [3J]	0.671 [3J]	1.85 [3J]	2.1 [3J]	0.020 [3J]	0.081 [3J]	5.7 [3J]	0.089 [3J]	5.7 [3J]	0.0187 [3J]	33.4 [3J]
	Americana	230329-14-WG/WC	218.7 [3J]	9.64 [3J]	62 [3J]	133 [3J]	45.8 [3J]	38.6 [3J]	318 [3J]	0.205 [3J]	0.0914 [3J]	0.633 [3J]	1.08 [3J]	1.9 [3J]	3.6 [3J]	0.023 [3J]	0.065 [3J]	3.4 [2,3J]	0.08 [3J]	3.6 [3J]	0.03 [3J]	20.5 [3J]
August 21, 2023	Lucky	230821-03-WG/WC	20,140	16.9	85.0	23.1	21.6	26.6	79.2	0.439	0.214	0.211	0.410	5.28	1.2	0.014	0.034	4.7	0.086	0.68	<0.0100	48.5
	Whitewater	230821-11-WG/WC	27,550 [3R]	107	323	52.3	118	152	229	1.06	0.605	0.611	0.725	4.10	5.0	0.017	0.13	10.2	0.25	7.3	0.0195	48.6
	Main	230821-12-WG/WC	9,850 [3R]	46.1 [1R]	222 [1R]	46.3 [1R]	79.9 [1R]	197 [1R]	166 [1R]	0.558 [1R]	0.222 [1R]	1.36 [1R]	0.817 [1R]	2.14 [1R]	3.8 [1R]	0.057 [1R]	0.2 [1R]	13.7 [1R]	0.38 [1R]	13.8 [1R]	0.0446 [1R]	112 [1R]
	Americana	230821-14-WC	–	67.7	213	57.7	57.1	80.0	184	0.625	0.355	0.676	0.758	3.41	3.6	0.023	0.13	9.0 [1]	0.22	5.6	0.0118	62.5

Notes:

– = no data

[1] Analytical parameter is qualified due to being less than five times the value detected in the rinsate blank. See Table 6 for rinsate blank results.

[2] Analytical parameter is qualified due to being less than five times the value detected in the equipment blank. See Table 6 for equipment blank results.

[1J] Sample qualified due to exceeded hold time.

[1R] Data rejected due to lack of representativeness (< 50%).

[2J] Data qualified due to lack of representativeness (50%–75%).

[2R] Data rejected due to insufficient rainfall (< 0.08 inches).

[3J] Data qualified due to insufficient rainfall (0.09–0.10 inches).

[3R] Data rejected due to collecting sample after composite sampling duration.

WG = Wet grab sample.

WC = Wet composite sample.

Table 4. Event Loading for Monitored Drainages in Pounds						
Event Date	Monitoring Station	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
October 22, 2022	Lucky	243 [2J]	3.40 [2J]	3.19 [2J]	1.88 [2J]	14.0 [2J]
	Whitewater	559 [1R]	8.43 [1R]	6.85 [1R]	5.41 [1R]	30.1 [1R]
	Main	299 [2J]	1.88 [2J]	4.04 [2J]	1.60 [2J]	13.2 [2J]
	Americana	2723 [2J]	23.3 [2J]	27.2 [2J]	20.2 [2J]	115 [2J]
January 9, 2023	Lucky	–	–	–	–	–
	Whitewater	–	–	–	–	–
	Main	–	–	–	–	–
	Americana	–	–	–	–	–
March 10, 2023	Lucky	262	–	0.167	–	–
	Whitewater	718	1.11	0.234	0.126	6.87
	Main	613	0.563	0.288	–	4.03
	Americana	–	–	–	–	–
March 29, 2023	Lucky	–	0.0277 [3J]	–	0.0482 [3J]	–
	Whitewater	–	0.0678 [3J]	0.0909 [3J]	0.0927 [3J]	0.318 [3J]
	Main	13.4 [3J]	0.0519 [3J]	0.231 [3J]	0.167 [3J]	0.460 [3J]
	Americana	132 [3J]	0.700 [3J]	2.16 [3J]	3.69 [3J]	6.49 [3J]
August 21, 2023	Lucky	29.1	0.480	0.231	0.449	5.78
	Whitewater	379	2.64	1.52	1.81	10.2
	Main	768 [1R]	2.18 [1R]	5.30 [1R]	3.19 [1R]	8.34 [1R]
	Americana	729	5.70	6.16	6.91	31.1

Notes:

-- = no data

[1R] Data rejected due to lack of representativeness (< 50%).

[2J] Data qualified due to lack of representativeness (50%–75%).

[3J] Data qualified due to insufficient rainfall (0.09–0.10 inches).

Table 5. Event Loading in Pounds/Acre						
Event Date	Monitoring Station	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
October 22, 2022	Lucky	2.31 [2J]	0.0324 [2J]	0.0304 [2J]	0.0179 [2J]	0.133 [2J]
	Whitewater	1.12 [1R]	0.0169 [1R]	0.0138 [1R]	0.0109 [1R]	0.0604 [1R]
	Main	3.78 [2J]	0.0238 [2J]	0.0511 [2J]	0.0203 [2J]	0.167 [2J]
	Americana	3.11 [2J]	0.0266 [2J]	0.0311 [2J]	0.0231 [2J]	0.131 [2J]
January 9, 2023	Lucky	–	–	–	–	–
	Whitewater	–	–	–	–	–
	Main	–	–	–	–	–
	Americana	–	–	–	–	–
March 10, 2023	Lucky	2.50	–	0.00159	–	–
	Whitewater	1.44	0.00222	0.000470	0.000253	0.0138
	Main	7.76	0.00713	0.00365	–	0.0510
	Americana	–	–	–	–	–
March 29, 2023	Lucky	–	0.000264 [3J]	–	0.000459 [3J]	–
	Whitewater	–	0.000136 [3J]	0.000183 [3J]	0.000186 [3J]	0.000639 [3J]
	Main	0.170 [3J]	0.000657 [3J]	0.00292 [3J]	0.00211 [3J]	0.00582 [3J]
	Americana	0.151 [3J]	0.000800 [3J]	0.00247 [3J]	0.00422 [3J]	0.00742 [3J]
August 21, 2023	Lucky	0.277	0.00457	0.00220	0.00427	0.0550
	Whitewater	0.761	0.00531	0.00306	0.00363	0.0205
	Main	9.72 [1R]	0.0276 [1R]	0.0671 [1R]	0.0404 [1R]	0.106 [1R]
	Americana	0.834	0.00651	0.00704	0.00790	0.0355

Notes:

– = no data

[1R] Data rejected due to lack of representativeness (< 50%).

[2J] Data qualified due to lack of representativeness (50%–75%).

[3J] Data qualified due to insufficient rainfall (0.09–0.10 inches).

Table 6. QC Sample Results

Event Date	Parent Sample	Sample ID	QC Sample Type	Analytical Parameters																		
				E. coli	BOD_5	COD	Hardness as $CaCO_3$	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
				mpn/100 mL	mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
October 22, 2022	Lucky grab	221022-03-001	Field blank	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Lucky grab	221022-03-101	Field duplicate	4950	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Calculated parent/duplicate RPD			**2%**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
January 9, 2023	Main grab	230109-12-001	Field Blank	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Main grab	230109-12-101	Field Duplicate	69.7	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Calculated parent/duplicate RPD			**13%**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
March 29, 2023	Lucky grab	230329-03-001	Field Blank	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	--	–	–	–	–	–	–
	Lucky grab	230329-03-101	Field Duplicate	313	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Calculated parent/duplicate RPD			**4%**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
August 21, 2023	Lucky grab	230821-03-001	Field Blank	< 1.0	–	–	–	–	–	–	–	–	–	–	–	–	--	–	–	–	–	–	–
	Lucky grab	230821-03-101	Field Duplicate	4730	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Calculated parent/duplicate RPD			**11%**	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
October 2, 2023	–	231002-12-004	Rinsate blank	–	< 2.00	7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.0030	0.0370	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	0.25	< 0.0090	0.0220	< 0.0100	0.73
	–	231002-12-003	Equipment blank	–	< 2.00	7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.0030	0.0560	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	0.18	< 0.0090	< 0.0100	< 0.0100	0.80
October 4, 2023	–	231004-11-004	Rinsate blank	–	< 2.00	< 7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	0.0099	< 0.0350	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	1.20	0.0100	0.0120	< 0.0100	1.20
	–	231004-11-003	Equipment blank	–	< 2.00	< 7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.0030	< 0.0350	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	2.20	0.0180	0.0250	< 0.0100	1.40
October 5, 2023	–	231005-14-004	Rinsate blank	–	< 2.00	< 7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.0030	< 0.0350	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	2.00	0.0120	0.0220	< 0.0100	0.77
	–	231005-14-003	Equipment blank	–	< 2.00	< 7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.0030	< 0.0350	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	0.50	< 0.0090	< 0.0100	< 0.0100	0.55
	–	231005-03-004	Rinsate blank	–	< 2.00	< 7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.0030	< 0.0350	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	0.28	< 0.0090	< 0.0100	< 0.0100	3.00
	–	231005-03-003	Equipment blank	–	< 2.00	< 7.0	< 0.100	< 0.3	< 0.900	< 20.0	< 0.0120	< 0.0030	< 0.0350	< 0.0250	< 0.200	< 0.0700	< 0.0100	< 0.0100	0.41	< 0.0090	0.0210	< 0.0100	1.40
Allowable RPD				40%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%

– = No data

Cells highlighted in gray are flagged for discussion.

Appendix C: Storm Event Reports

Storm Event Report No. 1: October 22, 2022

Storm Event Report No. 2: January 9, 2023

Storm Event Report No. 3: March 10, 2023

Storm Event Report No. 4: March 29, 2023

Storm Event Report No. 5: May 5, 2023

Storm Event Report No. 6: August 21, 2023

Storm Event Report for October 22, 2022

Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 208-389-7700

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2023

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for October 22, 2022

Date: January 19, 2023

To: Tammy Lightle

Cc: Monica Lowe

From: Shannon Kronz, Project Engineer

Prepared by: Shannon Kronz, Project Engineer

Reviewed by: Melissa Jannusch, Project Manager

Limitations:

This document was prepared solely for ACHD in accordance with professional standards at the time the services were performed and in accordance with the contract between ACHD and Brown and Caldwell dated September 30, 2022. This document is governed by the specific scope of work authorized by ACHD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACHD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2023 (October 1, 2022, through September 30, 2023). The following storm event report summarizes stormwater sampling results from the October 22, 2022, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2023 Phase I Stormwater Outfall Monitoring.

Table 2-1. WY 2023 Samples Collected

Date	Lucky	Whitewater	Main	Americana	AS_6
October 22, 2022	G[1], C[2]	G, C[3]	G, C[2]	G, C[2]	G, C[2]
Collected:		1G	1G	1G	1G

Notes:

C = composite sample

G = grab sample

[1] E. coli *sample qualified due to exceeded holding time.*

[2] *Composite samples qualified due to lack of representativeness (50%–75%).*

[3] *Composite samples rejected due to lack of representativeness (<50%).*

After the October 22, 2022, storm event, ACHD still needs to collect two grab samples from Whitewater, Main, Americana, and AS_6 and three grab samples from Lucky for WY 2023. In addition, three composite samples need to be collected from all Phase I monitoring sites.

Section 3: Storm Event Summary

The October 22, 2022, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from October 21, 2022, is included in Attachment A for reference.

Friday, October 21, 2022

- On the morning of October 21, 2022, the National Weather Service issued a forecast for widespread rain in the Boise area, starting the evening of October 21, 2022, and continuing into October 22, 2022. Rain shadowing was not expected. The chance of precipitation was 100 percent, with 0.58 inch of precipitation forecasted.
- Setup was accomplished on October 21, 2022. An expected precipitation depth of 0.30 inch was used to set trigger volumes at monitoring stations.

Saturday, October 22, 2022

- Steady rain started at approximately 2230 on Friday evening and continued until 0600 Saturday, with the heaviest wave between 0400 and 0500.
- Precipitation totals ranged between 0.70 and 0.84 inch at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrographs for each site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana, and AS_6 monitoring stations were set up on October 21, 2022, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programed into the Lucky, Whitewater, Main, and Americana flowmeters. A site-specific velocity cutoff value was programmed into the AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling can be found in Attachment C.

Grab Samples

Two, two-member teams mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment around midnight on October 22, 2022. Grab samples were submitted to the West Boise Water Quality Lab at 0234 on October 22. Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are located in Attachment D.

Composite Samples

Composite samples were collected at Lucky, Whitewater, Main, Americana, and AS_6 monitoring stations. Volumes of the composite samples submitted were sufficient for all parameters. The composite samples were submitted to the West Boise Water Quality Lab at 1052 on October 22. Analytical results are included in Table 2. Pollutant loading estimates for the event are detailed in Table 3.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the October 22, 2022, storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the Lucky monitoring station. The analytical results for these samples are included in Table 4.

Table 4-1. Quality Control Samples

Sample ID	Sample Type	Parent Sample	Conclusions
221022-03-001	Field blank	Lucky grab	No *E. coli* detection was reported in the field blank.
221022-03-101	Field duplicate	Lucky grab	Relative percent difference was within the acceptable range.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. The accepted holding time for *E. coli* samples is 8 hours. The grab sample and field duplicate sample collected at Lucky were analyzed outside of the acceptable holding time, and the reported values are considered estimates.

An accepted composite sample represents at least 75 percent of the total discharge or at least 6 hours of the storm duration. The composite samples collected at Lucky, Main, Americana, and AS_6 represented between 57–67 percent of total discharge over 4–5 hours and are, therefore, qualified. The composite sample collected at Whitewater represented 36 percent of the total discharge over 3.5 hours and is rejected.

All other acceptance and performance measured for analytical and non-analytical criteria were met for this storm event.

Data Tables

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	YES	YES
Composite samples collected and submitted?	YES	YES	YES	YES	YES
Trigger volume (ft^3)	7899 gal	2,185	9,313 gal	8,071	602
Velocity cutoff (fps)	–	–	–	–	0.02
Sampler enable condition (in)	level > 3.6	level > 2.0	level > 2.2	level > 6.75	–
Runoff start time	2358 [1]	0108	0000	1139 [1]	0035
Grab sample collection time	0124	0157	0024	0042	0106
Composite sample stop time	0523	0450	0504	0509	0521
Runoff stop time	1004	1059	0944	1059	0909
Volume of discharge sampled (ft^3)	27,092	50,999	32,165	202,385	14,558
Total runoff volume (ft^3)	40,606	143,500	56,293	348,982	22,988
Percent of storm flow sampled (%)	67%	36%	57%	58%	63%
Composite sample duration (hrs)	4.5	3.5	4.5	5.0	4.0
Storm precipitation (in)	0.70	0.70	0.71	0.71/0.84	0.71/0.84
Referenced rain gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	24	23	24	24	24
Number of composite bottles filled	1	1	1	1	1
Composite sample volume (Approx.; ml)	14,750	13,250	14,000	14,000	14,750

Notes:

[1] Runoff started on 10/21/22.

Table 2. Field and Analytical Data Summary

Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				Analytical Parameters																					
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli	Sample ID Composite	BOD_5	COD	Hardness as $CaCO_3$	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C	mpn/100 mL		mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	10/22/2022	221022-03-WG	8.61	6.48	178.9	13.94	4040.0 [1J]	221022-03-WC	147 [2J]	323 [2J]	30.3 [2J]	51.1 [2J]	95.8 [2J]	163 [2J]	1.34 [2J]	0.985 [2J]	1.26 [2J]	0.740 [2J]	5.52 [2J]	2.6 [2J]	<0.025 [2J]	0.12 [2J]	8.6 [2J]	0.09 [2J]	2.6 [2J]	0.0125 [2J]	91.2 [2J]
Whitewater	10/22/2022	221022-11-WG	7.41	6.89	231.9	14.85	770.1	221022-11-WC	875 [1R]	1310 [1R]	54.9 [1R]	79.6 [1R]	159 [1R]	681 [1R]	2.40 [1R]	1.71 [1R]	1.95 [1R]	1.54 [1R]	8.56 [1R]	4.2 [1R]	<0.025 [1R]	0.18 [1R]	14.6 [1R]	0.70 [1R]	11.3 [1R]	0.0344 [1R]	74.4 [1R]
Main	10/22/2022	221022-12-WG	8.18	6.41	242.3	17.07	88.2	221022-12-WC	42.5 [2J]	146 [2J]	23.5 [2J]	58.1 [2J]	85.4 [2J]	73.5 [2J]	0.534 [2J]	0.337 [2J]	1.15 [2J]	0.454 [2J]	3.77 [2J]	2.2 [2J]	0.025 [2J]	0.14 [2J]	8.3 [2J]	0.28 [2J]	11.8 [2J]	0.0154 [2J]	65.9 [2J]
Americana	10/22/2022	221022-14-WG	8.05	7.03	367.6	17.12	648.8	221022-14-WC	225 [2J]	416 [2J]	55.9 [2J]	62.5 [2J]	125 [2J]	244 [2J]	1.07 [2J]	0.712 [2J]	1.25 [2J]	0.927 [2J]	5.26 [2J]	5.1 [2J]	<0.025 [2J]	0.19 [2J]	10.1 [2J]	0.14 [2J]	8.2 [2J]	0.0147 [2J]	61.6 [2J]
AS_6	10/22/2022	221022-206-WG	8.30	7.08	325.9	14.83	1299.7	221022-206-WC	680 [2J]	1200 [2J]	51.3 [2J]	106 [2J]	301 [2J]	542 [2J]	2.84 [2J]	1.96 [2J]	1.5 [2J]	0.890 [2J]	9.29 [2J]	4.5 [2J]	<0.025 [2J]	0.23 [2J]	13.6 [2J]	0.77 [2J]	15.0 [2J]	0.0309 [2J]	119 [2J]

Notes:

[1J] Sample qualified due to exceeded hold time

[2J] Data qualified due to lack of representativeness (50% - 75%)

[1R] Data rejected due to lack of representativeness (<50%)

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	10/22/2022	243 [2J]	3.40 [2J]	3.19 [2J]	1.88 [2J]	14.0 [2J]
Whitewater	10/22/2022	559 [1R]	8.43 [1R]	6.85 [1R]	5.41 [1R]	30.1 [1R]
Main	10/22/2022	299 [2J]	1.88 [2J]	4.04 [2J]	1.60 [2J]	13.2 [2J]
Americana	10/22/2022	2723 [2J]	23.3 [2J]	27.2 [2J]	20.2 [2J]	115 [2J]
AS_6	10/22/2022	432 [2J]	4.07 [2J]	2.15 [2J]	1.28 [2J]	13.3 [2J]

Notes:

[2J] Data qualified due to lack of representativeness (50% - 75%)

[1R] Data rejected due to lack of representativeness (<50%)

Table 4. QC Sample Summary				
Date	Parent Sample	Sample ID	Type	E. coli
				mpn/100 mL
10/22/2022	221022-03-WG	221022-03-001	Field Blank	<1.0
10/22/2022	221022-03-WG	221022-03-101	Field Duplicate	4950
Calculated parent/duplicate RPD				2%
Allowable RPD				40%

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 10/21/2022	Time: 7:52 AM	Initials: TL
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.00”
Date and time of expected event	10/21 6pm
Expected amount of precipitation	0.58”
Percent chance of precipitation	100%
Percent chance of >0.10” over 12 hours	95%

NWS Update

I spoke with Anna at NWS this morning. They are very confident that we will get >0.10”. It is looking like we will get a bit of sprinkles coming in starting around 6pm, but the bulk of the rain should be arriving around 11pm-12am, with the heaviest rain from 1am-5am. The totals from 12am – 6am are 0.30” and the totals from 6am on are another 0.20”. The rain is going to be widespread, with little to no chance of rain shadowing. The models are in good agreement, with the median precip amount for the 24 hour period being 0.40”.

Targeted Station & Samples

Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☐ Equipment Concerns:
☐ Other:

Text Forecast

NWS Forecast for: 2 Miles SW Garden City ID
Issued by: National Weather Service Boise, ID
Last Update: 3:44 am MDT Oct 21, 2022

Today: Mostly sunny, with a high near 67. Calm wind becoming west northwest 5 to 7 mph in the afternoon.
Tonight: Rain. Low around 44. Calm wind becoming south southwest 5 to 9 mph after midnight. Chance of precipitation is 100%. New precipitation amounts between a quarter and half of an inch possible.
Saturday: Showers. Steady temperature around 47. West northwest wind around 14 mph. Chance of precipitation is 80%. New precipitation amounts between a tenth and quarter of an inch possible.
Saturday Night: A 30 percent chance of showers before midnight. Mostly cloudy, with a low around 33. West northwest wind around 9 mph.
Sunday: Mostly sunny, with a high near 51. Northwest wind 8 to 15 mph.
Sunday Night: Mostly clear, with a low around 30.
Monday: A 20 percent chance of showers after noon. Mostly sunny, with a high near 52.
Monday Night: A 40 percent chance of showers, mainly before midnight. Mostly cloudy, with a low around 38.

Tuesday: A 20 percent chance of showers after noon. Mostly cloudy, with a high near 53.
Tuesday Night: A 40 percent chance of showers. Mostly cloudy, with a low around 38.
Wednesday: A 50 percent chance of showers. Mostly cloudy, with a high near 51.
Wednesday Night: A 20 percent chance of showers. Mostly cloudy, with a low around 32.
Thursday: Mostly sunny, with a high near 50.

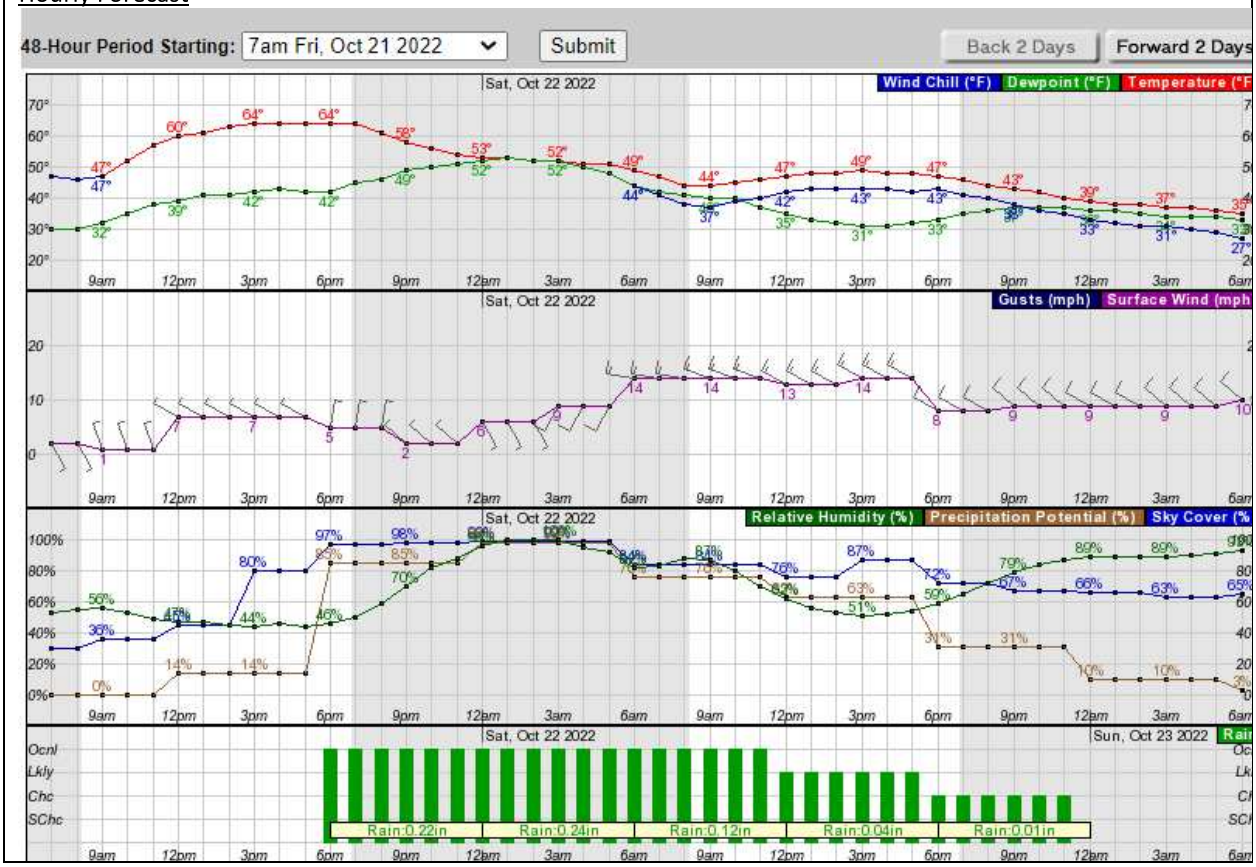
Forecast Discussion
Area Forecast Discussion
National Weather Service Boise ID
333 AM MDT Fri Oct 21 2022

.SHORT TERM...Today through Sunday night...Today will be the last dry and mild day for most of the area before the onset to a significant pattern change to cool wet and windy conditions this weekend. Precipitation will start to develop across the north - mainly from Baker County to the West Central ID Mountains - later this afternoon as **a moist and vigorous low pressure system enters the Pacific Northwest. The precipitation will overspread the area from north to south tonight with widespread rain** and high-elevation snow. Snow levels will lower to around 7000 feet in the north and remain high (above 9000 feet) near the Nevada border. Gusty winds will also develop ahead of a cold front this afternoon. The winds will continue to increase and become windy this evening, and remain windy through Saturday with the passage of a cold front and the arrival of colder air behind it. Winds will be near advisory levels in the higher elevations of Harney/Malhuer County in SE Oregon and Owyhee County in SW Idaho. Snow levels will continue to lower on Saturday, reaching down to 4500-5500 feet. **The widespread precipitation will transition to showers on Saturday** as the cold unstable upper trough settles into the region. Snow accumulations will be mainly confined to the higher elevations above 6000 feet where several inches are expected. **Rain and snow showers will persist through Saturday night with additional light snowfall accumulations above 4500 feet.** Winds will diminish, but it will remain breezy overnight. The upper trough will continue to develop on Sunday while slowly drifting to our east. Snow showers will linger over the higher elevations of SW Idaho, although with little or no additional snow accumulation. Models have ramped up the wind speeds/gusts on Sunday, especially in far SW Idaho. Winds will approach advisory levels in a corridor from south of Boise to the Nevada border. Temperatures will trend colder each day, with highs only in the 40s and 50s in the valleys. Lows Sunday morning will be around 32F in some locations in the Snake Plain, with evening colder temperatures (mid 20s-low 30s) forecast on **Monday morning for the first widespread freeze event this season.**

.LONG TERM...Monday through Friday...**Active weather pattern continues with a weak trough passage on Monday. This will bring mountain snow and valley rain showers.** Snow amounts will be light. A brief break in the precipitation follows for Tuesday as the flow shifts to the west-southwest. Ensembles are split with the

next system mid-week. Deterministic along with about 55% of the ensembles favor another trough passage with the remaining 45% favoring another upper level ridge. Current forecast favors another cold trough passage Wednesday but confidence remains low. A drier conditions follow into the weekend with weak ridging over the Intermountain West. Temperatures will average around 5 degrees below normal.

Hourly Forecast



Storm Event QA/QC Checklist – Phase I

STORM DATE 22/0/22

A. Event and Data Completeness	Yes	No	N/A	Notes
1. Field data sheets filled out completely and clearly	X			
2. Field parameters reviewed, and any problems/issues addressed	X			
3. All samples collected as specified	X			
4. All samples delivered to lab promptly (review chain of custody rpts)	X			
5. Inconsistencies/clarifications discussed with sampling team member	X			reviewed QC sample times
6. All analytical reports from lab received	X			

B. Validation and Verification Methods	Yes	No	N/A	Notes
1. Outliers and unexpected values discussed with lab			X	
2. Appropriate analytical methods used	X			
3. All lab QA samples were within method acceptance criteria	X			
4. All samples reviewed and data qualifiers assigned if needed	X			
5. Data quality objective achieved	X			

C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.00	0.00	0.00	0.00	0.00	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.70	0.70	0.71	.71/.84	.71/.84	> 0.10"	X		
3. Sampled amount (% of total run-off)	67	36	57	58	63	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject		X	WW X
4. Composite sample duration (hours)	4.5	3.5	4.5	5.0	4.0				
4. Ecoli sample holding time (hours)	12	6	7.75	7.5	7	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject	X	Lucky X	
5. Filtering of samples for dissolved parameter analysis (hours)	8.5	7	8.5	8	6.5	<= 24 hrs: no qualifier > 24 hrs.: reject	X		

D. Notes

Reviewed by Tamara Tyler **Date** 12.01.22

Approved by Monica Love **Date** 12/2/22

Storm Runoff Estimates and Trigger Volumes

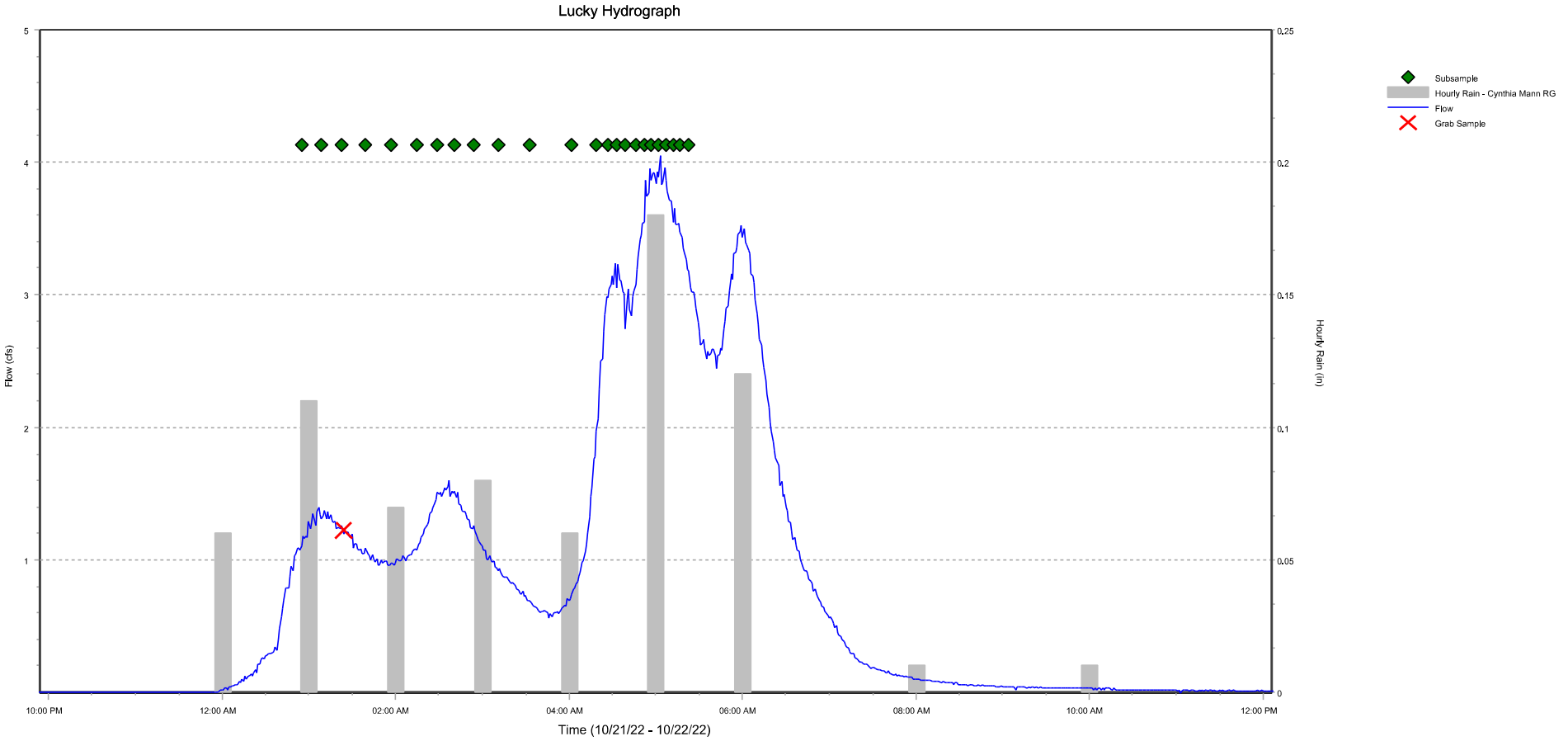
Simple Method

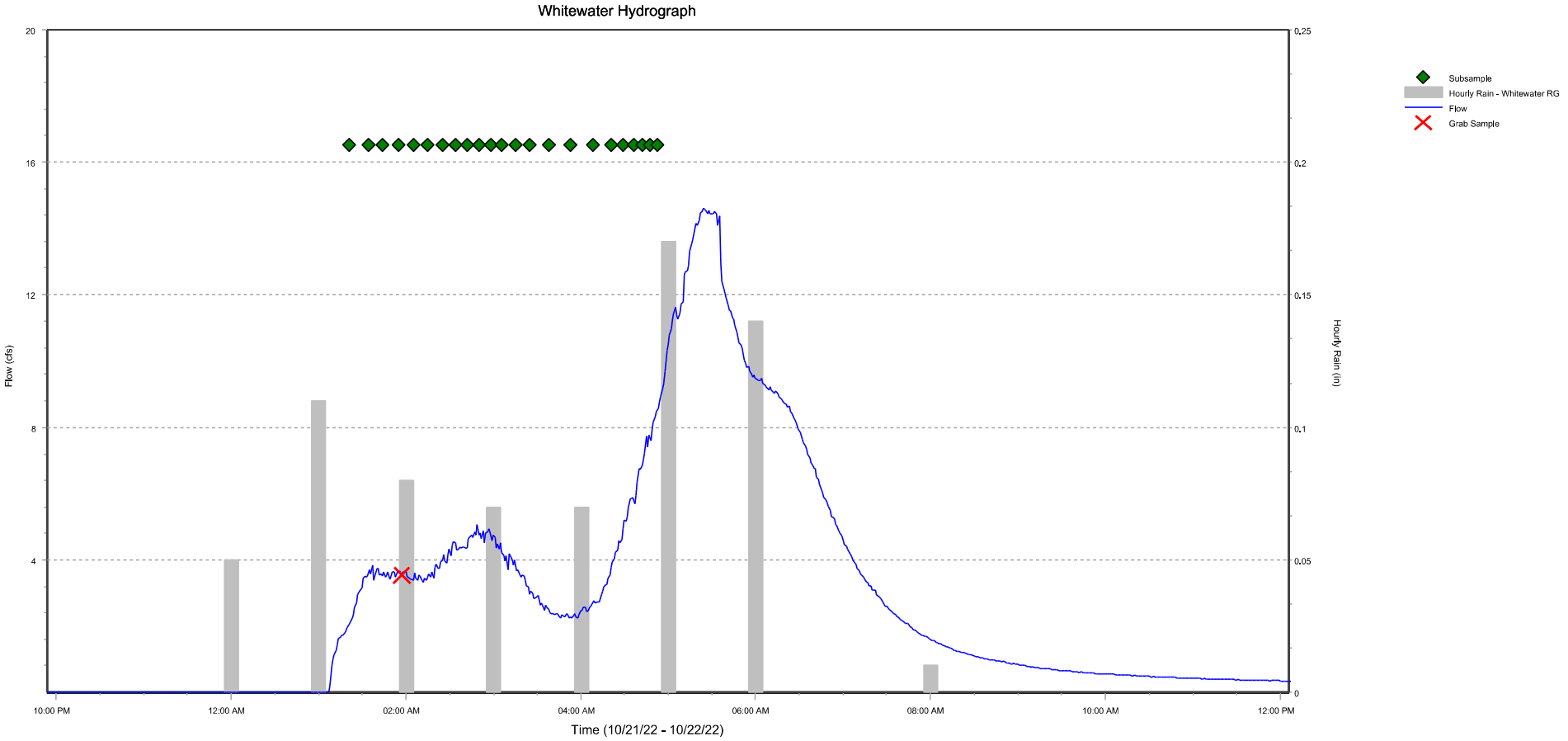
Expected Precipitation Depth =	0.3	in
Square Feet per Acre =	43560	ft^2/ac
Inches per Foot=	12	in/ft
Aliquots per Sample=	17	

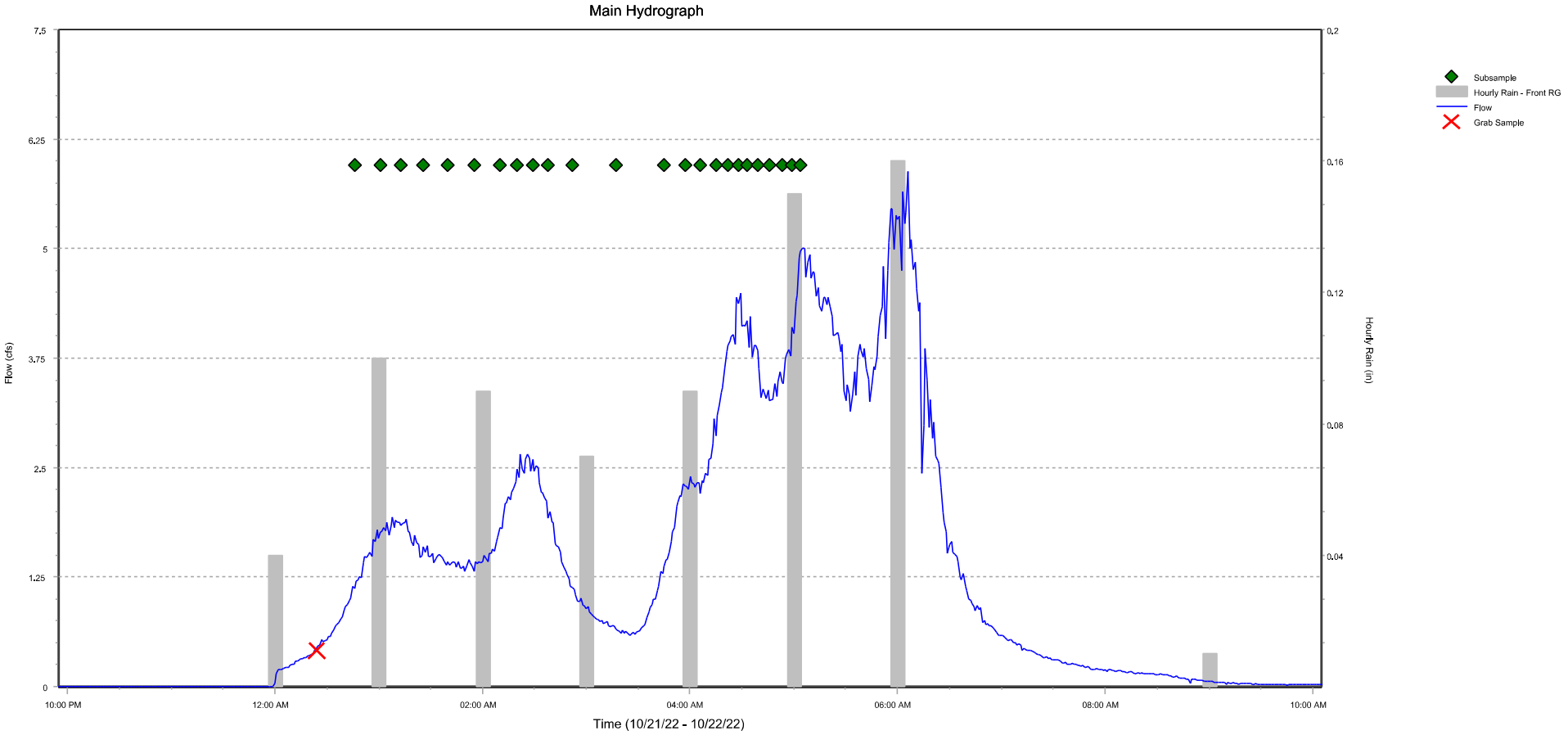
Step 1. Enter runoff coefficients in yellow cells.
Step 2. Enter expected precipitation depth in inches in blue cell.
Step 3. Read trigger volumes (**bold**) in green cells.

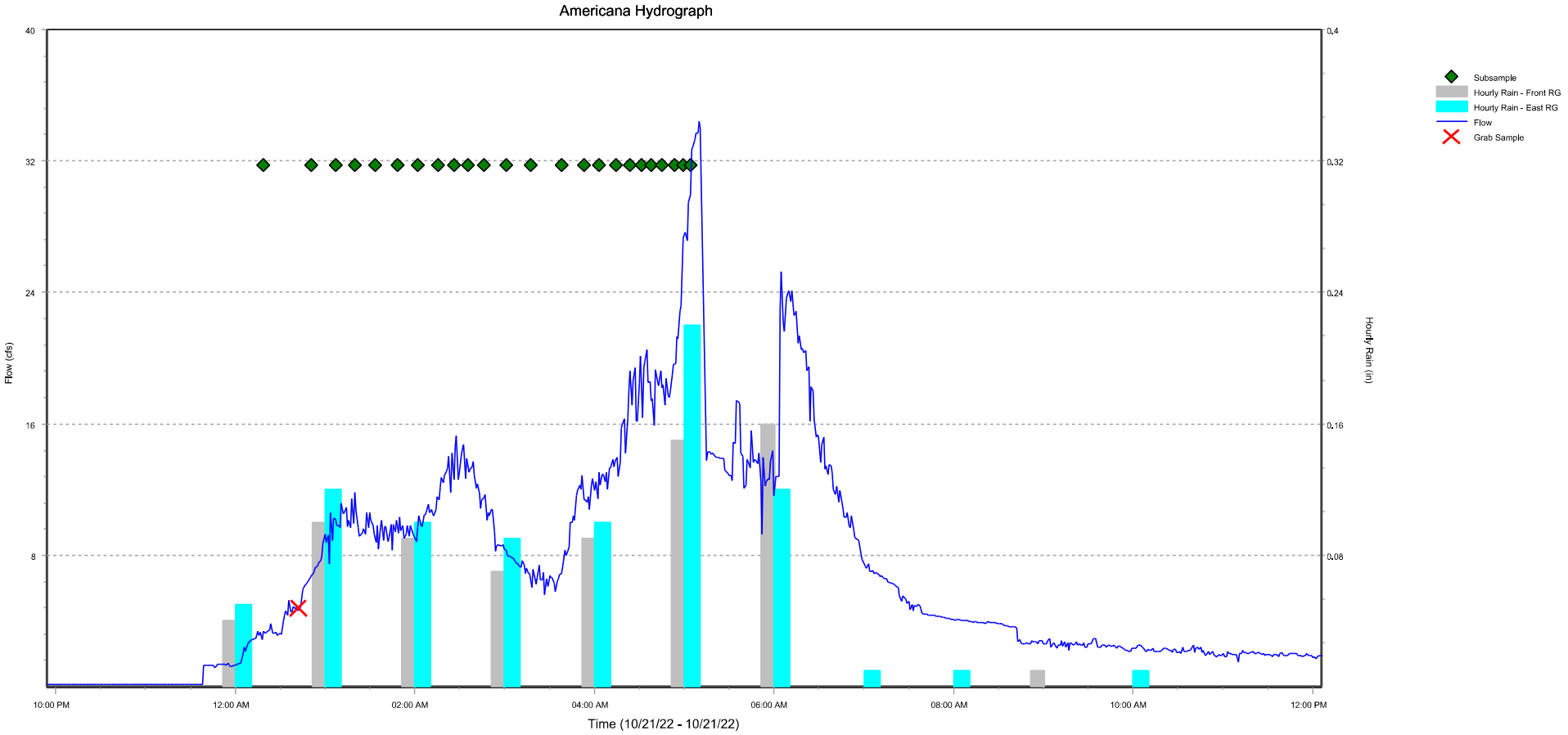
Site	Area (ac)	Using RC Based on Land Use			Using Manually-entered RC				Used in Field
		RC	Expected Vol. (ft^3)	Trigger Vol. (ft^3)	RC	Expected Vol. (ft^3)	Trigger Vol. (ft^3)	Trigger Vol. (Gal)	Trigger Vol.
Lucky #3	105	0.401	45852	**2697**	0.157	17952.17	**1056**	7899	7899 ft^3
Whitewater #11	498	0.437	236995	**13941**	0.116	62909.35	**3701**	27683	2185 ft^3
Main #12	79	0.437	37596	**2212**	0.246	21163.63	**1245**	9313	9313 gal
Americana #14	875	0.446	424982	**24999**	0.144	137214.00	**8071**	60371	8071 ft^3
AS_6 #206	204	0.257	57094	**3358**	0.046	10241.39	**602**	4503	602 gal

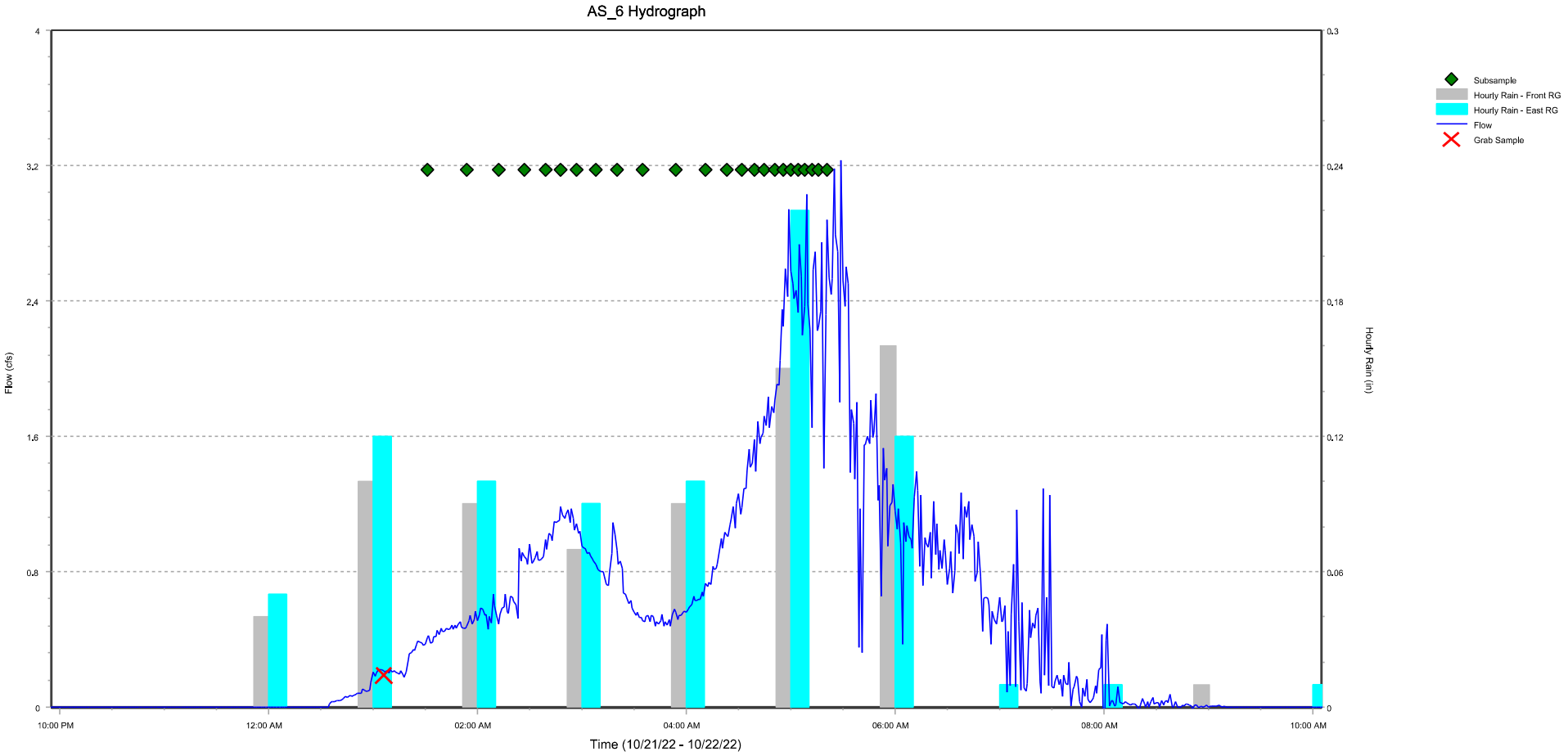
Attachment B: Storm Event Hydrographs


Lucky Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (10/21/22 - 10/22/22)
10:00 PM
12:00 AM
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
Subsample
Hourly Rain - Cynthia Mann RG
Flow
Grab Sample


Whitewater Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (10/21/22 - 10/22/22)
10:00 PM
12:00 AM
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
20
16
12
8
4
0.25
0.2
0.15
0.1
0.05
0
Subsample
Hourly Rain - Whitewater RG
Flow
Grab Sample


Main Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (10/21/22 - 10/22/22)
7.5
6.25
5
3.75
2.5
1.25
0
0.2
0.16
0.12
0.08
0.04
10:00 PM
12:00 AM
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
Subsample
Hourly Rain - Front RG
Flow
Grab Sample


Americana Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (10/21/22 - 10/21/22)
40
32
24
16
8
0.4
0.32
0.24
0.16
0.08
10:00 PM
12:00 AM
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
Subsample
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample


AS_6 Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (10/21/22 - 10/22/22)
10:00 PM
12:00 AM
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
0
0.8
1.6
2.4
3.2
4
0
0.06
0.12
0.18
0.24
0.3
Subsample
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample

Attachment C: Field Forms

Set Up/ Shut Down Form – HACH

TATION: Lucky

SET UP

Personnel: SMK, TLL

Date/Time On-Site: 10/21/22 1332

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1336	2.14	0	0	12.8

Enable Condition or Velocity Cutoff:	3.6 in
Deadband:	1.5 in
Trigger Volume:	7899 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☐ Install 15L sample bottle, with ice
- ☐ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☐ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☐ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☐ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 10.24.22 1142

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1144	2.05	0	0		12.3
	Downloaded to:	USB			

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Lucky **Bottle** 1 **of** 1

Personnel: TLL, SMK **Date/Time On-Site:** 10.22.22 / 0900

☑ Halt sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	221022-03 -WC
Approx Sample Volume (mL):	14750
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Dark Brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	10/22 ~~09~~ 00 55	Success	13	10/22 04:19	Success
2	01:09		14	04:27	
3	01:23		15	04:33	
4	01:39		16	04:39	
5	01:57		17	04:46	
6	02 15		18	04:52	
7	02:29		19	04:57	
8	02:41		20	05 02	
9	02:54		21	05 07	
10	03 11		22	05:12	
11	03:33		23	05:17	
12	04:02		24	05:23	

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle, add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	~~15500 mL~~
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Lucky

Personnel: SMK, DEB **Date/Time On-Site:** 10/22/22 00:25

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
01:35	7.13	480.74	1.20	12.8	00:30	—

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	221022-03 -WG	10/22/22	01:24	☑
Field Duplicate *E.Coli*	221022-03 -101	10/22/22	~~1:27~~ 12:00	☑
Field Blank *E.Coli*	221022-03 -001	10/22/22	12:00	☑

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	01:32	13.94	8.61	6.48	178.9

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

Set Up/ Shut Down Form – ISCO

TATION: Whitewater

SET UP

Personnel: TLL, SMR

Date/Time On-Site: 10/21/22 12:58

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1001	0.48	0	0.15	—
1258	0.49	0	0.15	—
Enable Condition:	level > 2"			
Hysteresis:	1.5"			
Flow Pulse Interval:	2185 cf			

On-Site
- ☑ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)
- ☒ Direct or Remote; Date/time 10/21 1001
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 10.24.22 / 1124

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1125	0.15	0	0.05	—
Downloaded to:	—			

On-Site
- ☐ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)
- ☒ Direct or Remote Date/time 10/25 1029
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: White Water **Bottle** 1 **of** 1

Personnel: TLL, SMK **Date/Time On-Site:** 10/22/22 09:20

☑ Halt sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	221022-11 -WC
Approx Sample Volume (mL):	13250 mL
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Very dark brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	10122122 01:19	Success	13	10122122 03:13	Success
2	01:32		14	03:23	
3	01:42		15	03:36	
4	01:53		16	03:51	
5	02:03		17	04:06	
6	02:13		18	04:19	
7	02:23		19	04:27	
8	02:31		20	04:34	
9	02:40		21	04:40	
10	02:48		22	04:45	
11	02:56		23	04:50	
12	03:04		24	04:54	Power failed

Comments:

Battery J

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle; add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Whitewater

Personnel: SMK, DEB **Date/Time On-Site:** 10/22/22 01:49

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
01:49	7.54	3.42	2.21	–	1:45	

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	221022-11 · -WG	10/22/22	01:57	☑
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	02:00	14.85	7.41	6.89	231.9

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

Set Up/ Shut Down Form – HACH

TATION: Main

SET UP

Personnel: TLL, SMK

Date/Time On-Site: 10/21/22 1144

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1147	1.19	0	0	13.4

Enable Condition or Velocity Cutoff:	level > 2.2"
Deadband:	1.0"
Trigger Volume:	9313 gal

- [x] Install batteries on flowmeter and sampler
- [x] Perform decon. cycle
- [x] Install 15L sample bottle, with ice
- [x] Leave bottle lid at site, in a clean re-sealable plastic bag
- [x] Verify all cable and tubing connections
- [x] Check date and time on flowmeter and sampler
- [x] Set flowmeter program and sampler program parameters
- [x] Set logging interval to 1 minute
- [x] Start flowmeter program and sampler program
- [x] Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 10.24.22 / 1057

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1101	1.21	0	0		12.2
Downloaded to:		USB			

If flow monitoring is complete:	**If continuing to monitor flow:**
☐ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Main **Bottle** 1 **of** 1

Personnel: SMK, TLL **Date/Time On-Site:** 10/22/22 0155

☑ Halt sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	221022-12 -WC
Approx Sample Volume (mL):	14000
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	10/22/22 0046	Success	13	10/22/22 0345	Success
2	0101		14	0357	
3	0113		15	0406	
4	0126		16	0415	
5	0140		17	0422	
6	0155		18	0428	
7	0210		19	0433	
8	0220		20	0439	
9	0229		21	0446	
10	0238		22	0453	
11	0252		23	0459	
12	0317		24	0504	

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle, add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Main

Personnel: TL, STm **Date/Time On-Site:** 10/22/22 0022

Flow Meter Current Status						
Time	Level (in)	Flow ~~(cfs)~~ gpm	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0024	4.34	185	0.94	130		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	221022-12 -WG	10/22	0024	☒
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP10	00:30	17.07	8.18	6.41	242.33

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	0

Comments:

Set Up/ Shut Down Form – ISCO

LOCATION: Americana

SET UP

Personnel: TL, SMK

Date/Time On-Site: 10/21/22 1213

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0951	5.18	0.12	0.165	11.72
1214	5.21	0.08	0.109	11.91
Downloaded to:		—		
Enable Condition:		level > 6.75" hysteresis 1.5"		
Flow Pulse Interval:		8071 cf		

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set Sampler program parameters
- ☒ Check date/time on Sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify Sampler Program is running

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 10/21 0951
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TL

Date/Time On-Site: 10.24.22 / 1107

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1107	5.73	1.09	1.281	11.69
Downloaded to:		—		

On-Site

- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 10/25 1027
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Americana **Bottle** 1 **of** 1

Personnel: SMK, TLC **Date/Time On-Site:** 10/22/22 09:48

☑ Halt Sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	221022-14 -WC
Approx Sample Volume (mL):	14000
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Dark Brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	10/22/22 0019	Success	13	10/22/22 0317	Success
2	0051		14	0339	
3	0107		15	0353	
4	0120		16	0403	
5	0134		17	0414	
6	0149		18	0424	
7	0203		19	0432	
8	0215		20	0438	
9	0227		21	0445	
10	0236		22	0453	
11	0247		23	0459	
12	0301		24	0509	

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler	☐ Keep flowmeter running
☒ Verify flowmeter is running	☐ Install new 15L bottle; add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
☒ Complete COC form; arrange transport to lab	**Date/Time Restarted:** _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Americana

Personnel: TL ~~SMATH~~ STM **Date/Time On-Site:** 10.22.22 0039

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0039	9.90	4.76	2.388	11.90		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	221022-14 -WG	10/22/22	0042	☒
Field Duplicate *E.Coli*	221022-14 -101	"	0043	☒
Field Blank *E.Coli*	221022-14 -001	"	0048	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP10	0051	17.12	8.05	7.03	367.61

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	1

Comments:

Set Up/ Shut Down Form – HACH

STATION: AS-6

SET UP

Personnel: SMK, TLL

Date/Time On-Site: 10/21/22 1235

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1235	0	0	0	12.3

Enable Condition or Velocity Cutoff:	0.02 ft/s
Deadband:	-
Trigger Volume:	602 cf

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 10.24.22 / 1009

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1010	0	0	0	22963	11.9
	Downloaded to:	R7			

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6 **Bottle** 1 **of** 1

Personnel: SMK, TLL **Date/Time On-Site:** 10/22/22 09:36

☑ Halt Sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	221022-206 -WC
Approx Sample Volume (mL):	14750
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Very dark brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	10/22/22 01:31	Success	13	10/22/22 04:23	Success
2	01:54		14	04:32	
3	02:12		15	04:39	
4	02:27		16	04:45	
5	02:39		17	04:51	
6	02:48		18	04:56	
7	02:57		19	05:00	
8	03:08		20	05:04	
9	03:20		21	05:08	
10	03:35		22	05:12	
11	03:54		23	05:16	
12	04:11		24	05:21	

Comments:

If Sampling is Complete:
- ☒ Power off Samplers
- ☒ Disable Flow Meter pacing
- ☒ Resume Flow Meter program
- ☒ Verify Flow Meter is running
- ☒ Add ice to sample transport cooler
- ☒ Complete COC form; arrange transport to lab
- ☒ Current **Velocity Cutoff (fps):** 0.02

If Continuing Sampling (sample bottle change-out):
- ☐ Keep Flow Meter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning;

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: AS-6

Personnel: TL, STM **Date/Time On-Site:** 10.22.22 / 0104

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0104	2.629	0.22	1.23	12.4		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	221022-206 -WG	10/22	0106	☒
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP10	01:12	14.83	8.30	7.08	325.92

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	0

Comments:

Attachment D: Storm Event Analytical Reports

Report Date: 11/16/2022 13:30

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00260-01	ACST1B	221022-03-WG	Water		10/22/2022	10/22/2022
AC00260-02	ACST1B	221022-03-101	Water		10/22/2022	10/22/2022
AC00260-03	ACST1B	221022-03-001	Water		10/22/2022	10/22/2022
AC00260-04	ACST1B	221022-11-WG	Water		10/22/2022	10/22/2022
AC00260-05	ACST1B	221022-12-WG	Water		10/22/2022	10/22/2022
AC00260-06	ACST1B	221022-14-WG	Water		10/22/2022	10/22/2022
AC00260-07	ACST1B	221022-206-WG	Water		10/22/2022	10/22/2022

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Report Date: 11/16/2022 13:30

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	221022-03-WG
Date/Time Collected:	10/22/2022 01:24		
Lab Number:	AC00260-01	Sample Collector:	SMK
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B224079	4040.0	MPN/100 mL	100.0	1.0	IDEXX - Colilert	10/22/22 13:22	10/23/22 13:30	ASE	H D
Wet Chemistry										
Chlorine Screen	B224078	Absent				SM 4500-CL G-2000 mod	10/22/22	10/22/22 8:18	MER	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	221022-03-101
Date/Time Collected:	10/22/2022 12:00		
Lab Number:	AC00260-02	Sample Collector:	SMK
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B224079	4950.0	MPN/100 mL	100.0	1.0	IDEXX - Colilert	10/22/22 13:22	10/23/22 13:30	ASE	D
Wet Chemistry										
Chlorine Screen	B224078	Absent				SM 4500-CL G-2000 mod	10/22/22	10/22/22 8:18	MER	

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Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	221022-03-001
Date/Time Collected:	10/22/2022 12:00		
Lab Number:	AC00260-03	Sample Collector:	SMK
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B224079	<1.0	MPN/100 mL	1.0	1.0	IDEXX - Colilert	10/22/22 08:10	10/23/22 9:35	ASE	U
Wet Chemistry										
Chlorine Screen	B224078	Absent				SM 4500-CL G-2000 mod	10/22/22	10/22/22 8:18	MER	

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Analysis Report

Location:	ACST1B	Location Description:	221022-11-WG
Date/Time Collected:	10/22/2022 01:57		
Lab Number:	AC00260-04	Sample Collector:	SMK
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B224079	770.1	MPN/100 mL	1.0	1.0	IDEXX - Colilert	10/22/22 08:10	10/23/22 9:35	ASE	
Wet Chemistry										
Chlorine Screen	B224078	Absent				SM 4500-CL G-2000 mod	10/22/22	10/22/22 8:18	MER	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	221022-12-WG
Date/Time Collected:	10/22/2022 00:24		
Lab Number:	AC00260-05	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B224079	88.2	MPN/100 mL	1.0	1.0	IDEXX - Colilert	10/22/22 08:10	10/23/22 9:35	ASE	
Wet Chemistry										
Chlorine Screen	B224078	Absent				SM 4500-CL G-2000 mod	10/22/22	10/22/22 8:18	MER	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Water Quality Laboratory
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Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	221022-14-WG
Date/Time Collected:	10/22/2022 00:42		
Lab Number:	AC00260-06	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B224079	648.8	MPN/100 mL	1.0	1.0	IDEXX - Colilert	10/22/22 08:10	10/23/22 9:35	ASE	
Wet Chemistry										
Chlorine Screen	B224078	Absent				SM 4500-CL G-2000 mod	10/22/22	10/22/22 8:18	MER	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Water Quality Laboratory
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Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	221022-206-WG
Date/Time Collected:	10/22/2022 01:06		
Lab Number:	AC00260-07	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B224079	1299.7	MPN/100 mL	1.0	1.0	IDEXX - Colilert	10/22/22 08:10	10/23/22 9:35	ASE	
Wet Chemistry										
Chlorine Screen	B224078	Absent				SM 4500-CL G-2000 mod	10/22/22	10/22/22 8:18	MER	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Boise City Public Works
Water Quality Laboratory
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Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B224079									
Blank (B224079-BLK1)									
E. Coli	Absent						10/23/2022	ASE	
LCS (B224079-BS1)									
E. Coli				Present			10/23/2022	ASE	
Duplicate (B224079-DUP1)	Source ID: AC00260-01								
E. Coli					Pass	128	10/23/2022	ASE	

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Notes and Definitions

Item	Definition
D	Data reported from a dilution
H	Hold time Exceeded.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Tammy Lightle, Sam Malinowski, Shannon Kranz, Dylan Burrvel

AC00260

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	Total Containers
~~260~~ -01	10.22.22		0124		221022-03-WG	SMK	X	X												X					1
~~260~~ -02			1200		221022-03-101	SMK	X	X												X					1
~~260~~ 03			1200		221022-03-001	SMK	X	X												X					1
~~260~~ -04			0157		221022-11-WG	SMK	X	X												X					1
~~260~~ -05			0024		221022-12-WG	TL	X	X												X					1
~~260~~ -06			0042		221022-~~13~~14-WG	TL	X	X												X					1
~~260~~ -07			0106		221022-206-WG	TL	X	X												X					1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Tammy Lightle	~~10~~ 10/22/22 / 0234	KMR 10.22.22 1130	AC00260

AC00260

Report Date: 11/17/2022 14:09

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00258-01	ACST1C	221022-03-WC	Water		10/22/2022	10/22/2022
AC00258-02	ACST1C	221022-11-WC	Water		10/22/2022	10/22/2022
AC00258-03	ACST1C	221022-12-WC	Water		10/22/2022	10/22/2022
AC00258-04	ACST1C	221022-14-WC	Water		10/22/2022	10/22/2022
AC00258-05	ACST1C	221022-206-WC	Water		10/22/2022	10/22/2022

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Report Date: 11/17/2022 14:09

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	221022-03-WC
Date/Time Collected:	10/22/2022 00:55 - 10/22/2022 05:23		
Lab Number:	AC00258-01	Sample Collector:	S.K
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Wet Chemistry										
Ammonia, as N	B224155	1.26	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	10/29/22	10/29/22 13:35	GKH	
BOD5	B224082	147	mg/L	2.00	2.00	SM 5210 B-2011	10/23/22	10/28/22 11:15	GKH	
COD	B224081	323	mg/L	13.0	13.0	HH 8000, Standard Method 5220 D	10/23/22	10/23/22 12:33	ASE	
Nitrate-Nitrite, as N	B224164	0.740	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	10/31/22	10/31/22 11:12	ALN	
TKN	B224112	5.52	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	10/26/22	10/27/22 9:09	ALN	
Total Dissolved Solids	B224111	163	mg/L	25.0	25.0	SM 2540 C-2011	10/25/22	10/27/22 13:45	ALG	
Total Suspended Solids	B224074	95.8	mg/L	0.900	0.900	SM 2540 D-2011	10/22/22	10/22/22 15:24	MER	
Turbidity	B224077	51.1	NTU	0.6	0.3	EPA 180.1, Rev. 2.0 (1993)	10/22/22	10/22/22 14:41	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B224083	0.985	mg/L	4.00E-3	2.00E-3	EPA 365.1, Rev. 2.0 (1993)	10/23/22	10/23/22 13:12	BAK	D
Total Metals										
Mercury	B224114	0.0125	ug/L	0.0100	0.0100	EPA 245.2	10/26/22	10/27/22 8:06	SAS	
Arsenic	B224220	2.6	ug/L	0.040	0.040	EPA 200.8	11/06/22	11/9/22 13:11	DMW	
Cadmium	B224220	0.12	ug/L	0.025	0.025	EPA 200.8	11/06/22	11/9/22 13:11	DMW	
Calcium	B224087	8.87	mg/L	0.0460	0.0460	EPA 200.7	10/24/22	10/31/22 15:15	EDM	
Lead	B224220	2.6	ug/L	0.050	0.050	EPA 200.8	11/06/22	11/9/22 13:11	DMW	
Magnesium	B224087	1980	ug/L	50.0	50.0	EPA 200.7	10/24/22	10/31/22 15:15	EDM	
Phosphorus as P	B224087	1.34	mg/L	6.00E-3	6.00E-3	EPA 200.7	10/24/22	10/31/22 15:15	EDM	
Hardness	B224087	30.3	mg/L	0.115	0.115	EPA 200.7	10/24/22	10/31/22 15:15	EDM	
Dissolved Metals										
Cadmium	B224219	<0.0250	ug/L	0.025	0.025	EPA 200.8	11/04/22	11/4/22 14:30	DMW	U
Copper	B224219	8.6	ug/L	0.15	0.15	EPA 200.8	11/04/22	11/4/22 14:30	DMW	
Lead	B224219	0.093	ug/L	0.050	0.050	EPA 200.8	11/04/22	11/4/22 14:30	DMW	
Zinc	B224219	91.2	ug/L	0.78	0.78	EPA 200.8	11/04/22	11/4/22 14:30	DMW	

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Report Date: 11/17/2022 14:09

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	221022-11-WC
Date/Time Collected:	10/22/2022 01:19 - 10/22/2022 04:54		
Lab Number:	AC00258-02	Sample Collector:	S.K
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Wet Chemistry										
Ammonia, as N	B224155	1.95	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	10/29/22	10/29/22 12:35	GKH	
BOD5	B224082	875	mg/L	8.00	2.00	SM 5210 B-2011	10/23/22	10/28/22 11:10	GKH	D
COD	B224081	1310	mg/L	13.0	13.0	HH 8000, Standard Method 5220 D	10/23/22	10/23/22 12:33	ASE	
Nitrate-Nitrite, as N	B224164	1.54	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	10/31/22	10/31/22 11:17	ALN	
TKN	B224214	8.56	mg/L	1.00	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	11/03/22	11/4/22 10:14	JAL	D
Total Dissolved Solids	B224111	681	mg/L	25.0	25.0	SM 2540 C-2011	10/25/22	10/27/22 13:46	ALG	
Total Suspended Solids	B224074	159	mg/L	0.900	0.900	SM 2540 D-2011	10/22/22	10/22/22 13:55	MER	
Turbidity	B224077	79.6	NTU	0.6	0.3	EPA 180.1, Rev. 2.0 (1993)	10/22/22	10/22/22 14:49	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B224083	1.71	mg/L	0.0100	2.00E-3	EPA 365.1, Rev. 2.0 (1993)	10/23/22	10/23/22 13:18	BAK	D
Total Metals										
Mercury	B224114	0.0344	ug/L	0.0100	0.0100	EPA 245.2	10/26/22	10/27/22 8:20	SAS	
Arsenic	B224220	4.2	ug/L	0.040	0.040	EPA 200.8	11/06/22	11/9/22 13:20	DMW	
Cadmium	B224220	0.18	ug/L	0.025	0.025	EPA 200.8	11/06/22	11/9/22 13:20	DMW	
Calcium	B224087	16.0	mg/L	0.0460	0.0460	EPA 200.7	10/24/22	10/31/22 15:20	EDM	
Lead	B224220	11.3	ug/L	0.050	0.050	EPA 200.8	11/06/22	11/9/22 13:20	DMW	
Magnesium	B224087	3620	ug/L	50.0	50.0	EPA 200.7	10/24/22	10/31/22 15:20	EDM	
Phosphorus as P	B224087	2.40	mg/L	6.00E-3	6.00E-3	EPA 200.7	10/24/22	10/31/22 15:20	EDM	
Hardness	B224087	54.9	mg/L	0.115	0.115	EPA 200.7	10/24/22	10/31/22 15:20	EDM	
Dissolved Metals										
Cadmium	B224219	<0.0250	ug/L	0.025	0.025	EPA 200.8	11/04/22	11/4/22 14:40	DMW	U
Copper	B224219	14.6	ug/L	0.15	0.15	EPA 200.8	11/04/22	11/4/22 14:40	DMW	
Lead	B224219	0.70	ug/L	0.050	0.050	EPA 200.8	11/04/22	11/4/22 14:40	DMW	
Zinc	B224219	74.4	ug/L	0.78	0.78	EPA 200.8	11/04/22	11/4/22 14:40	DMW	

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	221022-12-WC
Date/Time Collected:	10/22/2022 00:46 - 10/22/2022 05:04		
Lab Number:	AC00258-03	Sample Collector:	S.K
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Wet Chemistry										
Ammonia, as N	B224155	1.15	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	10/29/22	10/29/22 12:53	GKH	
BOD5	B224082	42.5	mg/L	2.00	2.00	SM 5210 B-2011	10/23/22	10/28/22 11:06	GKH	
COD	B224081	146	mg/L	13.0	13.0	HH 8000, Standard Method 5220 D	10/23/22	10/23/22 12:33	ASE	
Nitrate-Nitrite, as N	B224164	0.454	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	10/31/22	10/31/22 11:18	ALN	
TKN	B224112	3.77	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	10/26/22	10/27/22 9:14	ALN	
Total Dissolved Solids	B224111	73.5	mg/L	25.0	25.0	SM 2540 C-2011	10/25/22	10/27/22 13:47	ALG	
Total Suspended Solids	B224074	85.4	mg/L	0.900	0.900	SM 2540 D-2011	10/22/22	10/22/22 15:12	MER	
Turbidity	B224077	58.1	NTU	0.6	0.3	EPA 180.1, Rev. 2.0 (1993)	10/22/22	10/22/22 14:53	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B224083	0.337	mg/L	2.00E-3	2.00E-3	EPA 365.1, Rev. 2.0 (1993)	10/23/22	10/23/22 13:13	BAK	
Total Metals										
Mercury	B224114	0.0154	ug/L	0.0100	0.0100	EPA 245.2	10/26/22	10/27/22 8:24	SAS	
Arsenic	B224220	2.2	ug/L	0.040	0.040	EPA 200.8	11/06/22	11/9/22 13:23	DMW	
Cadmium	B224220	0.14	ug/L	0.025	0.025	EPA 200.8	11/06/22	11/9/22 13:23	DMW	
Calcium	B224087	6.90	mg/L	0.0460	0.0460	EPA 200.7	10/24/22	10/31/22 15:25	EDM	
Lead	B224220	11.8	ug/L	0.050	0.050	EPA 200.8	11/06/22	11/9/22 13:23	DMW	
Magnesium	B224087	1510	ug/L	50.0	50.0	EPA 200.7	10/24/22	10/31/22 15:25	EDM	
Phosphorus as P	B224087	0.534	mg/L	6.00E-3	6.00E-3	EPA 200.7	10/24/22	10/31/22 15:25	EDM	
Hardness	B224087	23.5	mg/L	0.115	0.115	EPA 200.7	10/24/22	10/31/22 15:25	EDM	
Dissolved Metals										
Cadmium	B224219	0.025	ug/L	0.025	0.025	EPA 200.8	11/04/22	11/4/22 14:42	DMW	
Copper	B224219	8.3	ug/L	0.15	0.15	EPA 200.8	11/04/22	11/4/22 14:42	DMW	
Lead	B224219	0.28	ug/L	0.050	0.050	EPA 200.8	11/04/22	11/4/22 14:42	DMW	
Zinc	B224219	65.9	ug/L	0.78	0.78	EPA 200.8	11/04/22	11/4/22 14:42	DMW	

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
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Analysis Report

Location:	ACST1C	Location Description:	221022-14-WC
Date/Time Collected:	10/22/2022 00:19 - 10/22/2022 05:09		
Lab Number:	AC00258-04	Sample Collector:	S.K
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Wet Chemistry										
Ammonia, as N	B224155	1.25	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	10/29/22	10/29/22 13:08	GKH	
BOD5	B224082	225	mg/L	2.00	2.00	SM 5210 B-2011	10/23/22	10/28/22 10:59	GKH	
COD	B224081	416	mg/L	13.0	13.0	HH 8000, Standard Method 5220 D	10/23/22	10/23/22 12:33	ASE	
Nitrate-Nitrite, as N	B224164	0.927	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	10/31/22	10/31/22 11:19	ALN	
TKN	B224112	5.26	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	10/26/22	10/27/22 9:15	ALN	
Total Dissolved Solids	B224111	244	mg/L	25.0	25.0	SM 2540 C-2011	10/25/22	10/27/22 13:48	ALG	
Total Suspended Solids	B224074	125	mg/L	0.900	0.900	SM 2540 D-2011	10/22/22	10/22/22 14:57	MER	
Turbidity	B224077	62.5	NTU	0.6	0.3	EPA 180.1, Rev. 2.0 (1993)	10/22/22	10/22/22 14:59	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B224083	0.712	mg/L	4.00E-3	2.00E-3	EPA 365.1, Rev. 2.0 (1993)	10/23/22	10/23/22 13:20	BAK	D
Total Metals										
Mercury	B224114	0.0147	ug/L	0.0100	0.0100	EPA 245.2	10/26/22	10/27/22 8:43	SAS	
Arsenic	B224220	5.1	ug/L	0.040	0.040	EPA 200.8	11/06/22	11/9/22 13:25	DMW	
Cadmium	B224220	0.19	ug/L	0.025	0.025	EPA 200.8	11/06/22	11/9/22 13:25	DMW	
Calcium	B224087	16.9	mg/L	0.0460	0.0460	EPA 200.7	10/24/22	10/31/22 15:30	EDM	
Lead	B224220	8.2	ug/L	0.050	0.050	EPA 200.8	11/06/22	11/9/22 13:25	DMW	
Magnesium	B224087	3370	ug/L	50.0	50.0	EPA 200.7	10/24/22	10/31/22 15:30	EDM	
Phosphorus as P	B224087	1.07	mg/L	6.00E-3	6.00E-3	EPA 200.7	10/24/22	10/31/22 15:30	EDM	
Hardness	B224087	55.9	mg/L	0.115	0.115	EPA 200.7	10/24/22	10/31/22 15:30	EDM	
Dissolved Metals										
Cadmium	B224219	<0.0250	ug/L	0.025	0.025	EPA 200.8	11/04/22	11/4/22 14:45	DMW	U
Copper	B224219	10.1	ug/L	0.15	0.15	EPA 200.8	11/04/22	11/4/22 14:45	DMW	
Lead	B224219	0.14	ug/L	0.050	0.050	EPA 200.8	11/04/22	11/4/22 14:45	DMW	
Zinc	B224219	61.6	ug/L	0.78	0.78	EPA 200.8	11/04/22	11/4/22 14:45	DMW	

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Boise City Public Works
Water Quality Laboratory
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Boise, Idaho 83714-1076
Telephone (208) 608-7240
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Analysis Report

Location:	ACST1C	Location Description:	221022-206-WC
Date/Time Collected:	10/22/2022 01:31 - 10/22/2022 05:21		
Lab Number:	AC00258-05	Sample Collector:	S.K
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Wet Chemistry										
Ammonia, as N	B224155	1.50	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	10/29/22	10/29/22 13:21	GKH	
BOD5	B224082	680	mg/L	8.00	2.00	SM 5210 B-2011	10/23/22	10/28/22 10:55	GKH	D
COD	B224081	1200	mg/L	13.0	13.0	HH 8000, Standard Method 5220 D	10/23/22	10/23/22 12:33	ASE	
Nitrate-Nitrite, as N	B224164	0.890	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	10/31/22	10/31/22 11:21	ALN	
TKN	B224214	9.29	mg/L	1.00	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	11/03/22	11/4/22 10:15	JAL	D
Total Dissolved Solids	B224111	542	mg/L	25.0	25.0	SM 2540 C-2011	10/25/22	10/27/22 13:48	ALG	
Total Suspended Solids	B224074	301	mg/L	0.900	0.900	SM 2540 D-2011	10/22/22	10/22/22 14:56	MER	
Turbidity	B224077	106	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	10/22/22	10/22/22 15:07	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B224083	1.96	mg/L	0.0100	2.00E-3	EPA 365.1, Rev. 2.0 (1993)	10/23/22	10/23/22 13:23	BAK	D
Total Metals										
Mercury	B224114	0.0309	ug/L	0.0100	0.0100	EPA 245.2	10/26/22	10/27/22 8:47	SAS	
Arsenic	B224220	4.5	ug/L	0.040	0.040	EPA 200.8	11/06/22	11/9/22 13:28	DMW	
Cadmium	B224220	0.23	ug/L	0.025	0.025	EPA 200.8	11/06/22	11/9/22 13:28	DMW	
Calcium	B224087	14.3	mg/L	0.0460	0.0460	EPA 200.7	10/24/22	10/31/22 15:37	EDM	
Lead	B224220	15.0	ug/L	0.050	0.050	EPA 200.8	11/06/22	11/9/22 13:28	DMW	
Magnesium	B224087	3790	ug/L	50.0	50.0	EPA 200.7	10/24/22	10/31/22 15:37	EDM	
Phosphorus as P	B224087	2.84	mg/L	6.00E-3	6.00E-3	EPA 200.7	10/24/22	10/31/22 15:37	EDM	
Hardness	B224087	51.3	mg/L	0.115	0.115	EPA 200.7	10/24/22	10/31/22 15:37	EDM	
Dissolved Metals										
Cadmium	B224219	<0.0250	ug/L	0.025	0.025	EPA 200.8	11/04/22	11/4/22 14:47	DMW	U
Copper	B224219	13.6	ug/L	0.15	0.15	EPA 200.8	11/04/22	11/4/22 14:47	DMW	
Lead	B224219	0.77	ug/L	0.050	0.050	EPA 200.8	11/04/22	11/4/22 14:47	DMW	
Zinc	B224219	119	ug/L	0.78	0.78	EPA 200.8	11/04/22	11/4/22 14:47	DMW	

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Water Quality Laboratory
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Boise, Idaho 83714-1076
Telephone (208) 608-7240
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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B224074									
Blank (B224074-BLK1)									
Total Suspended Solids	<0.9	mg/L					10/22/2022	MER	U
LCS (B224074-BS1)									
Total Suspended Solids			102	90-110			10/22/2022	MER	
Duplicate (B224074-DUP1)	Source ID: BB02469-01								
Total Suspended Solids					6.03	20	10/22/2022	MER	
Batch: B224077									
Blank (B224077-BLK1)									
Turbidity	<0.3	NTU					10/22/2022	KMR	U
LCS (B224077-BS2)									
Turbidity			109	90-110			10/22/2022	KMR	
Duplicate (B224077-DUP1)	Source ID: AC00258-01								
Turbidity					2.45	25	10/22/2022	KMR	D
Batch: B224081									
Blank (B224081-BLK1)									
COD	<13	mg/L					10/23/2022	ASE	U
LCS (B224081-BS1)									
COD			99.0	90-110			10/23/2022	ASE	
Duplicate (B224081-DUP1)	Source ID: AC00258-03								
COD					2.03	10	10/23/2022	ASE	
Batch: B224082									
Blank (B224082-BLK1)									
BOD5	<2	mg/L					10/28/2022	GKH	Seed-02, U
LCS (B224082-BS1)									
BOD5			102	84.6-115.4			10/28/2022	GKH	
LCS (B224082-BS2)									
BOD5			107	84.6-115.4			10/28/2022	GKH	
Duplicate (B224082-DUP1)	Source ID: BB02472-01								
BOD5					0.880	30	10/28/2022	GKH	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B224111									
Blank (B224111-BLK1)									
Total Dissolved Solids	<25	mg/L					10/27/2022	ALG	U
LCS (B224111-BS1)									
Total Dissolved Solids			99.5	90-110			10/27/2022	ALG	
Duplicate (B224111-DUP1) Source ID: AC00258-01									
Total Dissolved Solids					0.00	10	10/27/2022	ALG	
Batch: B224112									
Blank (B224112-BLK1)									
TKN	<0.1	mg/L					10/27/2022	ALN	U
LCS (B224112-BS1)									
TKN			98.4	80-120			10/27/2022	ALN	
Duplicate (B224112-DUP1) Source ID: AC00258-01									
TKN					1.13	20	10/27/2022	ALN	
Duplicate (B224112-DUP2) Source ID: BB02464-01									
TKN					1.06	20	10/27/2022	ALN	D
Matrix Spike (B224112-MS1) Source ID: AC00258-01									
TKN			115	80-120			10/27/2022	ALN	
Matrix Spike (B224112-MS2) Source ID: BB02464-01									
TKN			104	80-120			10/27/2022	ALN	D
Matrix Spike Dup (B224112-MSD1) Source ID: AC00258-01									
TKN			107	80-120	3.87	20	10/27/2022	ALN	
Matrix Spike Dup (B224112-MSD2) Source ID: BB02464-01									
TKN			111	80-120	2.00	20	10/27/2022	ALN	D
Batch: B224155									
Blank (B224155-BLK1)									
Ammonia, as N	<0.035	mg/L					10/29/2022	GKH	U
LCS (B224155-BS1)									
Ammonia, as N			99.4	90-110			10/29/2022	GKH	
Duplicate (B224155-DUP1) Source ID: BB02456-01									
Ammonia, as N					8.42	10	10/29/2022	GKH	
Duplicate (B224155-DUP2) Source ID: BB02463-01									
Ammonia, as N					1.55	10	10/29/2022	GKH	D
Matrix Spike (B224155-MS1) Source ID: BB02456-01									
Ammonia, as N			97.2	80-120			10/29/2022	GKH	
Matrix Spike (B224155-MS2) Source ID: BB02463-01									
Ammonia, as N			95.1	80-120			10/29/2022	GKH	D
Matrix Spike Dup (B224155-MSD1) Source ID: BB02456-01									
Ammonia, as N			96.1	80-120	1.03	10	10/29/2022	GKH	
Matrix Spike Dup (B224155-MSD2) Source ID: BB02463-01									
Ammonia, as N			96.5	80-120	1.03	10	10/29/2022	GKH	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B224164									
Blank (B224164-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					10/31/2022	ALN	U
Blank (B224164-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					10/31/2022	ALN	U
LCS (B224164-BS1)									
Nitrate-Nitrite, as N			96.7	90-110			10/31/2022	ALN	
LCS (B224164-BS2)									
Nitrate-Nitrite, as N			97.8	90-110			10/31/2022	ALN	
Duplicate (B224164-DUP1) Source ID: AC00258-01									
Nitrate-Nitrite, as N					0.752	10	10/31/2022	ALN	
Duplicate (B224164-DUP3) Source ID: WB02153-06									
Nitrate-Nitrite, as N					8.54	10	10/31/2022	ALN	
Duplicate (B224164-DUP4) Source ID: BB02456-01RE1									
Nitrate-Nitrite, as N					0.175	10	10/31/2022	ALN	D
Matrix Spike (B224164-MS1) Source ID: AC00258-01									
Nitrate-Nitrite, as N			96.1	90-110			10/31/2022	ALN	
Matrix Spike (B224164-MS3) Source ID: WB02153-06									
Nitrate-Nitrite, as N			97.0	90-110			10/31/2022	ALN	
Matrix Spike (B224164-MS4) Source ID: BB02456-01RE1									
Nitrate-Nitrite, as N			101	90-110			10/31/2022	ALN	D
Matrix Spike (B224164-MS5) Source ID: LS01356-01									
Nitrate-Nitrite, as N			97.5	90-110			10/31/2022	ALN	
Matrix Spike Dup (B224164-MSD1) Source ID: AC00258-01									
Nitrate-Nitrite, as N			96.3	90-110	0.205	10	10/31/2022	ALN	
Matrix Spike Dup (B224164-MSD3) Source ID: WB02153-06									
Nitrate-Nitrite, as N			96.9	90-110	0.0981	10	10/31/2022	ALN	
Matrix Spike Dup (B224164-MSD4) Source ID: BB02456-01RE1									
Nitrate-Nitrite, as N			102	90-110	0.287	10	10/31/2022	ALN	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B224214									
Blank (B224214-BLK1)									
TKN	<0.1	mg/L					11/04/2022	JAL	U
Blank (B224214-BLK2)									
TKN	<0.1	mg/L					11/04/2022	JAL	U
LCS (B224214-BS1)									
TKN			99.7	80-120			11/04/2022	JAL	
LCS (B224214-BS2)									
TKN			104	80-120			11/04/2022	JAL	
Duplicate (B224214-DUP1) Source ID: BB02489-01									
TKN					0.822	20	11/04/2022	JAL	D
Duplicate (B224214-DUP2) Source ID: BB02494-02									
TKN					8.92	20	11/04/2022	JAL	D
Duplicate (B224214-DUP3) Source ID: LS01358-02									
TKN					0.144	20	11/04/2022	JAL	D
Matrix Spike (B224214-MS1) Source ID: BB02489-01									
TKN			113	80-120			11/04/2022	JAL	D
Matrix Spike (B224214-MS2) Source ID: BB02494-02									
TKN			108	80-120			11/04/2022	JAL	D
Matrix Spike (B224214-MS3) Source ID: LS01358-02									
TKN			111	80-120			11/04/2022	JAL	D
Matrix Spike Dup (B224214-MSD1) Source ID: BB02489-01									
TKN			105	80-120	2.25	20	11/04/2022	JAL	D
Matrix Spike Dup (B224214-MSD2) Source ID: BB02494-02									
TKN			113	80-120	1.72	20	11/04/2022	JAL	D
Matrix Spike Dup (B224214-MSD3) Source ID: LS01358-02									
TKN			108	80-120	1.08	20	11/04/2022	JAL	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Dissolved Wet Chemistry									
Batch: B224083									
Blank (B224083-BLK1)									
Orthophosphate, as P	<0.002	mg/L					10/23/2022	BAK	U
LCS (B224083-BS1)									
Orthophosphate, as P			96.3	90-110			10/23/2022	BAK	
Duplicate (B224083-DUP1) Source ID: AC00258-03									
Orthophosphate, as P					0.640	10	10/23/2022	BAK	
Matrix Spike (B224083-MS1) Source ID: AC00258-03									
Orthophosphate, as P			106	90-110			10/23/2022	BAK	
Matrix Spike Dup (B224083-MSD1) Source ID: AC00258-03									
Orthophosphate, as P			108	90-110	0.411	10	10/23/2022	BAK	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B224087									
Blank (B224087-BLK1)									
Calcium	<0.046	mg/L					10/31/2022	EDM	U
Magnesium	<50	ug/L					10/31/2022	EDM	U
Phosphorus as P	<0.006	mg/L					10/31/2022	EDM	U
LCS (B224087-BS1)									
Calcium			97.0	85-115			10/31/2022	EDM	
Magnesium			97.9	85-115			10/31/2022	EDM	
Phosphorus as P			102	85-115			10/31/2022	EDM	
Duplicate (B224087-DUP1) Source ID: AC00259-01									
Calcium					1.80	20	10/31/2022	EDM	
Magnesium					2.03	20	10/31/2022	EDM	
Phosphorus as P					1.06	20	10/31/2022	EDM	
Matrix Spike (B224087-MS1) Source ID: AC00259-01									
Calcium			95.2	70-130			10/31/2022	EDM	
Magnesium			96.2	70-130			10/31/2022	EDM	
Phosphorus as P			103	70-130			10/31/2022	EDM	
Matrix Spike Dup (B224087-MSD1) Source ID: AC00259-01									
Calcium			94.4	70-130	0.556	20	10/31/2022	EDM	
Magnesium			96.3	70-130	0.0244	20	10/31/2022	EDM	
Phosphorus as P			103	70-130	0.327	20	10/31/2022	EDM	
Batch: B224114									
Blank (B224114-BLK1)									
Mercury	<0.01	ug/L					10/27/2022	SAS	U
LCS (B224114-BS1)									
Mercury			99.5	85-115			10/27/2022	SAS	
Duplicate (B224114-DUP1) Source ID: AC00258-01									
Mercury					19.1	20	10/27/2022	SAS	
Matrix Spike (B224114-MS1) Source ID: AC00258-01									
Mercury			101	70-130			10/27/2022	SAS	
Matrix Spike Dup (B224114-MSD1) Source ID: AC00258-01									
Mercury			101	70-130	0.194	20	10/27/2022	SAS	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B224220									
Blank (B224220-BLK1)									
Arsenic	<0.040	ug/L					11/09/2022	DMW	U
Cadmium	<0.025	ug/L					11/09/2022	DMW	U
Lead	<0.050	ug/L					11/09/2022	DMW	U
LCS (B224220-BS1)									
Arsenic			99.5	85-115			11/09/2022	DMW	
Cadmium			100	85-115			11/09/2022	DMW	
Lead			103	85-115			11/09/2022	DMW	
Duplicate (B224220-DUP1) Source ID: AC00258-01									
Arsenic					7.39	20	11/09/2022	DMW	
Cadmium					4.84	20	11/09/2022	DMW	
Lead					6.29	20	11/09/2022	DMW	
Matrix Spike (B224220-MS1) Source ID: AC00258-01									
Arsenic			99.1	70-130			11/09/2022	DMW	
Cadmium			97.8	70-130			11/09/2022	DMW	
Lead			98.9	70-130			11/09/2022	DMW	
Matrix Spike Dup (B224220-MSD1) Source ID: AC00258-01									
Arsenic			103	70-130	3.14	20	11/09/2022	DMW	
Cadmium			102	70-130	4.15	20	11/09/2022	DMW	
Lead			103	70-130	2.95	20	11/09/2022	DMW	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Dissolved Metals									
Batch: B224219									
Blank (B224219-BLK1)									
Cadmium	<0.025	ug/L					11/04/2022	DMW	U
Copper	<0.15	ug/L					11/04/2022	DMW	U
Lead	<0.050	ug/L					11/04/2022	DMW	U
Zinc	<0.78	ug/L					11/04/2022	DMW	U
LCS (B224219-BS1)									
Cadmium			98.7	85-115			11/04/2022	DMW	
Copper			99.9	85-115			11/04/2022	DMW	
Lead			99.4	85-115			11/04/2022	DMW	
Zinc			107	85-115			11/04/2022	DMW	
Duplicate (B224219-DUP1) Source ID: AC00258-01									
Cadmium					NR	10	11/04/2022	DMW	U
Copper					0.778	10	11/04/2022	DMW	
Lead					1.47	10	11/04/2022	DMW	
Zinc					0.677	10	11/04/2022	DMW	
Matrix Spike (B224219-MS1) Source ID: AC00258-01									
Cadmium			97.3	70-130			11/04/2022	DMW	
Copper			97.0	70-130			11/04/2022	DMW	
Lead			97.1	70-130			11/04/2022	DMW	
Zinc			97.5	70-130			11/04/2022	DMW	
Matrix Spike Dup (B224219-MSD1) Source ID: AC00258-01									
Cadmium			94.6	70-130	2.83	10	11/04/2022	DMW	
Copper			93.3	70-130	2.05	10	11/04/2022	DMW	
Lead			93.9	70-130	3.26	10	11/04/2022	DMW	
Zinc			90.2	70-130	1.83	10	11/04/2022	DMW	

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Notes and Definitions

Item	Definition
D	Data reported from a dilution
Seed-02	The seed depletion is less than that recommended by the method.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Shannon Krentz
Tammy Lightle

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	Total Containers
-01	10/22/22	10/22/22	0055	0523	221022-03-WC	SK	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	1
-02			0119	0454	221022-11-WC	SK	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	1
-03			0046	0504	221022-12-WC	SK	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	1
-04			0019	0509	221022-14-WC	SK	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	1
-05	↓	↓	0131	0521	221022-206-WC	SK	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Tam Lightle	10.22.22 / 1052	MER Magdalyn 10/22/22 1054	ACOC-258

ACOC-258

Storm Event Report for January 9, 2023

Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 208-389-7700

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2023

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for January 9, 2023

Date: March 27, 2023

To: Tammy Lightle

Cc: Monica Lowe

From: Shannon Kronz, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer
Shannon Kronz, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Limitations:

This document was prepared solely for ACHD in accordance with professional standards at the time the services were performed and in accordance with the contract between ACHD and Brown and Caldwell dated September 30, 2022. This document is governed by the specific scope of work authorized by ACHD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACHD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2023 (October 1, 2022, through September 30, 2023). The following storm event report summarizes stormwater sampling results from the January 9, 2023, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2023 Phase I Stormwater Outfall Monitoring.

Table 2-1. WY 2023 Samples Collected

Date	Lucky	Whitewater	Main	Americana	AS_6
October 22, 2022	G[1], C[2]	G, C[3]	G, C[2]	G, C[2]	G, C[2]
January 9, 2023	G[4]	G[4]	G[4]	G[4]	G[4]
Collected:		1G	1G	1G	1G

Notes:

C = composite sample

G = grab sample

[1] E. coli *sample qualified due to exceeded holding time.*

[2] *Composite samples qualified due to lack of representativeness (50%–75%).*

[3] *Composite samples rejected due to lack of representativeness (<50%).*

[4] *Grab sample rejected due to insufficient rainfall (<0.08 in).*

After the January 9, 2023, storm event, ACHD needs to collect two grab samples from Whitewater, Main, Americana, and AS_6 and three grab samples from Lucky for WY 2023. In addition, three composite samples need to be collected from all Phase I monitoring sites.

Section 3: Storm Event Summary

The January 9, 2023, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from January 9, 2023, is included in Attachment A for reference.

Monday, January 09, 2023 (Set up)

- On the morning of January 09, 2023, the National Weather Service issued a forecast for widespread rain in the Boise area, starting at 0900, and continuing into 1800. Rain shadowing was expected. The chance of precipitation was 100 percent, with 0.12 inch of precipitation forecasted.
- Setup was accomplished on January 9, 2023. An expected precipitation depth of 0.11 inch was used to set trigger volumes at monitoring stations.

Monday, January 09, 2023 (Storm Event Collection)

- Light rain started at approximately 1100 and continued until 1400.
- Precipitation totals ranged between 0.05 and 0.07 inch at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrographs for each site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana, and AS_6 monitoring stations were set up on January 9, 2023, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programed into the Lucky, Whitewater, Main, and Americana flowmeters. A site-specific velocity cutoff value was programmed into the AS_6 flowmeter. Set up and sampling information are included in Table 1. The field forms completed during set up/shutdown and sampling can be found in Attachment C.

Grab Samples

Two, two-member teams mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on January 9, 2023, at 1130. Grab samples were submitted to the West Boise Water Quality Lab at 1457 on January 09, 2023. Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are located in Attachment D.

Composite Samples

Composite samples were collected all monitoring stations, but due to insufficient rainfall (<0.08 in), the samples were not submitted to the City of Boise Water Quality Laboratory.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the January 9, 2023, storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the Main monitoring station. The analytical results for these samples are included in Table 3.

Table 4-1. Quality Control Samples

Sample ID	Sample Type	Parent Sample	Conclusions
230109-12-001	Field blank	Main grab	No E. coli detection was reported in the field blank.
230109-12-101	Field duplicate	Main grab	Relative percent difference was within the acceptable range.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. All program rain gauges received less than 0.08 inch of rain during the January 9 event, so the grab samples were rejected for insufficient rainfall. All other acceptance and performance criteria for non-analytical data were met for this storm event.

Section 5: Notes and Recommendations

AS_6

Because of the small precipitation amount, the AS_6 subwatershed produced limited stormwater runoff. For much of the duration of the storm, the water level in the pipe was at or below 1.5", at which the area velocity sensor is unable to measure consistent velocity readings. This resulted in a discontinuous hydrograph for the storm event.

Data Tables

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	YES	YES
Composite samples collected and submitted?	NO	NO	NO	NO	NO
Trigger volume	2895 gal	800 ft^3	3411 gal	2960 ft^3	221 ft^3
Velocity cutoff (fps)	-	-	-	-	0.02
Sampler enable condition (in)	level > 3.31	level > 1.4	level > 2.25	level > 7.0	-
Runoff start time	11:46	13:29	11:47	11:23	13:37
Grab sample collection time	13:18	14:21	12:57	13:15	13:52
Composite sample stop time	-	-	-	-	-
Runoff stop time	16:19	17:59	15:58	16:30	15:42
Volume of discharge sampled (ft^3)	-	-	-	-	-
Total runoff volume (ft^3)	1,908	1,835	2,914	45,298	170
Percent of storm flow sampled (%)	-	-	-	-	-
Composite sample duration (hrs)	-	-	-	-	-
Storm precipitation (in)	0.07	0.05	0.05	0.05/0.07	0.05/0.07
Referenced rain gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	-	-	-	-	-
Number of composite bottles filled	-	-	-	-	-
Composite sample volume (Approx.; ml)	-	-	-	-	-

Notes:

– = No data

Table 2. Field and Analytical Data Summary							
Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli
			mg/L	S.U.	uS/cm	C	mpn/100 mL
Lucky	1/9/2023	230109-03-WG	9.04 [2R]	6.90 [2R]	119.14 [2R]	11.77 [2R]	435.2 [2R]
Whitewater	1/9/2023	230109-11-WG	8.54 [2R]	6.86 [2R]	147.42 [2R]	10.04 [2R]	235.9 [2R]
Main	1/9/2023	230109-12-WG	11.2 [2R]	6.56 [2R]	231.0 [2R]	6.14 [2R]	172.2 [2R]
Americana	1/9/2023	230109-14-WG	9.98 [2R]	6.60 [2R]	517.1 [2R]	9.51 [2R]	2850.0 [2R]
AS_6	1/9/2023	230109-206-WG	7.66 [2R]	6.89 [2R]	200.8 [2R]	6.36 [2R]	157.6 [2R]

Notes:

– = No data.

[2R] Data rejected due to insufficient rainfall (<0.08 inch)

Table 3. QC Sample Summary				
Date	Parent Sample	Sample ID	Type	E. coli
				mpn/100 mL
1/9/2023	230109-12-WG	230109-12-001	Field Blank	<1.0
1/9/2023	230109-12-WG	230109-12-101	Field Duplicate	69.7
Calculated parent/duplicate RPD				13%
Allowable RPD				40%

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 1/9/2023	Time: 7:08 AM	Initials: TL
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.01”
Date and time of expected event	1/9 9:00a – 6p
Expected amount of precipitation	0.12
Percent chance of precipitation	100%
Percent chance of >0.10” over 12 hours	68%

NWS Update

I talked with Spencer from NWS this morning. Their predictions have a 70% chance of getting >0.10”, and the official forecasted amount is 0.20”. The valley is currently being rainshadowed, but this is expected to be overcome between 9a-11a at which time we should start to see some rain. The bulk of the storm is from 11a-3p and all precip is expected to taper off by 6p.

Targeted Station & Samples

Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab	☐ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☐ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☐ Equipment Concerns:
☐ Other:

Text Forecast

NWS Forecast for: 2 Miles SW Garden City ID
Issued by: National Weather Service Boise, ID
Last Update: 3:55 am MST Jan 9, 2023

Today: Rain. High near 45. Southeast wind 8 to 18 mph. Chance of precipitation is 100%. New precipitation amounts between a tenth and quarter of an inch possible.
Tonight: A 30 percent chance of rain before 11pm. Mostly cloudy, with a low around 33. Southeast wind 5 to 7 mph becoming calm in the evening.
Tuesday: A 40 percent chance of rain after 11am. Mostly cloudy, with a high near 44. Southeast wind 5 to 8 mph.
Tuesday Night: A 40 percent chance of rain, mainly before 11pm. Mostly cloudy, with a low around 34. South wind around 5 mph becoming calm in the evening.
Wednesday: Partly sunny, with a high near 45. Calm wind becoming south southeast around 6 mph in the afternoon.
Wednesday Night: A slight chance of rain before 11pm, then a chance of rain and snow. Mostly cloudy, with a low around 36. Chance of precipitation is 30%. Little or no snow accumulation expected.
Thursday: A 20 percent chance of showers before 11am. Mostly cloudy, with a high near 47.

Thursday Night: Mostly cloudy, with a low around 34.
Friday: Mostly cloudy, with a high near 46.
Friday Night: Mostly cloudy, with a low around 36.
Saturday: A 20 percent chance of showers. Mostly cloudy, with a high near 47.
Saturday Night: A 20 percent chance of showers. Mostly cloudy, with a low around 34.
Sunday: A 30 percent chance of showers. Mostly cloudy, with a high near 45.

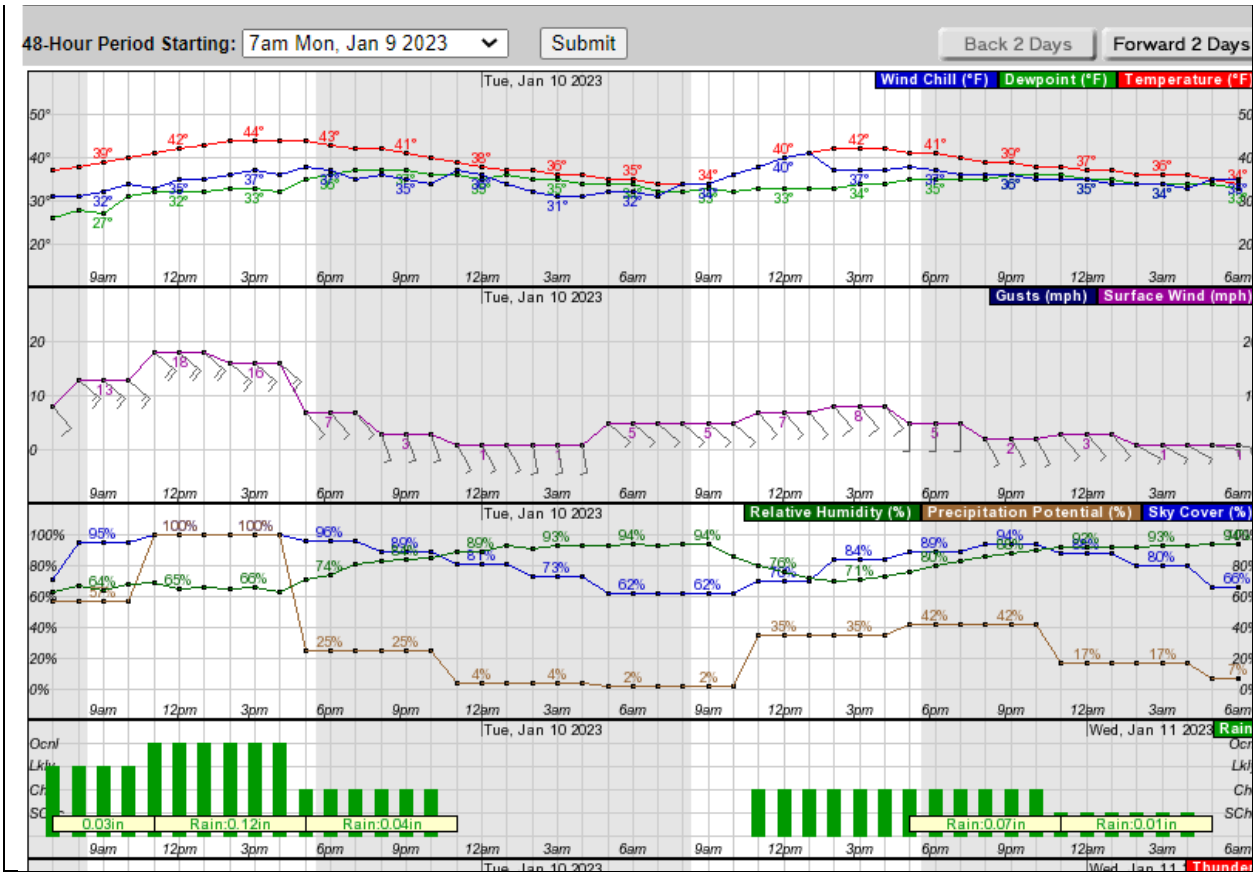
Forecast Discussion

Area Forecast Discussion
National Weather Service Boise ID
316 AM MST Mon Jan 9 2023

.SHORT TERM...Today through Wednesday night...Next upper level trough moving inland across California this morning. This system is associated with a strong atmospheric river that should reach southern Idaho this evening. A well defined warm front will reach Southeast Oregon around 12z and into Southwest Idaho by 15z ushering in the widespread precipitation. Breezy southeasterly winds in the valley could limit the onset and precipitation amounts but do expect close to a quarter of inch of rain today. The heaviest precipitation is expected across the Boise Mountains and Camas Prairie where the greatest moisture aloft and orographic lift meet this afternoon and evening. With snow levels around 4500 feet makes an ideal setup for heavy snow in the Boise Mountains and Camas Prairie. Will also see breezy easterly winds which could create blowing and drifting snow along with low visibilities for on Highway 20 and 21. Precipitation will end across Southeast Oregon by 00z tonight but continue across much of Southwest Idaho into Tuesday morning. There will be a brief break in the precipitation Tuesday afternoon followed but another moist Pacific trough for Tuesday night into Wednesday, Much of the energy and precipitation will track just south of the forecast area but showers are still expected across the southern half of the forecast area. Upper level ridge rebuilds later on Wednesday as the next Pacific Trough approaches the coast. Temperatures will remain about 5-8 degrees above normal through the period.

.LONG TERM...Thursday through Monday...Moist, southwesterly flow continues to dominate the regional pattern, ushering in periodic disturbances and moderating temperatures to around 5 degrees above normal. During their transitions, these disturbance are expected to increase the possibility for unsettled weather including light showers and breezy surface winds. The best chances begin Saturday and continue on through Monday, associated with a stronger, more organized disturbance as it rolls through. Expect snow in the mountains and higher elevations with rain likely throughout the major valleys.

Hourly Forecast


48-Hour Period Starting: 7am Mon, Jan 9 2023
Submit
Back 2 Days
Forward 2 Days
Tue, Jan 10 2023
Wind Chill (°F)
Dewpoint (°F)
Temperature (°F)
Gusts (mph)
Surface Wind (mph)
Relative Humidity (%)
Precipitation Potential (%)
Sky Cover (%)
Wed, Jan 11 2023
0.03in
Rain:0.12in
Rain:0.04in
Rain:0.07in
Rain:0.01in
9am
12pm
3pm
6pm
9pm
12am
3am
6am

Storm Event QA/QC Checklist – Phase I

STORM DATE 230109

A. Event and Data Completeness	Yes	No	N/A	Notes
1. Field data sheets filled out completely and clearly	X			
2. Field parameters reviewed, and any problems/issues addressed	X			
3. All samples collected as specified	X			
4. All samples delivered to lab promptly (review chain of custody rpts)	X			
5. Inconsistencies/clarifications discussed with sampling team member			X	
6. All analytical reports from lab received	X			

B. Validation and Verification Methods	Yes	No	N/A	Notes
1. Outliers and unexpected values discussed with lab			X	
2. Appropriate analytical methods used	X			
3. All lab QA samples were within method acceptance criteria	X			
4. All samples reviewed and data qualifiers assigned if needed	X			
5. Data quality objective achieved	X			

C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.00	0.00	0.00	0.00	0.00	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.07	0.05	0.05	0.05/0.07	0.05/0.07	> 0.10"			X
3. Sampled amount (% of total run-off)						>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject			
4. Composite sample duration (hours)									
4. Ecoli sample holding time (hours)	3	2	3	3	2	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject	X		
5. Filtering of samples for dissolved parameter analysis (hours)						<= 24 hrs: no qualifier > 24 hrs.: reject			

D. Notes

- No composite samples were submitted from any site.
- Ecoli samples are rejected due to lack of rainfall.

Reviewed by Tom Litton **Date** 02.13.23

Approved by Monica Love **Date** 2/14/23

Storm Runoff Estimates and Trigger Volumes

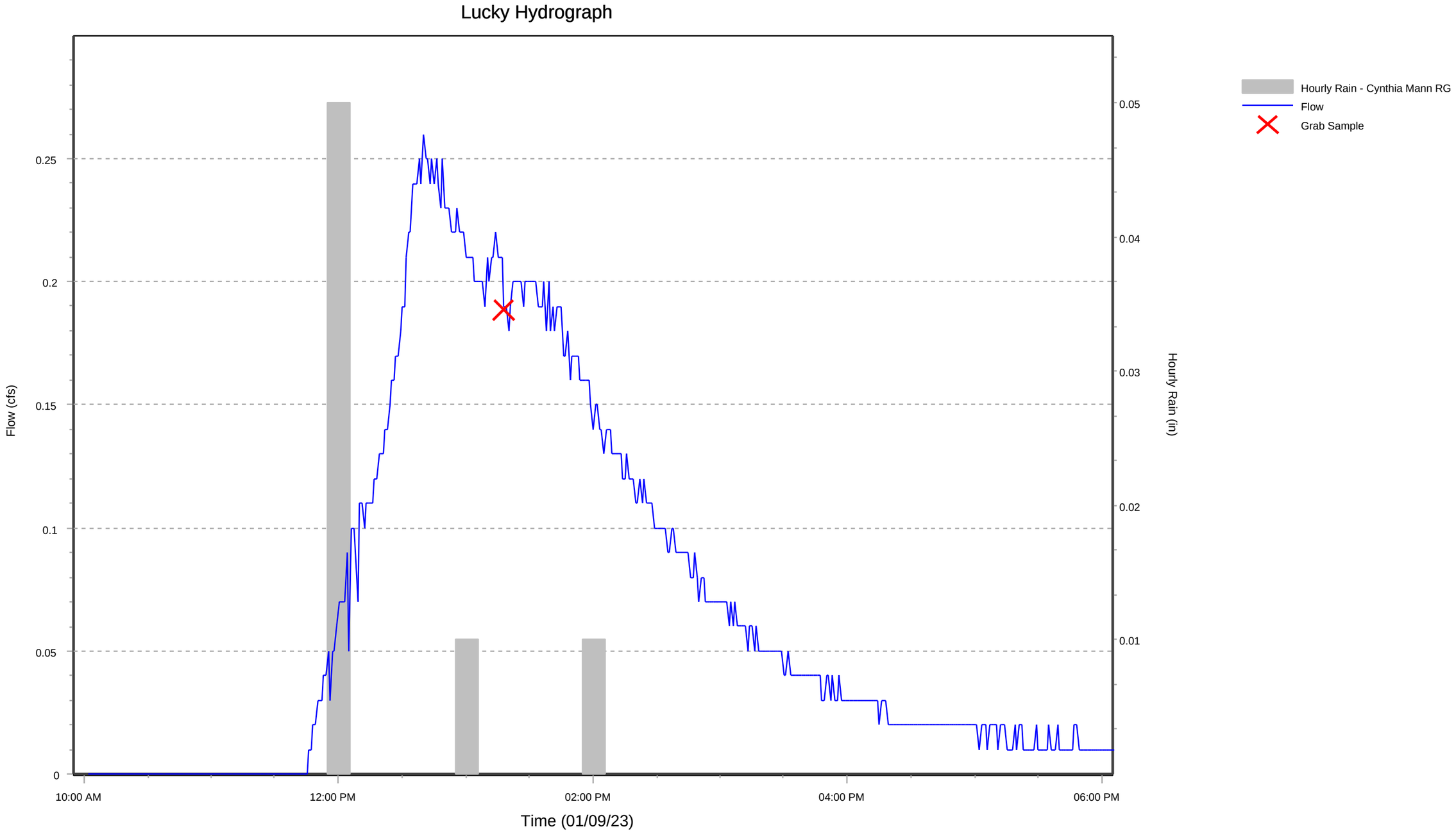
Simple Method

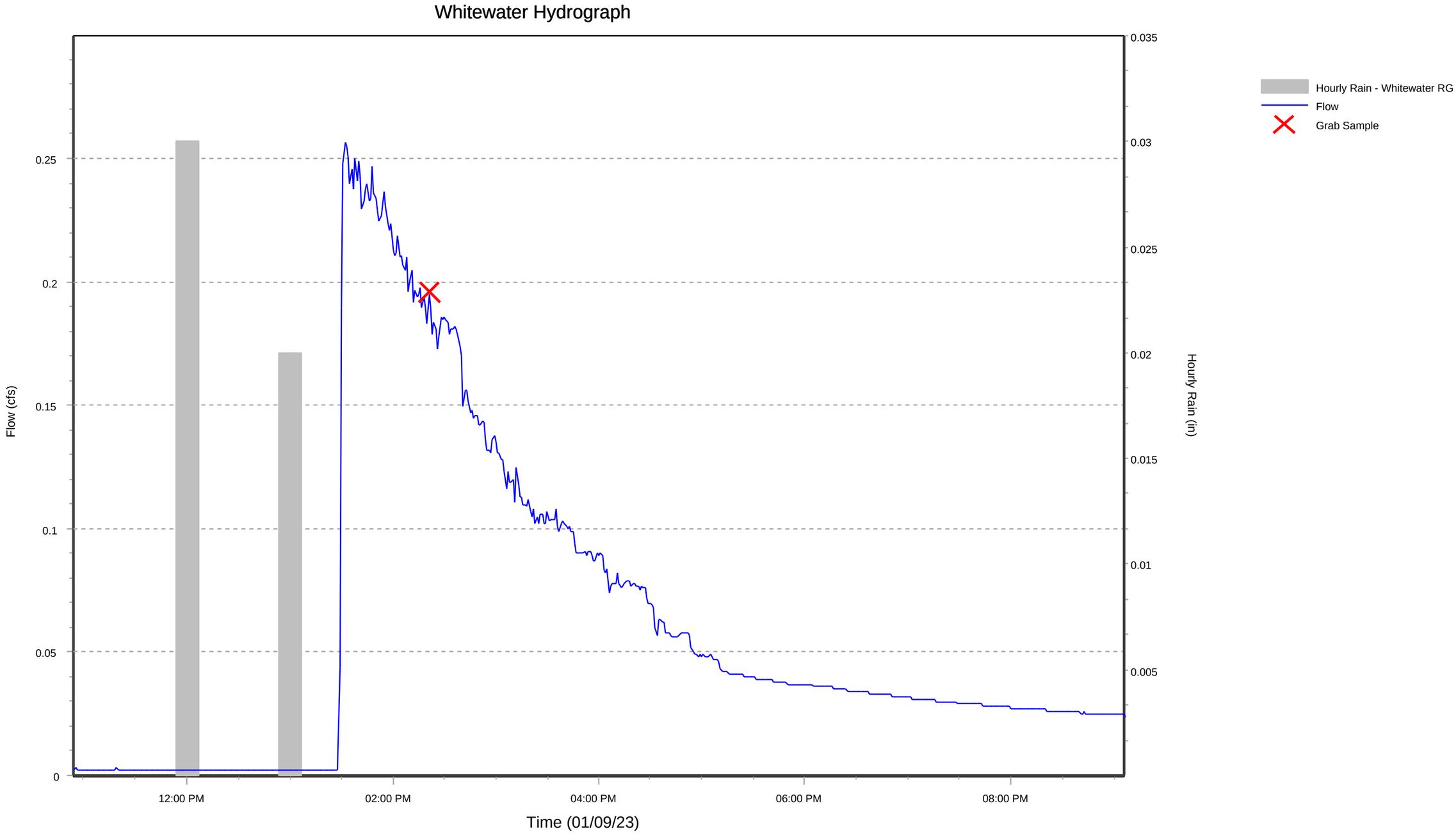
Expected Precipitation Depth =	0.11	in
Square Feet per Acre =	43560	ft^2/ac
Inches per Foot=	12	in/ft
Aliquots per Sample=	17	

Step 1. Enter runoff coefficients in yellow cells.
Step 2. Enter expected precipitation depth in inches in blue cell.
Step 3. Read trigger volumes (**bold**) in green cells.

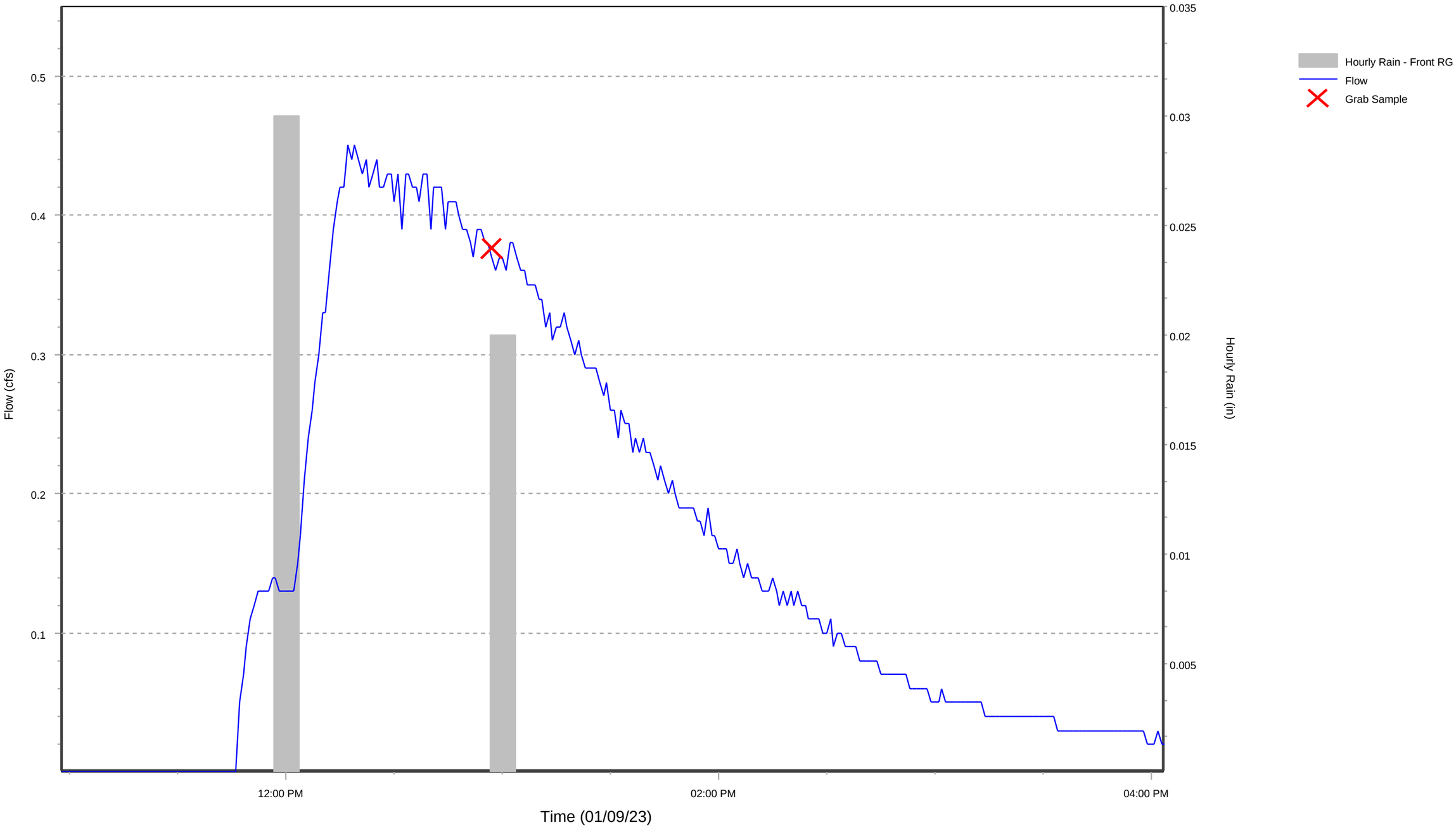
Site	Area (ac)	Using RC Based on Land Use			Using Manually-entered RC				Used in Field
		RC	Expected Vol. (ft^3)	Trigger Vol. (ft^3)	RC	Expected Vol. (ft^3)	Trigger Vol. (ft^3)	Trigger Vol. (Gal)	Trigger Vol.
Lucky #3	105	0.401	16813	**989**	0.157	6582.46	**387**	2895	2895 gal
Whitewater #11	498	0.437	86898	**5112**	0.116	23066.76	**1357**	10150	800 ft^3
Main #12	79	0.437	13785	**811**	0.246	7760.00	**456**	3411	3411 gal
Americana #14	875	0.446	155827	**9166**	0.144	50311.80	**2960**	22141	2960 ft^3
AS_6 #206	204	0.257	20935	**1231**	0.046	3755.18	**221**	1653	221 ft^3

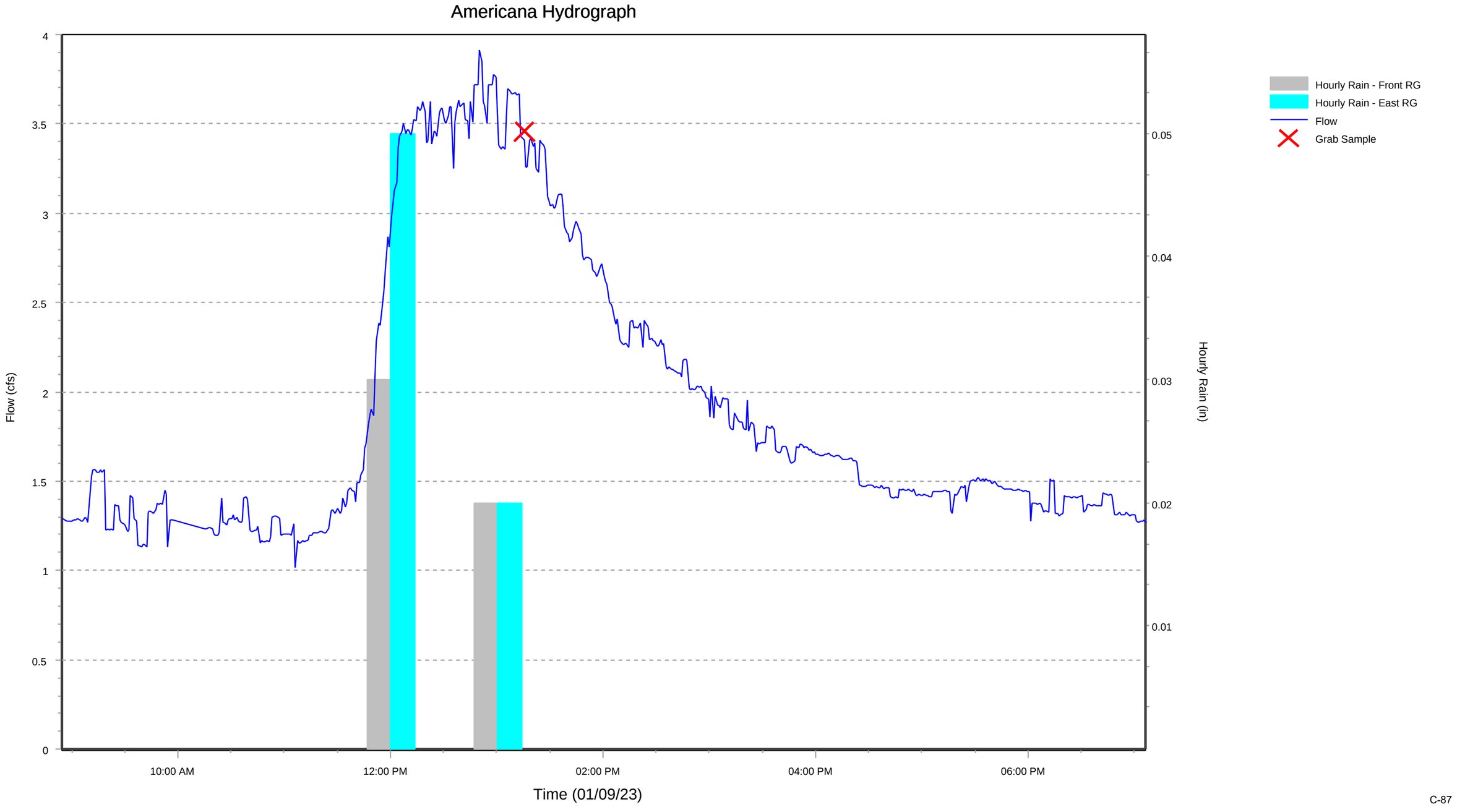
Attachment B: Storm Event Hydrographs

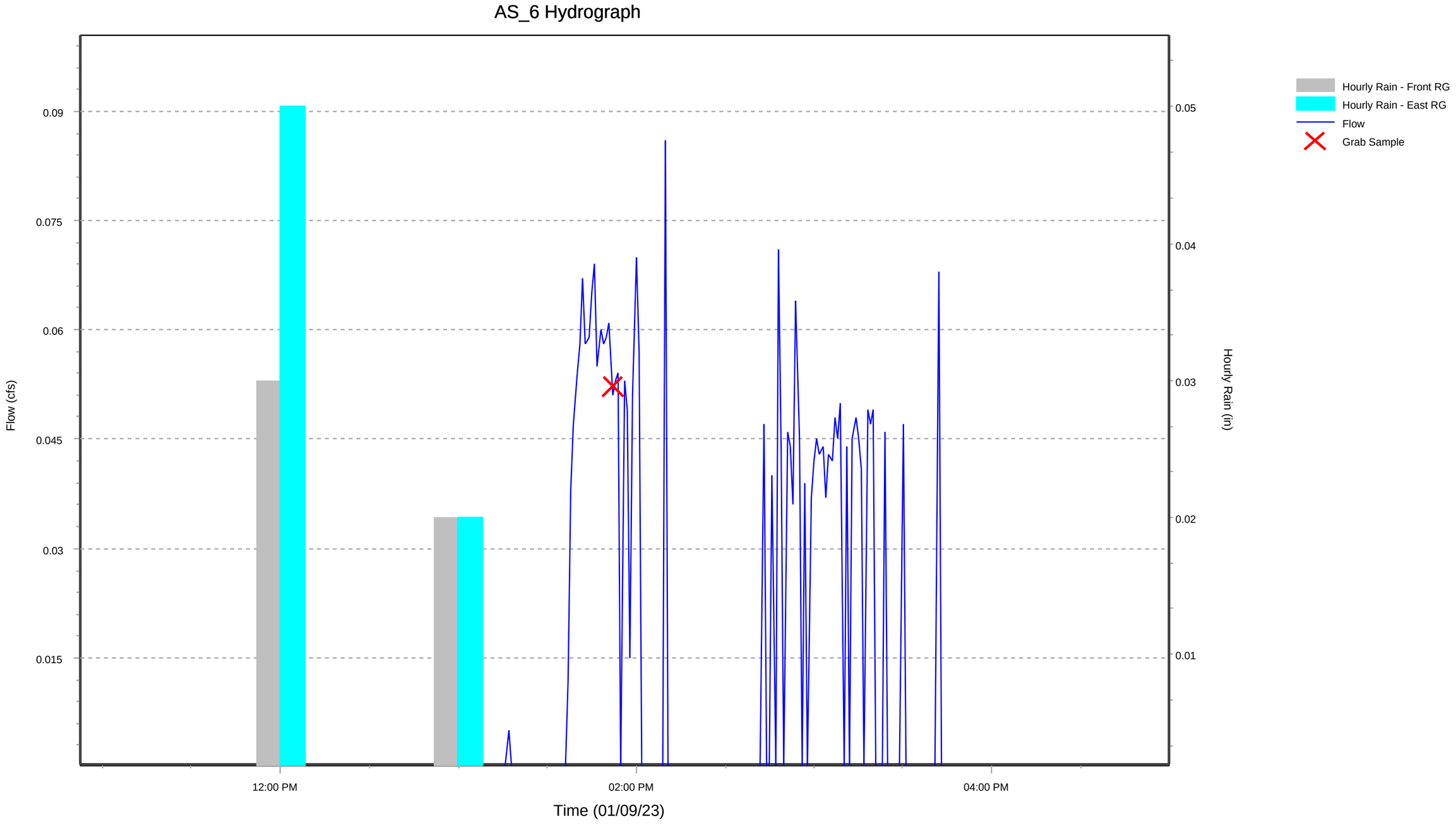

Lucky Hydrograph
Hourly Rain - Cynthia Mann RG
Flow
Grab Sample
Flow (cfs)
Hourly Rain (in)
0
0.05
0.1
0.15
0.2
0.25
0.01
0.02
0.03
0.04
0.05
10:00 AM
12:00 PM
02:00 PM
04:00 PM
06:00 PM
Time (01/09/23)


Whitewater Hydrograph
Hourly Rain - Whitewater RG
Flow
Grab Sample
Flow (cfs)
Hourly Rain (in)
0
0.05
0.1
0.15
0.2
0.25
0.005
0.01
0.015
0.02
0.025
0.03
0.035
12:00 PM
02:00 PM
04:00 PM
06:00 PM
08:00 PM
Time (01/09/23)

Main Hydrograph




Americana Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (01/09/23)
0
0.5
1
1.5
2
2.5
3
3.5
4
0.01
0.02
0.03
0.04
0.05
10:00 AM
12:00 PM
02:00 PM
04:00 PM
06:00 PM
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample


AS_6 Hydrograph
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample
Flow (cfs)
0.09
0.075
0.06
0.045
0.03
0.015
Hourly Rain (in)
0.05
0.04
0.03
0.02
0.01
12:00 PM
02:00 PM
04:00 PM
Time (01/09/23)

Attachment C: Field Forms

Set Up/ Shut Down Form – HACH

STATION: Lucky

SET UP

Personnel: TLL SMK

Date/Time On-Site: 09:37 1/9/23

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0942	2.31	-130.06	-1.67	12.8

Enable Condition or Velocity Cutoff:	3.31in
Deadband:	1in
Trigger Volume:	2895 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 01.10.23 / 1053

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1057	1.61	0	0	—	12.6
Downloaded to:		USB on Keychain			

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Lucky **Bottle** 1 **of** 0

Personnel: TZL **Date/Time On-Site:** 01.10.23 1053

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	1/9 1255	Success	13		
2	1327		14		
3	1404		15		
4	1513		16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

Not enough rain - sample dumped

If sampling is complete:
- ☒ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle, add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____
- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Lucky

Personnel: ZL, SMK **Date/Time On-Site:** 1257 1/9/23

Flow Meter Current Status						
Time	Level (in)	Flow ~~(cfs)~~ gpm	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1258	3.73	93.37	0.59	12.8	12:55	

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230109-03 -WG	1/9/23	13 18	☑
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1313	11.77	9.04	6.90	119.14

Sampler Current Status	
First Subsample Date/Time	12:55
Last Subsample Date/Time	
# of Subsamples taken	1

Comments:

Set Up/ Shut Down Form – ISCO

TATION: Whitewater

SET UP

Personnel: TLL, SMK

Date/Time On-Site: 1007 1/9/23

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0812	0.37	0.00	0.11	N/A

Enable Condition:	level > 1.4"
Hysteresis:	1.0"
Flow Pulse Interval:	800 cf

On-Site

- ☑ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 49 0812
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 01.10.23 / 1035

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1035	0.71	0.01	0.20	—
Downloaded to:		—		

On-Site

- ☐ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 1/10 1419
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Whitewater **Bottle** 1 **of** Ø

Personnel: TL **Date/Time On-Site:** 01.10.23 / 1035

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	1/9 1355	Success	13		
2	" 1515	"	14		
3	" 1912	"	15		
4	1/10 0731	No Liquid Detected	16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

Not enough rain - sample dumped

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☐ Keep flowmeter running	☐ Install new 15L bottle; add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Whitewater

Personnel: TL, SMK **Date/Time On-Site:** 1/9/23 13:57

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
13:57	2.36	0.22	0.71			0.02

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230109-11 -WG	1/9/23	1421	☑
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1417	10.04	8.54	6.86	147.42

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

Set Up/ Shut Down Form – HACH

ſATION: Main

SET UP

Personnel: TLL SMK

Date/Time On-Site: 0835 1 19123

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
08:40	1.25	0	0	12.5

Enable Condition or Velocity Cutoff:	2.25 in
Deadband:	1 in
Trigger Volume:	3411 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☐ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☐ Set logging interval to 1 minute
- ☐ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 01.10.23 / 1008

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1012	1.28	0	0	—	11.9
Downloaded to:		USB on keychain			

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Main **Bottle** 1 **of** Ø

Personnel: TL **Date/Time On-Site:** 01.10.23 / 1008

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	1/9 1221	Success	13		
2	1239		14		
3	1259		15		
4	1322		16		
5	1355		17		
6	1509		18		
7	1938		19		
8	2133		20		
9	1/10 0144	Rinse Error	21		
10			22		
11			23		
12			24		

Comments:

Not enough rain – sample dumped

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☐ Keep flowmeter running	☐ Install new 15L bottle, add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Main

Personnel: TL, KMC **Date/Time On-Site:** 01.09.23 / 1254

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1255	4.32	169.52	0.87	12.6		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230109-12 -WG	1/9/23	1257	☒
Field Duplicate *E.Coli*	230109-12 -101	↓	1258	☒
Field Blank *E.Coli*	230109-12 -001	↓	1303	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	1303	6.14	11.2	6.56	231.0

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	2, now 3!

Comments:

Grab samples were a little more clear than usual.
Strong smell of gasoline at MH.

Set Up/ Shut Down Form – ISCO

TATION: Americana

SET UP

Personnel: TLL, SMK

Date/Time On-Site: 0855 1/9/23

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0811	5.57	1.19	1.462	11.79
Enable Condition:	level > ~~6.0~~ 7.0"			
Hysteresis:	~~1.0~~ 1.5"			
Flow Pulse Interval:	2960 cf			

On-Site

- ☑ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☑ Direct or Remote; Date/time 1/9 0807
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☑ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 01.10.23 / 0951

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
Downloaded to:	—			

On-Site

- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 1/10 1416
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Americana **Bottle** 1 **of** 6

Personnel: TZL **Date/Time On-Site:** 01.10.23 / 0951

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	1/9 1154	Success	13	1/9 1522	Success
2	1210		14	1551	
3	1224		15	1621	
4	1238		16	1654	
5	1252		17	1729	
6	1306		18	1802	
7	1320		19	1838	
8	1335		20	1916	
9	1352		21	1954	
10	1411		22	2033	
11	1433		23	2131	
12	1456		24	2310	

Comments:

RGs only recorded 0.05 - 0.07" → sample dumped & not submitted

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☐ Keep flowmeter running	☐ Install new 15L bottle; add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Americana

Personnel: TZL, KMC **Date/Time On-Site:** 01.09.23 / 1310

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1318	8.27	3.40	2.358	11.87		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230109-14 -WG	1.9.23	1315	☒
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	1320	9.51	9.98	6.60	517.1

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	6

Comments:

Sample is pretty clear.

Set Up/ Shut Down Form – HACH

TATION: AS-6

SET UP

Personnel: TLL, SMK

Date/Time On-Site: 0912 1/9/23

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0918	0	0	0	12.3

Enable Condition or Velocity Cutoff:	0.02 fps
Deadband:	N/A
Trigger Volume:	221

- ☑ Install batteries on flowmeter and sampler
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Verify all cable and tubing connections
- ☒ Check date and time on flowmeter and sampler
- ☒ Set flowmeter program and sampler program parameters
- ☒ Set logging interval to 1 minute
- ☒ Start flowmeter program and sampler program
- ☒ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 01.10.23 / 0932

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
0932	0	0	0	170	12.1
Downloaded to:		RT			

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments: Bringing back sampler to replace internal desiccant

Composite Sample Collection

STATION: AS-6 **Bottle** Ø **of** Ø

Personnel: TRL **Date/Time On-Site:** 01.10.23 / 0932

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

Not enough flow to trigger the sampler.

If sampling is complete:
- ☒ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle, add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____
- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: AS-6

Personnel: TL, KMC **Date/Time On-Site:** 01.09.23 / 1330

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1351	1.589	0.05	0.64	12.2		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230109-206 -WG	1.9.23	1352	☒
Field Duplicate *E.Coli*	-101	—	—	☐
Field Blank *E.Coli*	-001	—	—	☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	1358	6.36	7.66	6.89	200.8

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	Ø

Comments: light brown color (like tea)

Attachment D: Storm Event Analytical Reports

Report Date: 01/17/2023 14:34

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00267-01	ACST1B	230109-03-WG	Water		01/09/2023	01/09/2023
AC00267-02	ACST1B	230109-11-WG	Water		01/09/2023	01/09/2023
AC00267-03	ACST1B	230109-12-WG	Water		01/09/2023	01/09/2023
AC00267-04	ACST1B	230109-12-101	Water		01/09/2023	01/09/2023
AC00267-05	ACST1B	230109-12-001	Water		01/09/2023	01/09/2023
AC00267-06	ACST1B	230109-14-WG	Water		01/09/2023	01/09/2023
AC00267-07	ACST1B	230109-206-WG	Water		01/09/2023	01/09/2023

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No duplication of this report is allowed, except in its entirety

Report Date: 01/17/2023 14:34

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230109-03-WG
Date/Time Collected:	01/09/2023 13:18		
Lab Number:	AC00267-01	Sample Collector:	Z.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B230081	435.2	MPN/100 mL	1.0	1.0	IDEXX - Colilert	01/09/23 16:00	1/10/23 16:30	JAL	
Wet Chemistry										
Chlorine Screen	B230093	Absent				SM 4500-CL G-2000 mod	01/09/23	1/9/23 15:05	LRF	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location:	ACST1B	Location Description:	230109-11-WG
Date/Time Collected:	01/09/2023 14:21		
Lab Number:	AC00267-02	Sample Collector:	Z.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B230081	235.9	MPN/100 mL	1.0	1.0	IDEXX - Colilert	01/09/23 16:00	1/10/23 16:30	JAL	
Wet Chemistry										
Chlorine Screen	B230093	Absent				SM 4500-CL G-2000 mod	01/09/23	1/9/23 15:05	LRF	

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11818 Joplin Road
Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230109-12-WG
Date/Time Collected:	01/09/2023 12:57		
Lab Number:	AC00267-03	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B230081	172.2	MPN/100 mL	1.0	1.0	IDEXX - Colilert	01/09/23 16:00	1/10/23 16:30	JAL	
Wet Chemistry										
Chlorine Screen	B230093	Absent				SM 4500-CL G-2000 mod	01/09/23	1/9/23 15:05	LRF	

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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230109-12-101
Date/Time Collected:	01/09/2023 12:00		
Lab Number:	AC00267-04	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B230081	69.7	MPN/100 mL	1.0	1.0	IDEXX - Colilert	01/09/23 16:00	1/10/23 16:30	JAL	
Wet Chemistry										
Chlorine Screen	B230093	Absent				SM 4500-CL G-2000 mod	01/09/23	1/9/23 15:05	LRF	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Report Date: 01/17/2023 14:34

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230109-12-001
Date/Time Collected:	01/09/2023 12:00		
Lab Number:	AC00267-05	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B230081	<1.0	MPN/100 mL	1.0	1.0	IDEXX - Colilert	01/09/23 16:00	1/10/23 16:30	JAL	U
Wet Chemistry										
Chlorine Screen	B230093	Absent				SM 4500-CL G-2000 mod	01/09/23	1/9/23 15:09	LRF	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Report Date: 01/17/2023 14:34

Boise City Public Works
Water Quality Laboratory
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Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230109-14-WG
Date/Time Collected:	01/09/2023 13:15		
Lab Number:	AC00267-06	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B230081	2850.0	MPN/100 mL	100.0	1.0	IDEXX - Colilert	01/09/23 16:00	1/10/23 16:30	JAL	D
Wet Chemistry										
Chlorine Screen	B230093	Absent				SM 4500-CL G-2000 mod	01/09/23	1/9/23 15:09	LRF	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Report Date: 01/17/2023 14:34

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230109-206-WG
Date/Time Collected:	01/09/2023 13:52		
Lab Number:	AC00267-07	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared Time	Analysis Time	Analyst Initials	Qual
Microbiology										
E. Coli	B230081	157.6	MPN/100 mL	1.0	1.0	IDEXX - Colilert	01/09/23 16:00	1/10/23 16:30	JAL	
Wet Chemistry										
Chlorine Screen	B230093	Absent				SM 4500-CL G-2000 mod	01/09/23	1/9/23 15:09	LRF	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
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Report Date: 01/17/2023 14:34

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Date Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B230081									
Blank (B230081-BLK1)									
E. Coli	Absent						01/10/2023	KMR	
LCS (B230081-BS1)									
E. Coli				Present			01/10/2023	KMR	
Duplicate (B230081-DUP1)	Source ID: LS01423-09								
E. Coli					Pass	128	01/10/2023	KMR	

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Report Date: 01/17/2023 14:34

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Tammy Lightle, Shannon Krantz, Kristen Chisholm, Zuly Lapa

Lab# ACD0267	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	Total Containers
-01	01.09.23		1318		230109-03-WG	ZL	X	X												X					
-02			1421		230109-11-WG	ZL	X	X												X					
-03			1257		230109-12-WG	TZ	X	X												X					
-04			1200		230109-12-101	TZ	X	X												X					
-05			1200		230109-12-001	TZ	X	X												X					
-06			1315		230109-14-WG	TZ	X	X												X					
-07			1352		230109-206-WG	TZ	X	X												X					

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Tammy Lightle	01.09.23 1457	1-9-23 1458	

coc_wql-pi

ACD0267

WY22

Storm Event Report for March 10, 2023

Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 208-389-7700

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2023

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for March 10, 2023

Date: May 17, 2023

To: Tammy Lightle

Cc: Monica Lowe

From: Shannon Kronz, Project Engineer

Prepared by: Shannon Kronz, Project Engineer

Reviewed by: Kevin White, Project Manager

Limitations:

This document was prepared solely for ACHD in accordance with professional standards at the time the services were performed and in accordance with the contract between ACHD and Brown and Caldwell dated September 30, 2022. This document is governed by the specific scope of work authorized by ACHD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACHD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2023 (October 1, 2022, through September 30, 2023). The following storm event report summarizes stormwater sampling results from the March 10, 2023 storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2023 Phase I Stormwater Outfall Monitoring.

Table 2-1. WY 2023 Samples Collected

Date	Lucky	Whitewater	Main	Americana	AS_6
October 22, 2022	G[1], C[2]	G, C[3]	G, C[2]	G, C[2]	G, C[2]
January 9, 2023	G[4]	G[4]	G[4]	G[4]	G[4]
March 10, 2023	G, C[5]	G, C[5]	G, C[5]	G[5]	G, C[5]
Collected:	1G, C[5]	2G, C[5]	2G, C[5]	2G, C[5]	2G, C[5]

Notes:

C = composite sample

G = grab sample

[1] E. coli sample qualified due to exceeded holding time.

[2] Composite samples qualified due to lack of representativeness (50%–75%).

[3] Composite samples rejected due to lack of representativeness (<50%).

[4] Grab samples rejected due to insufficient rainfall (<0.08 in).

[5] Incomplete water quality analysis due to low composite sample volume.

After the March 10, 2023, storm event, ACHD still needs to collect one grab sample from Whitewater, Main, Americana, and AS_6 and two grab samples from Lucky for WY 2023. In addition, three complete composite samples need to be collected from all Phase I monitoring sites.

Section 3: Storm Event Summary

The March 10, 2023, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from March 9, 2023 is included in Attachment A for reference.

Thursday, March 9, 2023 (Set Up)

- On the morning of March 9, 2023, the National Weather Service issued a forecast for a rain on snow event in the Boise area. Snow was forecasted to start between 2000 and 2100 on March 9 and quickly switch to rain. The bulk of the storm was forecasted between midnight and 0600 on March 10. The chance of precipitation was 100 percent, with 0.39 inches of precipitation forecasted.
- Setup was accomplished on March 9, 2023. An expected precipitation depth of 0.30 inches was used to set trigger volumes at the monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.

Friday, March 10, 2023 (Storm Event)

- The Boise area experienced rainshadowing during the morning of March 10, 2023. Heavy rain started at approximately 0915 and continued until approximately 1000 on March 10.
- Precipitation totals ranged between 0.13 and 0.16 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrographs for each site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana, and AS_6 monitoring stations were set up on March 9, 2023, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programed into the Lucky, Whitewater, Main, and Americana flowmeters. A site-specific velocity cutoff value was programmed into the AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

One, two-member team mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on March 10 at 1000. Grab samples were submitted to the West Boise Water Quality Lab (WQL) at 1224 on March 10. Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are included in Attachment D.

Composite Samples

Composite samples were collected at Lucky, Whitewater, Main, and AS_6 monitoring stations and submitted to the WQL at 1619 on March 10. A partial water quality analysis was conducted on the composite samples due to low composite sample volume. The parameters analyzed at the WQL varied between composite samples depending on the composite sample volume. Analytical results are included in Table 2. Pollutant loading estimates for the event are included in Table 3. A discussion of other composite sample collection issues is included in Section 5.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the March 10, 2023, storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the AS_6 monitoring station. The analytical results for these samples are included in Table 4.

Table 4-1. Quality Control Samples

Sample ID	Sample Type	Parent Sample	Conclusions
230310-206-001	Field blank	AS_6 grab	No *E. coli* detection was reported in the field blank.
230310-203-101	Field duplicate	AS_6 grab	Relative percent difference was within the acceptable range.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. Acceptance and performance measures for all analytical and non-analytical criteria were met for this storm event.

Section 5: Notes

During the storm event, the Americana flowmeter did not transmit data or trigger the sampler but it did record flow data. This equipment error resulted in no subsamples collected, so a composite sample was not submitted to WQL. After the storm event, a hard reboot resolved the issue. Additional testing was performed, but the problem was unable to be replicated.

Data Tables

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	YES	YES
Composite samples collected and submitted?	YES	YES	YES	NO	YES
Trigger volume used in field (ft^3 or gal)	7899 gal	2185 ft^3	9313 gal	8071 ft^3	602 ft^3
Velocity cutoff (fps)	--	--	--	--	0.02
Sampler enable condition (in)	level > 2.4	level > 1.0	level > 2.25	level > 6.30	--
Runoff start time	0922	0928	0916	0904	0932
Grab sample collection time	1112	1136	1009	1027	1043
Composite sample stop time	1122	1244	1047	--	1132
Runoff stop time	1301	1502	1225	1421	1353
Volume of discharge sampled (ft^3)	9,009	30,360	11,183	--	6,624
Total runoff volume (ft^3)	9,460	31,808	12,149	71,177	7,062
Percent of storm flow sampled (%)	95%	95%	92%	--	94%
Composite sample duration (hrs)	2.0	3.0	1.5	--	2.0
Storm precipitation (in)	0.13	0.16	0.13	0.13/0.13	0.13/0.13
Referenced rain gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	8	14	9	--	11
Number of composite bottles filled	1	1	1	--	1
Composite sample volume (Approx.; ml)	5,000	8,000	5,000	--	6,500

Notes:

– = No data.

Table 2. Field and Analytical Data Summary

Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				Analytical Parameters																			
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli	Sample ID Composite	BOD_5	COD	Hardness as $CaCO_3$	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C	mpn/100 mL		mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	3/10/2023	230310-03-WG	11.36	7.90	95.29	5.78	1986.3	230310-03-WC	26.4	411	--	219	444	82.0	--	--	0.283	--	6.80	--	--	--	--	--	--	0.0369	--
Whitewater	3/10/2023	230310-11-WG	10.92	6.83	462.62	6.04	770.1	230310-11-WC	43.5	725	207	550	947	592	1.46	0.0678	0.309	0.166	9.06	9.6	--	0.65	--	--	55.7	0.0712	--
Main	3/10/2023	230310-12-WG	10.68	7.90	420.12	7.99	579.4	230310-12-WC	19.7	540	151	408	809	384	0.743	--	0.380	--	5.31	8.3	--	0.54	--	--	59.7	0.0581	--
Americana	3/10/2023	230310-14-WG	11.16	7.44	1282.6	6.68	547.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AS_6	3/10/2023	230310-206-WG	10.84	7.53	1252.9	6.01	920.8	230310-206-WC	50.9	964	184	665	1190	565	1.7	0.218	0.284	0.181	11.5	13.6	--	0.54	--	--	66.2	0.0782	--

Notes:

– = No data.

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	3/10/2023	262	--	0.167	--	--
Whitewater	3/10/2023	718	1.11	0.234	0.126	6.87
Main	3/10/2023	613	0.563	0.288	--	4.03
Americana	3/10/2023	--	--	--	--	--
AS_6	3/10/2023	524	0.749	0.125	0.0798	5.07

Notes:

– = No data.

Table 4. QC Sample Summary				
Date	Parent Sample	Sample ID	Type	E. coli
				mpn/100 mL
3/10/2023	230310-206-WG	230310-206-001	Field Blank	<1.0
3/10/2023	230310-206-WG	230310-206-101	Field Duplicate	1790.0
Calculated parent/duplicate RPD				6%
Allowable RPD				40%

Attachment A: Supplemental Documents

A-1. Sampling Event Communication Form

A-2. Data Validation Checklist

A-3. Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 3/9/2023	Time: 8:01 AM	Initials: TL
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.10”
Date and time of expected event	3/9 5pm – 3/10 5pm
Expected amount of precipitation	0.39”
Percent chance of precipitation	100%
Percent chance of >0.10” over 12 hours	96%

NWS Update

I talked with Josh at NWS this morning. He said that the storm will begin as snow but quickly switch to rain and then will remain as rain all night. We will start to see measurable precip between 8-9pm, but possibly delayed until 10pm. The bulk of the storm will be midnight-6am and all precip will be finished by noon. Totals are 0.40” for Boise and 0.50” for Meridian.

Targeted Station & Samples

Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☒ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☐ Equipment Concerns:
☐ Other:

Text Forecast

NWS Forecast for: 2 Miles SW Garden City ID
Issued by: National Weather Service Boise, ID
Last Update: 3:34 am MST Mar 9, 2023

Wind Advisory

Today: Patchy fog before noon. Otherwise, mostly cloudy, with a high near 45. Southeast wind 8 to 18 mph, with gusts as high as 29 mph.
Tonight: Rain and snow. Low around 35. Breezy, with a southeast wind 18 to 22 mph, with gusts as high as 40 mph. Chance of precipitation is 100%. New snow accumulation of less than a half inch possible.
Friday: Rain. High near 46. Breezy, with a southeast wind 15 to 20 mph becoming west 7 to 12 mph in the morning. Winds could gust as high as 30 mph. Chance of precipitation is 100%. New precipitation amounts between a tenth and quarter of an inch possible.
Friday Night: A slight chance of rain and snow before midnight. Partly cloudy, with a low around 27. West wind 6 to 11 mph becoming light and variable after midnight. Winds could gust as high as 23 mph. Chance of precipitation is 20%.

Saturday: Mostly sunny, with a high near 48. East southeast wind 3 to 7 mph.
Saturday Night: Partly cloudy, with a low around 27.
Sunday: A slight chance of snow before noon, then a chance of rain. Partly sunny, with a high near 48. Chance of precipitation is 30%. Little or no snow accumulation expected.
Sunday Night: A 50 percent chance of rain. Mostly cloudy, with a low around 37.
Monday: Rain likely, mainly after noon. Mostly cloudy, with a high near 56. Chance of precipitation is 60%.
Monday Night: Rain. Low around 39. Chance of precipitation is 80%.
Tuesday: Rain likely. Mostly cloudy, with a high near 53. Chance of precipitation is 60%.
Tuesday Night: A 40 percent chance of rain. Mostly cloudy, with a low around 32.
Wednesday: A chance of rain and snow. Partly sunny, with a high near 50. Chance of precipitation is 30%.

Forecast Discussion
Area Forecast Discussion
National Weather Service Boise ID
354 AM MST Thu Mar 9 2023

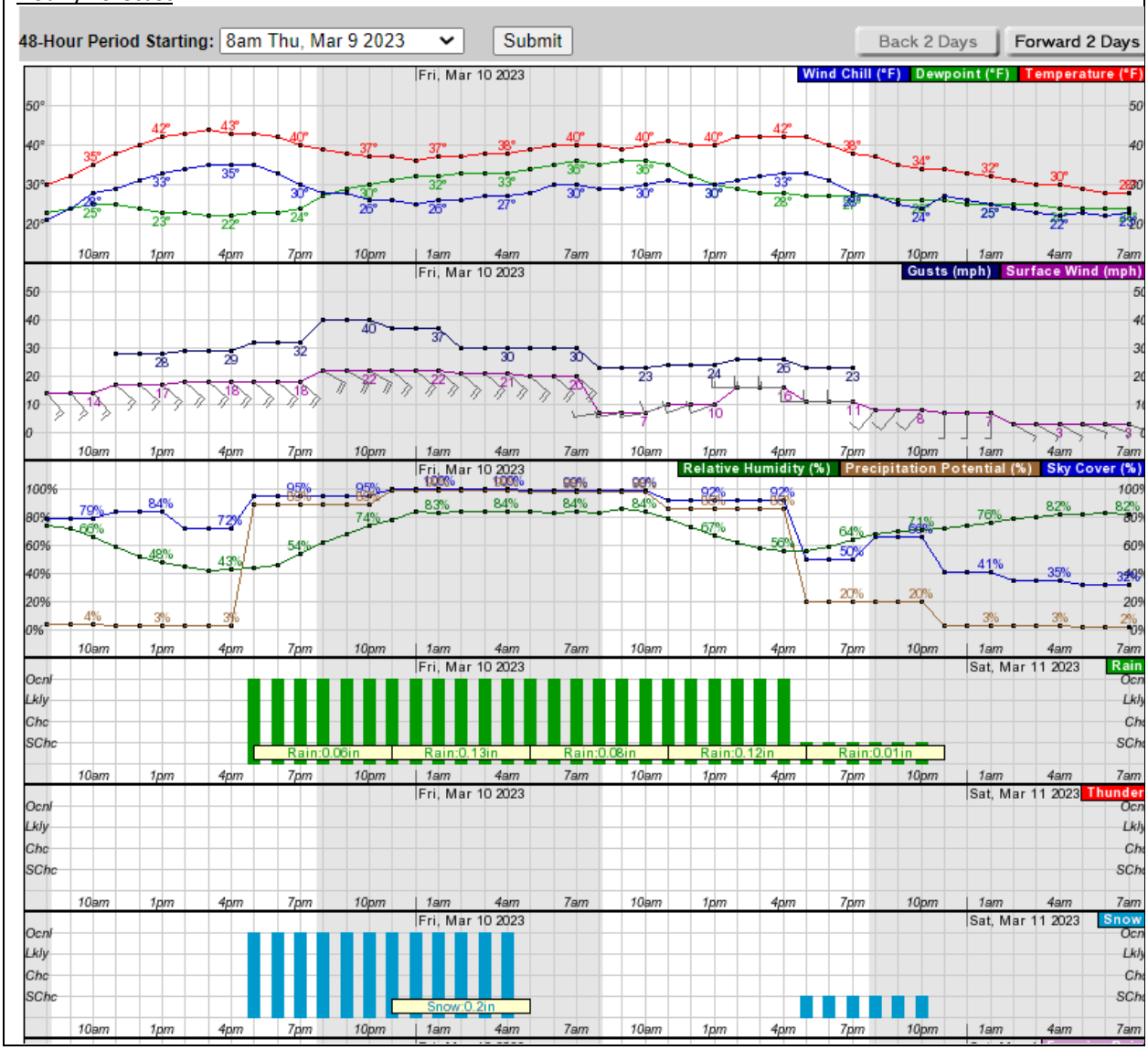
.SHORT TERM...Today through Saturday night...A strong Pacific storm with a deep moisture tap will push into the region late today. Easterly winds will increase out ahead of the storm, becoming gusty this afternoon. The gusty winds will continue overnight with higher terrain tapping into a strong southwest flow aloft. Snow and a rain/snow mix will accompany the storm as it surges inland. Snow levels will start at valley floors tonight, rising to between 4-7kft on Friday. The Snake Plain will see little accumulation as temperatures remain above freezing due to downsloping easterly winds. More sheltered valleys and sites above 4000 feet will see accumulating snow into Friday morning before a changeover to rain during the late morning. Winds will remain gusty but shift to the west behind a cold frontal passage during the day Friday. Models are faster with the timing of this front, which has resulted in cooler high temperatures for Friday. The quicker timing will also bring a sooner end to the precipitation Friday afternoon/evening. Have updated the WSW products to reflect the expected amounts/wind which has resulted in a mix of Warnings and Advisories. See the products for expected amounts. Left the western Magic Valley out of a WSW for now, but higher elevations north of Gooding/Jerome could see significant impacts from snow/wind.

The weather calms down Friday night into Saturday as the storm system exits eastward. With the front stalled south of the area, westerly flow will keep mostly dry and cool weather for Saturday. Any shower activity would be along the northern NV border. Saturday night will see the chance of showers increase along the northern NV border as another shortwave trough approaches the coast. Temperatures will remain around 10 degrees below normal.

.LONG TERM...Sunday through Thursday...Beginning Sunday, an upper low positioned along the PacNW coast will pull in the next round of Pacific moisture and precipitation from the southwest. The southwest flow aloft will generally keep snow levels above valley

floors, but allow for accumulating mountain snow to occur. **The low is forecast to track through the forecast area Monday and Tuesday which will continue the chance for precipitation.** Surface winds will be breezy at times during this period. Model guidance diverges thereafter, but is hinting at a slightly drier northwesterly flow solution as an upper ridge potentially builds along the west coast. Overall, temperatures for Sunday into next week will remain a few degrees below normal for this time of year.

Hourly Forecast



Storm Event QA/QC Checklist – Phase I

STORM DATE 230310

A. Event and Data Completeness	Yes	No	N/A	Notes
1. Field data sheets filled out completely and clearly	X			
2. Field parameters reviewed, and any problems/issues addressed	X			
3. All samples collected as specified	X			
4. All samples delivered to lab promptly (review chain of custody rpts)	X			
5. Inconsistencies/clarifications discussed with sampling team member			X	
6. All analytical reports from lab received	X			

B. Validation and Verification Methods	Yes	No	N/A	Notes
1. Outliers and unexpected values discussed with lab			X	
2. Appropriate analytical methods used	X			
3. All lab QA samples were within method acceptance criteria	X			
4. All samples reviewed and data qualifiers assigned if needed	X			
5. Data quality objective achieved	X			

C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.07	0.09	0.10	0.10/0.07	0.10/0.07	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.13	0.16	0.12	0.12/0.13	0.12/0.13	> 0.10"	X		
3. Sampled amount (% of total run-off)	95	95	92	–	94	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject	X		
4. Composite sample duration (hours)	2.0	3.0	1.5	–	2.0				
4. Ecoli sample holding time (hours)	2	2	3	3	2.5	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject	X		
5. Filtering of samples for dissolved parameter analysis (hours)	21	18.5	21.5	–	20	<= 24 hrs: no qualifier > 24 hrs.: reject	X		

D. Notes

- Americana comp did not collect due to equipment error. Testing in progress, but haven't been able to replicate errors.
- All submitted comps had low volume, so a full analyses was not completed.

Reviewed by Tim Little **Date** 04.27.23 **Approved by** Monica Love **Date** 5/10/23

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.
Step 2. Enter expected precipitation depth (in) in blue cell.
Step 3. Read trigger volumes (**bold**) in green cells.

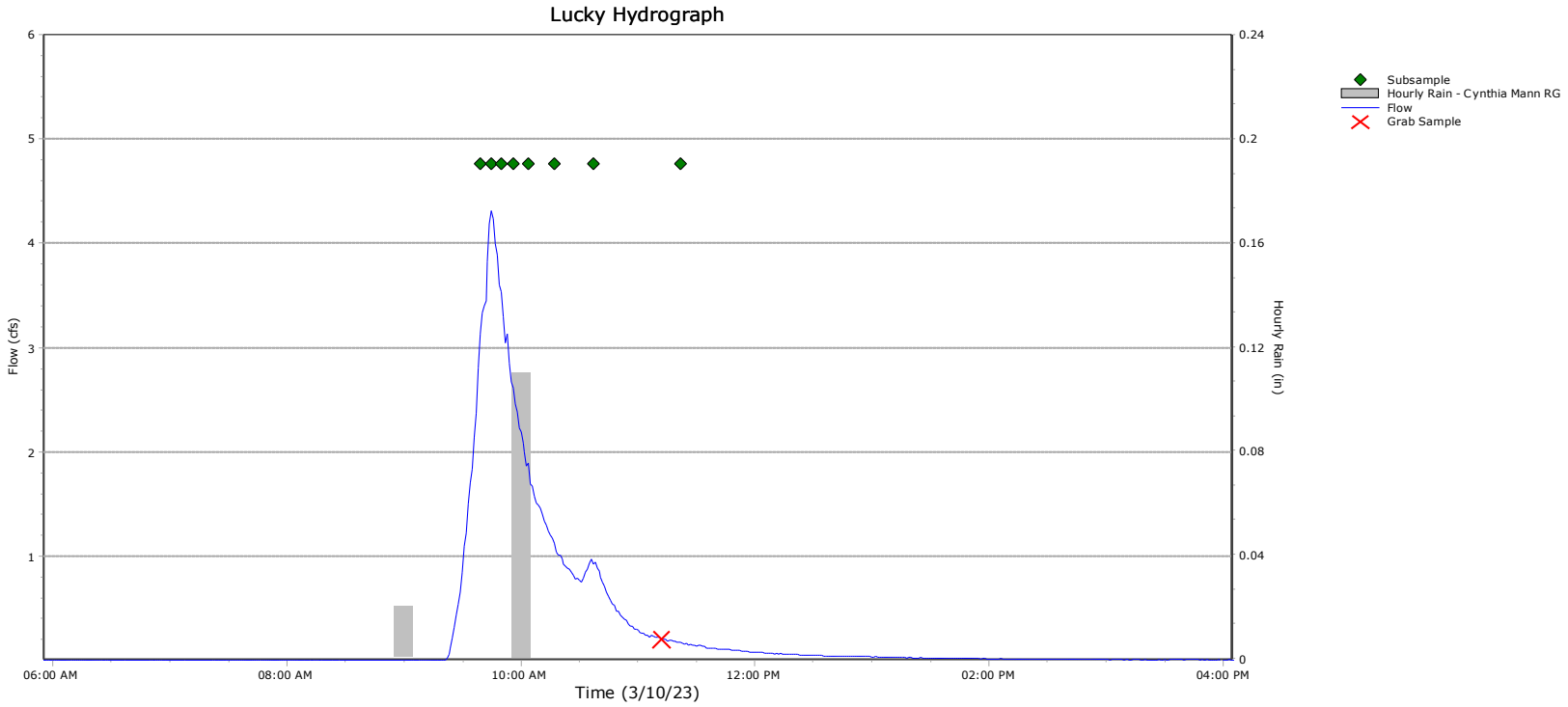
Expected Precipitation Depth = 0.30
Aliquots per Sample = 17

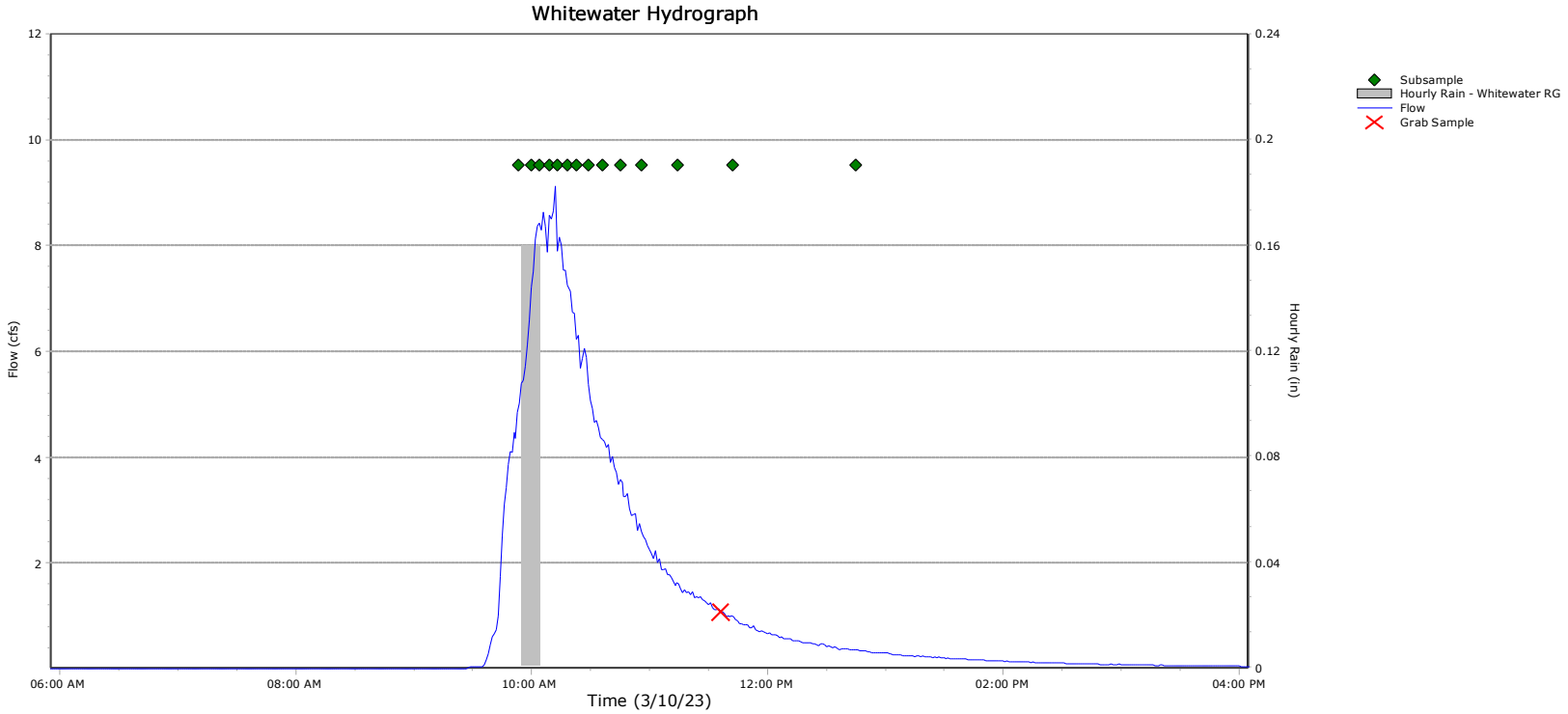
Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft^3)	Trigger Vol (ft^3)
Lucky	105	0.157	17952.2	**1056**
Whitewater	498	0.069	37149.1	**2185**
Main	79	0.246	21163.6	**1245**
Main Alt	60	0.200	13068.0	**769**
Americana	875	0.144	137214.0	**8071**
AS_6	204	0.046	10219.2	**601**
State	34	0.160	5924.2	**348**

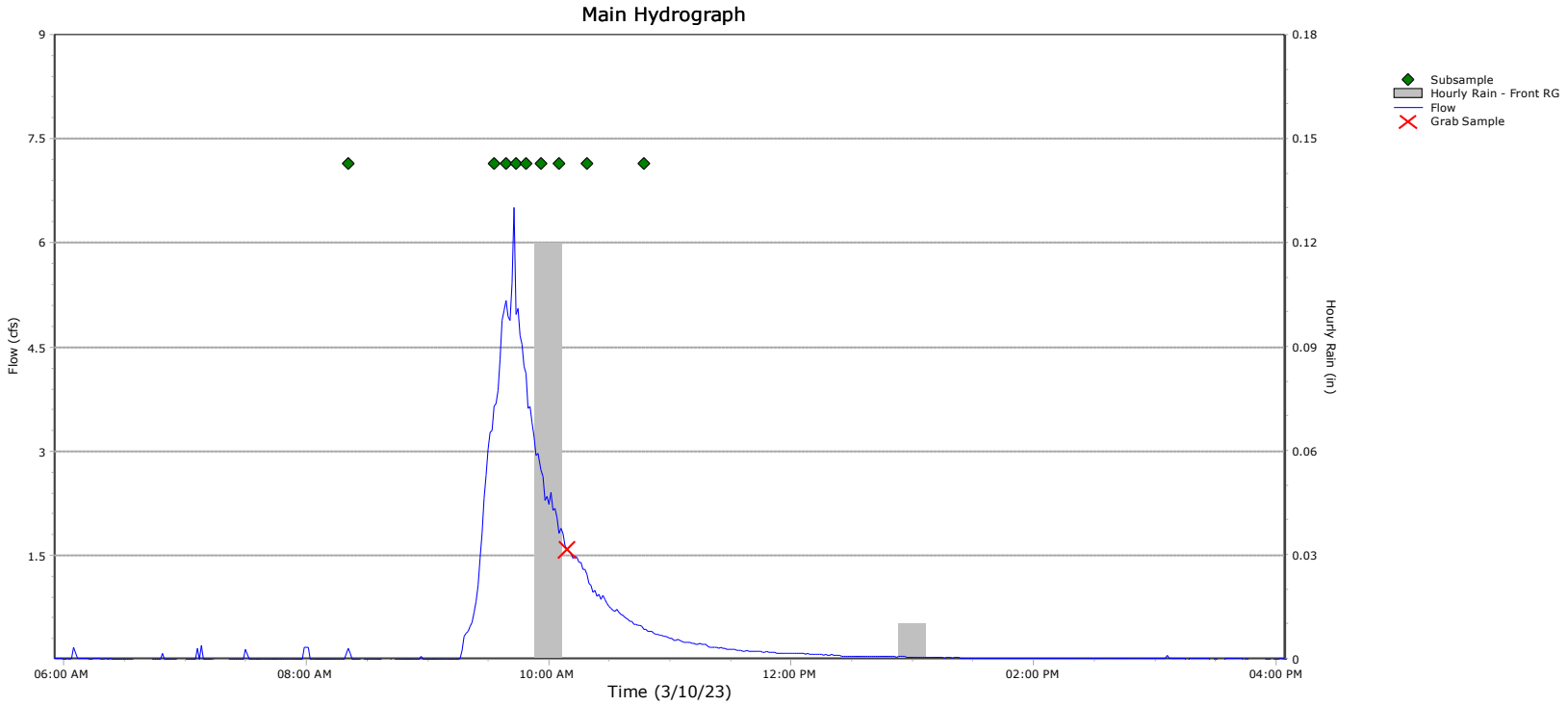
Notes:
Calculated RC = Average (precip (ft) / [volume (ft^3) x area (ft^2)])
Where precip (ft) is the measured amount from local rain guage, and volume (ft^3) is the measured discharge, and area (ft^2) is the watershed area

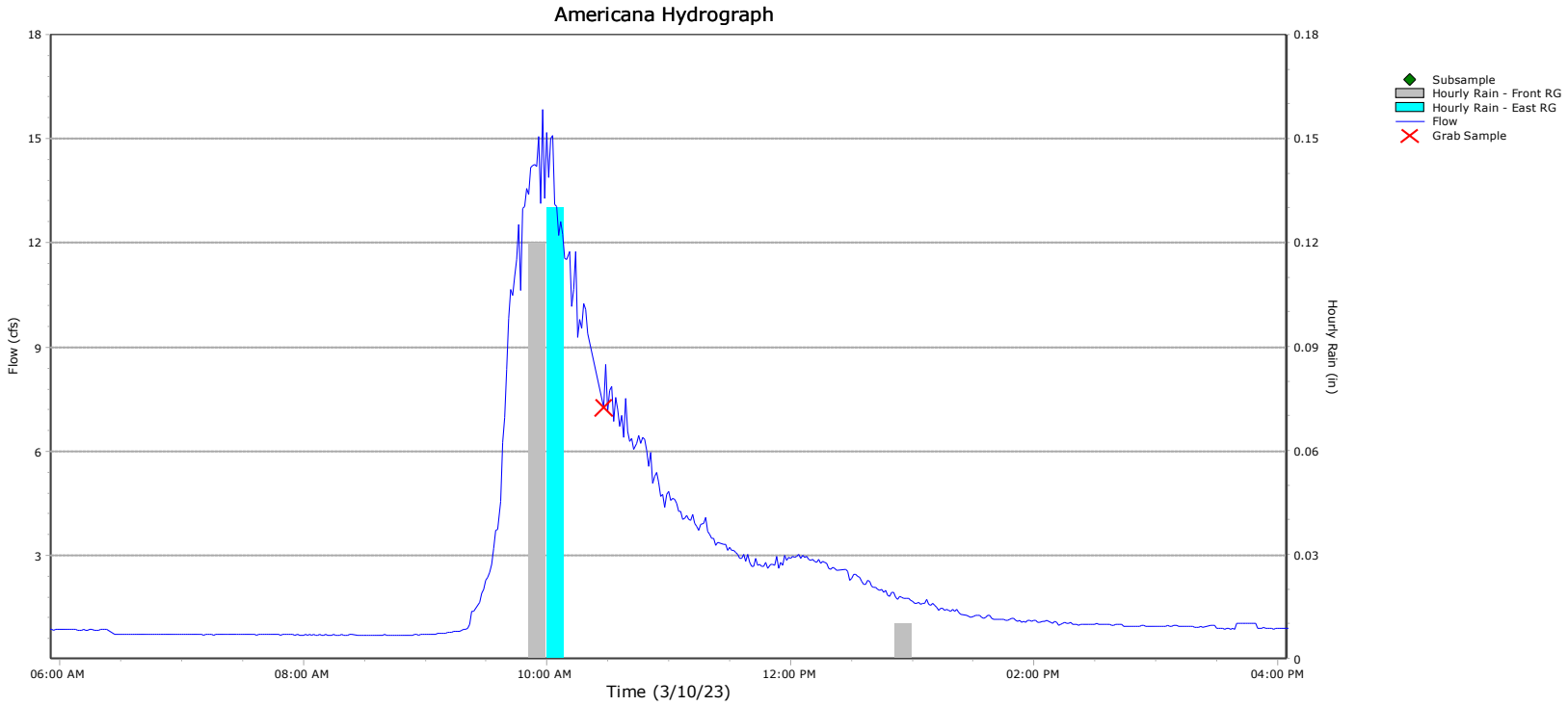
Expected volume (ft^3) = RC x expected precip (ft) x area (ft^2)

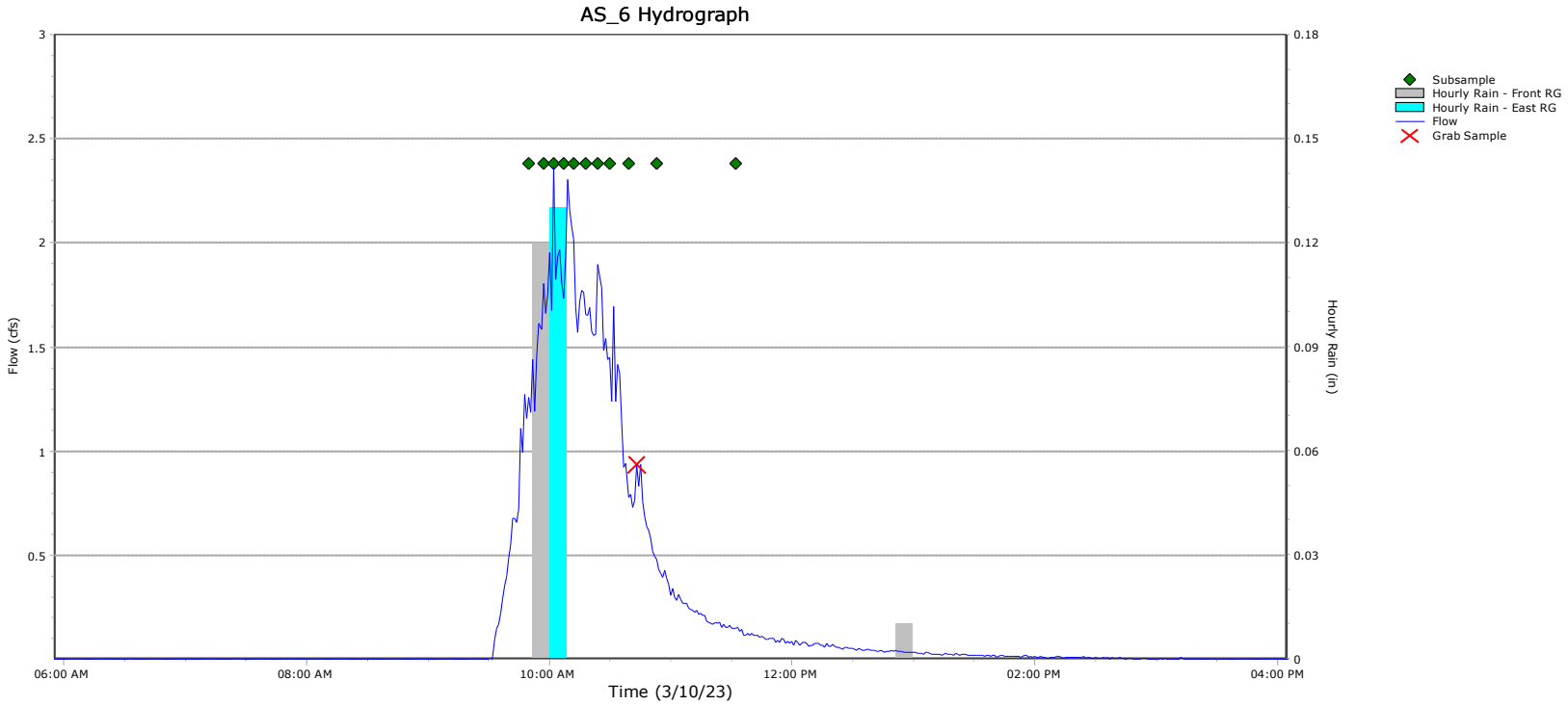
Attachment B: Storm Event Hydrographs


Lucky Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/10/23)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
0
1
2
3
4
5
6
0.04
0.08
0.12
0.16
0.2
0.24
Subsample
Hourly Rain - Cynthia Mann RG
Flow
Grab Sample


Whitewater Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/10/23)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
0
2
4
6
8
10
12
0.04
0.08
0.12
0.16
0.2
0.24
Subsample
Hourly Rain - Whitewater RG
Flow
Grab Sample


Main Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/10/23)
9
7.5
6
4.5
3
1.5
0.18
0.15
0.12
0.09
0.06
0.03
0
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
Subsample
Hourly Rain - Front RG
Flow
Grab Sample


Americana Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/10/23)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
0
3
6
9
12
15
18
0.03
0.06
0.09
0.12
0.15
0.18
Subsample
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample


AS_6 Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/10/23)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
0
0.5
1
1.5
2
2.5
3
0.03
0.06
0.09
0.12
0.15
0.18
Subsample
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample

Attachment C: Field Forms

Set Up/ Shut Down Form – HACH

TATION: Lucky

SET UP

Personnel: TLL, ~~ZZA~~ ZL

Date/Time On-Site: 03-09-2023 12:01

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
12:03	1.35	0	0	12.5

Enable Condition or Velocity Cutoff:	2.4 in.
Deadband:	1.00 in
Trigger Volume:	7599 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☐ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 03.13.23 / 1053

Time	Level (in)	Flow ~~(cfs)~~ gpm	Velocity (fps)	Total (cf)	Battery (V)
1054	1.97	9.50	0.15		12.1
Downloaded to:		USB on keychain			

If flow monitoring is complete:	If continuing to monitor flow:
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments: Changed clocks b/c of time change

Composite Sample Collection

STATION: FLL5 Lucky **Bottle** 1 **of** 1
Personnel: TLL, SMK **Date/Time On-Site:** 3/10/23 1505

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	230310-03 -WC
Approx Sample Volume (mL):	5000
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Brown / Gray
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/10 0939	Success	13		
2	0945		14		
3	0950		15		
4	0956		16		
5	1004		17		
6	1017		18		
7	1037		19		
8	1122		20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:
- ☒ Power off sampler, if separate from flowmeter
- ☒ Keep flowmeter running
- ☒ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle, add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____
- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Lucky

Personnel: TLL, KMC **Date/Time On-Site:** 3.10.23 1108

Flow Meter Current Status						
Time	Level (in)	Flow ~~(cfs)~~ gpm	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1110	3.80	96.87	0.60	12.6		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230310-03 -WG	3.10.23	1112	☒
Field Duplicate *E.Coli*	— -101	—	—	☐
Field Blank *E.Coli*	— -001	—	—	☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1114	5.78	11.36	7.9	95.29

Sampler Current Status		
First Subsample Date/Time	0939	3.10.23
Last Subsample Date/Time	1037	↓
# of Subsamples taken	7	

Comments:

Set Up/ Shut Down Form – ISCO

TATION: Whitewater

SET UP

Personnel: TLL, ZL

Date/Time On-Site: 03-09-2023 12:24

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
12:24	0.13	0.03	0.04	—

Enable Condition:	1.0 in
Hysteresis:	1.0 in
Flow Pulse Interval:	2 hrs

On-Site

- ☑ Replace flowmeter battery, install sampler battery
- ☐ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☐ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☐ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☑ Direct or Remote; Date/time 12:24 CT
- ☑ Retrieve data and review recent flow history
- ☑ Change Wireless Power Control to Storm Event
- ☐ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☑ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☑ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 03.13.23 / 1030

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
Downloaded to:				

On-Site

- ☐ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 3/13 0819
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Updated clock b/c of time change

Composite Sample Collection

STATION: Whitewater **Bottle** 1 **of** 1

Personnel: TLL, SMK **Date/Time On-Site:** 3/10/23 1518

☑ Halt sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	230309-11 -WC
Approx Sample Volume (mL):	8000
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Dark Gray
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/10 0952	Success	13	3/10 1141	Success
2	0959	↓	14	3/10 1244	↓
3	1003		15		
4	1008		16		
5	1012		17		
6	1017		18		
7	1022		19		
8	1028		20		
9	1035		21		
10	1044		22		
11	1055		23		
12	1113	↓	24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle; add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Whitewater

Personnel: TL, KMC **Date/Time On-Site:** 03.10.23 / 1133

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1133	4.68	1.11	1.31	N/A		0.18

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230310-11 -WG	3.10.23	1136	☒
Field Duplicate *E.Coli*	— -101	—	—	☐
Field Blank *E.Coli*	— -001	—	—	☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1139	6.04	10.92	6.83	462.62

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	12

Comments:

Set Up/ Shut Down Form – HACH

TATION: Main

SET UP

Personnel: TLL, ZL

Date/Time On-Site: 03-09-2023 10:40

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
10:43	1.74	3.93 gpm	0.08	12.7

Enable Condition or Velocity Cutoff:	2.25
Deadband:	1.00
Trigger Volume:	9313 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 03.13.23 / 0935

Time	Level (in)	Flow ~~(cfs)~~ gpm	Velocity (fps)	Total (cf)	Battery (V)
~~08~~ 0936	2.74	31.11	0.31		12.0
Downloaded to:		USB on keychain			

If flow monitoring is complete:	If continuing to monitor flow:
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments: Changed time b/c of time change.

Composite Sample Collection

STATION: Main
Personnel: TLL SMK

Bottle 1 **of** 1
Date/Time On-Site: 1425 3/10/23

☑ Halt sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	230310 - 12 - -WC
Approx Sample Volume (mL):	5000
Clarity (ex. Clear, Cloudy, Silty):	Dark Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Dark Brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/10 0821	Success	13		
2	0933		14		
3	0939		15		
4	0944		16		
5	0949		17		
6	0956		18		
7	1005		19		
8	1019		20		
9	1047		21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle, add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Main

Personnel: TLL, KMC **Date/Time On-Site:** 03.10.23 / 1006

Flow Meter Current Status						
Time	Level (in)	Flow ~~(cfs)~~ gpm	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1006	7.96	818	1.81	12.7		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230310-12 -WG	3/10/23	1009	☒
Field Duplicate *E.Coli*	— -101	—	—	☐
Field Blank *E.Coli*	— -001	—	—	☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1013	7.99	10.68	7.90	420.12

Sampler Current Status	
First Subsample Date/Time	0821 03.10.23
Last Subsample Date/Time	
# of Subsamples taken	7

Comments:

Set Up/ Shut Down Form – ISCO

TATION: Americana

SET UP

Personnel: TLL, ZL

Date/Time On-Site: 03-09-2023 11:04

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
11:04	4.83	1.06	1.601	12.06

Enable Condition:	6.30 in
Hysteresis:	1.5 in
Flow Pulse Interval:	8071 cf

On-Site
- ☑ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☐ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)
- ☑ Direct or Remote; Date/time 11:04
- ☑ Retrieve data and review recent flow history
- ☐ Change Wireless Power Control to Storm Event
- ☑ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☑ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☑ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 03.13.23 / 0947

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0953	6.56	1.77	1.650	12.19
	Downloaded to:	N/A		

On-Site
- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)
- ☒ Direct or Remote; Date/time
- ☐ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Flowmeter power was on when arrived on-site. Don't know why it wasn't connecting remotely.

Changed clock b/c of time change

Composite Sample Collection

STATION: _____ **Bottle** _____ **of** _____

Personnel: _____ **Date/Time On-Site:** _____

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

No subsamples were collected.

If sampling is complete:
- ☐ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____
- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Americana

Personnel: RL, KMC **Date/Time On-Site:** 03.10.23 1023

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230310-14 -WG	3.10.23	1027	☒
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1031	6.68	11.16	7.44	1282.6

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

Flowmeter battery clip was not clipped onto battery (must have fallen off).

No flow data prior to this visit, but still collecting grab sample b/c there was definitely enough rain.

*update 3/14/23: Flow data does exist from the event. Flowmeter is working, but the problem is with transmitting data.

Set Up/ Shut Down Form – HACH

TATION: AS-6

SET UP

Personnel: TLL, ZL

Date/Time On-Site: 03-09-2023 11:33

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
11:38	0	0	0	12.4

Enable Condition or Velocity Cutoff:	0.02
Deadband:	
Trigger Volume:	602 CF

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 03.13.23 / 1117

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1117	1.380	0.04	0.52	12519	12.2
Downloaded to:		R7			

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☐ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6 **Bottle** 1 **of** 1

Personnel: TLL, SMK **Date/Time On-Site:** 3/10/23 1445

☑ Halt sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	230310-206 -WC
Approx Sample Volume (mL):	6500
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Dark Brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/10 0950	Success	13		
2	0957		14		
3	1002		15		
4	1007		16		
5	1012		17		
6	1018		18		
7	1024		19		
8	1030		20		
9	1039		21		
10	1053		22		
11	1132		23		
12			24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle, add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: AS-6

Personnel: TLL, KMC **Date/Time On-Site:** 3/10/23 1041

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1041	5.461	0.78	1.53	11.8		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230310-206 -WG	3.10.23	1043	☒
Field Duplicate *E.Coli*	230310-206 -101	"	1042	☒
Field Blank *E.Coli*	230310-206 -001	"	1047	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1048	6.01	10.84	7.53	1252.9

Sampler Current Status		
First Subsample Date/Time	0950	3/10/23
Last Subsample Date/Time	1039	
# of Subsamples taken	~~10~~ 9	

Comments:

Attachment D: Storm Event Analytical Reports

Report Date: 03/24/2023 11:49

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00273-01	ACST1B	230310-03-WG	Water		03/10/2023	03/10/2023
AC00273-02	ACST1B	230310-11-WG	Water		03/10/2023	03/10/2023
AC00273-03	ACST1B	230310-12-WG	Water		03/10/2023	03/10/2023
AC00273-04	ACST1B	230310-14-WG	Water		03/10/2023	03/10/2023
AC00273-05	ACST1B	230310-206-WG	Water		03/10/2023	03/10/2023
AC00273-06	ACST1B	230310-206-101	Water		03/10/2023	03/10/2023
AC00273-07	ACST1B	230310-206-001	Water		03/10/2023	03/10/2023

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Report Date: 03/24/2023 11:49

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230310-03-WG
Date/Time Collected:	03/10/2023 11:12		
Lab Number:	AC00273-01	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B230812	1986.3	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/10/23 13:15	3/11/23 13:42	GKH	
Wet Chemistry										
Chlorine Screen	B230813	Absent				SM 4500-CL G-2000 mod	03/10/23	3/10/23 12:55	MER	

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Analysis Report

Location:	ACST1B	Location Description:	230310-11-WG
Date/Time Collected:	03/10/2023 11:36		
Lab Number:	AC00273-02	Sample Collector:	Z.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B230812	770.1	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/10/23 13:15	3/11/23 13:42	GKH	
Wet Chemistry										
Chlorine Screen	B230813	Absent				SM 4500-CL G-2000 mod	03/10/23	3/10/23 12:55	MER	

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Analysis Report

Location:	ACST1B	Location Description:	230310-12-WG
Date/Time Collected:	03/10/2023 10:09		
Lab Number:	AC00273-03	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B230812	579.4	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/10/23 13:15	3/11/23 13:42	GKH	
Wet Chemistry										
Chlorine Screen	B230813	Absent				SM 4500-CL G-2000 mod	03/10/23	3/10/23 12:55	MER	

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Analysis Report

Location:	ACST1B	Location Description:	230310-14-WG
Date/Time Collected:	03/10/2023 10:27		
Lab Number:	AC00273-04	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B230812	547.5	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/10/23 13:15	3/11/23 13:42	GKH	
Wet Chemistry										
Chlorine Screen	B230813	Absent				SM 4500-CL G-2000 mod	03/10/23	3/10/23 12:55	MER	

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Analysis Report

Location:	ACST1B	Location Description:	230310-206-WG
Date/Time Collected:	03/10/2023 10:43		
Lab Number:	AC00273-05	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B230812	920.8	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/10/23 13:15	3/11/23 13:42	GKH	
Wet Chemistry										
Chlorine Screen	B230813	Absent				SM 4500-CL G-2000 mod	03/10/23	3/10/23 12:59	MER	

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Analysis Report

Location:	ACST1B	Location Description:	230310-206-101
Date/Time Collected:	03/10/2023 12:00		
Lab Number:	AC00273-06	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B230812	1790.0	MPN/100 mL	100.0	1.0	IDEXX - Colilert	03/10/23 13:15	3/11/23 13:42	GKH	D
Wet Chemistry										
Chlorine Screen	B230813	Absent				SM 4500-CL G-2000 mod	03/10/23	3/10/23 12:59	MER	

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Analysis Report

Location:	ACST1B	Location Description:	230310-206-001
Date/Time Collected:	03/10/2023 12:00		
Lab Number:	AC00273-07	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B230812	<1.0	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/10/23 13:15	3/11/23 13:42	GKH	U
Wet Chemistry										
Chlorine Screen	B230813	Absent				SM 4500-CL G-2000 mod	03/10/23	3/10/23 12:59	MER	

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B230812									
Blank (B230812-BLK1)									
E. Coli	Absent						03/11/2023	GKH	
LCS (B230812-BS1)									
E. Coli				Present			03/11/2023	GKH	
Duplicate (B230812-DUP1)	Source ID: AC00274-01								
E. Coli					Pass	128	03/11/2023	GKH	

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Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Tammy Lightle
Kristen Chisholm

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C 166 Total Containers
00273-01	3.10.23		1112		230310-03-WG	KC	X	X												X					1
-02			1136		230310-11-WG		X	X												X					1
-03			1009		230310-12-WG		X	X												X					1
-04			1027		230310-14-WG		X	X												X					1
-05			1043		230310-206-WG		X	X												X					1
-06			1200		230310-206-101		X	X												X					1
-07			1200		230310-206-001	TR	X	X												X					1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Tammy Lightle	3.10.23 / 1224	3-10-23 1226	

coc_wql-pi

#AC00273

WY22

Report Date: 04/13/2023 08:29

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00276-01	ACST1C	230310-03-WC	Water		03/10/2023	03/11/2023
AC00276-02	ACST1C	230310-11-WC	Water		03/10/2023	03/11/2023
AC00276-03	ACST1C	230310-12-WC	Water		03/10/2023	03/11/2023
AC00276-04	ACST1C	230310-206-WC	Water		03/10/2023	03/11/2023

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Water Quality Laboratory
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Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230310-03-WC
Date/Time Collected:	03/10/2023 09:39 - 03/10/2023 11:22		
Lab Number:	AC00276-01	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B230915	0.283	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	03/21/23	3/21/23 11:12	ALN	
BOD5	B230821	26.4	mg/L	2.00	2.00	SM 5210 B-2011	03/11/23	3/16/23 10:21	KMR	
COD	B230820	411	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/11/23	3/11/23 11:01	MER	
TKN	B230872	6.80	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/16/23	3/17/23 9:33	ALN	
Total Dissolved Solids	B230843	82.0	mg/L	25.0	25.0	SM 2540 C-2011	03/13/23	3/15/23 8:12	ALG	
Total Suspended Solids	B230817	444	mg/L	0.900	0.900	SM 2540 D-2011	03/11/23	3/11/23 10:04	GKH	
Turbidity	B230815	219	NTU	6.0	0.3	EPA 180.1, Rev. 2.0 (1993)	03/11/23	3/11/23 9:28	JAL	D
Total Metals										
Mercury	B230941	0.0369	ug/L	0.0100	0.0100	EPA 245.1	03/23/23	3/24/23 9:56	SAS	

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Analysis Report

Location:	ACST1C	Location Description:	230310-11-WC
Date/Time Collected:	03/10/2023 09:52 - 03/10/2023 12:44		
Lab Number:	AC00276-02	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B230915	0.309	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	03/21/23	3/21/23 11:33	ALN	
BOD5	B230821	43.5	mg/L	2.00	2.00	SM 5210 B-2011	03/11/23	3/16/23 10:15	KMR	
COD	B230820	725	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/11/23	3/11/23 11:01	MER	
Nitrate-Nitrite, as N	B230850	0.166	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	03/14/23	3/14/23 11:28	JAL	
TKN	B231031	9.06	mg/L	0.500	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/29/23	3/30/23 9:40	ALN	D
Total Dissolved Solids	B230843	592	mg/L	25.0	25.0	SM 2540 C-2011	03/13/23	3/15/23 8:09	ALG	
Total Suspended Solids	B230817	947	mg/L	0.900	0.900	SM 2540 D-2011	03/11/23	3/11/23 9:57	GKH	
Turbidity	B230815	550	NTU	6.0	0.3	EPA 180.1, Rev. 2.0 (1993)	03/11/23	3/11/23 9:35	JAL	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B230814	0.0678	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/11/23	3/11/23 10:52	JAL	
Total Metals										
Mercury	B230941	0.0712	ug/L	0.0100	0.0100	EPA 245.1	03/23/23	3/24/23 10:00	SAS	
Arsenic	B230890	9.6	ug/L	0.070	0.070	EPA 200.8	03/18/23	3/19/23 15:17	DMW	
Cadmium	B230890	0.65	ug/L	0.010	0.010	EPA 200.8	03/18/23	3/19/23 15:17	DMW	
Calcium	B230828	22.2	mg/L	0.0400	0.0400	EPA 200.7	03/13/23	3/13/23 18:30	EDM	
Lead	B230890	55.7	ug/L	0.10	0.010	EPA 200.8	03/18/23	3/19/23 15:26	DMW	D
Magnesium	B230828	36800	ug/L	75.0	75.0	EPA 200.7	03/13/23	3/13/23 18:30	EDM	
Phosphorus as P	B230828	1.46	mg/L	0.0100	0.0100	EPA 200.7	03/13/23	3/13/23 18:30	EDM	
Hardness	B230828	207	mg/L	0.100	0.100	SM 2340 B-2011	03/13/23	3/13/23 18:30	EDM	

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Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230310-12-WC
Date/Time Collected:	03/10/2023 08:21 - 03/10/2023 10:47		
Lab Number:	AC00276-03	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B230915	0.380	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	03/21/23	3/21/23 11:01	ALN	
BOD5	B230821	19.7	mg/L	2.00	2.00	SM 5210 B-2011	03/11/23	3/16/23 10:04	KMR	
COD	B230820	540	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/11/23	3/11/23 11:01	MER	
TKN	B230872	5.31	mg/L	0.100	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/16/23	3/17/23 9:34	ALN	
Total Dissolved Solids	B230843	384	mg/L	25.0	25.0	SM 2540 C-2011	03/13/23	3/15/23 8:13	ALG	
Total Suspended Solids	B230817	809	mg/L	0.900	0.900	SM 2540 D-2011	03/11/23	3/11/23 10:05	GKH	
Turbidity	B230815	408	NTU	6.0	0.3	EPA 180.1, Rev. 2.0 (1993)	03/11/23	3/11/23 9:24	JAL	D
Total Metals										
Mercury	B230941	0.0581	ug/L	0.0100	0.0100	EPA 245.1	03/23/23	3/24/23 9:50	SAS	
Arsenic	B230890	8.3	ug/L	0.070	0.070	EPA 200.8	03/18/23	3/19/23 15:19	DMW	
Cadmium	B230890	0.54	ug/L	0.010	0.010	EPA 200.8	03/18/23	3/19/23 15:19	DMW	
Calcium	B230828	19.8	mg/L	0.0400	0.0400	EPA 200.7	03/13/23	3/13/23 18:36	EDM	
Lead	B230890	59.7	ug/L	0.10	0.010	EPA 200.8	03/18/23	3/19/23 15:29	DMW	D
Magnesium	B230828	24800	ug/L	75.0	75.0	EPA 200.7	03/13/23	3/13/23 18:36	EDM	
Phosphorus as P	B230828	0.743	mg/L	0.0100	0.0100	EPA 200.7	03/13/23	3/13/23 18:36	EDM	
Hardness	B230828	151	mg/L	0.100	0.100	SM 2340 B-2011	03/13/23	3/13/23 18:36	EDM	

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Analysis Report

Location:	ACST1C	Location Description:	230310-206-WC
Date/Time Collected:	03/10/2023 09:50 - 03/10/2023 11:32		
Lab Number:	AC00276-04	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B230915	0.284	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	03/21/23	3/21/23 11:21	ALN	
BOD5	B230821	50.9	mg/L	2.00	2.00	SM 5210 B-2011	03/11/23	3/16/23 9:56	KMR	
COD	B230820	964	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/11/23	3/11/23 11:04	MER	
Nitrate-Nitrite, as N	B230850	0.181	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	03/14/23	3/14/23 11:32	JAL	
TKN	B231031	11.5	mg/L	0.500	0.100	EPA 351.2, 10-107-06-2-M (Equivalent)	03/29/23	3/30/23 9:41	ALN	D
Total Dissolved Solids	B230843	565	mg/L	25.0	25.0	SM 2540 C-2011	03/13/23	3/15/23 8:14	ALG	
Total Suspended Solids	B230817	1190	mg/L	0.900	0.900	SM 2540 D-2011	03/11/23	3/11/23 9:59	GKH	
Turbidity	B230815	665	NTU	6.0	0.3	EPA 180.1, Rev. 2.0 (1993)	03/11/23	3/11/23 9:31	JAL	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B230814	0.218	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/11/23	3/11/23 10:57	JAL	
Total Metals										
Mercury	B230941	0.0782	ug/L	0.0100	0.0100	EPA 245.1	03/23/23	3/24/23 9:27	SAS	
Arsenic	B230890	13.6	ug/L	0.070	0.070	EPA 200.8	03/18/23	3/19/23 15:22	DMW	
Cadmium	B230890	0.54	ug/L	0.010	0.010	EPA 200.8	03/18/23	3/19/23 15:22	DMW	
Calcium	B230828	17.0	mg/L	0.0400	0.0400	EPA 200.7	03/13/23	3/13/23 18:41	EDM	
Lead	B230890	66.2	ug/L	0.10	0.010	EPA 200.8	03/18/23	3/19/23 15:31	DMW	D
Magnesium	B230828	34500	ug/L	75.0	75.0	EPA 200.7	03/13/23	3/13/23 18:41	EDM	
Phosphorus as P	B230828	1.70	mg/L	0.0100	0.0100	EPA 200.7	03/13/23	3/13/23 18:41	EDM	
Hardness	B230828	184	mg/L	0.100	0.100	SM 2340 B-2011	03/13/23	3/13/23 18:41	EDM	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B230815									
Blank (B230815-BLK1)									
Turbidity	<0.3	NTU					03/11/2023	JAL	U
LCS (B230815-BS1)									
Turbidity			105	90-110			03/11/2023	JAL	
Duplicate (B230815-DUP1)	Source ID: AC00275-01								
Turbidity					0.861	25	03/11/2023	JAL	D
Batch: B230817									
Blank (B230817-BLK1)									
Total Suspended Solids	<0.9	mg/L					03/11/2023	GKH	U
LCS (B230817-BS1)									
Total Suspended Solids			102	90-110			03/11/2023	GKH	
Duplicate (B230817-DUP1)	Source ID: AC00276-02								
Total Suspended Solids					0.955	20	03/11/2023	GKH	
Duplicate (B230817-DUP2)	Source ID: BB02772-01								
Total Suspended Solids					17.6	20	03/11/2023	GKH	
Batch: B230820									
Blank (B230820-BLK1)									
COD	<7	mg/L					03/11/2023	MER	U
LCS (B230820-BS1)									
COD			97.3	90-110			03/11/2023	MER	
Duplicate (B230820-DUP1)	Source ID: AC00275-01								
COD					2.64	10	03/11/2023	MER	
Batch: B230821									
Blank (B230821-BLK1)									
BOD5	<2	mg/L					03/16/2023	KMR	U
LCS (B230821-BS1)									
BOD5			99.3	84.6-115.4			03/16/2023	KMR	
LCS (B230821-BS2)									
BOD5			103	84.6-115.4			03/16/2023	KMR	
Duplicate (B230821-DUP1)	Source ID: BB02771-01								
BOD5					4.65	30	03/16/2023	KMR	D
Duplicate (B230821-DUP2)	Source ID: BB02772-02								
BOD5					3.33	30	03/16/2023	KMR	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B230843									
Blank (B230843-BLK1)									
Total Dissolved Solids	<25	mg/L					03/15/2023	ALG	U
LCS (B230843-BS1)									
Total Dissolved Solids			99.7	90-110			03/15/2023	ALG	
Duplicate (B230843-DUP1) Source ID: AC00276-02									
Total Dissolved Solids					0.211	10	03/15/2023	ALG	
Batch: B230850									
Blank (B230850-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					03/14/2023	JAL	U
Blank (B230850-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					03/14/2023	JAL	U
LCS (B230850-BS1)									
Nitrate-Nitrite, as N			96.3	90-110			03/14/2023	JAL	
LCS (B230850-BS2)									
Nitrate-Nitrite, as N			95.8	90-110			03/14/2023	JAL	
Duplicate (B230850-DUP1) Source ID: AC00276-02									
Nitrate-Nitrite, as N					3.61	10	03/14/2023	JAL	
Duplicate (B230850-DUP2) Source ID: BB02757-02									
Nitrate-Nitrite, as N					23.7	10	03/14/2023	JAL	QC-02
Duplicate (B230850-DUP3) Source ID: BB02762-02									
Nitrate-Nitrite, as N					0.525	10	03/14/2023	JAL	
Duplicate (B230850-DUP4) Source ID: LS01486-02									
Nitrate-Nitrite, as N					21.0	10	03/14/2023	JAL	QC-02
Matrix Spike (B230850-MS1) Source ID: AC00276-02									
Nitrate-Nitrite, as N			98.8	90-110			03/14/2023	JAL	
Matrix Spike (B230850-MS2) Source ID: BB02757-02									
Nitrate-Nitrite, as N			101	90-110			03/14/2023	JAL	
Matrix Spike (B230850-MS3) Source ID: BB02762-02									
Nitrate-Nitrite, as N			99.3	90-110			03/14/2023	JAL	
Matrix Spike (B230850-MS4) Source ID: LS01486-02									
Nitrate-Nitrite, as N			100	90-110			03/14/2023	JAL	
Matrix Spike Dup (B230850-MSD1) Source ID: AC00276-02									
Nitrate-Nitrite, as N			99.6	90-110	0.679	10	03/14/2023	JAL	
Matrix Spike Dup (B230850-MSD2) Source ID: BB02757-02									
Nitrate-Nitrite, as N			98.9	90-110	1.61	10	03/14/2023	JAL	
Matrix Spike Dup (B230850-MSD3) Source ID: BB02762-02									
Nitrate-Nitrite, as N			97.0	90-110	2.14	10	03/14/2023	JAL	
Matrix Spike Dup (B230850-MSD4) Source ID: LS01486-02									
Nitrate-Nitrite, as N			100	90-110	0.199	10	03/14/2023	JAL	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B230872									
Blank (B230872-BLK1)									
TKN	<0.1	mg/L					03/17/2023	ALN	U
LCS (B230872-BS1)									
TKN			97.4	80-120			03/17/2023	ALN	
Duplicate (B230872-DUP1) Source ID: AC00275-01									
TKN					4.27	20	03/17/2023	ALN	
Duplicate (B230872-DUP2) Source ID: BB02761-02									
TKN					3.67	20	03/17/2023	ALN	D
Matrix Spike (B230872-MS1) Source ID: AC00275-01									
TKN			101	80-120			03/17/2023	ALN	
Matrix Spike (B230872-MS2) Source ID: BB02761-02									
TKN			94.3	80-120			03/17/2023	ALN	D
Matrix Spike Dup (B230872-MSD1) Source ID: AC00275-01									
TKN			89.6	80-120	7.33	20	03/17/2023	ALN	
Matrix Spike Dup (B230872-MSD2) Source ID: BB02761-02									
TKN			97.0	80-120	0.823	20	03/17/2023	ALN	D
Batch: B230915									
Blank (B230915-BLK1)									
Ammonia, as N	<0.035	mg/L					03/21/2023	ALN	U
LCS (B230915-BS1)									
Ammonia, as N			103	90-110			03/21/2023	ALN	
LCS (B230915-BS2)									
Ammonia, as N			102	90-110			03/21/2023	ALN	
Duplicate (B230915-DUP1) Source ID: AC00275-01									
Ammonia, as N					6.44	10	03/21/2023	ALN	
Duplicate (B230915-DUP2) Source ID: BB02773-01									
Ammonia, as N					0.591	10	03/21/2023	ALN	
Matrix Spike (B230915-MS1) Source ID: AC00275-01									
Ammonia, as N			104	80-120			03/21/2023	ALN	
Matrix Spike (B230915-MS2) Source ID: BB02773-01									
Ammonia, as N			105	80-120			03/21/2023	ALN	
Matrix Spike Dup (B230915-MSD1) Source ID: AC00275-01									
Ammonia, as N			105	80-120	0.972	10	03/21/2023	ALN	
Matrix Spike Dup (B230915-MSD2) Source ID: BB02773-01									
Ammonia, as N			105	80-120	0.0485	10	03/21/2023	ALN	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B231031									
Blank (B231031-BLK1)									
TKN	<0.1	mg/L					03/30/2023	ALN	U
Blank (B231031-BLK2)									
TKN	<0.1	mg/L					03/30/2023	ALN	U
LCS (B231031-BS1)									
TKN			98.0	80-120			03/30/2023	ALN	
LCS (B231031-BS2)									
TKN			98.5	80-120			03/30/2023	ALN	
Duplicate (B231031-DUP1) Source ID: BB02783-01									
TKN					6.57	20	03/30/2023	ALN	D
Duplicate (B231031-DUP2) Source ID: LS01498-05									
TKN					0.198	20	03/30/2023	ALN	D
Duplicate (B231031-DUP3) Source ID: WB02406-08									
TKN					0.380	20	03/30/2023	ALN	D
Matrix Spike (B231031-MS1) Source ID: BB02783-01									
TKN			85.7	80-120			03/30/2023	ALN	D
Matrix Spike (B231031-MS2) Source ID: LS01498-05									
TKN			98.6	80-120			03/30/2023	ALN	D
Matrix Spike (B231031-MS3) Source ID: WB02406-08									
TKN			95.7	80-120			03/30/2023	ALN	D
Matrix Spike Dup (B231031-MSD1) Source ID: BB02783-01									
TKN			84.2	80-120	0.508	20	03/30/2023	ALN	D
Matrix Spike Dup (B231031-MSD2) Source ID: LS01498-05									
TKN			101	80-120	1.16	20	03/30/2023	ALN	D
Matrix Spike Dup (B231031-MSD3) Source ID: WB02406-08									
TKN			95.6	80-120	0.0424	20	03/30/2023	ALN	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Wet Chemistry									
Batch: B230814									
Blank (B230814-BLK1)									
Orthophosphate, as P	<0.003	mg/L					03/11/2023	JAL	U
LCS (B230814-BS1)									
Orthophosphate, as P			94.5	90-110			03/11/2023	JAL	
Duplicate (B230814-DUP1) Source ID: AC00276-02									
Orthophosphate, as P					0.515	10	03/11/2023	JAL	
Matrix Spike (B230814-MS1) Source ID: AC00276-02									
Orthophosphate, as P			101	90-110			03/11/2023	JAL	
Matrix Spike Dup (B230814-MSD1) Source ID: AC00276-02									
Orthophosphate, as P			101	90-110	0.0855	10	03/11/2023	JAL	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B230828									
Blank (B230828-BLK1)									
Calcium	<0.04	mg/L					03/13/2023	EDM	U
Magnesium	<75	ug/L					03/13/2023	EDM	U
Phosphorus as P	<0.01	mg/L					03/13/2023	EDM	U
LCS (B230828-BS1)									
Calcium			98.2	85-115			03/13/2023	EDM	
Magnesium			98.9	85-115			03/13/2023	EDM	
Phosphorus as P			102	85-115			03/13/2023	EDM	
Duplicate (B230828-DUP1) Source ID: AC00276-04									
Calcium					0.747	20	03/13/2023	EDM	
Magnesium					0.146	20	03/13/2023	EDM	
Phosphorus as P					0.403	20	03/13/2023	EDM	
Matrix Spike (B230828-MS1) Source ID: AC00276-04									
Calcium			98.7	70-130			03/13/2023	EDM	
Magnesium			101	70-130			03/13/2023	EDM	
Phosphorus as P			100	70-130			03/13/2023	EDM	
Matrix Spike Dup (B230828-MSD1) Source ID: AC00276-04									
Calcium			88.6	70-130	4.40	20	03/13/2023	EDM	
Magnesium			84.0	70-130	4.57	20	03/13/2023	EDM	
Phosphorus as P			83.0	70-130	6.56	20	03/13/2023	EDM	
Batch: B230890									
Blank (B230890-BLK1)									
Arsenic	<0.070	ug/L					03/19/2023	DMW	U
Cadmium	<0.010	ug/L					03/19/2023	DMW	U
Lead	<0.010	ug/L					03/19/2023	DMW	U
LCS (B230890-BS1)									
Arsenic			96.5	85-115			03/19/2023	DMW	
Cadmium			98.9	85-115			03/19/2023	DMW	
Lead			99.7	85-115			03/19/2023	DMW	
Duplicate (B230890-DUP1) Source ID: ME00239-02									
Arsenic					1.58	20	03/19/2023	DMW	
Cadmium					NR	20	03/19/2023	DMW	U
Lead					5.11	20	03/19/2023	DMW	
Matrix Spike (B230890-MS1) Source ID: ME00239-02									
Arsenic			98.5	70-130			03/19/2023	DMW	
Cadmium			96.9	70-130			03/19/2023	DMW	
Lead			95.3	70-130			03/19/2023	DMW	
Matrix Spike Dup (B230890-MSD1) Source ID: ME00239-02									
Arsenic			97.8	70-130	0.647	20	03/19/2023	DMW	
Cadmium			96.6	70-130	0.352	20	03/19/2023	DMW	
Lead			94.6	70-130	0.738	20	03/19/2023	DMW	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B230941									
Blank (B230941-BLK1)									
Mercury	<0.01	ug/L					03/24/2023	SAS	U
LCS (B230941-BS1)									
Mercury			101	85-115			03/24/2023	SAS	
Duplicate (B230941-DUP1) Source ID: AC00276-04									
Mercury					8.14	20	03/24/2023	SAS	
Matrix Spike (B230941-MS1) Source ID: AC00276-04									
Mercury			99.8	70-130			03/24/2023	SAS	
Matrix Spike Dup (B230941-MSD1) Source ID: AC00276-04									
Mercury			123	70-130	8.66	20	03/24/2023	SAS	

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Report Date: 04/13/2023 08:29

Boise City Public Works
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Notes and Definitions

Item	Definition
D	Data reported from a dilution
QC-02	The RPD is greater than the method acceptance criteria. At least one of the values used to calculate the RPD, is less than or equal to the PQL.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Tammy Lightle, Shannon Krantz

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C-180 Total Containers
C00276-01	3/10/23	3/10/23	0939	1122	230310-03-WC	TL	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-02			0952	1244	230310-11-WC		X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-03			0821	~~1044~~ 1047 TL	230310-12-WC		X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-04			0950	1132	230310-206-WC		X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)
Tammy Lightle	3.10.23 1619	Scott Snow 3/11/23 0700

Comments/Special Instructions:

If sample volume is not sufficient for all analyses, please drop dissolved metals first.

If still not enough volume, drop total metals.

= dropped from COC

#AC00276

AC00276

Storm Event Report for March 29, 2023

Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 208-389-7700

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2023

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for March 29, 2023

Date: May 25, 2023

To: Tammy Lightle

Cc: Monica Lowe

From: Shannon Kronz, Project Engineer

Prepared by: Zuly Lapa, Project Engineer

Reviewed by: Kevin White, Project Manager
Shannon Kronz, Project Engineer

Limitations:

This document was prepared solely for ACHD in accordance with professional standards at the time the services were performed and in accordance with the contract between ACHD and Brown and Caldwell dated September 30, 2022. This document is governed by the specific scope of work authorized by ACHD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACHD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2023 (October 1, 2022, through September 30, 2023). The following storm event report summarizes stormwater sampling results from the March 29, 2023, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2023 Phase I Stormwater Outfall Monitoring.

Table 2-1. WY 2023 Samples Collected

Date	Lucky	Whitewater	Main	Americana	AS_6
October 22, 2022	G[1], C[2]	G, C[3]	G, C[2]	G, C[2]	G, C[2]
January 9, 2023	G[4]	G[4]	G[4]	G[4]	G[4]
March 10, 2023	G, C[5]	G, C[5]	G, C[5]	G[5]	G, C[5]
March 29, 2023	G[6], C[5,6]	G[6], C[5,6]	G[6], C[6]	G, C	G, C[5]
Collected:	1G, 1C[5]	2G, 1C[5]	2G, 1C[5]	3G, 1C	3G, 1C[5]

Notes:

C = composite sample

G = grab sample

[1] E. coli sample qualified due to exceeded holding time.

[2] Composite samples qualified due to lack of representativeness (50%–75%).

[3] Composite samples rejected due to lack of representativeness (<50%).

[4] Grab samples rejected due to insufficient rainfall (<0.08 inches).

[5] Incomplete water quality analysis due to low composite sample volume.

[6] Sample qualified due to insufficient rainfall (0.09 – 0.10 inches)

After the March 29, 2023, storm event, ACHD still needs to collect two grab samples from Lucky and one grab sample from Whitewater and Main for WY 2023. In addition, three complete composite samples need to be collected from Lucky, Whitewater, Main, and AS_6 and two composite samples need to be collected from Americana.

Section 3: Storm Event Summary

The March 29, 2023, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from March 28, 2023, is included in Attachment A for reference.

Tuesday, March 28, 2023 (Set Up)

- On the morning of March 28, 2023, the National Weather Service issued a forecast for widespread rain in the Boise area, starting March 29 at 0300 - 1000. Rain shadowing was expected on March 28, but not during the forecasted storm. The chance of precipitation was 70 percent, with 0.15 inches of precipitation forecasted.
- Setup was accomplished on March 28, 2023. An expected precipitation depth of 0.11 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.

Wednesday, March 29, 2023 (Storm Event)

- Moderate rain started at approximately 0715 and continued until 1100.
- Precipitation totals ranged between 0.09 and 0.12 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrographs for each site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana, and AS_6 monitoring stations were set up on March 28, 2023, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programed into the Lucky, Whitewater, Main, and Americana flowmeters. A site-specific velocity cutoff value was programmed into the AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

Two, two-member teams mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on March 29 at 0900. Grab samples were submitted to the West Boise Water Quality Lab at 1042 on March 29. Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are located in Attachment D.

Composite Samples

Composite samples were collected at Lucky, Whitewater, Main, Americana, and AS_6 monitoring stations and submitted to the West Boise Water Quality Lab at 1446 on March 29. The Lucky, Whitewater, and AS_6 composite samples did not have sufficient volume to analyze all parameters, but a partial water quality analysis was performed for each composite sample. A complete water quality analysis was completed on the Americana and Main composite samples. Analytical results are shown on Table 2. Pollutant loading estimates for the event are detailed in Table 3.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the March 29, 2023 storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the Lucky monitoring station. The analytical results for these samples are included in Table 4.

Table 4-1. Quality Control Samples

Sample ID	Sample Type	Parent Sample	Conclusions
230310-03-001	Field blank	Lucky grab	No *E. coli* detection was reported in the field blank.
230310-03-101	Field duplicate	Lucky grab	Relative percent difference was within the acceptable range.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. The samples collected at Lucky, Whitewater, and Main during the March 29 event were qualified due to insufficient rainfall (0.09 - 0.10 inches). The samples collected at Americana and AS_6 were accepted because the average rainfall for the Front and East rain gauges averaged greater than 0.10 inches. All other acceptance and performance measures for all analytical and non-analytical criteria were met for this storm event.

Data Tables

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	YES	YES
Composite samples collected and submitted?	YES	YES	YES	YES	YES
Trigger volume used in the field (ft^3 or gal)	2,895 gal	800 ft^3	3,411 gal	2,960 ft^3	221 ft^3
Velocity cutoff (fps)	--	--	--	--	0.02
Sampler enable condition (in)	level > 2.6	level > 2.5	level > 2.4	level > 6.7	--
Runoff start time	0739	0914	0722	0746	0856
Grab sample collection time	0919	1001	0905	0921	0940
Composite sample stop time	1228	1244	1118	1320	1215
Runoff stop time	1422	1545	1250	1331	1405
Volume of discharge sampled (ft^3)	1,330	4,959	3,774	53,671	1,478
Total runoff volume (ft^3)	1,414	6,111	3,981	54,701	1,592
Percent of storm flow sampled (%)	94%	81%	95%	98%	93%
Composite sample duration (hrs)	5.0	3.5	4.0	5.5	3.0
Storm Precipitation (in)	0.09	0.10	0.09	0.09/0.12	0.09/0.12
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	3	6	9	18	7
Number of composite bottles filled	1	1	1	1	1
Composite sample volume (Approx.; ml)	2,000	2,750	5,750	10,250	4,250

Notes:

Table 2. Field and Analytical Data Summary

Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				Analytical Parameters																					
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli	Sample ID Composite	BOD_5	COD	Hardness as $CaCO_3$	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C	mpn/100 mL		mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	3/29/2023	230329-03-WG	5.90 [3J]	7.30 [3J]	222.85 [3J]	10.99 [3J]	222.4 [3J]	230329-03-WC	--	--	34.5 [3J]	--	--	--	0.314 [3J]	0.104 [3J]	--	0.546 [3J]	--	1.9 [3J]	0.012 [3J]	0.026 [3J]	2.5 [3J]	0.096 [3J]	0.72 [3J]	--	12.2 [3J]
Whitewater	3/29/2023	230329-11-WG	7.70 [3J]	7.43 [3J]	134.99 [3J]	8.65 [3J]	10.7 [3J]	230329-11-WC	8.04 [3J]	69.0 [3J]	56.6 [3J]	48.7 [3J]	--	--	0.273 [3J]	0.0993 [3J]	0.366 [3J]	0.373 [3J]	1.28 [3J]	1.8 [3J]	0.017 [3J]	0.045 [3J]	3.9 [3J]	0.25 [3J]	3.2 [3J]	<0.0100 [3J]	29.4 [3J]
Main	3/29/2023	230329-12-WG	10.10 [3J]	7.93 [3J]	209.7 [3J]	7.74 [3J]	52.8 [3J]	230329-12-WC	12.1 [3J]	105 [3J]	44.7 [3J]	77.7 [3J]	54.0 [3J]	170 [3J]	0.209 [3J]	0.0869 [3J]	0.929 [3J]	0.671 [3J]	1.85 [3J]	2.1 [3J]	0.020 [3J]	0.081 [3J]	5.7 [3J]	0.089 [3J]	5.7 [3J]	0.0187 [3J]	33.4 [3J]
Americana	3/29/2023	230329-14-WG	10.42 [3J]	7.67 [3J]	481.7 [3J]	7.65 [3J]	218.7 [3J]	230329-14-WC	9.64 [3J]	62 [3J]	133 [3J]	45.8 [3J]	38.6 [3J]	318 [3J]	0.205 [3J]	0.0914 [3J]	0.633 [3J]	1.08 [3J]	1.9 [3J]	3.6 [3J]	0.023 [3J]	0.065 [3J]	3.4 [3J]	0.08 [3J]	3.6 [3J]	0.03 [3J]	20.5 [3J]
AS_6	3/29/2023	230329-206-WG	9.41 [3J]	7.85 [3J]	247.3 [3J]	5.75 [3J]	1046.2 [3J]	230329-206-WC	21.4 [3J]	145 [3J]	123 [3J]	69.4 [3J]	--	354 [3J]	0.528 [3J]	0.266 [3J]	0.600 [3J]	0.387 [3J]	2.84 [3J]	3.2 [3J]	0.028 [3J]	0.099 [3J]	4.8 [3J]	0.22 [3J]	6.5 [3J]	0.0181 [3J]	23.9 [3J]

Notes:

– = No data.

[3J] Data qualifed due to insufficient rainfall (0.09 - 0.10 inches)

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	3/29/2023	--	0.0277 [3J]	--	0.0482 [3J]	--
Whitewater	3/29/2023	--	0.0678 [3J]	0.0909 [3J]	0.0927 [3J]	0.318 [3J]
Main	3/29/2023	13.4 [3J]	0.0519 [3J]	0.231 [3J]	0.167 [3J]	0.460 [3J]
Americana	3/29/2023	132 [3J]	0.700 [3J]	2.16 [3J]	3.69 [3J]	6.49 [3J]
AS_6	3/29/2023	--	0.0524 [3J]	0.0596 [3J]	0.0384 [3J]	0.282 [3J]

Notes:

– = No data.

[3J] Data qualifed due to insufficient rainfall (0.09 - 0.10 inches)

Table 4. QC Sample Summary				
Date	Parent Sample	Sample ID	Type	E. coli
				mpn/100 mL
3/29/2023	230329-03-WG	230329-03-001	Field Blank	<1.0
3/29/2023	230329-03-WG	230329-03-101	Field Duplicate	313.0
Calculated parent/duplicate RPD				4%
Allowable RPD				40%

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 3/28/2023	Time: 7:40 AM	Initials: TL
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.00”
Date and time of expected event	3/29 3am
Expected amount of precipitation	0.14
Percent chance of precipitation	70%
Percent chance of >0.10” over 12 hours	25%

NWS Update

I spoke with Dave from NWS – he said that we are currently being rainshadowed so we won’t see much measurable precip during the daytime hours today. The rainshadowing is expected to be overcome tonight, and we should see measurable precip starting between 3am and 6am. The bulk of the storm is looking like 4am-10am, and should be done by noon tomorrow. The models differ on the amount of precip because some show the system breaking up while others don’t. Their official forecast is 0.15”.

Targeted Station & Samples

Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☒ Grab	☒ Grab	☐ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain ☐ Rain ☐ Rain on Snow
☐ Scattered Showers ☐ Thunder Showers ☐ Snowmelt
☐ Other:

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☐ Equipment Concerns:
☐ Other:

Text Forecast

NWS Forecast for: Boise ID
Issued by: National Weather Service Boise, ID
Last Update: 3:44 am MDT Mar 28, 2023

Today: Snow likely before noon, then a chance of rain. Cloudy, with a high near 53. Breezy, with an east southeast wind around 21 mph, with gusts as high as 30 mph. Chance of precipitation is 60%. Little or no snow accumulation expected.
Tonight: Rain likely, mainly after midnight. Cloudy, with a low around 36. Breezy, with an east wind 17 to 22 mph decreasing to 5 to 10 mph after midnight. Chance of precipitation is 60%.
Wednesday: Rain likely, mainly before noon. Cloudy, with a high near 49. Calm wind becoming west northwest 5 to 7 mph in the afternoon. Chance of precipitation is 70%.
Wednesday Night: A 30 percent chance of rain, mainly after midnight. Mostly cloudy, with a low around 34. Northwest wind 5 to 8 mph becoming calm in the evening.

Thursday: A chance of rain and snow before noon, then a chance of rain. Mostly cloudy, with a high near 51. West northwest wind 5 to 10 mph increasing to 11 to 16 mph in the afternoon. Chance of precipitation is 40%. Little or no snow accumulation expected.
Thursday Night: Mostly cloudy, with a low around 34.
Friday: Partly sunny, with a high near 54.
Friday Night: A 30 percent chance of showers after midnight. Mostly cloudy, with a low around 39.
Saturday: Showers. High near 52. Chance of precipitation is 80%.
Saturday Night: Showers, mainly before midnight. Low around 36. Chance of precipitation is 80%.
Sunday: Rain and snow showers likely. Mostly cloudy, with a high near 49. Chance of precipitation is 60%.
Sunday Night: A chance of rain and snow showers. Mostly cloudy, with a low around 32. Chance of precipitation is 50%.
Monday: A 40 percent chance of snow showers. Partly sunny, with a high near 48.

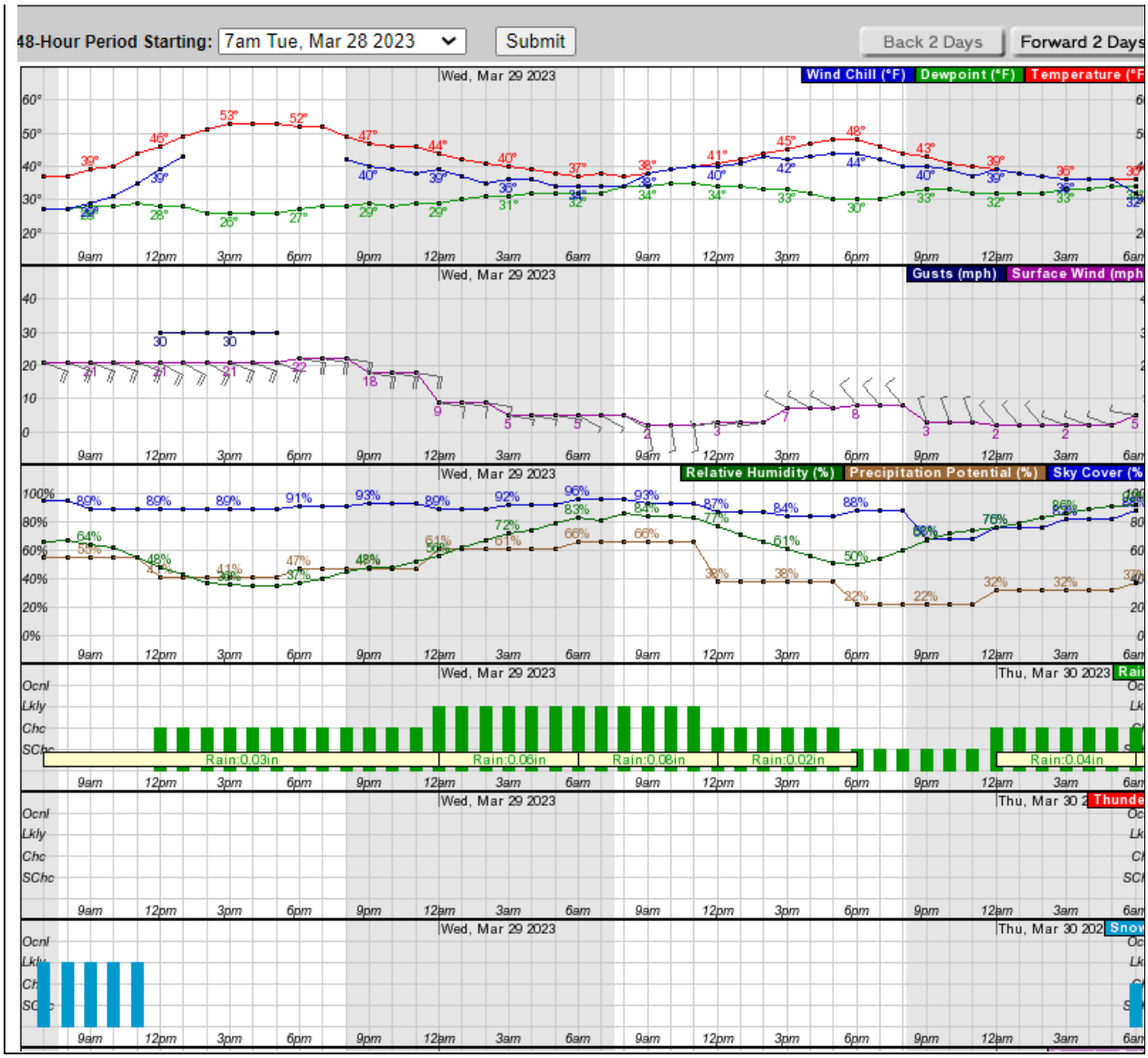
Forecast Discussion
Area Forecast Discussion
National Weather Service Boise ID
330 AM MDT Tue Mar 28 2023

.SHORT TERM...Today through Thursday night...A powerful storm system currently off the Oregon coast will bring periods of rain, snow, and gusty winds to our area through Thursday. A warm front will stall across northern portions of our area today as the low pressure center moves south. The heaviest precipitation today, mainly in the form of snow, will occur across northern Harney and Malheur counties as well as the higher elevations of Baker County, where a Winter Storm Warning remains in effect until 11 PM PDT this evening. Gusty winds will also result in blowing and drifting of snow. In Idaho, light snow will fall across the mountains today while the Snake Basin sees little to no precipitation due to downsloping off of the Owyhees. Gusty east to southeast winds will continue, strongest southeast of Boise and near the Nevada border where gusts to near 45 mph are possible this afternoon. Late this afternoon and evening, **a cold front will move west to east through eastern Oregon producing a final burst of moderate to heavy snow before shifting into western Idaho late this evening through Wednesday morning. The front will produce widespread precipitation in all areas,** with snow above 3500-4000 feet MSL. Winds will decrease and shift to the northwest behind the front. The upper level low will split with the northern portion tracking through our area Wednesday night and Thursday. Moisture will wrap around the low as it moves overhead, with the focus of precipitation across our northern and eastern zones. Snow levels will briefly drop to 2500-3000 feet Thursday morning, with light snow accumulations possible in the Snake Basin mainly southeast of Boise and in the Magic Valley. Northwest winds will increase and become gusty on Thursday as the low center moves to our east. Through Thursday, storm total snow accumulations of 3-6 inches in mountain valleys and 6-12 inches in higher mountains are expected.

.LONG TERM...Friday through Tuesday...Friday will be the driest day of the extended period due a transitory weak high pressure aloft.

However, residual moisture with an exiting trough will lead to chance of snow showers in central Idaho, but any accumulations will be light. Temperatures will be around 5 degrees below normal. **Models, including ensembles, are in excellent agreement that widespread precipitation will spread back into the region over the weekend as the next trough approaches the Pacific Northwest**. Snow levels will rise to around 4000 to 5000 feet on Saturday, lowering to 3000 to 4000 feet on Sunday as the trough moves further inland. Significant snowfall accumulations are expected in the mountains, with several inches in the mountain valleys and a foot or more on the peaks. Windy conditions will develop on Saturday as well. Temperatures will lower to around 10 degrees below normal by Sunday. Snow levels will fall to valley floors by Monday afternoon as the trough axis swings through the region. Snow showers will bring additional light accumulations to the mountains with minor accumulations in the valleys Monday through Tuesday. Temperatures will be 10 to 15 degrees below normal.

Hourly Forecast


48-Hour Period Starting: 7am Tue, Mar 28 2023
Submit
Back 2 Days
Forward 2 Days
Wed, Mar 29 2023
Wind Chill (°F)
Dewpoint (°F)
Temperature (°F
Gusts (mph)
Surface Wind (mph
Relative Humidity (%)
Precipitation Potential (%)
Sky Cover (%
Thu, Mar 30 2023
Ocnl
Lkly
Chc
SChc
Rain:0.03in
Rain:0.06in
Rain:0.08in
Rain:0.02in
Rain:0.04in
Thunde
Snow
9am
12pm
3pm
6pm
9pm
12am
3am
6am

Storm Event QA/QC Checklist – Phase I

STORM DATE 230329

A. Event and Data Completeness	Yes	No	N/A	Notes
1. Field data sheets filled out completely and clearly	X			
2. Field parameters reviewed, and any problems/issues addressed	X			
3. All samples collected as specified	X			
4. All samples delivered to lab promptly (review chain of custody rpts)	X			
5. Inconsistencies/clarifications discussed with sampling team member			X	
6. All analytical reports from lab received	X			

B. Validation and Verification Methods	Yes	No	N/A	Notes
1. Outliers and unexpected values discussed with lab			X	
2. Appropriate analytical methods used	X			
3. All lab QA samples were within method acceptance criteria	X			
4. All samples reviewed and data qualifiers assigned if needed	X			
5. Data quality objective achieved	X			

C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.01	0.00	0.00	0.00/0.00	0.00/0.00	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.09	0.10	0.09	0.09/0.12	0.09/0.12	> 0.10"	X	X	
3. Sampled amount (% of total run-off)	94	81	95	98	93	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject	X		
4. Composite sample duration (hours)	5.0	3.5	4.0	5.5	3.0				
4. Ecoli sample holding time (hours)	3	2	3	2.5	2.5	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject	X		
5. Filtering of samples for dissolved parameter analysis (hours)	2.5	2	4	0.5	4	<= 24 hrs: no qualifier > 24 hrs.: reject	X		

D. Notes

- Lucky, Whitewater, and Main are qualified due to rainfall amount.
- Americana and Main: all parameters analyzed.
- Lucky - BOD, COD, TSS, TDS, TKN, Total Hg, Turbidity, Ammonia were NOT analyzed.
- Whitewater - TSS, TDS were NOT analyzed.
- AS-6 - TSS was NOT analyzed.

Reviewed by Jan Gille **Date** 05.01.23 **Approved by** Monica Love **Date** 5/3/23

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.
Step 2. Enter expected precipitation depth (in) in blue cell.
Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth = 0.11
Aliquots per Sample = 17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft^3)	Trigger Vol (ft^3)
Lucky	105	0.157	6582.5	**387**
Whitewater	498	0.069	13621.3	**801**
Main	79	0.246	7760.0	**456**
Main Alt	60	0.200	4791.6	**282**
Americana	875	0.144	50311.8	**2960**
AS_6	204	0.046	3747.0	**220**
State	34	0.160	2172.2	**128**

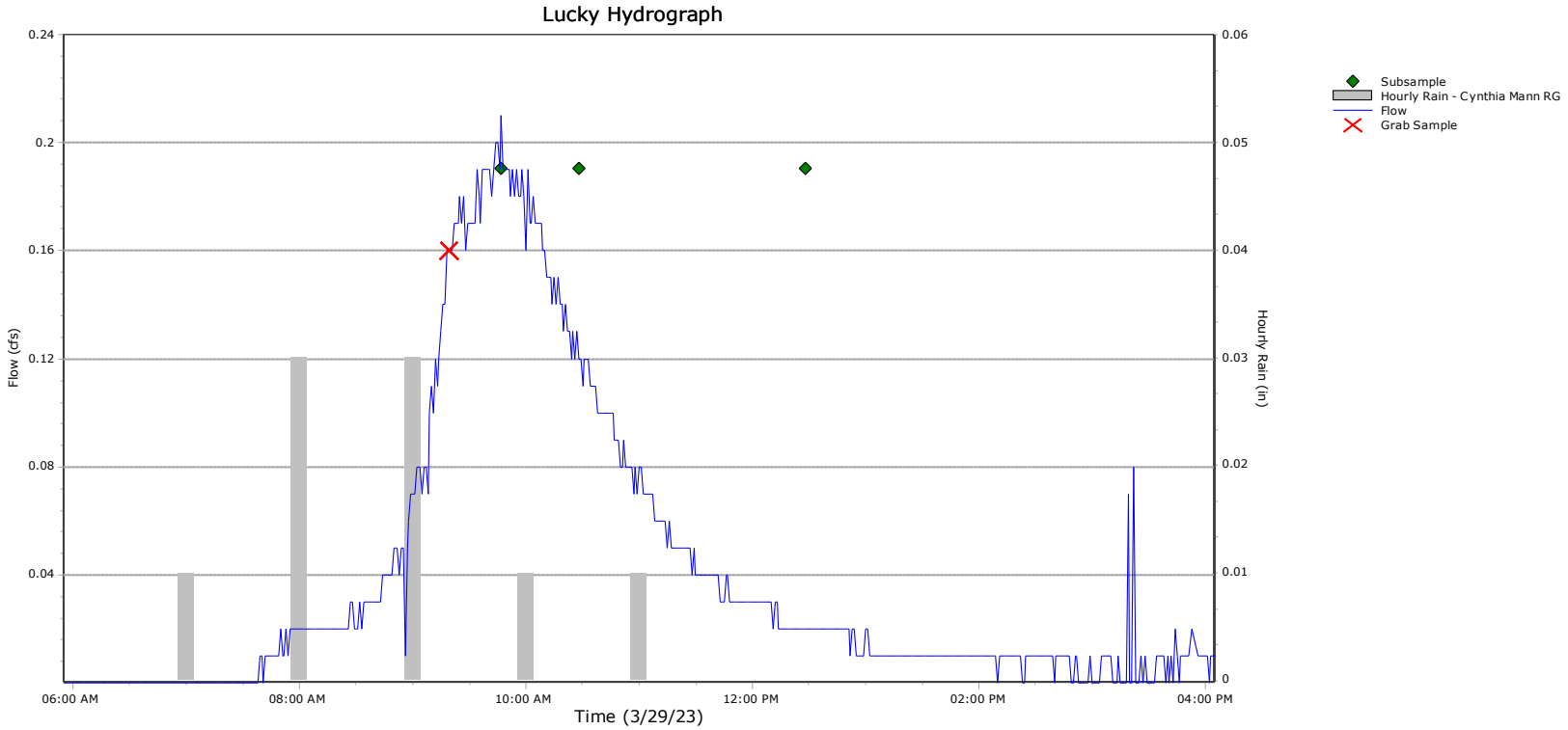
Notes:

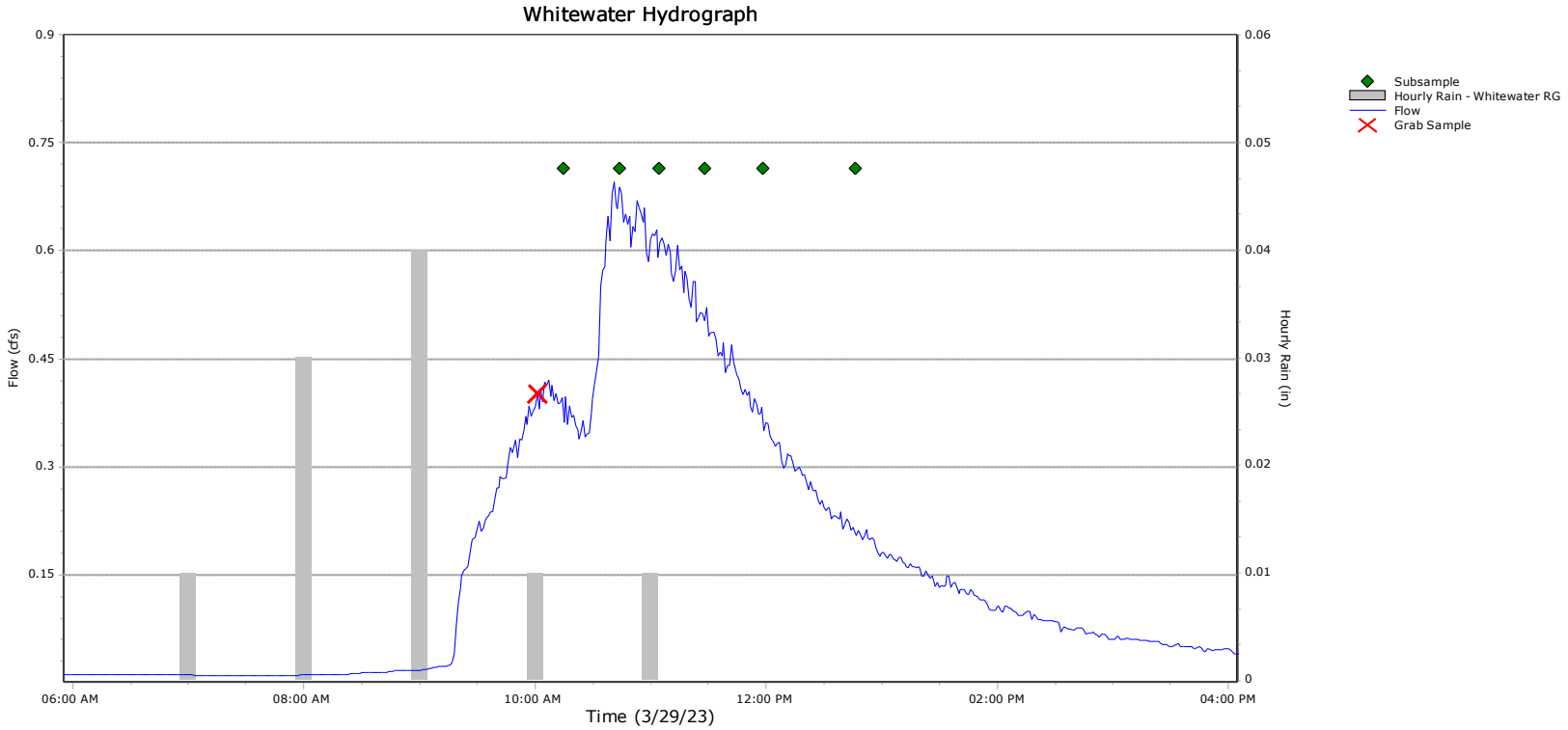
Calculated RC = Average (precip (ft) / [volume (ft^3) x area (ft^2)])

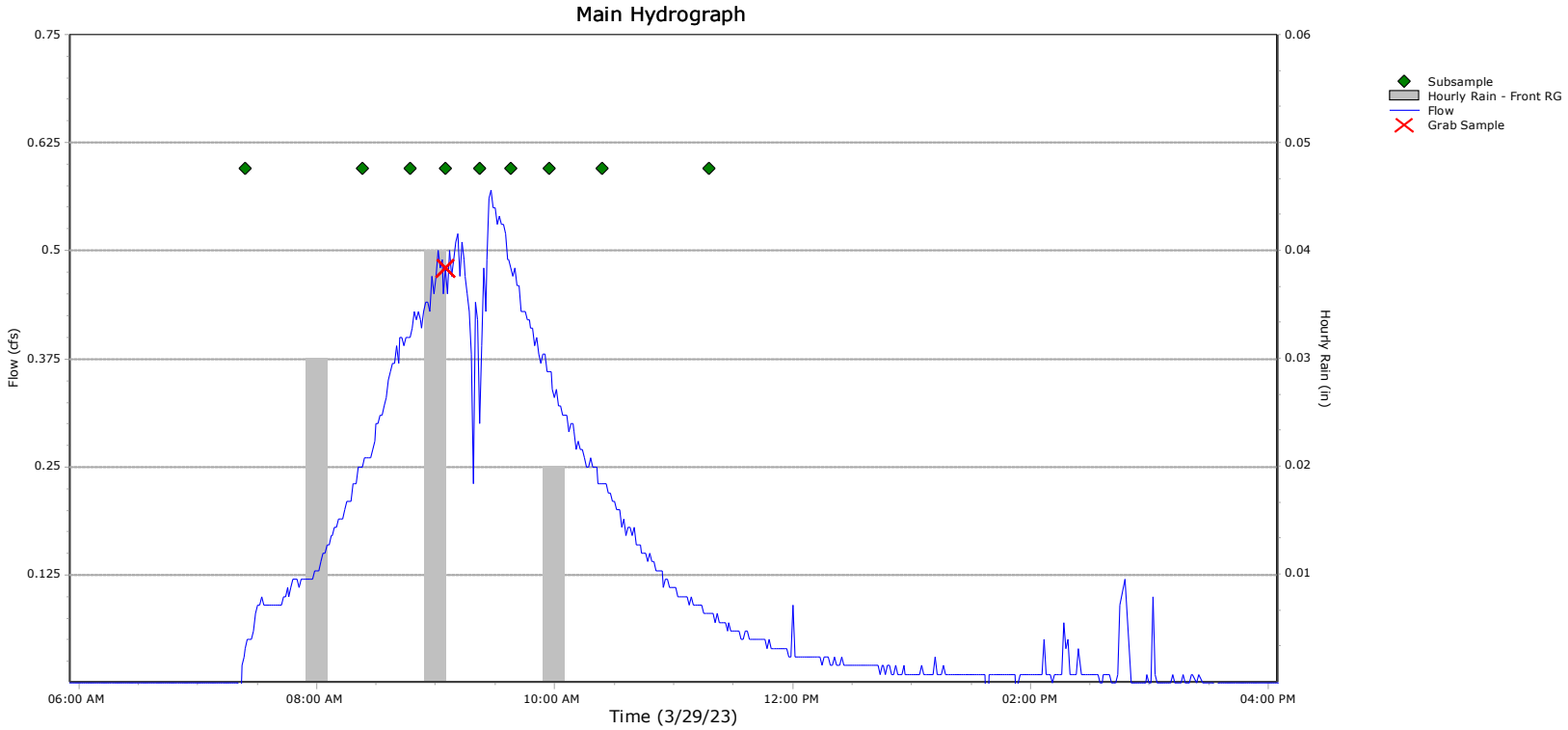
Where precip (ft) is the measured amount from local rain guage, and volume (ft^3) is the measured discharge, and area (ft^2) is the watershed area

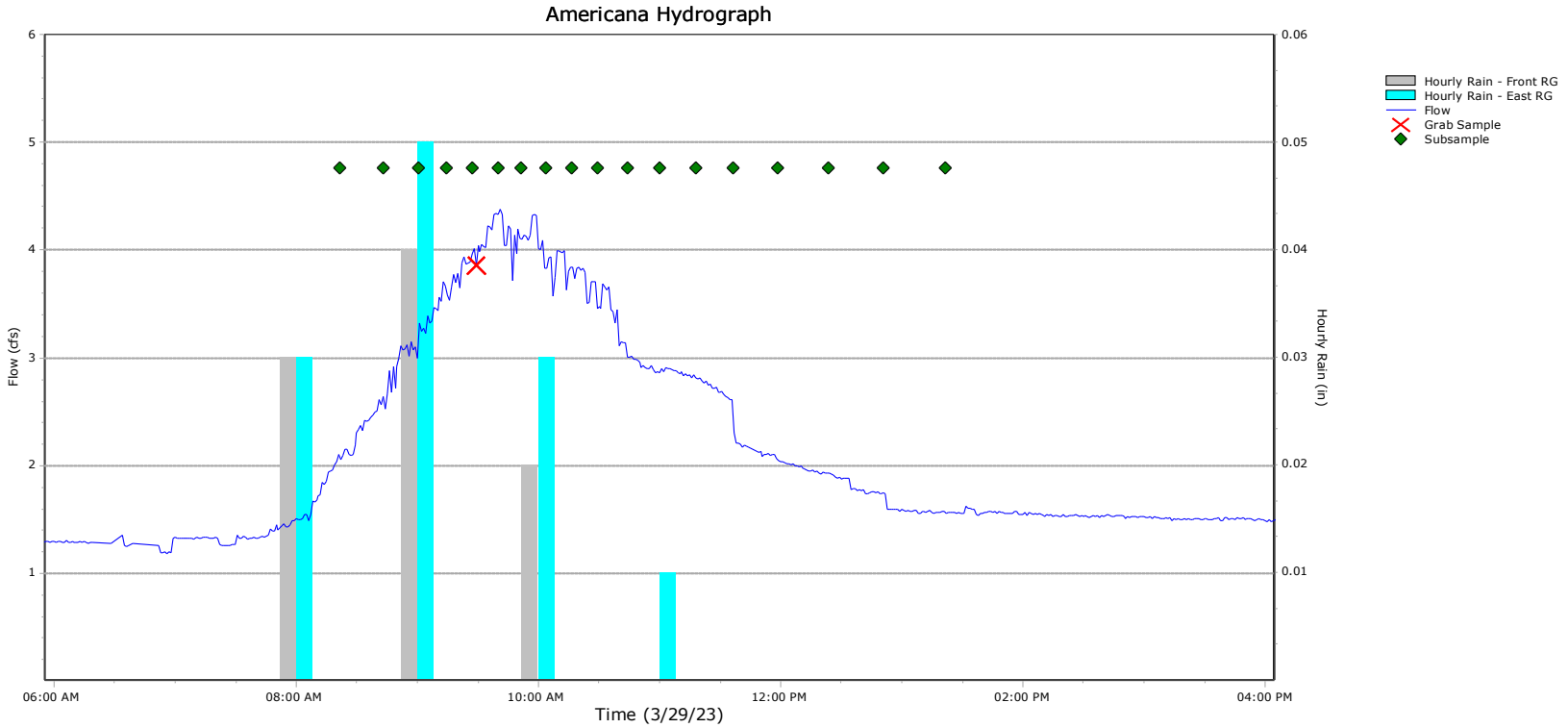
Expected volume (ft^3) = RC x expected precip (ft) x area (ft^2)

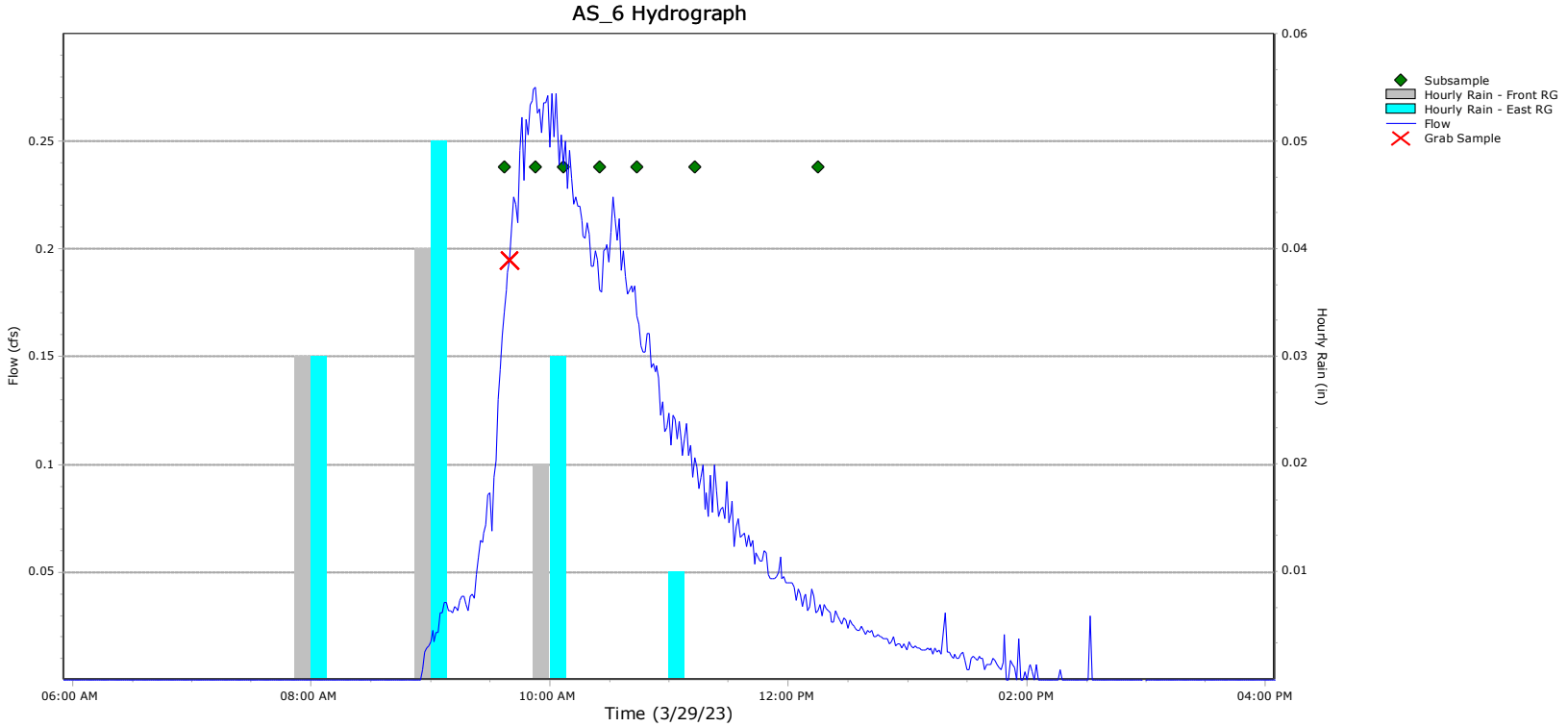
Attachment B: Storm Event Hydrographs


Lucky Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/29/23)
0.24
0.2
0.16
0.12
0.08
0.04
0.06
0.05
0.04
0.03
0.02
0.01
0
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
Subsample
Hourly Rain - Cynthia Mann RG
Flow
Grab Sample


Whitewater Hydrograph
0.9
0.75
0.6
0.45
0.3
0.15
Flow (cfs)
0.06
0.05
0.04
0.03
0.02
0.01
0
Hourly Rain (in)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
Time (3/29/23)
Subsample
Hourly Rain - Whitewater RG
Flow
Grab Sample


Main Hydrograph
0.75
0.625
0.5
0.375
0.25
0.125
Flow (cfs)
0.06
0.05
0.04
0.03
0.02
0.01
Hourly Rain (in)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
Time (3/29/23)
Subsample
Hourly Rain - Front RG
Flow
Grab Sample


Americana Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/29/23)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
1
2
3
4
5
6
0.01
0.02
0.03
0.04
0.05
0.06
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample
Subsample


AS_6 Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (3/29/23)
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
0.25
0.2
0.15
0.1
0.05
0.06
0.05
0.04
0.03
0.02
0.01
Subsample
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample

Attachment C: Field Forms

Set Up/ Shut Down Form – HACH

TATION: Lucky

SET UP

Personnel: Tammy / Chad

Date/Time On-Site: 3/28/23 1117

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1119	1.6	0	0	12.9

Enable Condition or Velocity Cutoff:	2.6"
Deadband:	1.0"
Trigger Volume:	2895 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TL

Date/Time On-Site: 4/3/23 1303

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)

Downloaded to:	USB on keychain

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Lucky Lucky **Bottle** 1 **of** 1

Personnel: Tammy Chad **Date/Time On-Site:** 3/29 1417

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	230329-03 -WC
Approx Sample Volume (mL):	2000
Clarity (ex. Clear, Cloudy, Silty):	Clear, cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Gray
QA/QC Sample ID:	— -103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/29 0947	Success	13		
2	1028		14		
3	1228		15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☐ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☑ Keep flowmeter running	☐ Install new 15L bottle, add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Lucky

Personnel: CRS SMK **Date/Time On-Site:** 3/29/23

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
922	3.33	76.19 gpm	.57	12.6	3/29 752	✓

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230329-03 -WG	3/29/23	0919	☑
Field Duplicate *E.Coli*	230329-03 -101	3/29/23	0919	☑
Field Blank *E.Coli*	230329-03 -001	3/29/23	0919	☑

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	931	10.99	5.90	7.30	22285

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

Set Up/ Shut Down Form – ISCO

TATION: Whitewater

SET UP

Personnel: TL / Chad

Date/Time On-Site: 3/28/23 1142

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0938	0.91	0.02	0.24	N/A
1144	0.86	0.02	0.23	NA

Enable Condition:	level > 2.5"
Hysteresis:	1.0"
Flow Pulse Interval:	800 cf

On-Site

- ☑ Replace flowmeter battery, install sampler battery
- ☐ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote; Date/time 3/28 0938
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: _____

Date/Time On-Site: _____

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)

Downloaded to:	—

On-Site

- ☒ Replace flowmeter battery
- ☐ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 4/3 0943
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: White Water **Bottle** 1 **of** 1

Personnel: Tammy Chad **Date/Time On-Site:** 1403

☐ Halt sampler program			
☐ Put lid on sample bottle; label sample bottle			
Sample ID:	230329-11	-WC	
Approx Sample Volume (mL):	7750		
Clarity (ex. Clear, Cloudy, Silty):	Cloudy		
Color (ex. Clear, Gray, Tan, Brown, Black):	Gray		
QA/QC Sample ID:	—	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	329 1013	Success	13		
2	329 1042		14		
3	329 1102		15		
4	329 1126		16		
5	329 1156		17		
6	329 1244		18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☐ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☑ Keep flowmeter running	☐ Install new 15L bottle; add ice
☑ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Whitewater

Personnel: SMK CRS **Date/Time On-Site:** 3/29/23 0950

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0952	2.68	.31	.83	NA	3/29 0900	.09

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230329-11 -WG	~~TODT~~ 3/29	1001	☑
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	1001	8.65	7.70	7.43	134.99

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	

Comments:

Set Up/ Shut Down Form – HACH

STATION: Main

SET UP

Personnel: Tammy / Chad

Date/Time On-Site: 3/28/23 10:14

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1016	1.38	0	0	12.8

Enable Condition or Velocity Cutoff:	2.4
Deadband:	1.0
Trigger Volume:	3411 G

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: Tammy ~~Chad~~

Date/Time On-Site: ~~3/28/23~~ 4/3/23

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1121	1.30	0	0		11.9
Downloaded to:		USB on Keychain			

If flow monitoring is complete:	If continuing to monitor flow:
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Main
Personnel: Tammy / Chad

Bottle 1 **of** 1
Date/Time On-Site: 1340

☑ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	230329-12- -WC
Approx Sample Volume (mL):	5750
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	Black, Brown
QA/QC Sample ID:	— -103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/28 ~~1143~~ ~~3/28~~	0 ml - Rinse Error	13		
2	3/29 0724	Success	14		
3	0823		15		
4	0847		16		
5	0905		17		
6	0922		18		
7	0938		19		
8	0957		20		
9	1024		21		
10	1118		22		
11			23		
12			24		

Comments:

If sampling is complete:
- ☐ Power off sampler, if separate from flowmeter
- ☑ Keep flowmeter running
- ☑ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle, add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____
- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Main

Personnel: TL, KRF **Date/Time On-Site:** 3.29.23

Flow Meter Current Status						
Time	Level (in)	Flow ~~(cfs)~~ SPM	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0907	4.76	200.81	0.89	12.9		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230329-12 -WG	3.29.23	0905	☒
Field Duplicate *E.Coli*	-101	—	—	☐
Field Blank *E.Coli*	-001	—	—	☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	0911	7.74	10.10	7.93	209.7

Sampler Current Status	
First Subsample Date/Time	0724
Last Subsample Date/Time	0905
# of Subsamples taken	5

Comments: one subsample attempted last night — but did not collect any liquid

Set Up/ Shut Down Form – ISCO

STATION: Americana

SET UP

Personnel: Tammy / Chad

Date/Time On-Site: 3/28/23 1035

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0943	5.78	1.26	1.464	11.42
1034	5.68	1.18 ~~1.508~~	1.508	12.22

Enable Condition:	Level > ~~6.7~~ 6.7"
Hysteresis:	1.0"
Flow Pulse Interval:	2960 cf

On-Site
- ☑ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)
- ☒ Direct or (Remote); Date/time 3/28 0943
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TL

Date/Time On-Site: 4/3/23 1135

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1131	6.51	1.76	1.676	11.76
Downloaded to:		N/A		

On-Site
- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)
- ☒ Direct or (Remote); Date/time 4/3 0953
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments: Need to return to replace dessiccant.

Composite Sample Collection

STATION: Amoco Cadiz **Bottle** 1 **of** 1

Personnel: Jimmy Chad **Date/Time On-Site:** 1351

☑ Halt sampler program			
☐ Put lid on sample bottle; label sample bottle			
Sample ID:	230229-14	-WC	
Approx Sample Volume (mL):	10250		
Clarity (ex. Clear, Cloudy, Silty):	Brown black		
Color (ex. Clear, Gray, Tan, Brown, Black):	Cloudy		
QA/QC Sample ID:	—	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/29 0820	Success	13	1117	Success
2	0842		14	1135	
3	0900		15	1158	
4	0913		16	1223	
5	0927		17	1250	
6	0939		18	1320	
7	0950		19		
8	1003		20		
9	1015		21		
10	1028		22		
11	1043		23		
12	1059		24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☑ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☑ Keep flowmeter running	☐ Install new 15L bottle; add ice
☑ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Americana

Personnel: TL, KRF **Date/Time On-Site:** 03.29.23 / 0918

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0922	8.61	3.93	2.534	12.03		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230329-14 -WG	3.29.23	0921	☑
Field Duplicate *E.Coli*	— -101	—	—	☐
Field Blank *E.Coli*	— -001	—	—	☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	0926	7.65	10.42	7.67	481.7

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	4

Comments:

Grab Sample Data Form

STATION: AS-6

Personnel: TZL, KRF **Date/Time On-Site:** 03.29.23 / 0936

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0936	2.421	0.16	1.00	11.8		

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230329-206 -WG	3.29.23	0940	☒
Field Duplicate *E.Coli*	230329-206 -101	↓	0941	☒
Field Blank *E.Coli*	230329-206 -001	↓	0945	☒

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP07	0947	5.75	9.41	7.85	247.3

Sampler Current Status	
First Subsample Date/Time	
Last Subsample Date/Time	
# of Subsamples taken	0

Comments: No subsamples yet - 200 cf so far

* 1 sample taken as we left

• The QC samples were discarded b/c this was the alternate site & the samples were not needed.

Set Up/ Shut Down Form – HACH

TATION: AB-6

SET UP

Personnel: Tammy/Chad

Date/Time On-Site: 3/28/23 1053

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1055	0	0	0	12.2

Enable Condition or Velocity Cutoff:	.02
Deadband:	—
Trigger Volume:	221

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 04.03.23 / 1401

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1401	0	0	0	92976	11.6
	Downloaded to:	R7			

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6 **Bottle** 1 **of** 1

Personnel: TL **Date/Time On-Site:** 3.29.23 / 1309

☐ Halt sampler program			
☐ Put lid on sample bottle; label sample bottle			
Sample ID:	230329-206	-WC	
Approx Sample Volume (mL):	4250 mL		
Clarity (ex. Clear, Cloudy, Silty):	Silty-ish		
Color (ex. Clear, Gray, Tan, Brown, Black):	Brown		
QA/QC Sample ID:	—	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	3/29 0937	Success	13		
2	0953		14		
3	1007		15		
4	1025		16		
5	1044		17		
6	1113		18		
7	1215		19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle, add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Attachment D: Storm Event Analytical Reports

Report Date: 04/05/2023 11:55

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00278-01	ACST1B	230329-03-WG	Water		03/29/2023	03/29/2023
AC00278-02	ACST1B	230329-03-101	Water		03/29/2023	03/29/2023
AC00278-03	ACST1B	230329-03-001	Water		03/29/2023	03/29/2023
AC00278-04	ACST1B	230329-11-WG	Water		03/29/2023	03/29/2023
AC00278-05	ACST1B	230329-12-WG	Water		03/29/2023	03/29/2023
AC00278-06	ACST1B	230329-14-WG	Water		03/29/2023	03/29/2023
AC00278-07	ACST1B	230329-206-WG	Water		03/29/2023	03/29/2023

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Report Date: 04/05/2023 11:55

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230329-03-WG
Date/Time Collected:	03/29/2023 09:19		
Lab Number:	AC00278-01	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B231040	222.4	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/29/23 12:06	3/30/23 13:05	RKT	
Wet Chemistry										
Chlorine Screen	B231041	Absent				SM 4500-CL G-2000 mod	03/29/23	3/29/23 11:23	NTS	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Report Date: 04/05/2023 11:55

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230329-03-101
Date/Time Collected:	03/29/2023 12:00		
Lab Number:	AC00278-02	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B231040	313.0	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/29/23 12:06	3/30/23 13:05	RKT	
Wet Chemistry										
Chlorine Screen	B231041	Absent				SM 4500-CL G-2000 mod	03/29/23	3/29/23 11:23	NTS	

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Report Date: 04/05/2023 11:55

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230329-03-001
Date/Time Collected:	03/29/2023 12:00		
Lab Number:	AC00278-03	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B231040	<1.0	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/29/23 12:06	3/30/23 13:05	RKT	U
Wet Chemistry										
Chlorine Screen	B231041	Absent				SM 4500-CL G-2000 mod	03/29/23	3/29/23 11:23	NTS	

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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230329-11-WG
Date/Time Collected:	03/29/2023 10:01		
Lab Number:	AC00278-04	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B231040	10.7	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/29/23 12:06	3/30/23 13:05	RKT	
Wet Chemistry										
Chlorine Screen	B231041	Absent				SM 4500-CL G-2000 mod	03/29/23	3/29/23 11:21	NTS	

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11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230329-12-WG
Date/Time Collected:	03/29/2023 09:05		
Lab Number:	AC00278-05	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B231040	52.8	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/29/23 12:06	3/30/23 13:05	RKT	
Wet Chemistry										
Chlorine Screen	B231041	Absent				SM 4500-CL G-2000 mod	03/29/23	3/29/23 11:23	NTS	

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Boise, Idaho 83714-1076
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Analysis Report

Location:	ACST1B	Location Description:	230329-14-WG
Date/Time Collected:	03/29/2023 09:21		
Lab Number:	AC00278-06	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B231040	218.7	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/29/23 12:06	3/30/23 13:05	RKT	
Wet Chemistry										
Chlorine Screen	B231041	Absent				SM 4500-CL G-2000 mod	03/29/23	3/29/23 11:23	NTS	

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Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230329-206-WG
Date/Time Collected:	03/29/2023 09:40		
Lab Number:	AC00278-07	Sample Collector:	T.L
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B231040	1046.2	MPN/100 mL	1.0	1.0	IDEXX - Colilert	03/29/23 12:06	3/30/23 13:05	RKT	
Wet Chemistry										
Chlorine Screen	B231041	Absent				SM 4500-CL G-2000 mod	03/29/23	3/29/23 11:23	NTS	

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Fax (208) 608-7319

Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B231040									
Blank (B231040-BLK1)									
E. Coli	Absent						03/30/2023	RKT	
LCS (B231040-BS1)									
E. Coli				Present			03/30/2023	RKT	
Duplicate (B231040-DUP1)	Source ID: AC00278-04								
E. Coli					Pass	128	03/30/2023	RKT	

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Notes and Definitions

Item	Definition
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Tammy Lightle
Kit Fairburn
Chad Schwend
Shannon Kranz

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C-231 Total Containers
AC00278-01	3.29.23		0919		230329-03-WG	CS	X	X												X					1
-02			1200		230329-03-101	CS	X	X												X					1
-03			1200		230329-03-001	CS	X	X												X					1
-04			1001		230329-11-WG	CS	X	X												X					1
-05			0905		230329-12-WG	TL	X	X												X					1
-06			0921		230329-14-WG	TL	X	X												X					1
-07			0940		230329-206-WG	TL	X	X												X					1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
[signature]	03.29.23 / 1042	KMR 3-29-23	1044
			AC00278

AC00278

Report Date: 04/27/2023 11:45

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00279-01	ACST1C	230329-03-WC	Water		03/29/2023	03/29/2023
AC00279-02	ACST1C	230329-11-WC	Water		03/29/2023	03/29/2023
AC00279-03	ACST1C	230329-12-WC	Water		03/29/2023	03/29/2023
AC00279-04	ACST1C	230329-14-WC	Water		03/29/2023	03/29/2023
AC00279-05	ACST1C	230329-206-WC	Water		03/29/2023	03/29/2023

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230329-03-WC
Date/Time Collected:	03/29/2023 09:47 - 03/29/2023 12:28		
Lab Number:	AC00279-01	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Nitrate-Nitrite, as N	B231073	0.546	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	03/31/23	3/31/23 10:51	LRF	
Dissolved Wet Chemistry										
Orthophosphate, as P	B231058	0.104	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/30/23	3/30/23 10:20	ALN	
Total Metals										
Arsenic	B231187	1.9	ug/L	0.070	0.070	EPA 200.8	04/09/23	4/13/23 11:56	DMW	
Cadmium	B231187	0.026	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 11:56	DMW	
Calcium	B231083	10.4	mg/L	0.0400	0.0400	EPA 200.7	04/03/23	4/4/23 12:07	AMO	
Lead	B231187	0.72	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 11:56	DMW	
Magnesium	B231083	2070	ug/L	75.0	75.0	EPA 200.7	04/03/23	4/4/23 12:07	AMO	
Phosphorus as P	B231083	0.314	mg/L	0.0100	0.0100	EPA 200.7	04/03/23	4/4/23 12:07	AMO	
Hardness	B231083	34.5	mg/L	0.100	0.100	SM 2340 B-2011	04/03/23	4/4/23 12:07	AMO	
Dissolved Metals										
Cadmium	B231091	0.012	ug/L	0.010	0.010	EPA 200.8	04/02/23	4/2/23 17:07	DMW	
Copper	B231091	2.5	ug/L	0.15	0.15	EPA 200.8	04/02/23	4/2/23 17:07	DMW	
Lead	B231091	0.096	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/02/23	4/2/23 17:07	DMW	
Zinc	B231091	12.2	ug/L	0.50	0.50	EPA 200.8	04/02/23	4/2/23 17:07	DMW	

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230329-11-WC
Date/Time Collected:	03/29/2023 10:12 - 03/29/2023 12:44		
Lab Number:	AC00279-02	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B231192	0.366	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	04/08/23	4/8/23 12:35	GKH	
BOD5	B231059	8.04	mg/L	2.00	2.00	SM 5210 B-2011	03/30/23	4/4/23 9:28	NTS	
COD	B231047	69.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/30/23	3/30/23 9:52	GKH	
Nitrate-Nitrite, as N	B231073	0.373	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	03/31/23	3/31/23 10:56	LRF	
TKN	B231093	1.28	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	04/03/23	4/4/23 9:10	ALN	
Turbidity	B231063	48.7	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	03/30/23	3/30/23 11:49	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B231058	0.0993	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/30/23	3/30/23 10:25	ALN	
Total Metals										
Mercury	B231122	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	04/05/23	4/6/23 8:02	SAS	U
Arsenic	B231187	1.8	ug/L	0.070	0.070	EPA 200.8	04/09/23	4/13/23 11:58	DMW	
Cadmium	B231187	0.045	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 11:58	DMW	
Calcium	B231083	10.3	mg/L	0.0400	0.0400	EPA 200.7	04/03/23	4/4/23 12:13	AMO	
Lead	B231187	3.2	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 11:58	DMW	
Magnesium	B231083	7490	ug/L	75.0	75.0	EPA 200.7	04/03/23	4/4/23 12:13	AMO	
Phosphorus as P	B231083	0.273	mg/L	0.0100	0.0100	EPA 200.7	04/03/23	4/4/23 12:13	AMO	
Hardness	B231083	56.6	mg/L	0.100	0.100	SM 2340 B-2011	04/03/23	4/4/23 12:13	AMO	
Dissolved Metals										
Cadmium	B231091	0.017	ug/L	0.010	0.010	EPA 200.8	04/02/23	4/2/23 17:09	DMW	
Copper	B231091	3.9	ug/L	0.15	0.15	EPA 200.8	04/02/23	4/2/23 17:09	DMW	
Lead	B231091	0.25	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/02/23	4/2/23 17:09	DMW	
Zinc	B231091	29.4	ug/L	0.50	0.50	EPA 200.8	04/02/23	4/2/23 17:09	DMW	

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230329-12-WC
Date/Time Collected:	03/29/2023 07:24 - 03/29/2023 11:18		
Lab Number:	AC00279-03	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B231192	0.929	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	04/08/23	4/8/23 12:18	GKH	M-06
BOD5	B231059	12.1	mg/L	2.00	2.00	SM 5210 B-2011	03/30/23	4/4/23 9:18	NTS	
COD	B231047	105	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/30/23	3/30/23 10:00	GKH	
Nitrate-Nitrite, as N	B231073	0.671	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	03/31/23	3/31/23 10:57	LRF	
TKN	B231093	1.85	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	04/03/23	4/4/23 9:11	ALN	
Total Dissolved Solids	B231062	170	mg/L	25.0	25.0	SM 2540 C-2011	03/30/23	4/1/23 8:07	GKH	
Total Suspended Solids	B231061	54.0	mg/L	0.900	0.900	SM 2540 D-2011	03/30/23	3/30/23 10:41	ALG	
Turbidity	B231063	77.7	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	03/30/23	3/30/23 11:23	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B231058	0.0869	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/30/23	3/30/23 10:26	ALN	
Total Metals										
Mercury	B231122	0.0187	ug/L	0.0100	0.0100	EPA 245.1	04/05/23	4/6/23 8:05	SAS	
Arsenic	B231187	2.1	ug/L	0.070	0.070	EPA 200.8	04/09/23	4/13/23 12:00	DMW	
Cadmium	B231187	0.081	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 12:00	DMW	
Calcium	B231083	8.57	mg/L	0.0400	0.0400	EPA 200.7	04/03/23	4/4/23 12:19	AMO	
Lead	B231187	5.7	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 12:00	DMW	
Magnesium	B231083	5650	ug/L	75.0	75.0	EPA 200.7	04/03/23	4/4/23 12:19	AMO	
Phosphorus as P	B231083	0.209	mg/L	0.0100	0.0100	EPA 200.7	04/03/23	4/4/23 12:19	AMO	
Hardness	B231083	44.7	mg/L	0.100	0.100	SM 2340 B-2011	04/03/23	4/4/23 12:19	AMO	
Dissolved Metals										
Cadmium	B231091	0.020	ug/L	0.010	0.010	EPA 200.8	04/02/23	4/2/23 17:12	DMW	
Copper	B231091	5.7	ug/L	0.15	0.15	EPA 200.8	04/02/23	4/2/23 17:12	DMW	
Lead	B231091	0.089	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/02/23	4/2/23 17:12	DMW	
Zinc	B231091	33.4	ug/L	0.50	0.50	EPA 200.8	04/02/23	4/2/23 17:12	DMW	

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11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230329-14-WC
Date/Time Collected:	03/29/2023 08:20 - 03/29/2023 13:20		
Lab Number:	AC00279-04	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B231192	0.633	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	04/08/23	4/8/23 12:42	GKH	
BOD5	B231059	9.64	mg/L	2.00	2.00	SM 5210 B-2011	03/30/23	4/4/23 9:14	NTS	
COD	B231047	62.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/30/23	3/30/23 10:00	GKH	
Nitrate-Nitrite, as N	B231073	1.08	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	03/31/23	3/31/23 10:58	LRF	
TKN	B231093	1.90	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	04/03/23	4/4/23 9:13	ALN	
Total Dissolved Solids	B231062	318	mg/L	25.0	25.0	SM 2540 C-2011	03/30/23	4/1/23 8:08	GKH	
Total Suspended Solids	B231061	38.6	mg/L	0.900	0.900	SM 2540 D-2011	03/30/23	3/30/23 10:40	ALG	
Turbidity	B231063	45.8	NTU	3.0	0.3	EPA 180.1, Rev. 2.0 (1993)	03/30/23	3/30/23 11:59	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B231058	0.0914	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/30/23	3/30/23 10:27	ALN	
Total Metals										
Mercury	B231227	0.0300	ug/L	0.0100	0.0100	EPA 245.1	04/11/23	4/12/23 7:53	SAS	
Arsenic	B231187	3.6	ug/L	0.070	0.070	EPA 200.8	04/09/23	4/13/23 12:03	DMW	
Cadmium	B231187	0.065	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 12:03	DMW	
Calcium	B231083	36.6	mg/L	0.0400	0.0400	EPA 200.7	04/03/23	4/4/23 12:30	AMO	
Lead	B231187	3.6	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 12:03	DMW	
Magnesium	B231083	10100	ug/L	75.0	75.0	EPA 200.7	04/03/23	4/4/23 12:30	AMO	
Phosphorus as P	B231083	0.205	mg/L	0.0100	0.0100	EPA 200.7	04/03/23	4/4/23 12:30	AMO	
Hardness	B231083	133	mg/L	0.100	0.100	SM 2340 B-2011	04/03/23	4/4/23 12:30	AMO	
Dissolved Metals										
Cadmium	B231091	0.023	ug/L	0.010	0.010	EPA 200.8	04/02/23	4/2/23 17:14	DMW	
Copper	B231091	3.4	ug/L	0.15	0.15	EPA 200.8	04/02/23	4/2/23 17:14	DMW	
Lead	B231091	0.080	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/02/23	4/2/23 17:14	DMW	
Zinc	B231091	20.5	ug/L	0.50	0.50	EPA 200.8	04/02/23	4/2/23 17:14	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Analysis Report

Location:	ACST1C	Location Description:	230329-206-WC
Date/Time Collected:	03/29/2023 09:37 - 03/29/2023 12:15		
Lab Number:	AC00279-05	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B231192	0.600	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	04/08/23	4/8/23 12:30	GKH	
BOD5	B231059	21.4	mg/L	2.00	2.00	SM 5210 B-2011	03/30/23	4/4/23 9:06	NTS	
COD	B231047	145	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	03/30/23	3/30/23 9:51	GKH	
Nitrate-Nitrite, as N	B231073	0.387	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	03/31/23	3/31/23 11:00	LRF	
TKN	B231093	2.84	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	04/03/23	4/4/23 9:18	ALN	
Total Dissolved Solids	B231062	354	mg/L	25.0	25.0	SM 2540 C-2011	03/30/23	4/1/23 8:08	GKH	
Turbidity	B231063	69.4	NTU	3.0	0.3	EPA 180.1, Rev. 2.0 (1993)	03/30/23	3/30/23 11:33	KMR	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B231058	0.266	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	03/30/23	3/30/23 10:29	ALN	M-06
Total Metals										
Mercury	B231122	0.0181	ug/L	0.0100	0.0100	EPA 245.1	04/05/23	4/6/23 8:15	SAS	
Arsenic	B231187	3.2	ug/L	0.070	0.070	EPA 200.8	04/09/23	4/13/23 12:13	DMW	
Cadmium	B231187	0.099	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 12:13	DMW	
Calcium	B231083	11.3	mg/L	0.0400	0.0400	EPA 200.7	04/03/23	4/4/23 12:24	AMO	
Lead	B231187	6.5	ug/L	0.010	0.010	EPA 200.8	04/09/23	4/13/23 12:13	DMW	
Magnesium	B231083	22900	ug/L	75.0	75.0	EPA 200.7	04/03/23	4/4/23 12:24	AMO	
Phosphorus as P	B231083	0.528	mg/L	0.0100	0.0100	EPA 200.7	04/03/23	4/4/23 12:24	AMO	
Hardness	B231083	123	mg/L	0.100	0.100	SM 2340 B-2011	04/03/23	4/4/23 12:24	AMO	
Dissolved Metals										
Cadmium	B231091	0.028	ug/L	0.010	0.010	EPA 200.8	04/02/23	4/2/23 17:24	DMW	
Copper	B231091	4.8	ug/L	0.15	0.15	EPA 200.8	04/02/23	4/2/23 17:24	DMW	
Lead	B231091	0.22	ug/L	9.00E-3	9.00E-3	EPA 200.8	04/02/23	4/2/23 17:24	DMW	
Zinc	B231091	23.9	ug/L	0.50	0.50	EPA 200.8	04/02/23	4/2/23 17:24	DMW	

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B231047									
Blank (B231047-BLK1)									
COD	<7	mg/L					03/30/2023	GKH	U
LCS (B231047-BS1)									
COD			96.0	90-110			03/30/2023	GKH	
Duplicate (B231047-DUP1)	Source ID: AC00279-02								
COD					0.00	10	03/30/2023	GKH	
Batch: B231059									
Blank (B231059-BLK1)									
BOD5	<2	mg/L					04/04/2023	NTS	U
LCS (B231059-BS1)									
BOD5			92.9	84.6-115.4			04/04/2023	NTS	
LCS (B231059-BS2)									
BOD5			96.4	84.6-115.4			04/04/2023	NTS	
Duplicate (B231059-DUP1)	Source ID: BB02811-01								
BOD5					0.614	30	04/04/2023	NTS	D
Duplicate (B231059-DUP2)	Source ID: BB02813-01								
BOD5					0.662	30	04/04/2023	NTS	D
Batch: B231061									
Blank (B231061-BLK1)									
Total Suspended Solids	<0.9	mg/L					03/30/2023	ALG	U
LCS (B231061-BS1)									
Total Suspended Solids			100	90-110			03/30/2023	ALG	
Duplicate (B231061-DUP1)	Source ID: BB02815-02								
Total Suspended Solids					1.71	20	03/30/2023	ALG	
Duplicate (B231061-DUP2)	Source ID: BB02816-01								
Total Suspended Solids					1.82	20	03/30/2023	ALG	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B231062									
Blank (B231062-BLK1)									
Total Dissolved Solids	<25	mg/L					04/01/2023	GKH	U
LCS (B231062-BS1)									
Total Dissolved Solids			97.3	90-110			04/01/2023	GKH	
Duplicate (B231062-DUP1) Source ID: AC00279-03									
Total Dissolved Solids					2.47	10	04/01/2023	GKH	
Batch: B231063									
Blank (B231063-BLK1)									
Turbidity	<0.3	NTU					03/30/2023	KMR	U
LCS (B231063-BS1)									
Turbidity			101	90-110			03/30/2023	KMR	
Duplicate (B231063-DUP1) Source ID: AC00279-04									
Turbidity					0.653	25	03/30/2023	KMR	D
Batch: B231073									
Blank (B231073-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					03/31/2023	LRF	U
Blank (B231073-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					03/31/2023	LRF	U
LCS (B231073-BS1)									
Nitrate-Nitrite, as N			103	90-110			03/31/2023	LRF	
LCS (B231073-BS2)									
Nitrate-Nitrite, as N			102	90-110			03/31/2023	LRF	
Duplicate (B231073-DUP1) Source ID: AC00279-01									
Nitrate-Nitrite, as N					1.26	10	03/31/2023	LRF	
Duplicate (B231073-DUP2) Source ID: BB02786-02									
Nitrate-Nitrite, as N					26.5	10	03/31/2023	LRF	QC-02
Duplicate (B231073-DUP3) Source ID: WB02406-06									
Nitrate-Nitrite, as N					NR	10	03/31/2023	LRF	
Matrix Spike (B231073-MS1) Source ID: AC00279-01									
Nitrate-Nitrite, as N			104	90-110			03/31/2023	LRF	
Matrix Spike (B231073-MS2) Source ID: BB02786-02									
Nitrate-Nitrite, as N			104	90-110			03/31/2023	LRF	
Matrix Spike (B231073-MS3) Source ID: WB02406-06									
Nitrate-Nitrite, as N			108	90-110			03/31/2023	LRF	
Matrix Spike Dup (B231073-MSD1) Source ID: AC00279-01									
Nitrate-Nitrite, as N			101	90-110	1.89	10	03/31/2023	LRF	
Matrix Spike Dup (B231073-MSD2) Source ID: BB02786-02									
Nitrate-Nitrite, as N			102	90-110	1.97	10	03/31/2023	LRF	
Matrix Spike Dup (B231073-MSD3) Source ID: WB02406-06									
Nitrate-Nitrite, as N			109	90-110	0.454	10	03/31/2023	LRF	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B231093									
Blank (B231093-BLK1)									
TKN	<0.2	mg/L					04/04/2023	ALN	U
LCS (B231093-BS1)									
TKN			97.5	80-120			04/04/2023	ALN	
Duplicate (B231093-DUP1) Source ID: AC00279-04									
TKN					15.5	20	04/04/2023	ALN	
Duplicate (B231093-DUP2) Source ID: BB02815-01									
TKN					18.4	20	04/04/2023	ALN	D
Matrix Spike (B231093-MS1) Source ID: AC00279-04									
TKN			84.5	80-120			04/04/2023	ALN	
Matrix Spike (B231093-MS2) Source ID: BB02815-01									
TKN			92.0	80-120			04/04/2023	ALN	D
Matrix Spike (B231093-MS4) Source ID: EP00191-01									
TKN			94.1	80-120			04/04/2023	ALN	
Matrix Spike (B231093-MS5) Source ID: EP00192-01									
TKN			104	80-120			04/04/2023	ALN	D
Matrix Spike (B231093-MS6) Source ID: EP00193-01									
TKN			95.8	80-120			04/04/2023	ALN	D
Matrix Spike (B231093-MS7) Source ID: EP00194-01									
TKN			105	80-120			04/04/2023	ALN	D
Matrix Spike (B231093-MS8) Source ID: EP00197-01									
TKN			96.5	80-120			04/04/2023	ALN	D
Matrix Spike Dup (B231093-MSD1) Source ID: AC00279-04									
TKN			94.7	80-120	7.93	20	04/04/2023	ALN	
Matrix Spike Dup (B231093-MSD2) Source ID: BB02815-01									
TKN			109	80-120	6.27	20	04/04/2023	ALN	D
Batch: B231192									
Blank (B231192-BLK1)									
Ammonia, as N	<0.035	mg/L					04/08/2023	GKH	U
LCS (B231192-BS1)									
Ammonia, as N			105	90-110			04/08/2023	GKH	
Duplicate (B231192-DUP1) Source ID: BB02815-02									
Ammonia, as N					1.35	10	04/08/2023	GKH	D
Matrix Spike (B231192-MS1) Source ID: BB02815-02									
Ammonia, as N			103	80-120			04/08/2023	GKH	D
Matrix Spike Dup (B231192-MSD1) Source ID: BB02815-02									
Ammonia, as N			102	80-120	0.532	10	04/08/2023	GKH	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Wet Chemistry									
Batch: B231058									
Blank (B231058-BLK1)									
Orthophosphate, as P	<0.003	mg/L					03/30/2023	ALN	U
LCS (B231058-BS1)									
Orthophosphate, as P			90.9	90-110			03/30/2023	ALN	
Duplicate (B231058-DUP1) Source ID: AC00279-01									
Orthophosphate, as P					4.81	10	03/30/2023	ALN	
Duplicate (B231058-DUP2) Source ID: WB02406-05									
Orthophosphate, as P					0.818	10	03/30/2023	ALN	D
Matrix Spike (B231058-MS1) Source ID: AC00279-01									
Orthophosphate, as P			98.9	90-110			03/30/2023	ALN	
Matrix Spike (B231058-MS2) Source ID: WB02406-05									
Orthophosphate, as P			102	90-110			03/30/2023	ALN	D
Matrix Spike Dup (B231058-MSD1) Source ID: AC00279-01									
Orthophosphate, as P			99.5	90-110	0.269	10	03/30/2023	ALN	
Matrix Spike Dup (B231058-MSD2) Source ID: WB02406-05									
Orthophosphate, as P			102	90-110	0.127	10	03/30/2023	ALN	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B231083									
Blank (B231083-BLK1)									
Calcium	<0.04	mg/L					04/04/2023	AMO	U
Magnesium	<75	ug/L					04/04/2023	AMO	U
Phosphorus as P	<0.01	mg/L					04/04/2023	AMO	U
LCS (B231083-BS1)									
Calcium			102	85-115			04/04/2023	AMO	
Magnesium			105	85-115			04/04/2023	AMO	
Phosphorus as P			114	85-115			04/04/2023	AMO	
Duplicate (B231083-DUP1) Source ID: AC00279-04									
Calcium					0.218	20	04/04/2023	AMO	
Magnesium					1.66	20	04/04/2023	AMO	
Phosphorus as P					0.770	20	04/04/2023	AMO	
Matrix Spike (B231083-MS1) Source ID: AC00279-04									
Calcium			97.4	70-130			04/04/2023	AMO	
Magnesium			102	70-130			04/04/2023	AMO	
Phosphorus as P			111	70-130			04/04/2023	AMO	
Matrix Spike Dup (B231083-MSD1) Source ID: AC00279-04									
Calcium			97.9	70-130	0.212	20	04/04/2023	AMO	
Magnesium			103	70-130	0.912	20	04/04/2023	AMO	
Phosphorus as P			114	70-130	1.97	20	04/04/2023	AMO	
Batch: B231122									
Blank (B231122-BLK1)									
Mercury	<0.01	ug/L					04/06/2023	SAS	U
LCS (B231122-BS1)									
Mercury			103	85-115			04/06/2023	SAS	
Duplicate (B231122-DUP1) Source ID: EP00196-01									
Mercury					NR	20	04/06/2023	SAS	U
Duplicate (B231122-DUP2) Source ID: EP00197-01									
Mercury					8.84	20	04/06/2023	SAS	
Matrix Spike (B231122-MS1) Source ID: EP00196-01									
Mercury			101	70-130			04/06/2023	SAS	
Matrix Spike (B231122-MS2) Source ID: EP00197-01									
Mercury			96.2	70-130			04/06/2023	SAS	
Matrix Spike Dup (B231122-MSD1) Source ID: EP00196-01									
Mercury			95.5	70-130	5.14	20	04/06/2023	SAS	
Matrix Spike Dup (B231122-MSD2) Source ID: EP00197-01									
Mercury			95.9	70-130	0.285	20	04/06/2023	SAS	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B231187									
Blank (B231187-BLK1)									
Arsenic	<0.070	ug/L					04/13/2023	DMW	U
Cadmium	<0.010	ug/L					04/13/2023	DMW	U
Lead	<0.010	ug/L					04/13/2023	DMW	U
LCS (B231187-BS1)									
Arsenic			94.3	85-115			04/13/2023	DMW	
Cadmium			95.0	85-115			04/13/2023	DMW	
Lead			96.9	85-115			04/13/2023	DMW	
Duplicate (B231187-DUP1) Source ID: AC00279-04									
Arsenic					2.93	20	04/13/2023	DMW	
Cadmium					3.07	20	04/13/2023	DMW	
Lead					2.61	20	04/13/2023	DMW	
Matrix Spike (B231187-MS1) Source ID: AC00279-04									
Arsenic			95.5	70-130			04/13/2023	DMW	
Cadmium			95.1	70-130			04/13/2023	DMW	
Lead			93.8	70-130			04/13/2023	DMW	
Matrix Spike Dup (B231187-MSD1) Source ID: AC00279-04									
Arsenic			96.1	70-130	0.433	20	04/13/2023	DMW	
Cadmium			95.4	70-130	0.320	20	04/13/2023	DMW	
Lead			94.6	70-130	0.592	20	04/13/2023	DMW	
Batch: B231227									
Blank (B231227-BLK1)									
Mercury	<0.01	ug/L					04/12/2023	SAS	U
LCS (B231227-BS1)									
Mercury			105	85-115			04/12/2023	SAS	
Duplicate (B231227-DUP1) Source ID: AC00279-04									
Mercury					2.97	20	04/12/2023	SAS	
Duplicate (B231227-DUP2) Source ID: LS01515-05									
Mercury					11.5	20	04/12/2023	SAS	
Matrix Spike (B231227-MS1) Source ID: AC00279-04									
Mercury			94.0	70-130			04/12/2023	SAS	
Matrix Spike (B231227-MS2) Source ID: LS01515-05									
Mercury			95.4	70-130			04/12/2023	SAS	
Matrix Spike Dup (B231227-MSD1) Source ID: AC00279-04									
Mercury			102	70-130	6.38	20	04/12/2023	SAS	
Matrix Spike Dup (B231227-MSD2) Source ID: LS01515-05									
Mercury			95.8	70-130	0.342	20	04/12/2023	SAS	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Metals									
Batch: B231091									
Blank (B231091-BLK1)									
Cadmium	<0.010	ug/L					04/02/2023	DMW	U
Copper	<0.15	ug/L					04/02/2023	DMW	U
Lead	<0.0090	ug/L					04/02/2023	DMW	U
Zinc	<0.50	ug/L					04/02/2023	DMW	U
LCS (B231091-BS1)									
Cadmium			101	85-115			04/02/2023	DMW	
Copper			103	85-115			04/02/2023	DMW	
Lead			103	85-115			04/02/2023	DMW	
Zinc			104	85-115			04/02/2023	DMW	
Duplicate (B231091-DUP1) Source ID: AC00279-04									
Cadmium					1.39	10	04/02/2023	DMW	
Copper					0.818	10	04/02/2023	DMW	
Lead					26.6	10	04/02/2023	DMW	QC-02
Zinc					0.912	10	04/02/2023	DMW	
Matrix Spike (B231091-MS1) Source ID: AC00279-04									
Cadmium			90.3	70-130			04/02/2023	DMW	
Copper			89.5	70-130			04/02/2023	DMW	
Lead			88.8	70-130			04/02/2023	DMW	
Zinc			91.4	70-130			04/02/2023	DMW	
Matrix Spike Dup (B231091-MSD1) Source ID: AC00279-04									
Cadmium			91.5	70-130	1.28	10	04/02/2023	DMW	
Copper			88.1	70-130	1.18	10	04/02/2023	DMW	
Lead			88.6	70-130	0.156	10	04/02/2023	DMW	
Zinc			90.2	70-130	0.738	10	04/02/2023	DMW	

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Report Date: 04/27/2023 11:45

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Notes and Definitions

Item	Definition
D	Data reported from a dilution
M-06	The reported result has been confirmed by reanalysis.
QC-02	The RPD is greater than the method acceptance criteria. At least one of the values used to calculate the RPD, is less than or equal to the PQL.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Tammy Lightle, Chad Schwend

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C-246 Total Containers
C00279-01	3/29/23		0947	1228	230329-03-WC	TL	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-02			1012	1244	230329-11-WC					X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-03			0724	1118	230329-12-WC					X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-04			0820	1320	230329-14-WC					X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-05			0937	1215	230329-200-WC					X	X	X	X	X	X	X	X	X	X		X	X	X	X	1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Tammy Lightle	03.29.23 / 1443	KMR 3-29-23 1446	Please prioritize the dissolved analytes. AC00279

AC00279

Storm Event Report for May 5, 2023

Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 208-389-7700

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2023

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for May 5, 2023

Date: July 28, 2023

To: Tammy Lightle

Cc: Monica Lowe

From: Zuly Lapa, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Kevin White, PE, Project Engineer

Limitations:

This document was prepared solely for ACHD in accordance with professional standards at the time the services were performed and in accordance with the contract between ACHD and Brown and Caldwell dated September 30, 2022. This document is governed by the specific scope of work authorized by ACHD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACHD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, Permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. Two alternate monitoring sites, Main Alternate (Main Alt) and Americana Alternate (Americana Alt), may be used when high river flows surcharge the Main and Americana storm drainpipes. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2023 (October 1, 2022, through September 30, 2023). The following storm event report summarizes stormwater sampling results from the May 5, 2023, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2023 Phase I Stormwater Outfall Monitoring.

Table 2-1. WY 2023 Samples Collected

Date	Lucky	Whitewater	Main	Main Alt	Americana	Americana Alt	AS_6
October 22, 2022	G[1], C[2]	G, C[3]	G, C[2]	--	G, C[2]	--	G, C[2]
January 9, 2023	G[4]	G[4]	G[4]	--	G[4]	--	G[4]
March 10, 2023	G, C[5]	G, C[5]	G, C[5]	--	G	--	G, C[5]
March 29, 2023	G[6], C[5,6]	G[6], C[5,6]	G[6], C[6]	--	G, C	--	G, C[5]
May 5, 2023	--	--	--	--	--	--	C
Collected:	1G, 1C[5c]	2G, 1C[5]	2G, 1C[5]	--	3G, 1C	--	3G, 1C
Still needed:	2G, 3C	1G, 3C	1G, 3C		2C		3C

Notes:

– = no samples taken

C = composite sample

G = grab sample

[1] E. coli sample qualified due to exceeded holding time.

[2] Composite samples qualified due to lack of representativeness (50%–75%).

[3] Composite samples rejected due to lack of representativeness (<50%).

[4] Grab samples rejected due to insufficient rainfall (<0.08 inches).

[5] Incomplete water quality analysis due to low composite sample volume.

[6] Sample qualified due to insufficient rainfall (0.09 – 0.10 inches).

After the May 5, 2023, storm event, ACHD still needs to collect two grab samples from Lucky and one grab sample from Whitewater and Main for WY 2023. In addition, three complete composite samples need to be

collected from Lucky, Whitewater, and Main and two composite samples need to be collected from Americana and AS_6 or from the corresponding alternate sites.

Section 3: Storm Event Summary

The May 5, 2023, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from May 4, 2023, is included in Attachment A for reference.

Thursday, May 4, 2023 (Set Up)

- On the morning of May 4, 2023, the National Weather Service issued a forecast for widespread rain in the Boise area, starting May 4 at 1400 and ending on May 5 at 1800. The chance of precipitation was 70 to 90 percent, with 0.10 to 0.25 inches of precipitation forecasted.
- Setup was accomplished on May 4, 2023. An expected precipitation depth of 0.11 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.

Wednesday, May 5, 2023 (Storm Event)

- Moderate rain first started at approximately May 5 at 1800 and ended at 1900 and again on May 6 at approximately 0500 and ended at 0900.
- Precipitation totals ranged between 0.16 and 0.23 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrograph for the AS_6 site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main Alt, and AS_6 monitoring stations were set up on May 4, 2023, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programed into the Lucky, Whitewater, and Main Alt flowmeters. A site-specific velocity cutoff value was programmed into the AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Composite Samples

A composite sample was collected at the AS_6 monitoring station and submitted to the West Boise Water Quality Lab at 0930 on May 6. The volume of the AS_6 composite sample was sufficient for analysis of all parameters. Analytical results are shown in Table 2 and pollutant loading estimates for the event are detailed in Table 3. A discussion of other composite sample collection issues is included in Section 5. Laboratory analytical reports are included in Attachment D.

Section 4: Quality Assurance/Quality Control

No quality control samples were collected during the May 5, 2023, storm event.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. The acceptance and performance criteria for analytical and non-analytical criteria were met for this storm event.

Section 5: Notes

Americana Alternate

The primary Americana site was subject to surcharge conditions. Equipment could not be installed at the alternate site because of unsafe flow conditions. Due to these circumstances, the Americana monitoring station was not targeted for composites during this event.

Main Alternate

Due to the surcharge conditions at the primary Main site, the main composite sample was attempted at the alternative site (Main Alt). At the Main Alt monitoring station, a level enable condition of >1.5" was used. During the storm event, the peak of the hydrograph was 1.5". The sampler enabled, however there was not enough flow to trigger a subsample.

Whitewater

At the Whitewater monitoring station, a level enable condition of >7.5" was used. During the storm event, the level in the pipe never exceeded 3.9", therefore the sampler did not enable, and no subsamples were triggered.

Lucky

The composite sample at the Lucky monitoring station only triggered six times, resulting in low sample volume. The sample was not submitted to the laboratory.

AS_6

During the storm event, the AS_6 composite sampler identified a “Distributor Error” message between 0625 and 0703 on May 6, 2023. After the event, the AS_6 sampler was tested but the error could not be recreated. It is unclear why the error message appeared. For this storm event, the “Distributor Error” did not affect the total composite sample volume as the error volume equaled the total received sample volume. Technical support will be contacted to analyze the equipment error and provide potential implications to the current sampling setup procedures.

Data Tables

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main Alt	Americana	AS_6
Grab samples collected and submitted?	NO	NO	NO	NO	NO
Composite samples collected and submitted?	NO	NO	NO	NO	YES
Trigger volume (gal or ft^3)	3,949 gal	1,093 ft^3	384 ft^3	--	301 ft^3
Velocity cutoff (fps)	--	--	--	--	0.02
Sampler enable condition (in)	level > 2.65	level > 7.5	level > 1.5	--	--
Runoff start time	--	--	--	--	1819 [1]
Grab sample collection time	--	--	--	--	--
Composite sample stop time	--	--	--	--	0703 [1]
Runoff stop time	--	--	--	--	0859 [1]
Volume of discharge sampled (ft^3)	--	--	--	--	4,203
Total runoff volume (ft^3)	--	--	--	--	5,347
Percent of storm flow sampled (%)	--	--	--	--	79
Composite sample duration (hrs)	--	--	--	--	5
Storm Precipitation (in)	0.16	0.16	0.17	--	0.17/0.23
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	--	--	--	--	14 [2]
Number of composite bottles filled	--	--	--	--	1
Composite sample volume (Approx.; ml)	--	--	--	--	8,000

Notes:

[1] Runoff start time was on 5/5/2023. Composite sample stop time and runoff stop time were on 5/6/2023.

[2] Four sampler messages had a "Distributor Error" message, but it appears those samples were successful based on the total composite sample volume.

– No data

Table 2. Field and Analytical Data Summary

Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				Analytical Parameters																					
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli	Sample ID Composite	BOD_5	COD	Hardness as $CaCO_3$	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C	mpn/100 mL		mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Whitewater	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Main Alt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Americana	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AS_6	5/5/2023	--	--	--	--	--	--	230505-206-WC	74.9	298	42.0	88.0	204	163	1.51	0.927	1.33	0.310	5.23	3.5	0.022	0.14	15.7	0.72	10.6	0.0182	54.5

Notes:
– = No data.

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	-	-	-	-	-	-
Whitewater	-	-	-	-	-	-
Main Alt	-	-	-	-	-	-
Americana	-	-	-	-	-	-
AS_6	5/5/2023	68.1	0.504	0.444	0.103	1.745

Notes:

– = No data.

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 5/4/2023	Time: 7:42 AM	Initials: TL
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.00”
Date and time of expected event	5/4 2pm – 5/5 6pm
Expected amount of precipitation	0.10” – 0.25” Thurs night, 0.25” – 0.5” Friday
Percent chance of precipitation	70% - 90%
Percent chance of >0.10” over 12 hours	41% Thurs, 80% Friday

NWS Update

I spoke with Joel at NWS this morning. Not much has changed in the forecast since yesterday. We have a chance of isolated thunderstorms starting at 2pm today. The chance for steady, widespread rain increases early Friday morning (after midnight) with daytime totals adding up to around 0.30”. The strongest chances are after 5am. Models are in good agreement with no chance of rainshadowing due to the convective nature of this system.

Targeted Station & Samples

Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☐ Grab	☐ Grab	☒ Grab
☒ Composite	☒ Composite	☒ Composite	☐ Composite	☒ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☒ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☐ Equipment Concerns:
☐ Other:

Text Forecast

NWS Forecast for: Boise ID
Issued by: National Weather Service Boise, ID
Last Update: 3:13 am MDT May 4, 2023

Today: Scattered showers and thunderstorms after noon. Some of the storms could produce gusty winds and heavy rain. Mostly cloudy, with a high near 77. East wind around 7 mph. Chance of precipitation is 30%.
Tonight: Showers likely and possibly a thunderstorm. Some of the storms could produce gusty winds and heavy rain. Mostly cloudy, with a low around 50. Southeast wind 7 to 10 mph. Chance of precipitation is 70%.
Friday: Showers. Steady temperature around 51. Southeast wind 7 to 13 mph becoming southwest in the afternoon. Winds could gust as high as 23 mph. Chance of precipitation is 90%. New precipitation amounts between a quarter and half of an inch possible.
Friday Night: Showers likely, mainly before midnight. Cloudy, with a low around 44. Southwest wind around 5 mph becoming calm after midnight. Chance of precipitation is 70%.
Saturday: A 40 percent chance of showers, mainly after noon. Mostly cloudy, with a high near 61. Light and variable wind.
Saturday Night: A 40 percent chance of showers. Mostly cloudy, with a low around 44.

Sunday: A chance of showers, with thunderstorms also possible after noon. Partly sunny, with a high near 62. Chance of precipitation is 40%.
Sunday Night: A 30 percent chance of showers. Mostly cloudy, with a low around 44.
Monday: A chance of showers, with thunderstorms also possible after noon. Partly sunny, with a high near 62. Chance of precipitation is 50%.
Monday Night: A 40 percent chance of showers, mainly before midnight. Mostly cloudy, with a low around 43.
Tuesday: A 30 percent chance of showers. Partly sunny, with a high near 63.
Tuesday Night: A 20 percent chance of showers. Mostly cloudy, with a low around 46.
Wednesday: A 30 percent chance of showers. Partly sunny, with a high near 67.

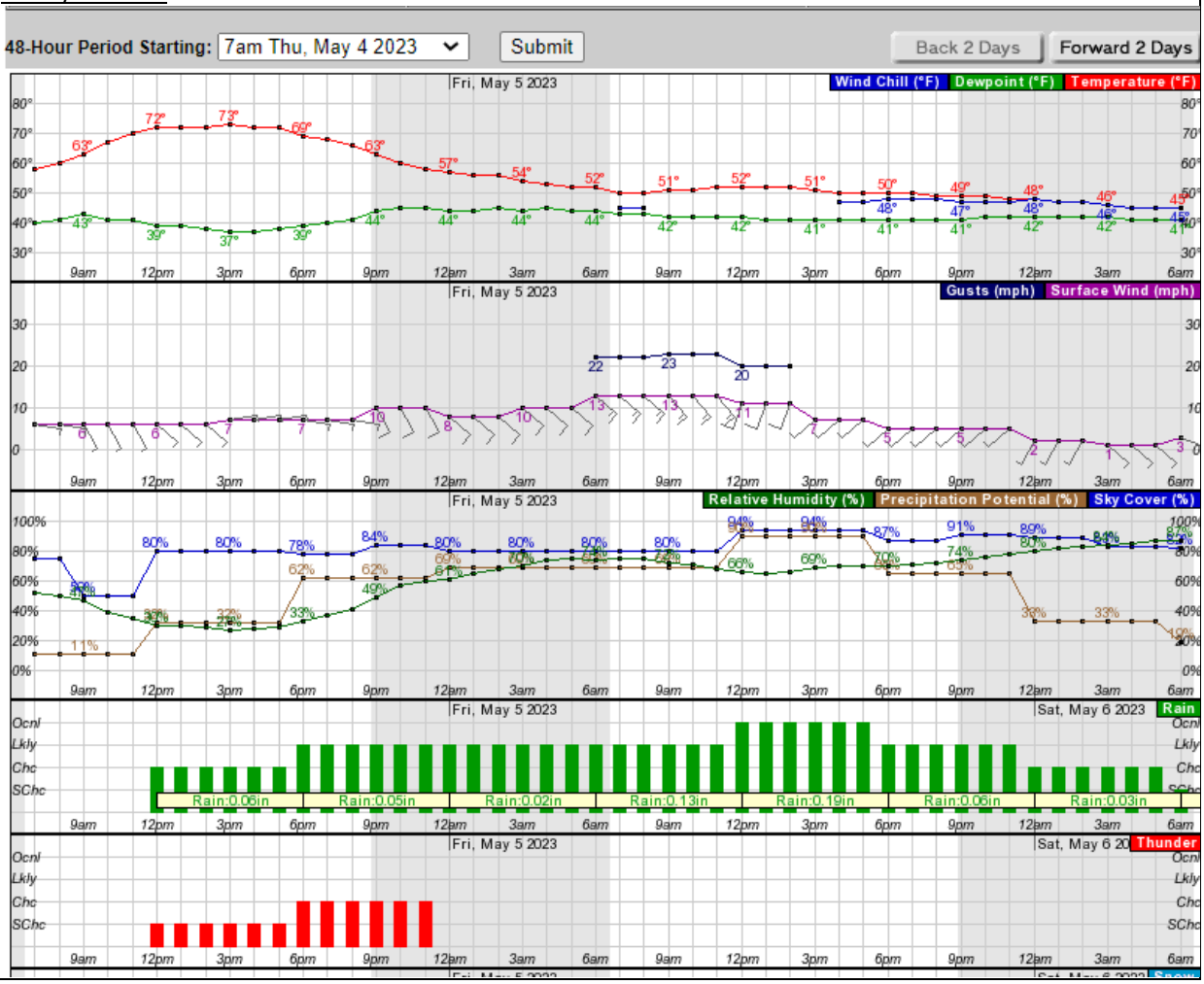
Forecast Discussion
Area Forecast Discussion
National Weather Service Boise ID
355 AM MDT Thu May 4 2023

.SHORT TERM...Today through Saturday night...Upper level trough over central CA, is moving inland and elongating along the Great Basin with multiple shortwaves embedded in the flow. Showers have developed across NV and have move northward overnight. Showers and thunderstorms will increase in coverage on this afternoon, with locally heavy rains and gusty winds. Isolated storms have the potential of 0.50-1.00"/hr rainfall rates, as precipitable water values near the 80th percentile. By Friday the center trough will move across southeast OR and southwest ID, bringing widespread showers and isolated thunderstorms, and significant precipitation. These rainfall rates, along with recent snowmelt, looks to continue the concern for hydrologic impacts across the region through the weekend. **Ensembles show a 50-80 percent chance of exceeding 0.50" precipitation across most of the region and a 20-40 percent chance of exceeding 1.00" during a 48 hour period through mid Saturday.** However, the Magic Valley will see the least amount of precipitation with this system with only a 10-20 percent chance of exceeding 0.50". It should be noted high resolution guidance shows locally higher precipitation amounts of up to 2-3 inches across eastern OR and the central ID mountains, depending on where the heavier showers line up. As the center of the trough moves overhead on Friday morning, snow levels briefly lower to around 4500-5500ft (MSL) across eastern OR and 5500-6500ft across southwest Idaho. Snow levels quickly rise on Friday afternoon to 6000-7000ft with the heating of the day. A secondary shortwave brings another round of showers on Saturday.

.LONG TERM...Sunday through Thursday...Southwest flow will strengthen aloft ahead of the next cold front to arrive late Sunday/early Monday. A chance of showers are forecast on Sunday with below normal temperatures. Then, showers and winds will increase on Monday as the trough pivots northeastward through the Pacific Northwest. Instability also increases on Monday, which will yield a chance (20%) of thunderstorms to develop Monday afternoon. This trough will not be as moist as the aforementioned activity, but will continue to add to the river and stream flood concerns across the forecast area. Temperatures will remain colder than normal for

Monday and Tuesday, allowing snow levels to linger around 5500-6500 ft MSL. Shower activity will continue into Tuesday as the trough begins to exit the area. Thereafter, the forecast becomes uncertain as guidance diverges for Wednesday and Thursday, but is currently trending toward a warmer and drier solution by late in the week.

Hourly Forecast



Storm Event QA/QC Checklist – Phase I

STORM DATE 230505

A. Event and Data Completeness	Yes	No	N/A	Notes
1. Field data sheets filled out completely and clearly	X			
2. Field parameters reviewed, and any problems/issues addressed			X	
3. All samples collected as specified	X			
4. All samples delivered to lab promptly (review chain of custody rpts)	X			
5. Inconsistencies/clarifications discussed with sampling team member			X	
6. All analytical reports from lab received	X			

B. Validation and Verification Methods	Yes	No	N/A	Notes
1. Outliers and unexpected values discussed with lab			X	
2. Appropriate analytical methods used	X			
3. All lab QA samples were within method acceptance criteria	X			
4. All samples reviewed and data qualifiers assigned if needed	X			
5. Data quality objective achieved	X			

C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)					0.03/0.08	< 0.11" in 72 hrs	X		
2. Precipitation (inches)					0.17/0.23	> 0.10"	X		
3. Sampled amount (% of total run-off)					79	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject	X		
4. Composite sample duration (hours)					5				
4. Ecoli sample holding time (hours)					N/A	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject			
5. Filtering of samples for dissolved parameter analysis (hours)					3	<= 24 hrs: no qualifier > 24 hrs.: reject	X		

D. Notes

Composite from AS-6 was the only sample submitted to the lab.

Reviewed by Tamara Gillette **Date** 06.05.23

Approved by Monica L Love **Date** 6/5/23

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.
Step 2. Enter expected precipitation depth (in) in blue cell.
Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth =	0.11
Aliquots per Sample =	17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft^3)	Trigger Vol (ft^3)
Lucky	105	0.157	6582.5	**387**
Whitewater	498	0.069	13621.3	**801**
Main	79	0.246	7760.0	**456**
Main Alt	60	0.200	4791.6	**282**
Americana	875	0.144	50311.8	**2960**
AS_6	204	0.046	3747.0	**220**
State	34	0.160	2172.2	**128**

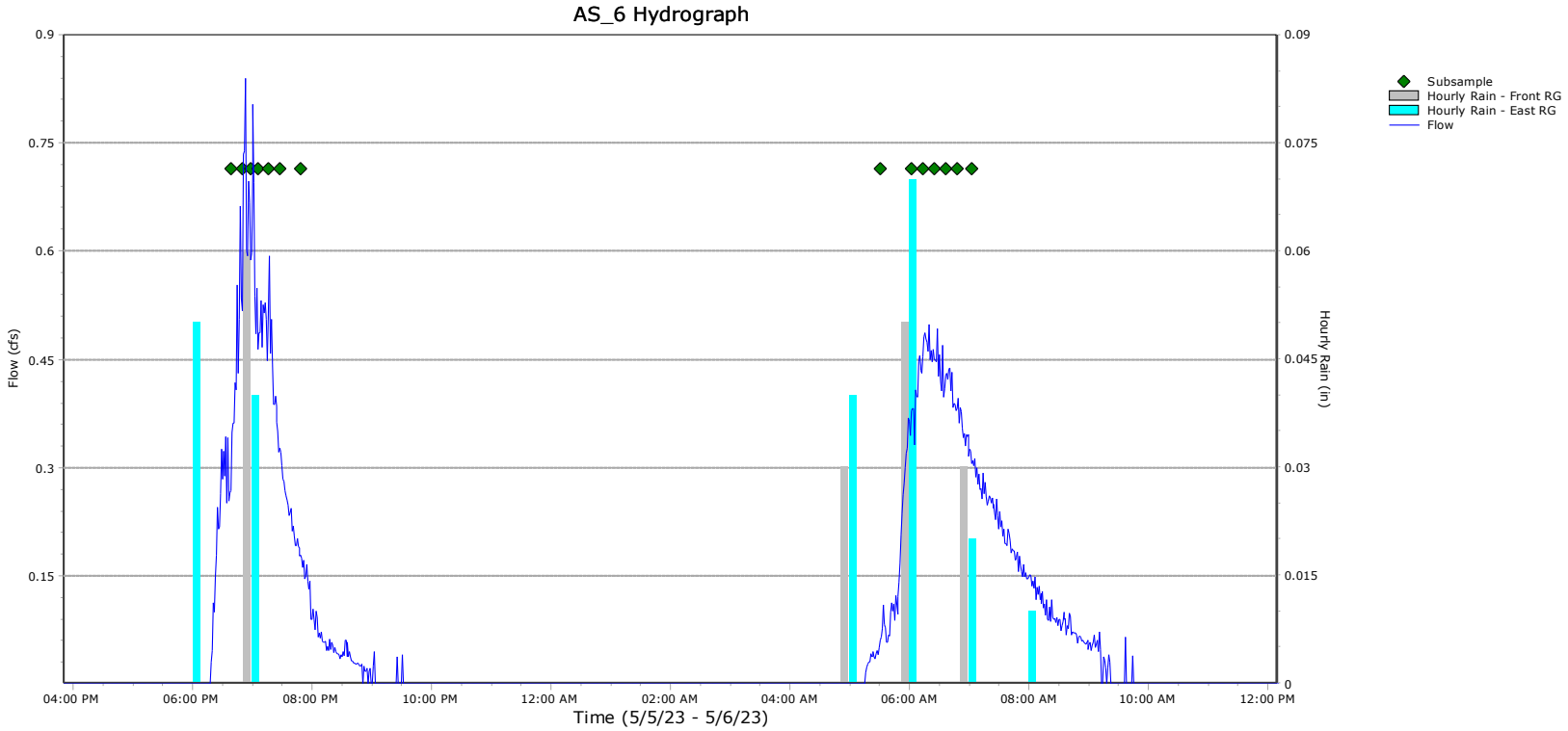
Notes:

Calculated RC = Average (precip (ft) / [volume (ft^3) x area (ft^2)])

Where precip (ft) is the measured amount from local rain guage, and volume (ft^3) is the measured discharge, and area (ft^2) is the watershed area

Expected volume (ft^3) = RC x expected precip (ft) x area (ft^2)

Attachment B: Storm Event Hydrographs


AS_6 Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (5/5/23 - 5/6/23)
0.9
0.75
0.6
0.45
0.3
0.15
0.09
0.075
0.06
0.045
0.03
0.015
0
04:00 PM
06:00 PM
08:00 PM
10:00 PM
12:00 AM
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
Subsample
Hourly Rain - Front RG
Hourly Rain - East RG
Flow

Attachment C: Field Forms

Set Up/ Shut Down Form – HACH

TATION: Lucky

SET UP

Personnel: TLL, SMK

Date/Time On-Site: 5/4/23 0922

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
5/4 0924	1.64	0	0	12.8

Enable Condition or Velocity Cutoff:	2.65 in
Deadband:	1 in
Trigger Volume:	3949 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 05.08.23 / 1058

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)

Downloaded to:	Keychain USB

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Lucky
Personnel: TLL

Bottle 1 **of** 6
Date/Time On-Site: 05.08.23 / 1058

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	5/5 1929	Success	13		
2	5/6 0510		14		
3	0547		15		
4	0606		16		
5	0630		17		
6	0709		18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

Sample was dumped - nothing submitted to the lab.

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☐ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☐ Keep flowmeter running	☐ Install new 15L bottle, add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Set Up/ Shut Down Form – ISCO

TATION: Whitewater

SET UP

Personnel: TLL, SMK

Date/Time On-Site: 5/4/23 0945

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0950	4.10	0.46	0.66	—

Enable Condition:	level > 7.5"
Hysteresis:	4"
Flow Pulse Interval:	1093

On-Site

- ☒ Replace flowmeter battery, install sampler battery
- ☒ Perform decon. cycle
- ☒ Install 15L sample bottle, with ice
- ☒ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☒ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☒ Direct or Remote: Date/time 5/4 0822
- ☒ Retrieve data and review recent flow history
- ☒ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 05.08.23 / 1119

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
Downloaded to:				

On-Site

- ☒ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote: Date/time 05.08.23 / 1247
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Whitewater **Bottle** 1 **of** Ø

Personnel: TLL **Date/Time On-Site:** 05.08.23 / 1149

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

level never got high enough to enable sampler –
no subsamples collected

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☐ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☐ Keep flowmeter running	☐ Install new 15L bottle; add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Set Up/ Shut Down Form – ISCO

TATION: Main Alt.

SET UP

Personnel: TLL, SMK

Date/Time On-Site: 5/4/23 10:41

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1052	-0.41	0	0	13.1

Enable Condition:	1.5 in
Hysteresis:	1.5 in
Flow Pulse Interval:	384 cf

On-Site
- ☒ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☒ Set sampler program parameters
- ☒ Check date/time on sampler
- ☐ Verify all cable and tubing connections
- ☒ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)
- ☒ Direct or Remote; Date/time 5/4 1041
- ☒ Retrieve data and review recent flow history
- ☐ Change Wireless Power Control to Storm Event
- ☒ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☒ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

SHUT DOWN

Personnel: TLL

Date/Time On-Site: 05.08.23 / 1155

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)

Downloaded to:	R6

On-Site
- ☐ Replace flowmeter battery
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)
- ☒ Direct or Remote; Date/time _____
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: _____ **Bottle** _____ **of** 6

Personnel: _____ **Date/Time On-Site:** _____

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

Sampler enabled, but not enough flow to trigger any subsamples

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☐ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☐ Keep flowmeter running	☐ Install new 15L bottle; add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Set Up/ Shut Down Form – HACH

ΓATION: AS-6

SET UP

Personnel: TLL SMK

Date/Time On-Site: 5/4/23 10:05

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1014	0	0	0	12.6

Enable Condition or Velocity Cutoff:	~~0.2~~ 0.02
Deadband:	—
Trigger Volume:	301 kf

- [x] Install batteries on flowmeter and sampler
- [x] Perform decon. cycle
- [x] Install 15L sample bottle, with ice
- [x] Leave bottle lid at site, in a clean re-sealable plastic bag
- [x] Verify all cable and tubing connections
- [x] Check date and time on flowmeter and sampler
- [x] Set flowmeter program and sampler program parameters
- [x] Set logging interval to 1 minute
- [x] Start flowmeter program and sampler program
- [x] Verify running

Comments:

SHUT DOWN

Personnel: TL

Date/Time On-Site: 05.08.23 /1136

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1140	0	0	0	15166	12.1
Downloaded to:		RG			

If flow monitoring is complete:	**If continuing to monitor flow:**
[x] Halt program on flowmeter	☐ Replace flowmeter battery
[x] Download flowmeter data	☐ Reset logging interval to 15 minutes
[x] Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6 **Bottle** 1 **of** 1

Personnel: TL, ZL **Date/Time On-Site:** 5/6/23 0840

☒ Halt sampler program	
☒ Put lid on sample bottle; label sample bottle	
Sample ID:	230505-206 -WC
Approx Sample Volume (mL):	8000 mL
Clarity (ex. Clear, Cloudy, Silty):	Clear
Color (ex. Clear, Gray, Tan, Brown, Black):	Dark Brown
QA/QC Sample ID:	— -103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	5/5 1839	Success	13	5/6 0648	Distributer Error
2	1850	"	14	" 0703	"
3	1858	"	15		
4	1906	"	16		
5	1916	"	17		
6	1928	"	18		
7	1949	"	19		
8	5/6 0531	"	20		
9	0602	"	21		
10	0614	"	22		
11	0625	Distributer Error	23		
12	0636	"	24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☒ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☒ Keep flowmeter running	☐ Install new 15L bottle, add ice
☒ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Attachment D: Storm Event Analytical Reports

Report Date: 05/30/2023 14:31

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00281-01	ACST1C	230505-206-WC	Water		05/06/2023	05/06/2023

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Report Date: 05/30/2023 14:31

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230505-206-WC
Date/Time Collected:	05/05/2023 18:39 - 05/06/2023 07:03		
Lab Number:	AC00281-01	Sample Collector:	T.L
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B231698	1.33	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	05/15/23	5/15/23 10:03	ALN	
BOD5	B231588	74.9	mg/L	2.00	2.00	SM 5210 B-2016	05/07/23	5/12/23 10:03	SMC	
COD	B231583	298	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	05/07/23	5/7/23 12:24	RKT	
Nitrate-Nitrite, as N	B231636	0.310	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	05/10/23	5/10/23 11:35	JAL	
TKN	B231604	5.23	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	05/08/23	5/9/23 11:07	JAL	
Total Dissolved Solids	B231605	163	mg/L	25.0	25.0	SM 2540 C-2015	05/08/23	5/10/23 9:02	RKT	
Total Suspended Solids	B231579	204	mg/L	0.900	0.900	SM 2540 D-2015	05/06/23	5/6/23 12:05	MEC	
Turbidity	B231589	88.0	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	05/07/23	5/7/23 15:21	BAK	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B231587	0.927	mg/L	0.0120	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	05/07/23	5/7/23 12:31	BAK	D
Total Metals										
Mercury	B231625	0.0182	ug/L	0.0100	0.0100	EPA 245.1	05/10/23	5/11/23 8:12	SAS	
Arsenic	B231576	3.5	ug/L	0.070	0.070	EPA 200.8	05/07/23	5/12/23 16:21	DMW	
Cadmium	B231576	0.14	ug/L	0.010	0.010	EPA 200.8	05/07/23	5/12/23 16:21	DMW	
Calcium	B231647	9.90	mg/L	0.0400	0.0400	EPA 200.7	05/11/23	5/15/23 11:34	AMO	
Lead	B231576	10.6	ug/L	0.010	0.010	EPA 200.8	05/07/23	5/12/23 16:21	DMW	
Magnesium	B231647	4200	ug/L	75.0	75.0	EPA 200.7	05/11/23	5/15/23 11:34	AMO	
Phosphorus as P	B231647	1.51	mg/L	0.0100	0.0100	EPA 200.7	05/11/23	5/15/23 11:34	AMO	
Hardness	B231647	42.0	mg/L	0.100	0.100	SM 2340 B-2011	05/11/23	5/15/23 11:34	AMO	
Dissolved Metals										
Cadmium	B231686	0.022	ug/L	0.010	0.010	EPA 200.8	05/13/23	5/13/23 14:28	DMW	
Copper	B231686	15.7	ug/L	0.15	0.15	EPA 200.8	05/13/23	5/13/23 14:28	DMW	
Lead	B231686	0.72	ug/L	9.00E-3	9.00E-3	EPA 200.8	05/13/23	5/13/23 14:28	DMW	
Zinc	B231686	54.5	ug/L	0.50	0.50	EPA 200.8	05/13/23	5/13/23 14:28	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Boise City Public Works
Water Quality Laboratory
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Boise, Idaho 83714-1076
Telephone (208) 608-7240
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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B231579									
Blank (B231579-BLK1)									
Total Suspended Solids	<0.9	mg/L					05/06/2023	MEC	U
LCS (B231579-BS1)									
Total Suspended Solids			99.4	90-110			05/06/2023	MEC	
Duplicate (B231579-DUP1)	Source ID: BB02892-02								
Total Suspended Solids					2.95	20	05/06/2023	MEC	
Batch: B231583									
Blank (B231583-BLK1)									
COD	<7	mg/L					05/07/2023	RKT	U
LCS (B231583-BS1)									
COD			103	90-110			05/07/2023	RKT	
Duplicate (B231583-DUP1)	Source ID: AC00281-01								
COD					0.336	10	05/07/2023	RKT	
Batch: B231588									
Blank (B231588-BLK1)									
BOD5	<2	mg/L					05/12/2023	SMC	U
LCS (B231588-BS1)									
BOD5			107	84.6-115.4			05/12/2023	SMC	
LCS (B231588-BS2)									
BOD5			104	84.6-115.4			05/12/2023	SMC	
Duplicate (B231588-DUP1)	Source ID: BB02893-02								
BOD5					1.20	30	05/12/2023	SMC	D
Batch: B231589									
Blank (B231589-BLK1)									
Turbidity	<0.3	NTU					05/07/2023	BAK	U
LCS (B231589-BS1)									
Turbidity			100	90-110			05/07/2023	BAK	
Duplicate (B231589-DUP1)	Source ID: AC00281-01								
Turbidity					0.456	25	05/07/2023	BAK	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B231604									
Blank (B231604-BLK1)									
TKN	<0.2	mg/L					05/09/2023	JAL	U
Blank (B231604-BLK2)									
TKN	<0.2	mg/L					05/09/2023	JAL	U
LCS (B231604-BS1)									
TKN			98.2	80-120			05/09/2023	JAL	
LCS (B231604-BS2)									
TKN			90.4	80-120			05/09/2023	JAL	
Duplicate (B231604-DUP1) Source ID: BB02875-02									
TKN					14.5	20	05/09/2023	JAL	D
Duplicate (B231604-DUP2) Source ID: ST00020-01									
TKN					0.310	20	05/09/2023	JAL	D
Duplicate (B231604-DUP3) Source ID: WB02458-06									
TKN					0.423	20	05/09/2023	JAL	D
Matrix Spike (B231604-MS1) Source ID: BB02875-02									
TKN			100	80-120			05/09/2023	JAL	D
Matrix Spike (B231604-MS2) Source ID: ST00020-01									
TKN			98.6	80-120			05/09/2023	JAL	D
Matrix Spike (B231604-MS3) Source ID: WB02458-06									
TKN			107	80-120			05/09/2023	JAL	D
Matrix Spike (B231604-MS4) Source ID: EP00209-01									
TKN			95.5	80-120			05/09/2023	JAL	
Matrix Spike (B231604-MS5) Source ID: EP00210-01									
TKN			96.3	80-120			05/09/2023	JAL	
Matrix Spike (B231604-MS6) Source ID: EP00211-01									
TKN			108	80-120			05/09/2023	JAL	
Matrix Spike Dup (B231604-MSD1) Source ID: BB02875-02									
TKN			93.1	80-120	2.51	20	05/09/2023	JAL	D
Matrix Spike Dup (B231604-MSD2) Source ID: ST00020-01									
TKN			104	80-120	1.87	20	05/09/2023	JAL	D
Matrix Spike Dup (B231604-MSD3) Source ID: WB02458-06									
TKN			108	80-120	0.717	20	05/09/2023	JAL	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B231605									
Blank (B231605-BLK1)									
Total Dissolved Solids	<25	mg/L					05/09/2023	RKT	U
LCS (B231605-BS1)									
Total Dissolved Solids			103	90-110			05/09/2023	RKT	
Duplicate (B231605-DUP1) Source ID: AC00281-01									
Total Dissolved Solids					0.306	10	05/10/2023	RKT	
Batch: B231636									
Blank (B231636-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					05/10/2023	JAL	U
Blank (B231636-BLK2)									
Nitrate-Nitrite, as N	<0.025	mg/L					05/10/2023	JAL	U
LCS (B231636-BS1)									
Nitrate-Nitrite, as N			96.6	90-110			05/10/2023	JAL	
LCS (B231636-BS2)									
Nitrate-Nitrite, as N			101	90-110			05/10/2023	JAL	
Duplicate (B231636-DUP1) Source ID: BB02897-01									
Nitrate-Nitrite, as N					0.604	10	05/10/2023	JAL	
Duplicate (B231636-DUP2) Source ID: EP00200-02									
Nitrate-Nitrite, as N					NR	10	05/10/2023	JAL	U
Duplicate (B231636-DUP3) Source ID: WB02488-06									
Nitrate-Nitrite, as N					2.50	10	05/10/2023	JAL	
Matrix Spike (B231636-MS1) Source ID: BB02897-01									
Nitrate-Nitrite, as N			98.4	90-110			05/10/2023	JAL	
Matrix Spike (B231636-MS2) Source ID: EP00200-02									
Nitrate-Nitrite, as N			98.8	90-110			05/10/2023	JAL	
Matrix Spike (B231636-MS3) Source ID: WB02488-06									
Nitrate-Nitrite, as N			103	90-110			05/10/2023	JAL	
Matrix Spike Dup (B231636-MSD1) Source ID: BB02897-01									
Nitrate-Nitrite, as N			98.1	90-110	0.277	10	05/10/2023	JAL	
Matrix Spike Dup (B231636-MSD2) Source ID: EP00200-02									
Nitrate-Nitrite, as N			100	90-110	1.61	10	05/10/2023	JAL	
Matrix Spike Dup (B231636-MSD3) Source ID: WB02488-06									
Nitrate-Nitrite, as N			101	90-110	0.737	10	05/10/2023	JAL	

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Water Quality Laboratory
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Boise, Idaho 83714-1076
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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B231698									
Blank (B231698-BLK1)									
Ammonia, as N	<0.035	mg/L					05/15/2023	ALN	U
LCS (B231698-BS1)									
Ammonia, as N			99.3	90-110			05/15/2023	ALN	
Duplicate (B231698-DUP1) Source ID: BB02887-01									
Ammonia, as N					1.69	10	05/15/2023	ALN	
Duplicate (B231698-DUP2) Source ID: BB02892-03									
Ammonia, as N					1.10	10	05/15/2023	ALN	
Matrix Spike (B231698-MS1) Source ID: BB02887-01									
Ammonia, as N			100	80-120			05/15/2023	ALN	
Matrix Spike (B231698-MS2) Source ID: BB02892-03									
Ammonia, as N			102	80-120			05/15/2023	ALN	
Matrix Spike (B231698-MS3) Source ID: EP00212-01									
Ammonia, as N			101	80-120			05/15/2023	ALN	
Matrix Spike (B231698-MS4) Source ID: EP00213-01									
Ammonia, as N			106	80-120			05/15/2023	ALN	
Matrix Spike (B231698-MS5) Source ID: EP00214-01									
Ammonia, as N			103	80-120			05/15/2023	ALN	
Matrix Spike Dup (B231698-MSD1) Source ID: BB02887-01									
Ammonia, as N			101	80-120	0.936	10	05/15/2023	ALN	
Matrix Spike Dup (B231698-MSD2) Source ID: BB02892-03									
Ammonia, as N			103	80-120	0.299	10	05/15/2023	ALN	
Dissolved Wet Chemistry									
Batch: B231587									
Blank (B231587-BLK1)									
Orthophosphate, as P	<0.003	mg/L					05/07/2023	BAK	U
LCS (B231587-BS1)									
Orthophosphate, as P			98.0	90-110			05/07/2023	BAK	
Duplicate (B231587-DUP1) Source ID: AC00281-01									
Orthophosphate, as P					0.737	10	05/07/2023	BAK	D
Matrix Spike (B231587-MS1) Source ID: AC00281-01									
Orthophosphate, as P			99.6	90-110			05/07/2023	BAK	D
Matrix Spike Dup (B231587-MSD1) Source ID: AC00281-01									
Orthophosphate, as P			100	90-110	0.259	10	05/07/2023	BAK	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B231576									
Blank (B231576-BLK1)									
Arsenic	<0.070	ug/L					05/12/2023	DMW	U
Cadmium	<0.010	ug/L					05/12/2023	DMW	U
Lead	<0.010	ug/L					05/12/2023	DMW	U
LCS (B231576-BS1)									
Arsenic			98.5	85-115			05/12/2023	DMW	
Cadmium			99.1	85-115			05/12/2023	DMW	
Lead			99.9	85-115			05/12/2023	DMW	
Duplicate (B231576-DUP1) Source ID: NP00054-06									
Arsenic					0.973	20	05/12/2023	DMW	
Cadmium					10.6	20	05/12/2023	DMW	
Lead					0.567	20	05/12/2023	DMW	
Matrix Spike (B231576-MS1) Source ID: NP00054-06									
Arsenic			102	70-130			05/12/2023	DMW	
Cadmium			100	70-130			05/12/2023	DMW	
Lead			97.6	70-130			05/12/2023	DMW	
Matrix Spike Dup (B231576-MSD1) Source ID: NP00054-06									
Arsenic			97.9	70-130	2.54	20	05/12/2023	DMW	
Cadmium			98.5	70-130	1.58	20	05/12/2023	DMW	
Lead			96.3	70-130	1.25	20	05/12/2023	DMW	
Batch: B231625									
Blank (B231625-BLK1)									
Mercury	<0.01	ug/L					05/11/2023	SAS	U
LCS (B231625-BS1)									
Mercury			97.7	85-115			05/11/2023	SAS	
Duplicate (B231625-DUP1) Source ID: BB02888-03									
Mercury					NR	20	05/11/2023	SAS	U
Matrix Spike (B231625-MS1) Source ID: BB02888-03									
Mercury			104	70-130			05/11/2023	SAS	
Matrix Spike Dup (B231625-MSD1) Source ID: BB02888-03									
Mercury			101	70-130	3.43	20	05/11/2023	SAS	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B231647									
Blank (B231647-BLK1)									
Calcium	<0.04	mg/L					05/15/2023	AMO	U
Magnesium	<75	ug/L					05/15/2023	AMO	U
Phosphorus as P	<0.01	mg/L					05/15/2023	AMO	U
LCS (B231647-BS1)									
Calcium			99.7	85-115			05/15/2023	AMO	
Magnesium			101	85-115			05/15/2023	AMO	
Phosphorus as P			104	85-115			05/15/2023	AMO	
Duplicate (B231647-DUP1) Source ID: AC00281-01									
Calcium					0.244	20	05/15/2023	AMO	
Magnesium					0.436	20	05/15/2023	AMO	
Phosphorus as P					1.66	20	05/15/2023	AMO	
Duplicate (B231647-DUP2) Source ID: WB02488-10									
Calcium					1.36	20	05/15/2023	AMO	
Magnesium					0.350	20	05/15/2023	AMO	
Phosphorus as P					2.30	20	05/15/2023	AMO	
Matrix Spike (B231647-MS1) Source ID: AC00281-01									
Calcium			99.9	70-130			05/15/2023	AMO	
Magnesium			102	70-130			05/15/2023	AMO	
Phosphorus as P			105	70-130			05/15/2023	AMO	
Matrix Spike (B231647-MS2) Source ID: WB02488-10									
Calcium			104	70-130			05/15/2023	AMO	
Magnesium			103	70-130			05/15/2023	AMO	
Phosphorus as P			113	70-130			05/15/2023	AMO	
Matrix Spike Dup (B231647-MSD1) Source ID: AC00281-01									
Calcium			98.4	70-130	1.05	20	05/15/2023	AMO	
Magnesium			101	70-130	0.401	20	05/15/2023	AMO	
Phosphorus as P			106	70-130	0.244	20	05/15/2023	AMO	
Matrix Spike Dup (B231647-MSD2) Source ID: WB02488-10									
Calcium			98.0	70-130	2.47	20	05/15/2023	AMO	
Magnesium			102	70-130	0.567	20	05/15/2023	AMO	
Phosphorus as P			113	70-130	0.135	20	05/15/2023	AMO	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Dissolved Metals									
Batch: B231686									
Blank (B231686-BLK1)									
Cadmium	<0.010	ug/L					05/13/2023	DMW	U
Copper	<0.15	ug/L					05/13/2023	DMW	U
Lead	<0.0090	ug/L					05/13/2023	DMW	U
Zinc	<0.50	ug/L					05/13/2023	DMW	U
LCS (B231686-BS1)									
Cadmium			98.1	85-115			05/13/2023	DMW	
Copper			96.1	85-115			05/13/2023	DMW	
Lead			96.8	85-115			05/13/2023	DMW	
Zinc			104	85-115			05/13/2023	DMW	
Duplicate (B231686-DUP1) Source ID: ES00248-07									
Cadmium					NR	10	05/13/2023	DMW	U
Copper					0.740	10	05/13/2023	DMW	
Lead					6.29	10	05/13/2023	DMW	
Zinc					3.44	10	05/13/2023	DMW	
Matrix Spike (B231686-MS1) Source ID: ES00248-07									
Cadmium			98.2	70-130			05/13/2023	DMW	
Copper			95.4	70-130			05/13/2023	DMW	
Lead			95.8	70-130			05/13/2023	DMW	
Zinc			101	70-130			05/13/2023	DMW	
Matrix Spike Dup (B231686-MSD1) Source ID: ES00248-07									
Cadmium			93.9	70-130	4.46	10	05/13/2023	DMW	
Copper			91.1	70-130	4.41	10	05/13/2023	DMW	
Lead			92.3	70-130	3.80	10	05/13/2023	DMW	
Zinc			94.2	70-130	7.11	10	05/13/2023	DMW	

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Report Date: 05/30/2023 14:31

Boise City Public Works
Water Quality Laboratory
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Boise, Idaho 83714-1076
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Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Tammy Lightle
Zuly Lapa

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C-284 Total Containers
AC00281-01	5/5/23	5/6/23	1839	0703	230505-206-WC	TL	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Tammy Lightle	5/6/23 0930	[signature] 5/6/23 1000	# AC00281

AC00281

ACHD Sample Filtration, Splitting, and Compositing for Metals

C-286

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
Lims#: AC00281-01 Location: ACSTIC Sample Date: 5-6-23 Sample ID: 230505-206-WC	Split Date: 5-6-23 Start Split: 1017 Start Filter: 1017 Comp Time: N/A Analyst: DMW/DKT	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☒Other: 10.0µm	Coll Jug: Certified; No Sticker Comp Jug: N/A SSA2 SS Tubing: CC000039-40 SS Helper: 1 Stir Bar: CC000040-46 Connector: CC000035-68 CC000040-06	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	(2) High capacity 0.45µm VOSS filte (2) 5.0µm VOSS filters (2) 10.0µm VOSS filters Dirty Sample
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date: _____ Start Split: _____ Start Filter: _____ Comp Time: _____ Analyst: _____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other: _____	Coll Jug: _____ Comp Jug: _____ SS Tubing: _____ SS Helper: _____ Stir Bar: _____ Connector: _____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	

ACHD Sample Filtration, Splitting, and Compositing for Metals

Sample	Split/Filter Info	Filter Used	Bottle/Lid Lots	Bottles Split	Comments
Lims#: _____ Location:_____ Sample Date:_____ Sample ID: _____	Split Date:_____ Start Split:_____ Start Filter:_____ Comp Time:_____ Analyst:_____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other:_____	Coll Jug:_____ Comp Jug:_____ SS Tubing:_____ SS Helper:_____ Stir Bar:_____ Connector:_____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date:_____ Start Split:_____ Start Filter:_____ Comp Time:_____ Analyst:_____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other:_____	Coll Jug:_____ Comp Jug:_____ SS Tubing:_____ SS Helper:_____ Stir Bar:_____ Connector:_____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	
Lims#: _____ Location:_____ Sample Date:_____ Sample ID: _____	Split Date:_____ Start Split:_____ Start Filter:_____ Comp Time:_____ Analyst:_____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other:_____	Coll Jug:_____ Comp Jug:_____ SS Tubing:_____ SS Helper:_____ Stir Bar:_____ Connector:_____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____	
Lims#: _____ Location: _____ Sample Date: _____ Sample ID: _____	Split Date:_____ Start Split:_____ Start Filter:_____ Comp Time:_____ Analyst:_____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other:_____	Coll Jug:_____ Comp Jug:_____ SS Tubing:_____ SS Helper:_____ Stir Bar:_____ Connector:_____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	
Lims#:_____ Location:_____ Sample Date:_____ Sample ID:_____	Split Date:_____ Start Split:_____ Start Filter:_____ Comp Time:_____ Analyst:_____	Filter: ☒Voss ☒0.45µm ☐1.0µm ☒5.0µm ☐Other:_____	Coll Jug:_____ Comp Jug:_____ SS Tubing:_____ SS Helper:_____ Stir Bar:_____ Connector:_____	☒Teflon Total ☒TKN ☒Teflon Diss (F) ☒NH_3 ☒Hg CVAA ☒NO_x (F) ☒BOD ☒ortho-P (F) ☒TSS ☒Turb ☒TDS ☐_____ ☒COD ☐_____	

C-287

Storm Event Report for August 21, 2023

Technical Memorandum

1290 W. Myrtle St. Suite 340
Boise, ID 83702

Phone: 801.316.9859

Prepared for: Ada County Highway District

Project Title: NPDES Phase I Stormwater Support WY 2023

Project No.: 159103

Technical Memorandum

Subject: ACHD Phase I Storm Event Report for August 21, 2023

Date: October 30, 2023

To: Monica Lowe

Cc: Kristen Chisholm

From: Zuly Lapa, Project Engineer

Prepared by: Zuly Lapa, EIT, Project Engineer

Reviewed by: Melissa Jannusch, PE, Project Manager

Limitations:

This document was prepared solely for ACHD in accordance with professional standards at the time the services were performed and in accordance with the contract between ACHD and Brown and Caldwell dated September 30, 2022. This document is governed by the specific scope of work authorized by ACHD; it is not intended to be relied upon by any other party except for regulatory authorities contemplated by the scope of work. We have relied on information or instructions provided by ACHD and other parties and, unless otherwise expressly indicated, have made no independent investigation as to the validity, completeness, or accuracy of such information.

Section 1: Introduction

The Environmental Protection Agency Region 10 reissued a Municipal Separate Storm Sewer System Phase I National Pollutant Discharge Elimination System Permit (NPDES Permit), effective October 1, 2021, to Ada County Highway District (ACHD), Boise City, Ada County Drainage District No. 3, Idaho Transportation Department District 3, Boise State University, and Garden City. Under the NPDES Permit, Permittees are required to continue to conduct wet weather stormwater outfall monitoring and subwatershed monitoring. Four outfall monitoring sites (Lucky, Whitewater, Main, and Americana) and one subwatershed monitoring site (AS_6) have been established. The AS_6 site represents a subwatershed located within the Americana watershed. Two alternate monitoring sites, Main Alternate (Main Alt) and Americana Alternate (Americana Alt), may be used when high river flows surcharge the Main and Americana storm drainpipes. At each site, a minimum of three composite and three grab samples will be collected during Water Year (WY) 2023 (October 1, 2022, through September 30, 2023). The following storm event report summarizes stormwater sampling results from the August 21, 2023, storm event.

Section 2: Project Status

Table 2-1 is a summary of the sample types collected to date for WY 2023 Phase I Stormwater Outfall Monitoring. When samples are qualified, additional samples will be attempted from subsequent storms to collect unqualified samples.

Table 2-1. WY 2023 Samples Collected

Date	Lucky	Whitewater	Main	Main Alt	Americana	Americana Alt	AS_6
October 22, 2022	G[1], C[2]	G, C[3]	G, C[2]	--	G, C[2]	--	G, C[2]
January 9, 2023	G[4]	G[4]	G[4]	--	G[4]	--	G[4]
March 10, 2023	G, C[5]	G, C[5]	G, C[5]	--	G	--	G, C[5]
March 29, 2023	G[6], C[5,6]	G[6], C[5,6]	G[6], C[6]	--	G, C	--	G, C[5]
May 5, 2023	--	--	--	--	--	--	C
August 21, 2023	G, C	G[7], C	G[7], C[3]	--	C	--	C
Unqualified Samples:	2G, 1C	2G, 1C	2G	--	3G, 2C	--	3G, 2C
Samples Remaining:	1G, 2C	1G, 2C	1G, 3C	--	1C	--	1C

Notes:

-- = no samples taken

C = composite sample

G = grab sample

[1] E. coli sample qualified due to exceeded holding time.

[2] Composite samples qualified due to lack of representativeness (50% – 75%).

[3] Composite samples rejected due to lack of representativeness (<50%).

[4] Grab samples rejected due to insufficient rainfall (<0.08 inches).

[5] Incomplete water quality analysis due to low composite sample volume.

[6] Sample qualified due to insufficient rainfall (0.09 – 0.10 inches).

[7] Grab sample rejected due to collecting grab sample after composite sampling duration.

Section 3: Storm Event Summary

The August 21, 2023, storm event and the subsequent preparation and sampling efforts are detailed in the following sections.

3.1 Storm Detail

A summary of the forecast on which monitoring decisions were based is detailed below. The sampling event communication form that describes the forecast and summarizes the decision-making process from August 19, 2023, is included in Attachment A for reference.

Saturday, August 19, 2023 (Sampling Event Communication)

- On the morning of August 19, the National Weather Service issued a forecast for widespread rain in the Boise area, starting August 20 at 1200 and ending at 1800. The chance of precipitation was 60 to 80 percent, with 0.15 to 0.25 inches of precipitation forecasted.
- Second storm wave expected on August 21.

Sunday, August 20, 2023 (Set Up)

- Via a phone call, the National Weather Service forecasted the event for August 21 at 0400 and ending at 1100.
- Setup was accomplished on August 20. An expected precipitation depth of 0.25 inches was used to set trigger volumes at monitoring stations. A runoff calculations worksheet showing how the trigger volumes were calculated is included in Attachment A.

Monday, August 21, 2023 (Storm Event)

- Moderate rain first started at approximately August 21 at 0216 and ended at 1736.
- Precipitation totals ranged between 0.16 and 0.37 inches at local rain gauges.

Flow measurements and precipitation data are listed in Table 1 along with a sampling summary. Hydrograph for the Lucky, Whitewater, Main, Americana, and AS_6 site showing flow, rain, and sample collection data are included in Attachment B.

3.2 Sampling Summary

Lucky, Whitewater, Main, Americana and AS_6 monitoring stations were set up on August 21, 2023, to collect flow-proportional composite samples during the storm. Sampler enable conditions were programed into the Lucky, Whitewater, Main, and Americana flowmeters. A site-specific velocity cutoff value was programmed into the AS_6 flowmeter. Setup and sampling information are included in Table 1. The field forms completed during setup/shutdown and sampling are included in Attachment C.

Grab Samples

One, two-member team mobilized to collect stormwater runoff grab samples and verify operation of the automatic sampling equipment on August 21 at 0900. Grab samples were submitted to the West Boise Water Quality Lab (WQL) at 1300 on August 21. Results for grab samples, including field parameter and analytical data, are included in Table 2. Laboratory analytical reports are included in Attachment D.

Composite Samples

Composite samples were collected at the Lucky, Whitewater, Main, Americana and AS_6 monitoring station and submitted to the West Boise Water Quality Lab at 1615 on August 21, 2023. The volume of the Lucky, Whitewater, Main, Americana and AS_6 composite sample was sufficient for analysis of all parameters.

Analytical results are shown in Table 2 and pollutant loading estimates for the event are detailed in Table 3. Laboratory analytical reports are included in Attachment D.

Section 4: Quality Assurance/Quality Control

A summary of quality control samples collected during the August 21, 2023, storm event is presented below in Table 4-1. A field blank and a field duplicate were collected from the Lucky monitoring station. The analytical results for these samples are included in Table 4.

Table 4-1. Quality Control Samples

Sample ID	Sample Type	Parent Sample	Conclusions
230821-03-001	Field blank	Lucky grab	No *E. coli* detection was reported in the field blank.
230821-03-101	Field duplicate	Lucky grab	Relative percent difference was within the acceptable range.

Data quality objectives for this storm were evaluated and tracked using the data validation review checklist included in Attachment A. The grab samples are ideally collected during the first two hours of flow, or at a minimum during the time of composite sample collection. The grab samples collected at Main and Whitewater are rejected since they were collected after sampling composite duration.

An accepted composite sample represents at least 75 percent of the total discharge or at least 6 hours of the storm duration. The composite samples collected at Main are rejected since it was collected over a duration of 1.5 hours of the storm and due to the erratic flow measurements, the flow duration could not be accurately calculated. Additionally, based on rainfall duration measured at the nearest rain gauge (Front), the Main composite sample represent <50 percent of the calculated flow.

All other acceptance and performance measured for analytical and non-analytical criteria were met for this storm event.

Section 5: Notes and Recommendations

Whitewater

Sampling staff were unable to manually remove the manhole cover at the Whitewater monitoring site after numerous attempts. Ultimately, a backhoe was deployed to the site to remove the cover and collect grab samples. Post-storm review determined grab samples were collected after composite sample duration. Maintenance staff determined the manhole cover was defective and has replaced the cover.

Main

At the Main monitoring site, there were sudden high flow spikes between 0500 and 0600. Flow levels reached to about 67 cubic feet per second. In general, the flow readings were erratic and did not align with precipitation data. The EPA runoff calculation was performed to estimate the total event runoff and sampled runoff values based on impervious surface of the drainage basin (see Figure 1 for EPA's runoff calculation equation). Based on the estimated values, approximately 36% of the total storm runoff was sampled therefore the main composite samples are rejected. Upon arrival to the Main monitoring site, field staff noticed the sampling bottle was already full and confirmed that the 24 subsamples were taken. Field staff did not replace the composite bottle to continue taking composite samples.

Runoff Calculation

$$R = P * Pj * Rv$$

Where:

R = Event Runoff (inches)

P = Event Rainfall (inches)

Pj = Fraction of annual rainfall events that produce runoff (0.9)

Rv = Runoff Coefficient

Figure 1: EPA Runoff Calculation

ISCO Signature Flowmeters

The Whitewater and Americana flowmeter equipment, ISCO Signature, did not allow for remote connection or on-site connection. Staff attempted to connect at various times but had no success. Staff manually programmed the flowmeter equipment for trigger volume and enable depth/hysteresis. There were no errors recorded at the time of sampling or shutting down. ACHD is working with ISCO equipment IT to resolve the connectivity issues. Until the issue is resolved, the impacted ISCO Signature equipment may require direct manual set-up and not be available for remote access.

Data Tables

Table 1. Sampling and Flow Summary					
	Lucky	Whitewater	Main	Americana	AS_6
Grab samples collected and submitted?	YES	YES	YES	NO	NO
Composite samples collected and submitted?	YES	YES	YES	YES	YES
Trigger volume (gal or ft^3)	6,582.8 gal	1,821 ft^3	7,757.3 gal	6,726 ft^3	501 ft^3
Velocity cutoff (fps)	--	--	--	--	0.02
Sampler enable condition (in)	level > 2.72	level > 1.30	level > 1.77	level > 4.91	level > 1.00
Runoff start time	0353	0225	0216	0337	0356
Grab sample collection time	0900	1319	1055	--	--
Composite sample stop time	1309	1225	0525	1314	1042
Runoff stop time	1524	1645	1516	1736	1400
Volume of Discharge Sampled (ft^3)	15,738	35,921	59672[1]	123,419	6,498
Estimated Runoff Sampled (in)	--	--	0.059[1]	--	--
Total runoff volume (ft^3)	17,528	39,950	62474[1]	146,090	7,338
Estimated Total Runoff (in)	--	--	0.16[1]	--	--
Percent of storm flow sampled (%)	83%	90%	36% [1]	84%	89%
Composite sample duration (hrs)	9.5	7.5	1.5	9	6
Storm Precipitation (in)	0.3	0.37	0.33	0.33/0.37	0.33/0.37
Referenced Rain Gauge	Cynthia Mann	Whitewater	Front	Front/East	Front/East
Sampler messages (counts): Success	18	21	24	22	14
Number of composite bottles filled	2	1	1	1	1
Composite sample volume (Approx.; ml)	8,800	11,750	16,250	12,500	8,000

Notes:

[1] At the Main monitoring site, the volume of discharge sampled and total runoff volume were erratic and does not align with the precipitation data. The EPA runoff calculation was performed to estimate the total event runoff and sampled runoff values based on impervious surface of the drainage basin to obtain the percent of storm flow sampled.

Table 2. Field and Analytical Data Summary

Monitoring Station	Sample Date	Sample ID Grab	Field Parameters				Analytical Parameters																					
			Dissolved Oxygen	pH	Conductivity	Temperature	E. coli	Sample ID Composite	BOD_5	COD	Hardness as $CaCO_3$	Turbidity	TSS	TDS	Total Phosphorus	Orthophosphate as P	Ammonia as N	Nitrate + Nitrite as N	TKN	Arsenic, total	Cadmium, dissolved	Cadmium, total	Copper, dissolved	Lead, dissolved	Lead, total	Mercury, total	Zinc, dissolved
			mg/L	S.U.	uS/cm	C	mpn/100 mL		mg/L	mg/L	mg/L	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Lucky	8/21/2023	230821-03-WG	7.17	7.29	62.65	20.65	20,140	230821-03-WC	16.9	85.0	23.1	21.6	26.6	79.2	0.439	0.214	0.211	0.410	5.28	1.2	0.014	0.034	4.7	0.086	0.68	<0.0100	48.5
Whitewater	8/21/2023	230821-11-WG	5.22 [3R]	7.15 [3R]	130.88 [3R]	23.15 [3R]	27,550 [3R]	230821-11-WC	107	323	52.3	118	152	229	1.06	0.605	0.611	0.725	4.10	5.0	0.017	0.13	10.2	0.25	7.3	0.0195	48.6
Main	8/21/2023	230821-12-WG	7.07 [3R]	6.86 [3R]	95.3 [3R]	22.21 [3R]	9,850 [3R]	230821-12-WC	46.1 [1R]	222 [1R]	46.3 [1R]	79.9 [1R]	197 [1R]	166 [1R]	0.558 [1R]	0.222 [1R]	1.36 [1R]	0.817 [1R]	2.14 [1R]	3.8 [1R]	0.057 [1R]	0.2 [1R]	13.7 [1R]	0.38 [1R]	13.8 [1R]	0.0446 [1R]	112 [1R]
Americana	8/21/2023	--	--	--	--	--	--	230821-14-WC	67.7	213	57.7	57.1	80.0	184	0.625	0.355	0.676	0.758	3.41	3.6	0.023	0.13	9.0	0.22	5.6	0.0118	62.5
AS_6	8/21/2023	--	--	--	--	--	--	230821-206-WC	309	875	55.5	83.5	136	420	2.54	1.47	0.529	0.417	8.40	3.8	0.040	0.12	18.3	0.61	6.7	0.0237	99.1

Notes:

– = No data.

[1R] Data rejected due to lack of representativeness (<50%).

[3R] Data rejected due to collecting sample after composite sampling duration.

Table 3. Event Pollutant Loading Estimates in Pounds						
Monitoring Station	Event Date	TSS	Total Phosphorus	Ammonia as N	Nitrate + Nitrite as N	TKN
Lucky	8/21/2023	29.1	0.480	0.231	0.449	5.78
Whitewater	8/21/2023	379	2.64	1.52	1.81	10.2
Main	8/21/2023	768 [1R]	2.18 [1R]	5.30 [1R]	3.19 [1R]	8.34 [1R]
Americana	8/21/2023	729	5.70	6.16	6.91	31.1
AS_6	8/21/2023	62.3	1.16	0.242	0.191	3.85

Notes:

[1R] Data rejected due to lack of representativeness (<50%). Runoff volumes used in pollutant loading calculation appear to be inaccurate.

Table 4. QC Sample Summary				
Date	Parent Sample	Sample ID	Type	E. coli
				mpn/100 mL
8/21/2023	230821-03-WG	230821-03-001	Field Blank	<1.0
8/21/2023	230821-03-WG	230821-03-101	Field Duplicate	4,730.0
Calculated parent/duplicate RPD				11%
Allowable RPD				40%

Attachment A: Supplemental Documents

Sampling Event Communication Form

Data Validation Checklist

Runoff Calculation Worksheet

SAMPLING EVENT COMMUNICATION FORM

Date: 8/19/2023	Time: 1:22 PM	Initials: KC
Is there a targeted sampling event during the next 36 hours? (Or, if it is Friday, is a targeted event expected before 5:00 PM Monday?)		Yes

Past 72 hr Precip	0.00”
Date and time of expected event	8/20 Sunday 12pm – 6pm
Expected amount of precipitation	0.15” – 0.25”
Percent chance of precipitation	80%
Percent chance of >0.10” over 12 hours	60%

NWS Update

I spoke with Spencer from the NWS who says there is a 60% chance of getting more than 0.10” Sunday afternoon into the evening. The models are predicting 0.15” in the afternoon and up to 0.25” into the evening. The chance of precipitation drops between 6pm and midnight tomorrow to 40% between the first storm and the second wave expected on Monday.

Targeted Station & Samples

Lucky	Whitewater	Main	Americana	AS_6	State (Phase II)
☒ Grab	☒ Grab	☒ Grab	☐ Grab	☐ Grab	☒ Grab
☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite	☒ Composite

Type of Forecasted Precipitation

☐ Light Rain	☒ Rain	☐ Rain on Snow
☐ Scattered Showers	☐ Thunder Showers	☐ Snowmelt
☐ Other:		

Reasons for Not Targeting a Forecasted Storm and/or Stations

☐ Holiday
☐ Waiting on Antecedent Dry Period – Expires:
☐ Equipment Concerns:
☐ Other:

Text Forecast

NWS Forecast for: Boise ID
Issued by: National Weather Service Boise, ID
Last Update: 10:16 am MDT Aug 19, 2023

Hydrologic Outlook
Flood Watch

This Afternoon: Isolated showers and thunderstorms. Widespread haze. Mostly sunny and hot, with a high near 93. South southwest wind 5 to 7 mph. Chance of precipitation is 20%.
Tonight: Isolated showers and thunderstorms after midnight. Mostly cloudy, with a low around 71. Light and variable wind becoming east 5 to 8 mph after midnight. Chance of precipitation is 20%.
Sunday: Showers likely, then showers and possibly a thunderstorm after noon. Some of the storms could produce heavy rain. Temperature falling to around 65 by 5pm. East southeast wind 9 to 17 mph. **Chance of precipitation is 80%. New rainfall amounts between a tenth and quarter of an inch, except higher amounts possible in thunderstorms.**

Sunday Night: Showers and possibly a thunderstorm. Some of the storms could produce heavy rain. Low around 59. Northeast wind around 5 mph becoming calm in the evening. Chance of precipitation is 80%. New rainfall amounts between a tenth and quarter of an inch, except higher amounts possible in thunderstorms.
Monday: Showers, with thunderstorms also possible after noon. Some of the storms could produce heavy rain. High near 75. Light southeast wind becoming south 10 to 15 mph in the morning. Chance of precipitation is 90%. New rainfall amounts between a half and three quarters of an inch possible.
Monday Night: Showers likely and possibly a thunderstorm before midnight, then a chance of showers. Some of the storms could produce heavy rain. Mostly cloudy, with a low around 65. Chance of precipitation is 70%. New precipitation amounts between a tenth and quarter of an inch, except higher amounts possible in thunderstorms.
Tuesday: A chance of showers, with thunderstorms also possible after noon. Some of the storms could produce heavy rain. Partly sunny, with a high near 82. Chance of precipitation is 50%.
Tuesday Night: A chance of showers and thunderstorms before midnight, then a slight chance of showers. Some of the storms could produce heavy rain. Partly cloudy, with a low around 61. Chance of precipitation is 30%.
Wednesday: A 20 percent chance of showers. Mostly sunny, with a high near 82.
Wednesday Night: Mostly clear, with a low around 62.
Thursday: Sunny, with a high near 88.
Thursday Night: Mostly clear, with a low around 63.
Friday: A 20 percent chance of showers. Sunny, with a high near 87.

Forecast Discussion

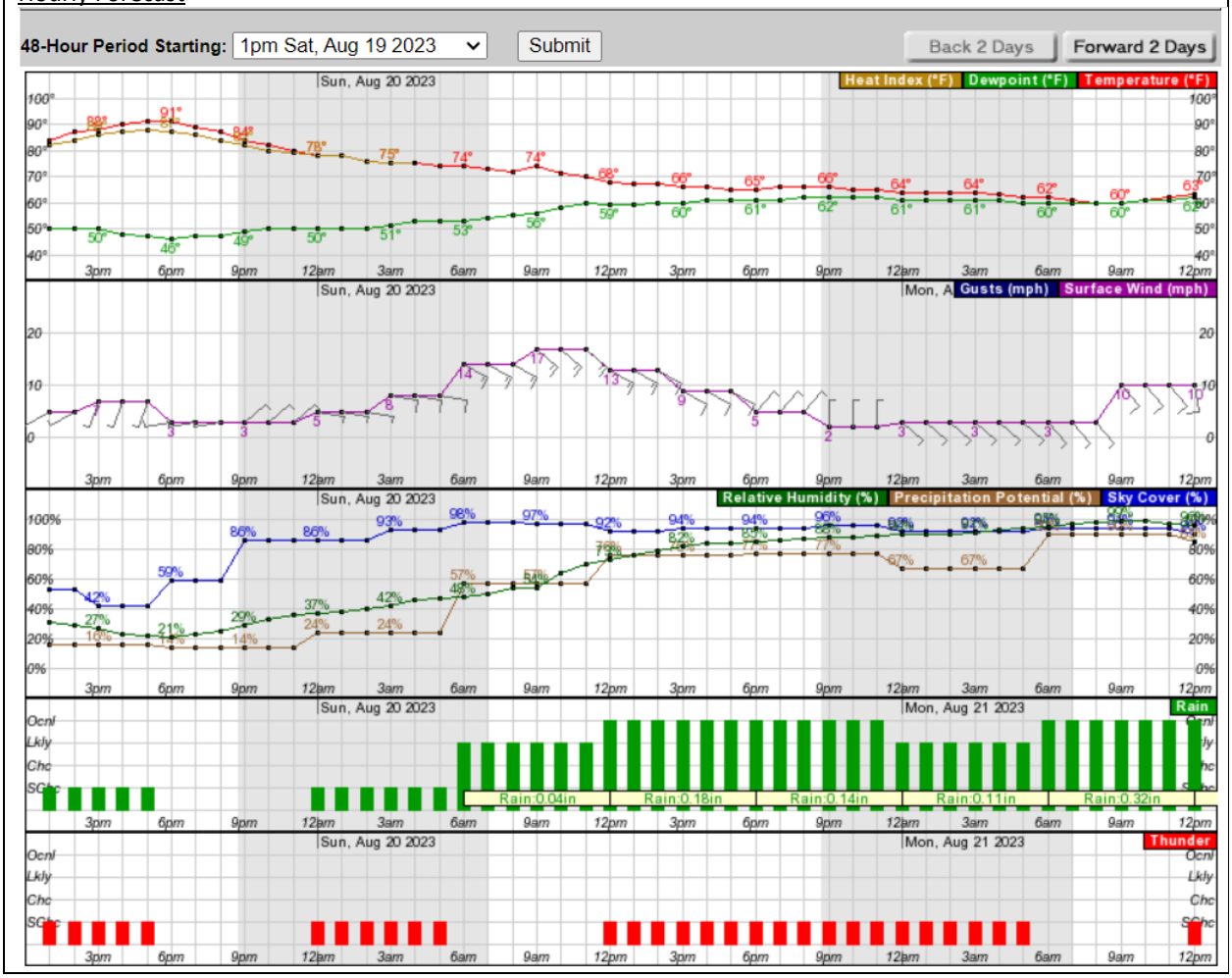
Area Forecast Discussion...UPDATED
National Weather Service Boise ID
1151 AM MDT Sat Aug 19 2023

Included Hydrology segment

.DISCUSSION...Forecast is on track for a record-setting rain event Sunday through Tuesday as remains of Hurricane Hilary track northward, from Baja California today, to southern California Sunday, western NV Sunday night, and right through our CWA Monday. The only comparable event in recent history occurred Sep 10-11, 1976, when tropical storm Kathleen brought intense rain to our CWA. But before Hilary`s moisture gets here a weaker monsoon moisture surge, already over northeast NV, will bring showers and thunderstorms to our CWA this afternoon and evening mainly on the Idaho side, although instability for thunderstorms will be greater in southeast Oregon. After that, a stronger monsoon surge from the south will come in Sunday with widespread rain but only a slight chance of thunderstorms. That surge will include the first moisture from Hilary, resulting in locally heavy rain especially on the Idaho side. Rain will begin in the Snake Basin 6 to 9 AM MDT Sunday and spread northward through the day. Eastern Oregon will have relatively less rain especially in Harney County. The main moisture from Hilary will come in around sunrise Monday and will be much wetter than the monsoon surge on Sunday. Rain totals of 1 to 3 inches are expected, with rainfall rates up to 3 inches/hour during the heaviest downpours. Dew point temperatures may reach 70 degrees in the western Treasure valleys, among the highest dew points on record. The axis of heaviest rain will be along the OR/ID border Monday, then nne-ward through Valley County/ID Monday evening. Meanwhile, the

center of circulation of Hilary will still be evident near Winnemucca/ NV at 8 AM MDT Monday, and move to Ontario/OR 6 PM MDT Monday. With that track, southeast/east winds will increase to 25 to 35 mph in south-central Idaho Monday, and we are considering a wind advisory for it, although that area should have less rain than areas to the west. Current forecast is in good shape for now. Any refinements will be made in the afternoon package. The Flood Watch for all areas Sunday morning through Monday evening looks good at this time.

Hourly Forecast



Storm Event QA/QC Checklist – Phase I

STORM DATE 230821

A. Event and Data Completeness	Yes	No	N/A	Notes
1. Field data sheets filled out completely and clearly	X			
2. Field parameters reviewed, and any problems/issues addressed	X			
3. All samples collected as specified	X			
4. All samples delivered to lab promptly (review chain of custody rpts)	X			
5. Inconsistencies/clarifications discussed with sampling team member	X			
6. All analytical reports from lab received	X			

B. Validation and Verification Methods	Yes	No	N/A	Notes
1. Outliers and unexpected values discussed with lab			X	
2. Appropriate analytical methods used	X			
3. All lab QA samples were within method acceptance criteria	X			
4. All samples reviewed and data qualifiers assigned if needed	X			
5. Data quality objective achieved	X			

C. Specific Storm and Sample QA/QC Criteria	Lucky	Whitewater	Main	Americana	AS_6	Program Criteria	Met	Qualify	Reject
1. Antecedent dry period (inches in previous 72-hours)	0.01	0.01	0.00	0.00 / 0.02	0.00 / 0.02	< 0.11" in 72 hrs	X		
2. Precipitation (inches)	0.30	0.37	0.33	0.33 / 0.37	0.33 / 0.37	> 0.10"	X		
3. Sampled amount (% of total run-off)	83%	90%	<50%	84%	89%	>= 75% or >= 6 hrs: no qualifier >= 50% and <75%: qualify < 50%: reject	ALL but MAIN		X
4. Composite sample duration (hours)	9.5	7.5	1.5	9	6				
4. Ecoli sample holding time (hours)	5	2	3	—	—	<=8 hrs: no qualifier >8 and <=16 hrs.: qualify >16 hrs.: reject			MAIN + WW — SAMPLE TIME
5. Filtering of samples for dissolved parameter analysis (hours)	3.5	3	10	2.5	5.5	<= 24 hrs: no qualifier > 24 hrs.: reject	X		

D. Notes

- Main + whitewater grabs rejected – collected after composite duration
- Main comp rejected — only 1.5 hour sampling duration + erratic flow measurements

Reviewed by [signature] **Date** 10/13/2023

Approved by Monica O Love **Date** 10/13/23

Storm Runoff Estimates and Trigger Volumes

Step 1. Enter runoff coefficients in yellow cells.
Step 2. Enter expected precipitation depth (in) in blue cell.
Step 3. Read trigger volumes (**bold**) in green cells.

Expected Precipitation Depth = 0.25
Aliquots per Sample = 17

Site	Area (ac)	Using RC calculated from flow data		
		RC	Expected Vol (ft^3)	Trigger Vol (ft^3)
Lucky	105	0.157	14960.1	**880**
Whitewater	498	0.069	30957.5	**1821**
Main	79	0.246	17636.4	**1037**
Main Alt	60	0.200	10890.0	**641**
Americana	875	0.144	114345.0	**6726**
AS_6	204	0.046	8516.0	**501**
State	34	0.160	4936.8	**290**

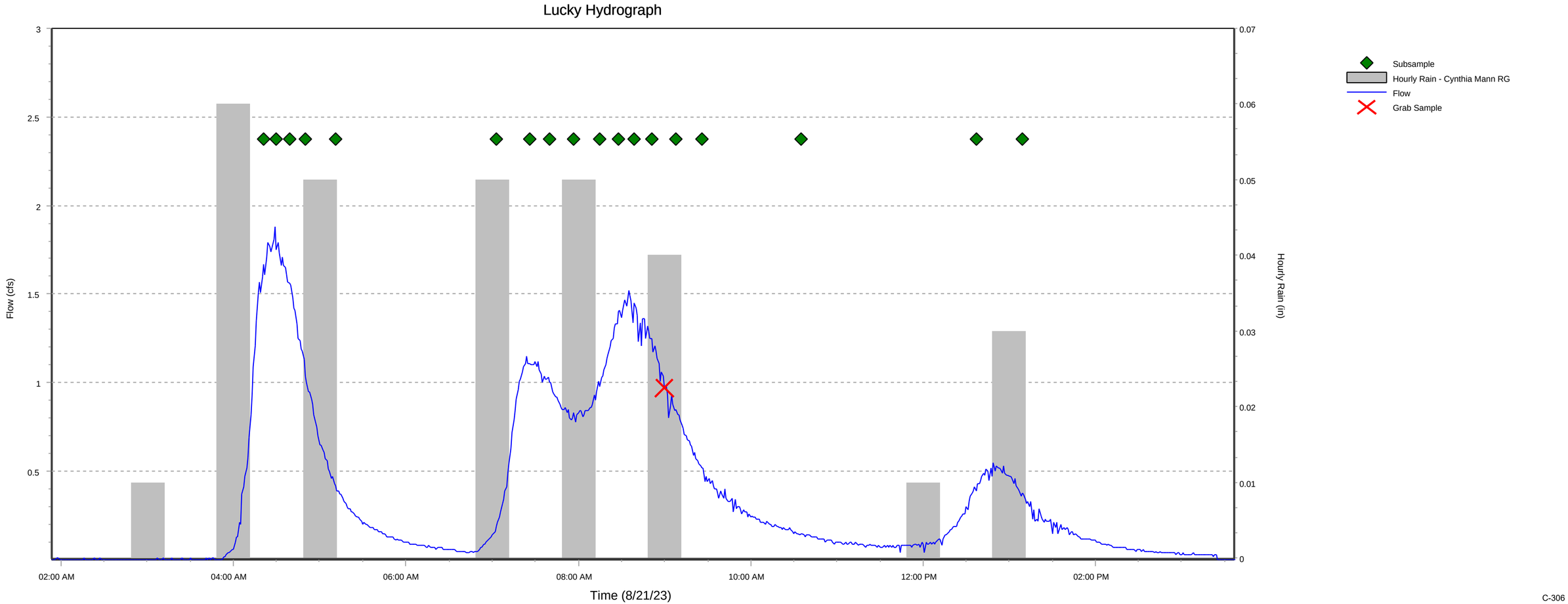
Notes:

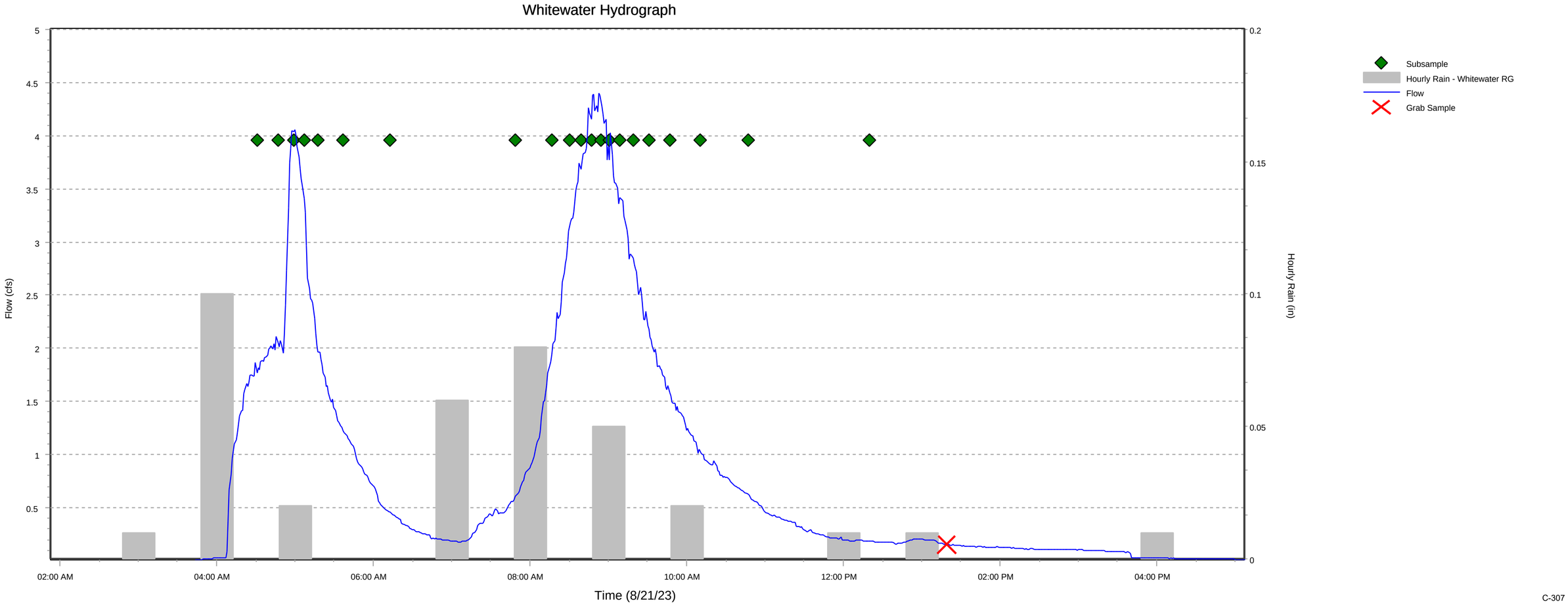
Calculated RC = Average (precip (ft) / [volume (ft^3) x area (ft^2)])

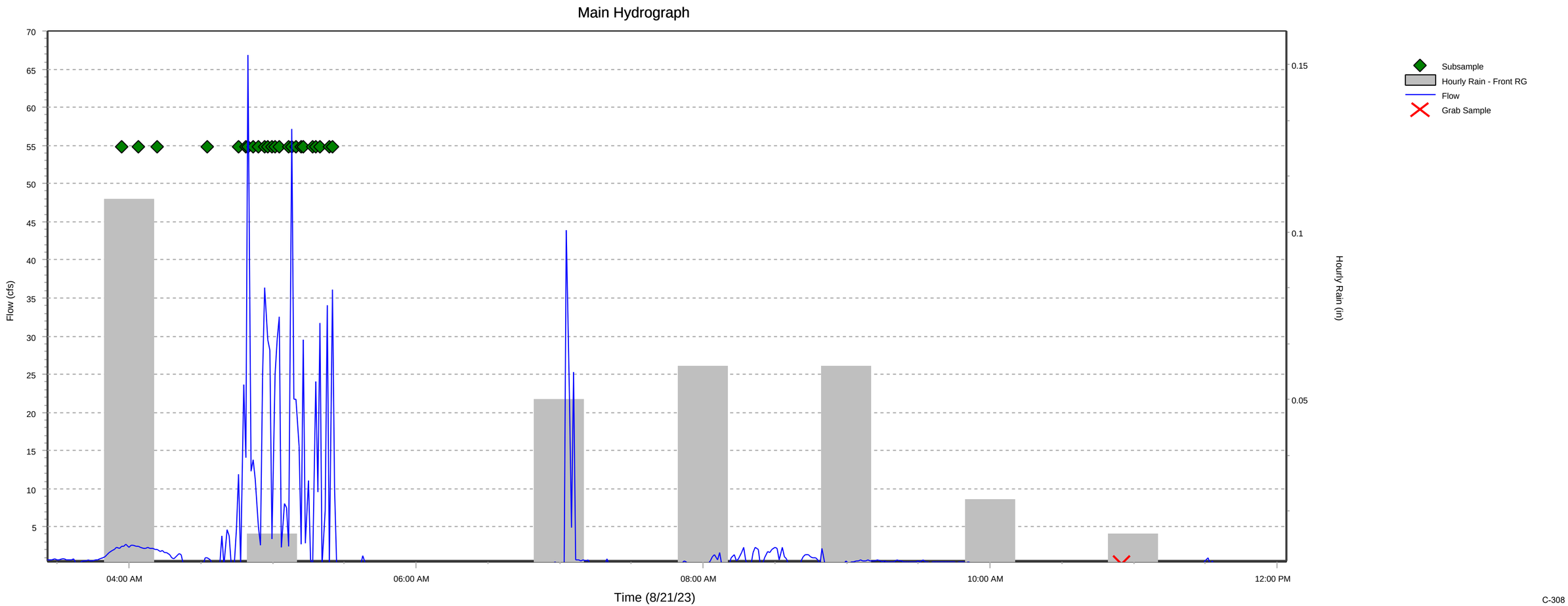
Where precip (ft) is the measured amount from local rain guage, and volume (ft^3) is the measured discharge, and area (ft^2) is the watershed area

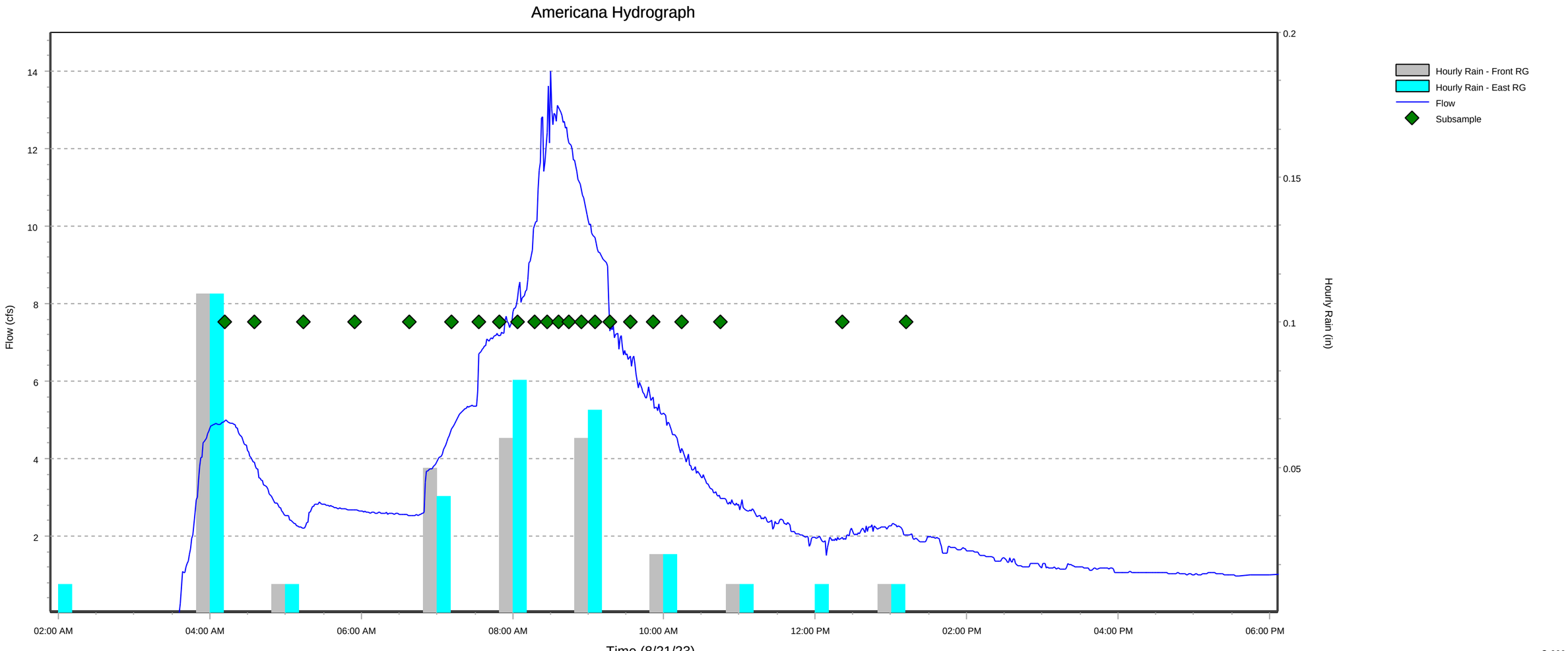
Expected volume (ft^3) = RC x expected precip (ft) x area (ft^2)

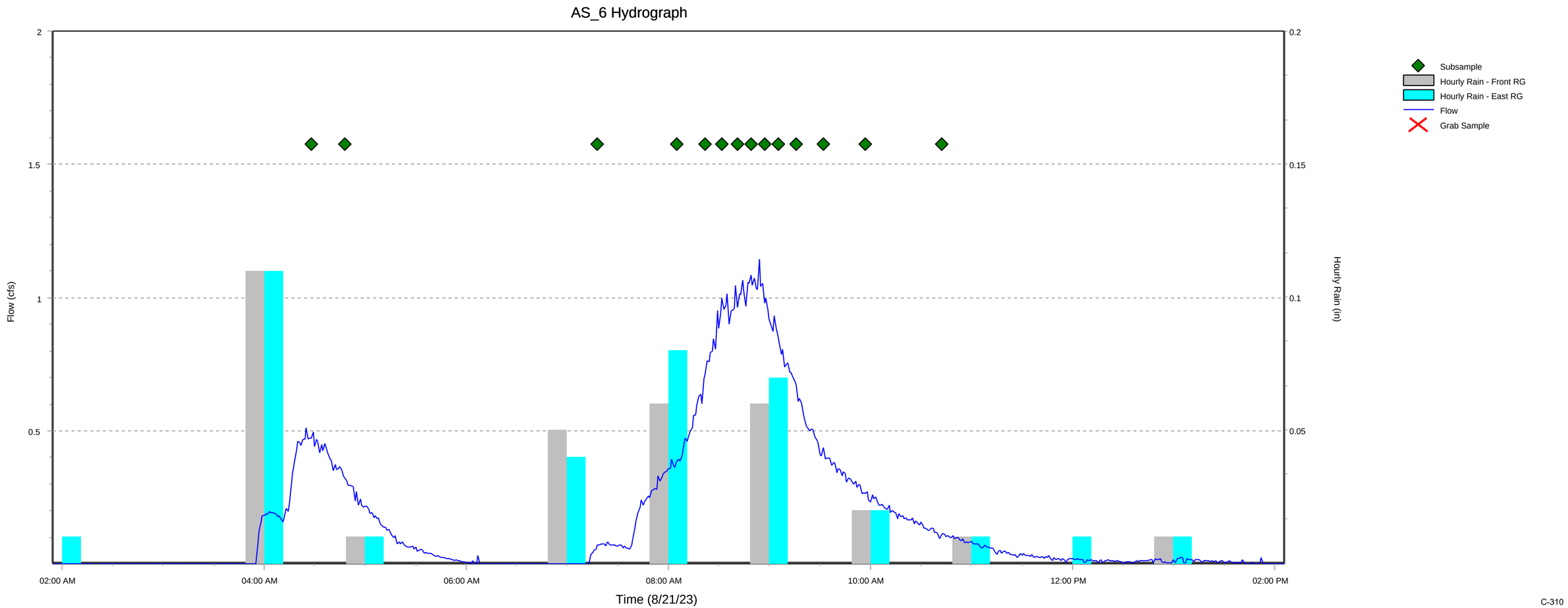
Attachment B: Storm Event Hydrographs


Lucky Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (8/21/23)
3
2.5
2
1.5
1
0.5
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
Subsample
Hourly Rain - Cynthia Mann RG
Flow
Grab Sample


Whitewater Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (8/21/23)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0.2
0.15
0.1
0.05
0
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
Subsample
Hourly Rain - Whitewater RG
Flow
Grab Sample


Main Hydrograph
Flow (cfs)
70
65
60
55
50
45
40
35
30
25
20
15
10
5
Hourly Rain (in)
0.15
0.1
0.05
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
Time (8/21/23)
Subsample
Hourly Rain - Front RG
Flow
Grab Sample


Americana Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (8/21/23)
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Subsample
14
12
10
8
6
4
2
0.2
0.15
0.1
0.05
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
04:00 PM
06:00 PM


AS_6 Hydrograph
Flow (cfs)
Hourly Rain (in)
Time (8/21/23)
2
1.5
1
0.5
0.2
0.15
0.1
0.05
02:00 AM
04:00 AM
06:00 AM
08:00 AM
10:00 AM
12:00 PM
02:00 PM
Subsample
Hourly Rain - Front RG
Hourly Rain - East RG
Flow
Grab Sample

Attachment C: Field Forms

Set Up/ Shut Down Form – HACH

STATION: Lucky

SET UP

Personnel: KC, ZL

Date/Time On-Site: 08/20 0621

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0623	1.72	5.39	0.11	13.4

Enable Condition or Velocity Cutoff:	2.72"
Deadband:	1.00"
Trigger Volume:	880 cf / 6582.86 gal

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: KC

Date/Time On-Site: 8/22/23 1315

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1315	—	—	—	—	13.2

Downloaded to:	USB01

If flow monitoring is complete:	**If continuing to monitor flow:**
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☑ Download flowmeter data	☐ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments: Not giving any measurements for level, flow, velocity, ~~ext~~ or total (cf).

Composite Sample Collection

STATION: Lucky
Personnel: HDS ZL

Bottle 1 **of** 2
Date/Time On-Site: 08/21/23 0911

☐ Halt sampler program		
☐ Put lid on sample bottle; label sample bottle		
Sample ID:	230821-03	-WC
Approx Sample Volume (mL):	3000	
Clarity (ex. Clear, Cloudy, Silty):	cloudy	
Color (ex. Clear, Gray, Tan, Brown, Black):	brown	
QA/QC Sample ID:	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time 08/21/23	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	0421	Success	13	0851	Success
2	0430		14	0905	
3	0439		15	0926	
4	0450		16		
5	0511		17		
6	0703		18		
7	0726		19		
8	0740		20		
9	0757		21		
10	0815		22		
11	0828		23		
12	0839		24		

Comments:

If sampling is complete:
- ☐ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☐ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☑ Keep flowmeter running
- ☑ Install new 15L bottle, add ice
- ☑ Restart program from beginning

Date/Time Restarted: 0936

- ☑ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Composite Sample Collection

STATION: Lucky
Personnel: KC, ZL

Bottle 2 **of** 2
Date/Time On-Site: 08/21/23 1524

☑ Halt Sampler program	
☑ Put lid on sample bottle; label sample bottle	
Sample ID:	230821 – 03 – -WC
Approx Sample Volume (mL):	800mL
Clarity (ex. Clear, Cloudy, Silty):	cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1	08/21/23 1035	Success	13		
2	1237	↓	14		
3	1309		15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:
- ☑ Power off sampler
- ☑ Verify Flowmeter is running
- ☑ Add ice to sample transport cooler
- ☑ Complete COC form; arrange transport to lab

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	3.0"	3500 mL	5.5"	7250 mL	8.0"	11000 mL	10.5"	14750 mL
1.0"	800 mL	3.5"	4250 mL	6.0"	8000 mL	8.5"	11750 mL	11.0"	15500 mL
1.5"	1400 mL	4.0"	5000 mL	6.5"	8750 mL	9.0"	12500 mL	11.5"	16250 mL
2.0"	2000 mL	4.5"	5750 mL	7.0"	9500 mL	9.5"	13250 mL	After 12"	1" = 1500 mL
2.5"	2750 mL	5.0"	6500 mL	7.5"	10250 mL	10.0"	14000 mL	Lab min	8,000 mL

Composite Sample Collection

STATION: _____ **Bottle** _____ **of** _____

Personnel: _____ **Date/Time On-Site:** _____

☐ Halt Sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	-WC
Approx Sample Volume (mL):	
Clarity (ex. Clear, Cloudy, Silty):	
Color (ex. Clear, Gray, Tan, Brown, Black):	
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information					
Trigger #	Date/Time	Sampler Message/ Subsample Result	Trigger #	Date/Time	Sampler Message/ Subsample Result
1			13		
2			14		
3			15		
4			16		
5			17		
6			18		
7			19		
8			20		
9			21		
10			22		
11			23		
12			24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☐ Power off sampler	☐ Keep flowmeter running
☐ Verify flowmeter is running	☐ Install new 15L bottle; add ice
☐ Add ice to sample transport cooler	☐ Restart program from beginning
☐ Complete COC form; arrange transport to lab	**Date/Time Restarted:** _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Lucky

Personnel: HRJ **Date/Time On-Site:** 08/21/23 0846

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0854	7.22	5.4162	1.33	12.9	08/21/23	8.60
		9pm			0427	

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230821-03 -WG	08/21/23	0900	☒
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	0906	20.65	7.17	7.29	62.65

Sampler Current Status	
First Subsample Date/Time	08/21/23 0421
Last Subsample Date/Time	08/21/23 0905
# of Subsamples taken	14

Comments:

Set Up/ Shut Down Form – ISCO

STATION: whitewater

SET UP

Personnel: KC, ZL

Date/Time On-Site: 06/20/2023 0736

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0736	0.30	0.00	0.11	—

Enable Condition:	1.30
Hysteresis:	1"
Flow Pulse Interval:	~~15~~ 1821

On-Site

- ☑ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)

- ☑ Direct or Remote; Date/time 08/20/23 13:24
- ☑ Retrieve data and review recent flow history
- ☑ Change Wireless Power Control to Storm Event
- ☑ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☑ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☑ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

signature fail to connect ~~[illegible]~~ remotely.
KC & ZL directly change parameters on sensor.

SHUT DOWN

Personnel: KC

Date/Time On-Site: 8/22/23 1155

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1255	0.43	~~0.46~~ 0.0	0.17	—
	Downloaded to:	Flowlink - Remote download		

On-Site

- NA ~~☐ Replace flowmeter battery~~
- ☒ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)

- ☒ Direct or Remote; Date/time 8/23/23 1233
- ☒ Retrieve data
- ☒ Change Wireless Power Control to Dry Weather
- ☒ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☒ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Whitewater **Bottle** 1 **of** 1

Personnel: HSR, ZL **Date/Time On-Site:** 08/21/23 1021

☐ Halt sampler program	
☐ Put lid on sample bottle; label sample bottle	
Sample ID:	230821 – 11 -WC
Approx Sample Volume (mL):	11750
Clarity (ex. Clear, Cloudy, Silty):	Cloudy
Color (ex. Clear, Gray, Tan, Brown, Black):	brown
QA/QC Sample ID:	-103 (Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	08-21-23 0436	Success	13	0859	Success
2	0452		14	0906	
3	0504		15	0914	
4	0512		16	0924	
5	0523		17	0936	
6	0542		18	0952	
7	0618		19	1015	
8	0754		20	1020	
9	0822		21	1225	
10	0835		22		
11	0844		23		
12	0852		24		

Comments:

If sampling is complete:
- ☑ Power off sampler, if separate from flowmeter
- ☐ Keep flowmeter running
- ☑ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle; add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Whitewater

Personnel: HES, ZL, KC **Date/Time On-Site:** 08/21/23 1003

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
0956	4.18	1.37	1.92	—	08/21/23 0500	0.00

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230821 - 11 -WG	08/21/23	1319	☒
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP11	1323	23.15	5.22	7.15	130.88

Sampler Current Status	
First Subsample Date/Time	08/21/23 0436
Last Subsample Date/Time	08/21/23 1020
# of Subsamples taken	20

Comments:

Set Up/ Shut Down Form – HACH

TATION: Main

SET UP

Personnel: KC, ZL

Date/Time On-Site: 08/20/2023 0800

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0800	0.77	0.00	0.00	12.7

Enable Condition or Velocity Cutoff:	1.77"
Deadband:	1"
Trigger Volume:	[redacted]

1037cf / 7757.30gal
(updated rainfall amount to 0.25")

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: KC

Date/Time On-Site: 8/22/23 1241

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1241	0.76	0	0		12.1
Downloaded to:	USB01				

If flow monitoring is complete:	If continuing to monitor flow:
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☒ Download flowmeter data	KC ☒ Reset logging interval to 15 minutes
☒ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: Main
Personnel: HES, ZL
Bottle 1 **of** 1
Date/Time On-Site: 08/21/23 12:57

☐ Halt sampler program			
☐ Put lid on sample bottle; label sample bottle			
Sample ID:	230821 - 12	-WC	
Approx Sample Volume (mL):	16250		
Clarity (ex. Clear, Cloudy, Silty):	cloudy		
Color (ex. Clear, Gray, Tan, Brown, Black):	gray		
QA/QC Sample ID:		-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	08/21/23 0357	Success	13	0501	Success
2	0404		14	0503	
3	0412		15	0507	
4	0433		16	0508	
5	0446		17	0510	
6	0449		18	0512	
7	0450		19	0513	
8	0452		20	0517	
9	0454		21	0518	
10	0457		22	0520	
11	0458		23	0524	
12	0500		24	0525	

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☑ Power off sampler, if separate from flowmeter ☑ Keep flowmeter running ☑ Add ice to sample transport cooler	☐ Keep flowmeter running ☐ Install new 15L bottle, add ice ☐ Restart program from beginning **Date/Time Restarted:** _____ ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	~~**11.0"**~~	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Grab Sample Data Form

STATION: Main

Personnel: HRJ / ZL **Date/Time On-Site:** 08/21/23 1049

Flow Meter Current Status						
Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)	Flow Start (date/time)	Rainfall (in)
1049	2.51	46.80 (gpm)	0.41	12.3	08/21/23 0523	2.64in

Grab Information				
	Sample ID	Date	Time	Labeled?
Site *E.Coli*	230821 – 12 -WG	08/21/23	1055	☒
Field Duplicate *E.Coli*	-101			☐
Field Blank *E.Coli*	-001			☐

*Note: time on bottle for QC samples is 1200

Field Parameters					
Meter number	Time	Temp (C)	D.O. (mg/L)	pH (S.U.)	SpCond (uS/cm)
MP09	1053	22.21	7.07	6.86	95.30

Sampler Current Status	
First Subsample Date/Time	08/21/23 0357
Last Subsample Date/Time	08/21/23 0525
# of Subsamples taken	24

Comments:

Set Up/ Shut Down Form – ISCO

STATION: Americana

SET UP

Personnel: KC, ZL

Date/Time On-Site: 8/20/23 8:30

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
830	3.91	0	0	12.37

Enable Condition:	4.91"
Hysteresis:	1.0"
Flow Pulse Interval:	6726 cf

On-Site
- ☑ Replace flowmeter battery, install sampler battery
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Set sampler program parameters
- ☑ Check date/time on sampler
- ☑ Verify all cable and tubing connections
- ☑ Verify sampler program is running

Flowlink (Refer to PG 411 or PG 412, if needed)
- ☑ Direct or Remote; Date/time 08/20/23 1210
- ☑ Retrieve data and review recent flow history
- ☑ Change Wireless Power Control to Storm Event
- ☑ Change Data Storage Rates to 1 minute for Level, Velocity, Total Flow, and Flow Rate
- ☑ Enable Sampler: On Trigger, and set Sampler Enable equation
- ☑ Set Sampler Pacing to Flow Paced, and set trigger volume

Comments:

ZL-check measurement timeout ISCO

can't login remotely. couldn't retrieve data.

SHUT DOWN

Personnel: KC

Date/Time On-Site: 8/22/23 1110

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
1111	4.14	0.91	1.731	12.15
Downloaded to:		Remote download		

On-Site
- ☑ Replace flowmeter battery
- ☑ Remove battery from sampler

Flowlink (Refer to Flowlink Instructions, if needed)
- ☑ Direct or Remote; Date/time 8/22/23 1012
- ☑ Retrieve data
- ☑ Change Wireless Power Control to Dry Weather
- ☑ Change Data Storage Rates to 15 minutes for Level, Velocity, Total Flow, and Flow Rate
- ☑ Enable Sampler: Never

Comments:

Composite Sample Collection

STATION: Americana **Bottle** 1 **of** 1

Personnel: KC, ZL **Date/Time On-Site:** 08/21/23 1351

☐ Halt sampler program		
☐ Put lid on sample bottle; label sample bottle		
Sample ID:	230821-14	-WC
Approx Sample Volume (mL):	12500mL	
Clarity (ex. Clear, Cloudy, Silty):	cloudy	
Color (ex. Clear, Gray, Tan, Brown, Black):	gray	
QA/QC Sample ID:	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	08/21/23 0413	Success	13	0846	
2	0437		14	0856	
3	0516		15	0907	
4	0557		16	0919	
5	0640		17	0935	
6	0713		18	0953	
7	0735		19	1016	
8	0751		20	1047	
9	0806		21	1128	skipped
10	0819		22	1223	Success
11	0829		23	1314	
12	0838		24		

Comments:

If sampling is complete:	**If continuing sampling (sample bottle change-out):**
☑ Power off sampler, if separate from flowmeter	☐ Keep flowmeter running
☑ Keep flowmeter running	☐ Install new 15L bottle; add ice
☑ Add ice to sample transport cooler	☐ Restart program from beginning
	Date/Time Restarted: _____
	☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Set Up/ Shut Down Form – HACH

STATION: AS-6

SET UP

Personnel: KC, ZL

Date/Time On-Site: 08/20/2023 0852

Time	Level (in)	Flow (cfs)	Velocity (fps)	Battery (V)
0851	0.00	0.00	0.00	12.8

Enable Condition or Velocity Cutoff:	1"
Deadband:	1"
Trigger Volume:	501cf

- ☑ Install batteries on flowmeter and sampler
- ☑ Perform decon. cycle
- ☑ Install 15L sample bottle, with ice
- ☑ Leave bottle lid at site, in a clean re-sealable plastic bag
- ☑ Verify all cable and tubing connections
- ☑ Check date and time on flowmeter and sampler
- ☑ Set flowmeter program and sampler program parameters
- ☑ Set logging interval to 1 minute
- ☑ Start flowmeter program and sampler program
- ☑ Verify running

Comments:

SHUT DOWN

Personnel: KC

Date/Time On-Site: 8/22/23 1150

Time	Level (in)	Flow (cfs)	Velocity (fps)	Total (cf)	Battery (V)
1150	0	0	0	7338	12.0
Downloaded to:		Rugged 6			

If flow monitoring is complete:	If continuing to monitor flow:
☒ Halt program on flowmeter	☐ Replace flowmeter battery
☑ Download flowmeter data	☐ Reset logging interval to 15 minutes
☑ Remove flowmeter battery	☐ Change velocity cutoff to 0.02 fps
	☐ Start program
	☐ Verify running

Comments:

Composite Sample Collection

STATION: AS-6 **Bottle** 1 **of** 1

Personnel: HKJ ZL **Date/Time On-Site:** 08/21/23 11:46

☐ Halt sampler program		
☐ Put lid on sample bottle; label sample bottle		
Sample ID:	230821-206	-WC
Approx Sample Volume (mL):	8000 mL	
Clarity (ex. Clear, Cloudy, Silty):	cloudy	
Color (ex. Clear, Gray, Tan, Brown, Black):	gray	
QA/QC Sample ID:	-103	(Time: 1200)

Subsample Information

Trigger #	Date/Time	Error Message/ Subsample Result	Trigger #	Date/Time	Error Message/ Subsample Result
1	08/21/23 0428	Success	13	0957	↓
2	0448	↓	14	1042	↓
3	0718		15		
4	0805		16		
5	0822		17		
6	0832		18		
7	0841		19		
8	0849		20		
9	0857		21		
10	0905		22		
11	0916		23		
12	0932		24		

Comments:

If sampling is complete:
- ☑ Power off sampler, if separate from flowmeter
- ☑ Keep flowmeter running
- ☑ Add ice to sample transport cooler

If continuing sampling (sample bottle change-out):
- ☐ Keep flowmeter running
- ☐ Install new 15L bottle, add ice
- ☐ Restart program from beginning

Date/Time Restarted: _____

- ☐ Verify running

Liquid Height vs. Approximate Sample Volume Conversion Chart

Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume	Liquid Height	Sample Volume
0.5"	400 mL	**3.0"**	3500 mL	**5.5"**	7250 mL	**8.0"**	11000 mL	**10.5"**	14750 mL
1.0"	800 mL	**3.5"**	4250 mL	**6.0"**	8000 mL	**8.5"**	11750 mL	**11.0"**	15500 mL
1.5"	1400 mL	**4.0"**	5000 mL	**6.5"**	8750 mL	**9.0"**	12500 mL	**11.5"**	16250 mL
2.0"	2000 mL	**4.5"**	5750 mL	**7.0"**	9500 mL	**9.5"**	13250 mL	**After 12"**	1" = 1500 mL
2.5"	2750 mL	**5.0"**	6500 mL	**7.5"**	10250 mL	**10.0"**	14000 mL	**Lab min**	8,000 mL

Attachment D: Storm Event Analytical Reports

Report Date: 08/31/2023 13:31

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00311-01	ACST1B	230821-03-WG	Water		08/21/2023	08/21/2023
AC00311-02	ACST1B	230821-03-001	Water		08/21/2023	08/21/2023
AC00311-03	ACST1B	230821-03-101	Water		08/21/2023	08/21/2023
AC00311-04	ACST1B	23082112-WG	Water		08/21/2023	08/21/2023

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230821-03-WG
Date/Time Collected:	08/21/2023 09:00		
Lab Number:	AC00311-01	Sample Collector:	MMJ
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B233199	20140	MPN/100 mL	100.0	1.0	IDEXX - Colilert	08/21/23 13:57	8/22/23 14:05	ASE	D
Wet Chemistry										
Chlorine Screen	B233207	Absent				SM 4500-CL G-2000 mod	08/21/23	8/21/23 13:13	ASE	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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11818 Joplin Road
Boise, Idaho 83714-1076
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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230821-03-001
Date/Time Collected:	08/21/2023 12:00		
Lab Number:	AC00311-02	Sample Collector:	HRJ
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B233199	<1.0	MPN/100 mL	1.0	1.0	IDEXX - Colilert	08/21/23 13:57	8/22/23 14:05	ASE	U
Wet Chemistry										
Chlorine Screen	B233207	Absent				SM 4500-CL G-2000 mod	08/21/23	8/21/23 13:13	ASE	

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Analysis Report

Location:	ACST1B	Location Description:	230821-03-101
Date/Time Collected:	08/21/2023 12:00		
Lab Number:	AC00311-03	Sample Collector:	HRJ
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B233199	4730.0	MPN/100 mL	100.0	1.0	IDEXX - Colilert	08/21/23 13:57	8/22/23 14:05	ASE	D
Wet Chemistry										
Chlorine Screen	B233207	Absent				SM 4500-CL G-2000 mod	08/21/23	8/21/23 13:13	ASE	

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Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	23082112-WG
Date/Time Collected:	08/21/2023 10:55		
Lab Number:	AC00311-04	Sample Collector:	HRJ
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B233199	9850.0	MPN/100 mL	100.0	1.0	IDEXX - Colilert	08/21/23 13:57	8/22/23 14:05	ASE	D
Wet Chemistry										
Chlorine Screen	B233207	Absent				SM 4500-CL G-2000 mod	08/21/23	8/21/23 13:13	ASE	

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B233199									
Blank (B233199-BLK1)									
E. Coli	Absent						08/22/2023	ASE	
LCS (B233199-BS1)									
E. Coli				Present			08/22/2023	ASE	
Duplicate (B233199-DUP1)	Source ID: WB02658-06								
E. Coli					Pass	128	08/22/2023	ASE	
Duplicate (B233199-DUP3)	Source ID: AC00311-03								
E. Coli					Pass	128	08/22/2023	ASE	

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Notes and Definitions

Item	Definition
D	Data reported from a dilution
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Kristen Chisholm
Melissa Jannusen

Lab# AC00311	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C-335 Total Containers
-01	8/21/23	—	0900	—	230821-03-WG	MMJ	X	X												X					1
-02	8/21/23	— KC 1200 ~~0922~~		—	23082-03-001	HRJ	X	X												X					1
-03	8/21/23	— KC 1200 ~~0925~~		—	230821-03-101	HRJ	X	X												X					1
-04	8/21/23	—	1055	—	230821-12-WG	HRJ	X	X												X					1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristen Chisholm	8/21/23 1259	8-21-23 1300	

AC00311

Report Date: 09/12/2023 13:20

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00312-01	ACST1B	230821-11-WG	Water		08/21/2023	08/21/2023
AC00312-02	ACST1C	230821-12-WC	Water		08/21/2023	08/21/2023
AC00312-03	ACST1C	230821-11-WC	Water		08/21/2023	08/21/2023
AC00312-04	ACST1C	230821-14-WC	Water		08/21/2023	08/21/2023

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Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1B	Location Description:	230821-11-WG
Date/Time Collected:	08/21/2023 13:19		
Lab Number:	AC00312-01	Sample Collector:	K.C
Sample Type:	Grab	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Microbiology										
E. Coli	B233199	27550	MPN/100 mL	100.0	1.0	IDEXX - Colilert	08/21/23 15:18	8/22/23 15:18	ASE	D
Wet Chemistry										
Chlorine Screen	B233211	Absent				SM 4500-CL G-2000 mod	08/21/23	8/21/23 15:11	ASE	

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Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230821-12-WC
Date/Time Collected:	08/21/2023 03:57 - 08/21/2023 05:25		
Lab Number:	AC00312-02	Sample Collector:	K.C
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B233228	1.36	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	08/23/23	8/23/23 10:52	ALN	
BOD5	B233221	46.1	mg/L	2.00	2.00	SM 5210 B-2016	08/22/23	8/27/23 11:14	ASE	
COD	B233214	222	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	08/22/23	8/22/23 11:03	KMR	
Nitrate-Nitrite, as N	B233219	0.817	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	08/22/23	8/22/23 11:28	JAL	
TKN	B233245	2.14	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	08/24/23	8/25/23 9:29	ALN	
Total Dissolved Solids	B233224	166	mg/L	20.0	20.0	SM 2540 C-2015	08/22/23	8/23/23 17:22	BAK	
Total Suspended Solids	B233220	197	mg/L	0.900	0.900	SM 2540 D-2015	08/22/23	8/22/23 9:38	RKT	
Turbidity	B233218	79.9	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	08/22/23	8/22/23 12:17	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B233213	0.222	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	08/22/23	8/22/23 8:29	ALN	
Total Metals										
Mercury	B233306	0.0446	ug/L	0.0100	0.0100	EPA 245.1	08/29/23	8/30/23 8:58	SAS	
Arsenic	B233274	3.8	ug/L	0.070	0.070	EPA 200.8	08/25/23	8/30/23 13:02	DMW	
Cadmium	B233274	0.20	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:02	DMW	
Calcium	B233226	13.8	mg/L	0.0400	0.0400	EPA 200.7	08/22/23	8/23/23 17:16	EDM	
Lead	B233274	13.8	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:02	DMW	
Magnesium	B233226	2890	ug/L	80.0	80.0	EPA 200.7	08/22/23	8/23/23 17:16	EDM	
Phosphorus as P	B233226	0.558	mg/L	0.0120	0.0120	EPA 200.7	08/22/23	8/23/23 17:16	EDM	
Hardness	B233226	46.3	mg/L	0.100	0.100	SM 2340 B-2011	08/22/23	8/23/23 17:16	EDM	
Dissolved Metals										
Cadmium	B233273	0.057	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/25/23 13:47	DMW	
Copper	B233273	13.7	ug/L	0.15	0.15	EPA 200.8	08/25/23	8/25/23 13:47	DMW	
Lead	B233273	0.38	ug/L	9.00E-3	9.00E-3	EPA 200.8	08/25/23	8/25/23 13:47	DMW	
Zinc	B233273	112	ug/L	0.50	0.50	EPA 200.8	08/25/23	8/25/23 13:47	DMW	

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Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Analysis Report

Location:	ACST1C	Location Description:	230821-11-WC
Date/Time Collected:	08/21/2023 04:36 - 08/21/2023 12:25		
Lab Number:	AC00312-03	Sample Collector:	K.C
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B233228	0.611	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	08/23/23	8/23/23 11:11	ALN	
BOD5	B233221	107	mg/L	2.00	2.00	SM 5210 B-2016	08/22/23	8/27/23 11:06	ASE	
COD	B233214	323	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	08/22/23	8/22/23 11:03	KMR	
Nitrate-Nitrite, as N	B233219	0.725	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	08/22/23	8/22/23 11:33	JAL	
TKN	B233245	4.10	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	08/24/23	8/25/23 9:34	ALN	
Total Dissolved Solids	B233224	229	mg/L	20.0	20.0	SM 2540 C-2015	08/22/23	8/23/23 17:25	BAK	
Total Suspended Solids	B233220	152	mg/L	0.900	0.900	SM 2540 D-2015	08/22/23	8/22/23 9:39	RKT	
Turbidity	B233218	118	NTU	3.0	0.3	EPA 180.1, Rev. 2.0 (1993)	08/22/23	8/22/23 12:40	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B233213	0.605	mg/L	6.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	08/22/23	8/22/23 8:36	ALN	D
Total Metals										
Mercury	B233306	0.0195	ug/L	0.0100	0.0100	EPA 245.1	08/29/23	8/30/23 9:02	SAS	
Arsenic	B233274	5.0	ug/L	0.070	0.070	EPA 200.8	08/25/23	8/30/23 13:05	DMW	
Cadmium	B233274	0.13	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:05	DMW	
Calcium	B233226	15.3	mg/L	0.0400	0.0400	EPA 200.7	08/22/23	8/23/23 17:34	EDM	
Lead	B233274	7.3	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:05	DMW	
Magnesium	B233226	3430	ug/L	80.0	80.0	EPA 200.7	08/22/23	8/23/23 17:34	EDM	
Phosphorus as P	B233226	1.06	mg/L	0.0120	0.0120	EPA 200.7	08/22/23	8/23/23 17:34	EDM	
Hardness	B233226	52.3	mg/L	0.100	0.100	SM 2340 B-2011	08/22/23	8/23/23 17:34	EDM	
Dissolved Metals										
Cadmium	B233273	0.017	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/25/23 13:50	DMW	
Copper	B233273	10.2	ug/L	0.15	0.15	EPA 200.8	08/25/23	8/25/23 13:50	DMW	
Lead	B233273	0.25	ug/L	9.00E-3	9.00E-3	EPA 200.8	08/25/23	8/25/23 13:50	DMW	
Zinc	B233273	48.6	ug/L	0.50	0.50	EPA 200.8	08/25/23	8/25/23 13:50	DMW	

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Telephone (208) 608-7240
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Analysis Report

Location:	ACST1C	Location Description:	230821-14-WC
Date/Time Collected:	08/21/2023 04:13 - 08/21/2023 13:14		
Lab Number:	AC00312-04	Sample Collector:	K.C
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B233228	0.676	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	08/23/23	8/23/23 11:15	ALN	
BOD5	B233221	67.7	mg/L	2.00	2.00	SM 5210 B-2016	08/22/23	8/27/23 10:58	ASE	
COD	B233214	213	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	08/22/23	8/22/23 11:03	KMR	
Nitrate-Nitrite, as N	B233219	0.758	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	08/22/23	8/22/23 11:34	JAL	
TKN	B233245	3.41	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	08/24/23	8/25/23 9:36	ALN	
Total Dissolved Solids	B233224	184	mg/L	20.0	20.0	SM 2540 C-2015	08/22/23	8/23/23 17:26	BAK	
Total Suspended Solids	B233220	80.0	mg/L	0.900	0.900	SM 2540 D-2015	08/22/23	8/22/23 10:05	RKT	
Turbidity	B233218	57.1	NTU	3.0	0.3	EPA 180.1, Rev. 2.0 (1993)	08/22/23	8/22/23 13:07	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B233213	0.355	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	08/22/23	8/22/23 8:32	ALN	
Total Metals										
Mercury	B233306	0.0118	ug/L	0.0100	0.0100	EPA 245.1	08/29/23	8/30/23 9:05	SAS	
Arsenic	B233274	3.6	ug/L	0.070	0.070	EPA 200.8	08/25/23	8/30/23 13:07	DMW	
Cadmium	B233274	0.13	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:07	DMW	
Calcium	B233226	17.8	mg/L	0.0400	0.0400	EPA 200.7	08/22/23	8/23/23 17:14	EDM	
Lead	B233274	5.6	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:07	DMW	
Magnesium	B233226	3220	ug/L	80.0	80.0	EPA 200.7	08/22/23	8/23/23 17:14	EDM	
Phosphorus as P	B233226	0.625	mg/L	0.0120	0.0120	EPA 200.7	08/22/23	8/23/23 17:14	EDM	
Hardness	B233226	57.7	mg/L	0.100	0.100	SM 2340 B-2011	08/22/23	8/23/23 17:14	EDM	
Dissolved Metals										
Cadmium	B233273	0.023	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/25/23 13:52	DMW	
Copper	B233273	9.0	ug/L	0.15	0.15	EPA 200.8	08/25/23	8/25/23 13:52	DMW	
Lead	B233273	0.22	ug/L	9.00E-3	9.00E-3	EPA 200.8	08/25/23	8/25/23 13:52	DMW	
Zinc	B233273	62.5	ug/L	0.50	0.50	EPA 200.8	08/25/23	8/25/23 13:52	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Microbiology									
Batch: B233199									
Blank (B233199-BLK1)									
E. Coli	Absent						08/22/2023	ASE	
LCS (B233199-BS1)									
E. Coli				Present			08/22/2023	ASE	
Duplicate (B233199-DUP1) Source ID: WB02658-06									
E. Coli					Pass	128	08/22/2023	ASE	
Duplicate (B233199-DUP3) Source ID: AC00311-03									
E. Coli					Pass	128	08/22/2023	ASE	
Wet Chemistry									
Batch: B233214									
Blank (B233214-BLK1)									
COD	<7	mg/L					08/22/2023	KMR	U
LCS (B233214-BS1)									
COD			101	90-110			08/22/2023	KMR	
Duplicate (B233214-DUP1) Source ID: AC00314-01									
COD					3.55	10	08/22/2023	KMR	
Batch: B233218									
Blank (B233218-BLK1)									
Turbidity	<0.3	NTU					08/22/2023	LRF	U
LCS (B233218-BS1)									
Turbidity			100	90-110			08/22/2023	LRF	
Duplicate (B233218-DUP1) Source ID: AC00312-02									
Turbidity					2.80	25	08/22/2023	LRF	D
Batch: B233219									
Blank (B233219-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					08/22/2023	JAL	U
LCS (B233219-BS1)									
Nitrate-Nitrite, as N			100	90-110			08/22/2023	JAL	
Duplicate (B233219-DUP1) Source ID: AC00312-02									
Nitrate-Nitrite, as N					0.270	10	08/22/2023	JAL	
Duplicate (B233219-DUP2) Source ID: BB03161-01									
Nitrate-Nitrite, as N					NR	10	08/22/2023	JAL	U
Matrix Spike (B233219-MS1) Source ID: AC00312-02									
Nitrate-Nitrite, as N			99.1	90-110			08/22/2023	JAL	
Matrix Spike (B233219-MS2) Source ID: BB03161-01									
Nitrate-Nitrite, as N			104	90-110			08/22/2023	JAL	
Matrix Spike Dup (B233219-MSD1) Source ID: AC00312-02									
Nitrate-Nitrite, as N			100	90-110	0.484	10	08/22/2023	JAL	
Matrix Spike Dup (B233219-MSD2) Source ID: BB03161-01									
Nitrate-Nitrite, as N			104	90-110	0.210	10	08/22/2023	JAL	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B233220									
Blank (B233220-BLK1)									
Total Suspended Solids	<0.9	mg/L					08/22/2023	RKT	U
LCS (B233220-BS1)									
Total Suspended Solids			97.4	90-110			08/22/2023	RKT	
Duplicate (B233220-DUP1) Source ID: BB03167-01									
Total Suspended Solids					0.0807	20	08/22/2023	RKT	
Batch: B233221									
Blank (B233221-BLK1)									
BOD5	<2	mg/L					08/27/2023	ASE	U
LCS (B233221-BS2)									
BOD5			102	84.6-115.4			08/27/2023	ASE	
Duplicate (B233221-DUP1) Source ID: BB03166-01									
BOD5					0.436	30	08/27/2023	ASE	D
Batch: B233224									
Blank (B233224-BLK1)									
Total Dissolved Solids	<20	mg/L					08/23/2023	BAK	U
LCS (B233224-BS1)									
Total Dissolved Solids			93.6	90-110			08/23/2023	BAK	
Duplicate (B233224-DUP1) Source ID: AC00312-02									
Total Dissolved Solids					3.99	10	08/23/2023	BAK	
Batch: B233228									
Blank (B233228-BLK1)									
Ammonia, as N	<0.035	mg/L					08/23/2023	ALN	U
LCS (B233228-BS1)									
Ammonia, as N			100	90-110			08/23/2023	ALN	
LCS (B233228-BS2)									
Ammonia, as N			107	90-110			08/23/2023	ALN	
Duplicate (B233228-DUP1) Source ID: AC00312-02									
Ammonia, as N					8.19	10	08/23/2023	ALN	
Duplicate (B233228-DUP2) Source ID: BB03157-01									
Ammonia, as N					0.605	10	08/23/2023	ALN	D
Matrix Spike (B233228-MS1) Source ID: AC00312-02									
Ammonia, as N			107	80-120			08/23/2023	ALN	
Matrix Spike (B233228-MS2) Source ID: BB03157-01									
Ammonia, as N			99.3	80-120			08/23/2023	ALN	D
Matrix Spike Dup (B233228-MSD1) Source ID: AC00312-02									
Ammonia, as N			108	80-120	0.685	10	08/23/2023	ALN	
Matrix Spike Dup (B233228-MSD2) Source ID: BB03157-01									
Ammonia, as N			102	80-120	1.51	10	08/23/2023	ALN	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B233245									
Blank (B233245-BLK1)									
TKN	<0.2	mg/L					08/25/2023	ALN	U
Blank (B233245-BLK2)									
TKN	<0.2	mg/L					08/25/2023	ALN	U
Blank (B233245-BLK3)									
TKN	<0.2	mg/L					08/25/2023	ALN	U
LCS (B233245-BS1)									
TKN			97.8	80-120			08/25/2023	ALN	
LCS (B233245-BS2)									
TKN			97.3	80-120			08/25/2023	ALN	
LCS (B233245-BS3)									
TKN			94.1	80-120			08/25/2023	ALN	
Duplicate (B233245-DUP1) Source ID: AC00312-02									
TKN					3.40	20	08/25/2023	ALN	
Duplicate (B233245-DUP2) Source ID: BB03127-01RE1									
TKN					5.57	20	08/25/2023	ALN	D
Duplicate (B233245-DUP3) Source ID: BB03146-01									
TKN					4.80	20	08/25/2023	ALN	D
Duplicate (B233245-DUP4) Source ID: LS01650-02									
TKN					6.72	20	08/25/2023	ALN	D
Duplicate (B233245-DUP5) Source ID: WB02662-06									
TKN					6.89	20	08/25/2023	ALN	D
Matrix Spike (B233245-MS1) Source ID: AC00312-02									
TKN			108	80-120			08/25/2023	ALN	
Matrix Spike (B233245-MS2) Source ID: BB03127-01RE1									
TKN			113	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS3) Source ID: BB03146-01									
TKN			93.8	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS4) Source ID: LS01650-02									
TKN			102	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS5) Source ID: WB02662-06									
TKN			101	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS6) Source ID: EP00258-01									
TKN			102	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS7) Source ID: EP00258-02									
TKN			102	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS8) Source ID: EP00259-01									
TKN			95.5	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS9) Source ID: EP00260-01									
TKN			96.5	80-120			08/25/2023	ALN	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B233245 (Continued)									
Matrix Spike Dup (B233245-MSD1) Source ID: AC00312-02									
TKN			91.0	80-120	11.7	20	08/25/2023	ALN	
Matrix Spike Dup (B233245-MSD2) Source ID: BB03127-01RE1									
TKN			99.2	80-120	6.01	20	08/25/2023	ALN	D
Matrix Spike Dup (B233245-MSD3) Source ID: BB03146-01									
TKN			103	80-120	3.11	20	08/25/2023	ALN	D
Matrix Spike Dup (B233245-MSD4) Source ID: LS01650-02									
TKN			115	80-120	4.76	20	08/25/2023	ALN	D
Matrix Spike Dup (B233245-MSD5) Source ID: WB02662-06									
TKN			107	80-120	2.48	20	08/25/2023	ALN	D
Dissolved Wet Chemistry									
Batch: B233213									
Blank (B233213-BLK1)									
Orthophosphate, as P	<0.003	mg/L					08/22/2023	ALN	U
LCS (B233213-BS1)									
Orthophosphate, as P			95.2	90-110			08/22/2023	ALN	
Duplicate (B233213-DUP1) Source ID: AC00312-04									
Orthophosphate, as P					0.608	10	08/22/2023	ALN	
Matrix Spike (B233213-MS1) Source ID: AC00312-04									
Orthophosphate, as P			95.2	90-110			08/22/2023	ALN	
Matrix Spike Dup (B233213-MSD1) Source ID: AC00312-04									
Orthophosphate, as P			98.5	90-110	0.712	10	08/22/2023	ALN	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B233226									
Blank (B233226-BLK1)									
Calcium	<0.04	mg/L					08/23/2023	EDM	U
Magnesium	<80	ug/L					08/23/2023	EDM	U
Phosphorus as P	<0.012	mg/L					08/23/2023	EDM	U
LCS (B233226-BS1)									
Calcium			102	85-115			08/23/2023	EDM	
Magnesium			102	85-115			08/23/2023	EDM	
Phosphorus as P			101	85-115			08/23/2023	EDM	
Duplicate (B233226-DUP1) Source ID: AC00312-02									
Calcium					2.09	20	08/23/2023	EDM	
Magnesium					0.316	20	08/23/2023	EDM	
Phosphorus as P					1.76	20	08/23/2023	EDM	
Matrix Spike (B233226-MS1) Source ID: AC00312-02									
Calcium			102	70-130			08/23/2023	EDM	
Magnesium			102	70-130			08/23/2023	EDM	
Phosphorus as P			102	70-130			08/23/2023	EDM	
Matrix Spike Dup (B233226-MSD1) Source ID: AC00312-02									
Calcium			102	70-130	0.0723	20	08/23/2023	EDM	
Magnesium			103	70-130	0.458	20	08/23/2023	EDM	
Phosphorus as P			102	70-130	0.0565	20	08/23/2023	EDM	
Batch: B233274									
Blank (B233274-BLK1)									
Arsenic	<0.070	ug/L					08/30/2023	DMW	U
Cadmium	<0.010	ug/L					08/30/2023	DMW	U
Lead	<0.010	ug/L					08/30/2023	DMW	U
LCS (B233274-BS1)									
Arsenic			93.2	85-115			08/30/2023	DMW	
Cadmium			95.2	85-115			08/30/2023	DMW	
Lead			97.1	85-115			08/30/2023	DMW	
Duplicate (B233274-DUP1) Source ID: AC00312-04									
Arsenic					2.77	20	08/30/2023	DMW	
Cadmium					4.51	20	08/30/2023	DMW	
Lead					0.880	20	08/30/2023	DMW	
Matrix Spike (B233274-MS1) Source ID: AC00312-04									
Arsenic			93.4	70-130			08/30/2023	DMW	
Cadmium			98.5	70-130			08/30/2023	DMW	
Lead			93.6	70-130			08/30/2023	DMW	
Matrix Spike Dup (B233274-MSD1) Source ID: AC00312-04									
Arsenic			91.3	70-130	1.62	20	08/30/2023	DMW	
Cadmium			98.0	70-130	0.562	20	08/30/2023	DMW	
Lead			94.3	70-130	0.482	20	08/30/2023	DMW	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B233306									
Blank (B233306-BLK1)									
Mercury	<0.01	ug/L					08/30/2023	SAS	U
LCS (B233306-BS1)									
Mercury			100	85-115			08/30/2023	SAS	
Duplicate (B233306-DUP1) Source ID: AC00313-02									
Mercury					NR	20	08/30/2023	SAS	U
Duplicate (B233306-DUP2) Source ID: EP00260-02									
Mercury					NR	20	08/30/2023	SAS	U
Matrix Spike (B233306-MS1) Source ID: AC00313-02									
Mercury			111	70-130			08/30/2023	SAS	
Matrix Spike (B233306-MS2) Source ID: EP00260-02									
Mercury			101	70-130			08/30/2023	SAS	
Matrix Spike Dup (B233306-MSD1) Source ID: AC00313-02									
Mercury			109	70-130	1.02	20	08/30/2023	SAS	
Matrix Spike Dup (B233306-MSD2) Source ID: EP00260-02									
Mercury			99.6	70-130	1.65	20	08/30/2023	SAS	
Dissolved Metals									
Batch: B233273									
Blank (B233273-BLK1)									
Cadmium	<0.010	ug/L					08/25/2023	DMW	U
Copper	<0.15	ug/L					08/25/2023	DMW	U
Lead	<0.0090	ug/L					08/25/2023	DMW	U
Zinc	<0.50	ug/L					08/25/2023	DMW	U
LCS (B233273-BS1)									
Cadmium			95.6	85-115			08/25/2023	DMW	
Copper			95.1	85-115			08/25/2023	DMW	
Lead			96.3	85-115			08/25/2023	DMW	
Zinc			95.4	85-115			08/25/2023	DMW	
Duplicate (B233273-DUP1) Source ID: AC00312-04									
Cadmium					14.3	10	08/25/2023	DMW	QC-02
Copper					0.140	10	08/25/2023	DMW	
Lead					1.53	10	08/25/2023	DMW	
Zinc					0.176	10	08/25/2023	DMW	
Matrix Spike (B233273-MS1) Source ID: AC00312-04									
Cadmium			93.6	70-130			08/25/2023	DMW	
Copper			89.0	70-130			08/25/2023	DMW	
Lead			91.7	70-130			08/25/2023	DMW	
Zinc			87.6	70-130			08/25/2023	DMW	
Matrix Spike Dup (B233273-MSD1) Source ID: AC00312-04									
Cadmium			95.6	70-130	2.08	10	08/25/2023	DMW	
Copper			90.2	70-130	0.711	10	08/25/2023	DMW	
Lead			93.3	70-130	1.77	10	08/25/2023	DMW	
Zinc			88.3	70-130	0.227	10	08/25/2023	DMW	

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Notes and Definitions

Item	Definition
D	Data reported from a dilution
QC-02	The RPD is greater than the method acceptance criteria. At least one of the values used to calculate the RPD, is less than or equal to the PQL.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

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Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Kristin Chisholm
Zuly Lapa

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C-348 Total Containers
C00312-01	8/21/23	#	1319		230821-11-WG	KC	X	X												X					1
-02	8/21/23	8/21/23	0357	0525	230821-12-WC	KC	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-03	8/21/23	8/21/23	0936	1225	230821-11-WC	KC	X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
-04	8/21/23	8/21/23	0413	1314	230821-14-WC	KC			X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristin Chisholm	8/21/23 1436	[signature] 1437	
[signature]	8/21/23 1510	[signature] 1510	

PI – AC00312

AC00312

Report Date: 09/12/2023 13:20

Boise City Public Works
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11818 Joplin Road
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Samples in this Report

Lab ID	Sample	Sample Description	Matrix	Qualifiers	Date Sampled	Date Received
AC00313-01	ACST1C	230821-206-WC	Water		08/21/2023	08/21/2023
AC00313-02	ACST1C	230821-03-WC	Water		08/21/2023	08/21/2023

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Analysis Report

Location:	ACST1C	Location Description:	230821-206-WC
Date/Time Collected:	08/21/2023 04:28 - 08/21/2023 10:42		
Lab Number:	AC00313-01	Sample Collector:	K.C
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B233228	0.529	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	08/23/23	8/23/23 11:20	ALN	
BOD5	B233221	309	mg/L	2.00	2.00	SM 5210 B-2016	08/22/23	8/27/23 10:50	ASE	
COD	B233214	875	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	08/22/23	8/22/23 11:03	KMR	
Nitrate-Nitrite, as N	B233219	0.417	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	08/22/23	8/22/23 11:35	JAL	
TKN	B233245	8.40	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	08/24/23	8/25/23 9:37	ALN	
Total Dissolved Solids	B233224	420	mg/L	20.0	20.0	SM 2540 C-2015	08/22/23	8/24/23 10:37	BAK	
Total Suspended Solids	B233220	136	mg/L	0.900	0.900	SM 2540 D-2015	08/22/23	8/22/23 9:37	RKT	
Turbidity	B233218	83.5	NTU	3.0	0.3	EPA 180.1, Rev. 2.0 (1993)	08/22/23	8/22/23 12:32	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B233213	1.47	mg/L	0.0300	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	08/22/23	8/22/23 8:44	ALN	D
Total Metals										
Mercury	B233306	0.0237	ug/L	0.0100	0.0100	EPA 245.1	08/29/23	8/30/23 9:09	SAS	
Arsenic	B233274	3.8	ug/L	0.070	0.070	EPA 200.8	08/25/23	8/30/23 13:17	DMW	
Cadmium	B233274	0.12	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:17	DMW	
Calcium	B233226	15100	ug/L	40.0	40.0	EPA 200.7	08/22/23	8/23/23 17:36	EDM	
Lead	B233274	6.7	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:17	DMW	
Magnesium	B233226	4340	ug/L	80.0	80.0	EPA 200.7	08/22/23	8/23/23 17:36	EDM	
Phosphorus as P	B233226	2.54	mg/L	0.0120	0.0120	EPA 200.7	08/22/23	8/23/23 17:36	EDM	
Hardness	B233226	55.5	mg/L	0.100	0.100	SM 2340 B-2011	08/22/23	8/23/23 17:36	EDM	
Dissolved Metals										
Cadmium	B233273	0.040	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/25/23 14:02	DMW	
Copper	B233273	18.3	ug/L	0.15	0.15	EPA 200.8	08/25/23	8/25/23 14:02	DMW	
Lead	B233273	0.61	ug/L	9.00E-3	9.00E-3	EPA 200.8	08/25/23	8/25/23 14:02	DMW	
Zinc	B233273	99.1	ug/L	0.50	0.50	EPA 200.8	08/25/23	8/25/23 14:02	DMW	

* The reported adjusted "MDL" is sample-specific. The analysis MDL as defined by 40 CFR pt 136 App.B. was corrected for dilution, dry weight, or method-defined ML.

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Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
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Analysis Report

Location:	ACST1C	Location Description:	230821-03-WC
Date/Time Collected:	08/21/2023 04:21 - 08/21/2023 13:09		
Lab Number:	AC00313-02	Sample Collector:	K.C
Sample Type:	Composite	Sample Matrix:	Water

Analyte Name	Batch	Result	Units	Adjusted MDL *	Method MDL	Analysis Method Reference	Prepared	Analyzed	Analyst Initials	Qualifier
Wet Chemistry										
Ammonia, as N	B233228	0.211	mg/L	0.0350	0.0350	SM 4500-NH3 D-2011	08/23/23	8/23/23 11:25	ALN	
BOD5	B233221	16.9	mg/L	2.00	2.00	SM 5210 B-2016	08/22/23	8/27/23 10:42	ASE	
COD	B233214	85.0	mg/L	7.00	7.00	HH 8000, Standard Method 5220 D	08/22/23	8/22/23 11:03	KMR	
Nitrate-Nitrite, as N	B233219	0.410	mg/L	0.0250	0.0250	EPA 353.2, Rev. 2.0 (1993)	08/22/23	8/22/23 11:36	JAL	
TKN	B233245	5.28	mg/L	0.200	0.200	EPA 351.2, 10-107-06-2-M (Equivalent)	08/24/23	8/25/23 9:38	ALN	
Total Dissolved Solids	B233224	79.2	mg/L	20.0	20.0	SM 2540 C-2015	08/22/23	8/23/23 17:28	BAK	
Total Suspended Solids	B233220	26.6	mg/L	0.900	0.900	SM 2540 D-2015	08/22/23	8/22/23 10:06	RKT	
Turbidity	B233218	21.6	NTU	1.2	0.3	EPA 180.1, Rev. 2.0 (1993)	08/22/23	8/22/23 12:56	LRF	D
Dissolved Wet Chemistry										
Orthophosphate, as P	B233213	0.214	mg/L	3.00E-3	3.00E-3	EPA 365.1, Rev. 2.0 (1993)	08/22/23	8/22/23 8:39	ALN	
Total Metals										
Mercury	B233306	<0.0100	ug/L	0.0100	0.0100	EPA 245.1	08/29/23	8/30/23 8:05	SAS	U
Arsenic	B233274	1.2	ug/L	0.070	0.070	EPA 200.8	08/25/23	8/30/23 13:19	DMW	
Cadmium	B233274	0.034	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:19	DMW	
Calcium	B233226	7.55	mg/L	0.0400	0.0400	EPA 200.7	08/22/23	8/23/23 17:09	EDM	
Lead	B233274	0.68	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/30/23 13:19	DMW	
Magnesium	B233226	1040	ug/L	80.0	80.0	EPA 200.7	08/22/23	8/23/23 17:09	EDM	
Phosphorus as P	B233226	0.439	mg/L	0.0120	0.0120	EPA 200.7	08/22/23	8/23/23 17:09	EDM	
Hardness	B233226	23.1	mg/L	0.100	0.100	SM 2340 B-2011	08/22/23	8/23/23 17:09	EDM	
Dissolved Metals										
Cadmium	B233273	0.014	ug/L	0.010	0.010	EPA 200.8	08/25/23	8/25/23 14:04	DMW	
Copper	B233273	4.7	ug/L	0.15	0.15	EPA 200.8	08/25/23	8/25/23 14:04	DMW	
Lead	B233273	0.086	ug/L	9.00E-3	9.00E-3	EPA 200.8	08/25/23	8/25/23 14:04	DMW	
Zinc	B233273	48.5	ug/L	0.50	0.50	EPA 200.8	08/25/23	8/25/23 14:04	DMW	

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Quality Control Report

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry									
Batch: B233214									
Blank (B233214-BLK1)									
COD	<7	mg/L					08/22/2023	KMR	U
LCS (B233214-BS1)									
COD			101	90-110			08/22/2023	KMR	
Duplicate (B233214-DUP1) Source ID: AC00314-01									
COD					3.55	10	08/22/2023	KMR	
Batch: B233218									
Blank (B233218-BLK1)									
Turbidity	<0.3	NTU					08/22/2023	LRF	U
LCS (B233218-BS1)									
Turbidity			100	90-110			08/22/2023	LRF	
Duplicate (B233218-DUP1) Source ID: AC00312-02									
Turbidity					2.80	25	08/22/2023	LRF	D
Batch: B233219									
Blank (B233219-BLK1)									
Nitrate-Nitrite, as N	<0.025	mg/L					08/22/2023	JAL	U
LCS (B233219-BS1)									
Nitrate-Nitrite, as N			100	90-110			08/22/2023	JAL	
Duplicate (B233219-DUP1) Source ID: AC00312-02									
Nitrate-Nitrite, as N					0.270	10	08/22/2023	JAL	
Duplicate (B233219-DUP2) Source ID: BB03161-01									
Nitrate-Nitrite, as N					NR	10	08/22/2023	JAL	U
Matrix Spike (B233219-MS1) Source ID: AC00312-02									
Nitrate-Nitrite, as N			99.1	90-110			08/22/2023	JAL	
Matrix Spike (B233219-MS2) Source ID: BB03161-01									
Nitrate-Nitrite, as N			104	90-110			08/22/2023	JAL	
Matrix Spike Dup (B233219-MSD1) Source ID: AC00312-02									
Nitrate-Nitrite, as N			100	90-110	0.484	10	08/22/2023	JAL	
Matrix Spike Dup (B233219-MSD2) Source ID: BB03161-01									
Nitrate-Nitrite, as N			104	90-110	0.210	10	08/22/2023	JAL	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B233220									
Blank (B233220-BLK1)									
Total Suspended Solids	<0.9	mg/L					08/22/2023	RKT	U
LCS (B233220-BS1)									
Total Suspended Solids			97.4	90-110			08/22/2023	RKT	
Duplicate (B233220-DUP1) Source ID: BB03167-01									
Total Suspended Solids					0.0807	20	08/22/2023	RKT	
Batch: B233221									
Blank (B233221-BLK1)									
BOD5	<2	mg/L					08/27/2023	ASE	U
LCS (B233221-BS2)									
BOD5			102	84.6-115.4			08/27/2023	ASE	
Duplicate (B233221-DUP1) Source ID: BB03166-01									
BOD5					0.436	30	08/27/2023	ASE	D
Batch: B233224									
Blank (B233224-BLK1)									
Total Dissolved Solids	<20	mg/L					08/23/2023	BAK	U
LCS (B233224-BS1)									
Total Dissolved Solids			93.6	90-110			08/23/2023	BAK	
Duplicate (B233224-DUP1) Source ID: AC00312-02									
Total Dissolved Solids					3.99	10	08/23/2023	BAK	
Batch: B233228									
Blank (B233228-BLK1)									
Ammonia, as N	<0.035	mg/L					08/23/2023	ALN	U
LCS (B233228-BS1)									
Ammonia, as N			100	90-110			08/23/2023	ALN	
LCS (B233228-BS2)									
Ammonia, as N			107	90-110			08/23/2023	ALN	
Duplicate (B233228-DUP1) Source ID: AC00312-02									
Ammonia, as N					8.19	10	08/23/2023	ALN	
Duplicate (B233228-DUP2) Source ID: BB03157-01									
Ammonia, as N					0.605	10	08/23/2023	ALN	D
Matrix Spike (B233228-MS1) Source ID: AC00312-02									
Ammonia, as N			107	80-120			08/23/2023	ALN	
Matrix Spike (B233228-MS2) Source ID: BB03157-01									
Ammonia, as N			99.3	80-120			08/23/2023	ALN	D
Matrix Spike Dup (B233228-MSD1) Source ID: AC00312-02									
Ammonia, as N			108	80-120	0.685	10	08/23/2023	ALN	
Matrix Spike Dup (B233228-MSD2) Source ID: BB03157-01									
Ammonia, as N			102	80-120	1.51	10	08/23/2023	ALN	D

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B233245									
Blank (B233245-BLK1)									
TKN	<0.2	mg/L					08/25/2023	ALN	U
Blank (B233245-BLK2)									
TKN	<0.2	mg/L					08/25/2023	ALN	U
Blank (B233245-BLK3)									
TKN	<0.2	mg/L					08/25/2023	ALN	U
LCS (B233245-BS1)									
TKN			97.8	80-120			08/25/2023	ALN	
LCS (B233245-BS2)									
TKN			97.3	80-120			08/25/2023	ALN	
LCS (B233245-BS3)									
TKN			94.1	80-120			08/25/2023	ALN	
Duplicate (B233245-DUP1) Source ID: AC00312-02									
TKN					3.40	20	08/25/2023	ALN	
Duplicate (B233245-DUP2) Source ID: BB03127-01RE1									
TKN					5.57	20	08/25/2023	ALN	D
Duplicate (B233245-DUP3) Source ID: BB03146-01									
TKN					4.80	20	08/25/2023	ALN	D
Duplicate (B233245-DUP4) Source ID: LS01650-02									
TKN					6.72	20	08/25/2023	ALN	D
Duplicate (B233245-DUP5) Source ID: WB02662-06									
TKN					6.89	20	08/25/2023	ALN	D
Matrix Spike (B233245-MS1) Source ID: AC00312-02									
TKN			108	80-120			08/25/2023	ALN	
Matrix Spike (B233245-MS2) Source ID: BB03127-01RE1									
TKN			113	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS3) Source ID: BB03146-01									
TKN			93.8	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS4) Source ID: LS01650-02									
TKN			102	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS5) Source ID: WB02662-06									
TKN			101	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS6) Source ID: EP00258-01									
TKN			102	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS7) Source ID: EP00258-02									
TKN			102	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS8) Source ID: EP00259-01									
TKN			95.5	80-120			08/25/2023	ALN	D
Matrix Spike (B233245-MS9) Source ID: EP00260-01									
TKN			96.5	80-120			08/25/2023	ALN	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Wet Chemistry (Continued)									
Batch: B233245 (Continued)									
Matrix Spike Dup (B233245-MSD1) Source ID: AC00312-02									
TKN			91.0	80-120	11.7	20	08/25/2023	ALN	
Matrix Spike Dup (B233245-MSD2) Source ID: BB03127-01RE1									
TKN			99.2	80-120	6.01	20	08/25/2023	ALN	D
Matrix Spike Dup (B233245-MSD3) Source ID: BB03146-01									
TKN			103	80-120	3.11	20	08/25/2023	ALN	D
Matrix Spike Dup (B233245-MSD4) Source ID: LS01650-02									
TKN			115	80-120	4.76	20	08/25/2023	ALN	D
Matrix Spike Dup (B233245-MSD5) Source ID: WB02662-06									
TKN			107	80-120	2.48	20	08/25/2023	ALN	D
Dissolved Wet Chemistry									
Batch: B233213									
Blank (B233213-BLK1)									
Orthophosphate, as P	<0.003	mg/L					08/22/2023	ALN	U
LCS (B233213-BS1)									
Orthophosphate, as P			95.2	90-110			08/22/2023	ALN	
Duplicate (B233213-DUP1) Source ID: AC00312-04									
Orthophosphate, as P					0.608	10	08/22/2023	ALN	
Matrix Spike (B233213-MS1) Source ID: AC00312-04									
Orthophosphate, as P			95.2	90-110			08/22/2023	ALN	
Matrix Spike Dup (B233213-MSD1) Source ID: AC00312-04									
Orthophosphate, as P			98.5	90-110	0.712	10	08/22/2023	ALN	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals									
Batch: B233226									
Blank (B233226-BLK1)									
Calcium	<0.04	mg/L					08/23/2023	EDM	U
Magnesium	<80	ug/L					08/23/2023	EDM	U
Phosphorus as P	<0.012	mg/L					08/23/2023	EDM	U
LCS (B233226-BS1)									
Calcium			102	85-115			08/23/2023	EDM	
Magnesium			102	85-115			08/23/2023	EDM	
Phosphorus as P			101	85-115			08/23/2023	EDM	
Duplicate (B233226-DUP1) Source ID: AC00312-02									
Calcium					2.09	20	08/23/2023	EDM	
Magnesium					0.316	20	08/23/2023	EDM	
Phosphorus as P					1.76	20	08/23/2023	EDM	
Matrix Spike (B233226-MS1) Source ID: AC00312-02									
Calcium			102	70-130			08/23/2023	EDM	
Magnesium			102	70-130			08/23/2023	EDM	
Phosphorus as P			102	70-130			08/23/2023	EDM	
Matrix Spike Dup (B233226-MSD1) Source ID: AC00312-02									
Calcium			102	70-130	0.0723	20	08/23/2023	EDM	
Magnesium			103	70-130	0.458	20	08/23/2023	EDM	
Phosphorus as P			102	70-130	0.0565	20	08/23/2023	EDM	
Batch: B233274									
Blank (B233274-BLK1)									
Arsenic	<0.070	ug/L					08/30/2023	DMW	U
Cadmium	<0.010	ug/L					08/30/2023	DMW	U
Lead	<0.010	ug/L					08/30/2023	DMW	U
LCS (B233274-BS1)									
Arsenic			93.2	85-115			08/30/2023	DMW	
Cadmium			95.2	85-115			08/30/2023	DMW	
Lead			97.1	85-115			08/30/2023	DMW	
Duplicate (B233274-DUP1) Source ID: AC00312-04									
Arsenic					2.77	20	08/30/2023	DMW	
Cadmium					4.51	20	08/30/2023	DMW	
Lead					0.880	20	08/30/2023	DMW	
Matrix Spike (B233274-MS1) Source ID: AC00312-04									
Arsenic			93.4	70-130			08/30/2023	DMW	
Cadmium			98.5	70-130			08/30/2023	DMW	
Lead			93.6	70-130			08/30/2023	DMW	
Matrix Spike Dup (B233274-MSD1) Source ID: AC00312-04									
Arsenic			91.3	70-130	1.62	20	08/30/2023	DMW	
Cadmium			98.0	70-130	0.562	20	08/30/2023	DMW	
Lead			94.3	70-130	0.482	20	08/30/2023	DMW	

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Quality Control Report
(Continued)

Analyte Name	Method Blank	Units	% Recovery	Recovery Limits	RPD	RPD Limit	Analyzed	Analyst Initials	Qualifier
Total Metals (Continued)									
Batch: B233306									
Blank (B233306-BLK1)									
Mercury	<0.01	ug/L					08/30/2023	SAS	U
LCS (B233306-BS1)									
Mercury			100	85-115			08/30/2023	SAS	
Duplicate (B233306-DUP1) Source ID: AC00313-02									
Mercury					NR	20	08/30/2023	SAS	U
Duplicate (B233306-DUP2) Source ID: EP00260-02									
Mercury					NR	20	08/30/2023	SAS	U
Matrix Spike (B233306-MS1) Source ID: AC00313-02									
Mercury			111	70-130			08/30/2023	SAS	
Matrix Spike (B233306-MS2) Source ID: EP00260-02									
Mercury			101	70-130			08/30/2023	SAS	
Matrix Spike Dup (B233306-MSD1) Source ID: AC00313-02									
Mercury			109	70-130	1.02	20	08/30/2023	SAS	
Matrix Spike Dup (B233306-MSD2) Source ID: EP00260-02									
Mercury			99.6	70-130	1.65	20	08/30/2023	SAS	
Dissolved Metals									
Batch: B233273									
Blank (B233273-BLK1)									
Cadmium	<0.010	ug/L					08/25/2023	DMW	U
Copper	<0.15	ug/L					08/25/2023	DMW	U
Lead	<0.0090	ug/L					08/25/2023	DMW	U
Zinc	<0.50	ug/L					08/25/2023	DMW	U
LCS (B233273-BS1)									
Cadmium			95.6	85-115			08/25/2023	DMW	
Copper			95.1	85-115			08/25/2023	DMW	
Lead			96.3	85-115			08/25/2023	DMW	
Zinc			95.4	85-115			08/25/2023	DMW	
Duplicate (B233273-DUP1) Source ID: AC00312-04									
Cadmium					14.3	10	08/25/2023	DMW	QC-02
Copper					0.140	10	08/25/2023	DMW	
Lead					1.53	10	08/25/2023	DMW	
Zinc					0.176	10	08/25/2023	DMW	
Matrix Spike (B233273-MS1) Source ID: AC00312-04									
Cadmium			93.6	70-130			08/25/2023	DMW	
Copper			89.0	70-130			08/25/2023	DMW	
Lead			91.7	70-130			08/25/2023	DMW	
Zinc			87.6	70-130			08/25/2023	DMW	
Matrix Spike Dup (B233273-MSD1) Source ID: AC00312-04									
Cadmium			95.6	70-130	2.08	10	08/25/2023	DMW	
Copper			90.2	70-130	0.711	10	08/25/2023	DMW	
Lead			93.3	70-130	1.77	10	08/25/2023	DMW	
Zinc			88.3	70-130	0.227	10	08/25/2023	DMW	

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Report Date: 09/12/2023 13:20

Boise City Public Works
Water Quality Laboratory
11818 Joplin Road
Boise, Idaho 83714-1076
Telephone (208) 608-7240
Fax (208) 608-7319

Notes and Definitions

Item	Definition
D	Data reported from a dilution
QC-02	The RPD is greater than the method acceptance criteria. At least one of the values used to calculate the RPD, is less than or equal to the PQL.
U	Analyte included in the analysis, but not detected

Method Reference Acronyms

Colilert	Colilert, IDEXX Laboratories, Inc.
EPA	Manual of Methods for Chemical Analysis of Water and Wastes, USEPA
GS	USGS Techniques of Water-Resources Investigations
HH	Hach Spectrophotometer Procedures Manual
SM	Standard Methods for the Examination of Water and Wastewater
SW	Test methods for Evaluating Solid Waste, SW-846

for JFK

Janet Finegan-Kelly
Water Quality Laboratory Manager

Stephen Quintero or Azubike Emenari
QA/QC Coordinator

The contents of this report apply to the sample(s) analyzed in accordance with the Chain of Custody document.
No duplication of this report is allowed, except in its entirety

Ada County Highway District

Attn: Tammy Lightle
3775 Adams Street
Garden City, Idaho 83714–6418
Tel. (208) 387–6255
Fax (208) 387–6391

Purchase Order: 63061761
Project: Stormwater-PI
Sampler(s): Kristen Chisholm
Zuly Lapa

Lab#	Begin Date	End Date	Begin Time	End Time	Sample Identification	Sampler Initials	Matrix: Water	Type: Grab	Type: Composite	BOD_5 - SM 5210 B	COD - Hach 8000	TSS - SM 2540 D	TDS - SM 2540 C	TKN - EPA 351.2	TP - EPA 200.7	Orthophosphate - EPA 365.1	Total As, Cd, Pb - EPA 200.8	Diss. Cd Cu, Pb, Zn - EPA 200.8	Total Hg - EPA 245.2	E. Coli - IDEXX Colilert	Turbidity - EPA 180.1	Hardness - EPA 200.7	NO_3+NO_2 - EPA 353.2	NH_3 - SM 4500 NH_3 - D	C-359 Total Containers
C00313-01	08/21/23	08/21/23	0428	1042	230821-206-WC		X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	1
↓ -02	08/21/23	08/21/23	0421	~~1042~~ 1309	230821-03-WC		X		X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	2
	~~08/21/23~~	~~08/21/23~~	~~0900~~		~~230821-03-WC~~		~~X~~	~~X~~																	+

Relinquished by (sign)	Date & Time Transferred	Received by (sign)	Comments/Special Instructions:
Kristen Chisholm	8/21/23 4:14	[signature] 8/21/23 1615	

DF - ARA313

Appendix 8

Americana Subwatershed Summary WY 2023

Americana Subwatershed Monitoring Summary Report

Water Year 2023

Prepared by
Brown and Caldwell

Prepared for
Ada County Highway District
December 20, 2023

Table of Contents

Americana Subwatershed Monitoring Summary WY 2023 i
Section 1: Introduction 1
Section 2: Monitoring Sites, Equipment, and Sample Types 3
2.1 Water Quality Sample Types 5
Section 3: Americana Subwatershed Monitoring Results 5
3.1 Water Level Monitoring Results 5
3.2 Water Quality Monitoring Results 6
3.2.1 Grab Samples 7
3.2.2 Composite Samples 7
Tables TAB-1
Figures FIG-1

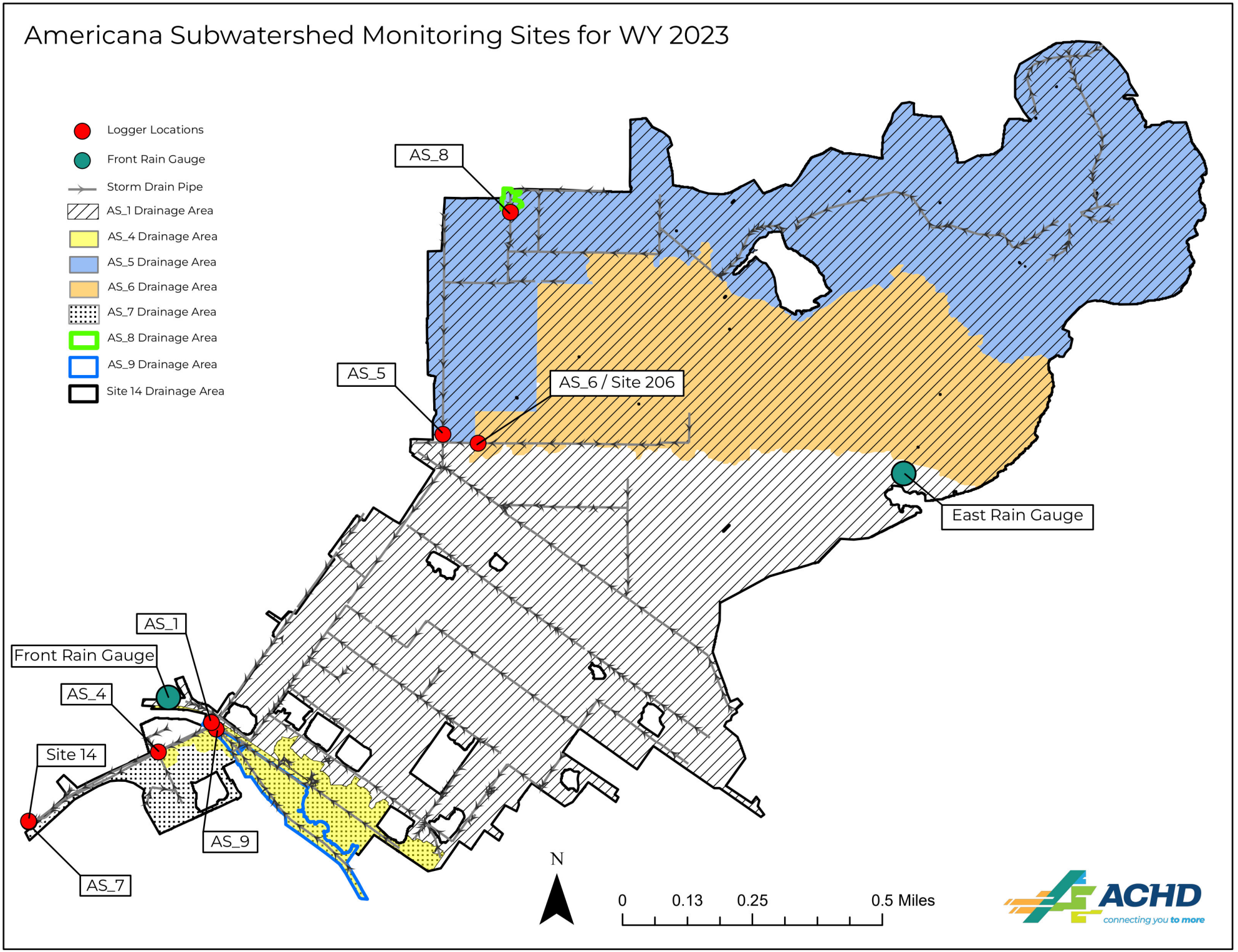
Section 1: Introduction

Ada County Highway District, Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3 (Permittees) were issued a National Pollutant Discharge Elimination System Phase I Permit #IDS027561 (Permit) on October 1, 2021. The Permit authorizes the Permittees to discharge from municipal separate storm sewer system outfalls to the Boise River and its tributaries. According to Permit Part 6.2.2, *Subwatershed Monitoring,* Permittees are required to conduct monitoring within the Americana subwatershed to better define wet weather and dry weather flow volumes, sources, and pollutant loads.

The Americana subwatershed is one of the largest urban subwatersheds on the lower Boise River and drains a significant portion of downtown Boise and the North End and Foothills residential areas. Stormwater discharge monitoring (flow measurement and analytical sample collection) is currently conducted at the Americana outfall as identified in the Stormwater Outfall Monitoring Plan (ACHD, 2022). While data collected at the outfall is important for understanding discharges to the Boise River, the dataset does not provide much information about the pollutant load and dry weather sources farther up in the storm drain system. Guided by the Americana Subwatershed Plan (ACHD, 2020), the Americana subwatershed is divided into subcatchments at major nodes in the system to parse out non-stormwater flow sources and characterize pollutant contributions. The following summary describes Americana subwatershed monitoring activities during water year (WY) 2023 (October 1, 2022–September 30, 2023).

In WY 2023, data collection throughout the Americana subwatershed included precipitation, water level, flow, and water quality samples. Precipitation data were collected at two representative locations, and water level data were collected at eight subwatershed locations and at the Americana monitoring station. The water level data were compared to the precipitation data to look for anomalies in the municipal separate storm sewer system, such as instances when the water level in-pipe increases or decreases without a corresponding precipitation event and when the water level increases from isolated subcatchment areas. Additionally, water quality data from wet weather discharges were collected from one subcatchment site (Site 206) to compare with the Americana outfall site (Site 14). The water quality data, along with flow data, were used to calculate pollutant loads and identify pollutants discharging from Site 206 that are disproportionately high compared to Site 14.

Figure 1


Americana Subwatershed Monitoring Sites for WY 2023
Logger Locations
Front Rain Gauge
Storm Drain Pipe
AS_1 Drainage Area
AS_4 Drainage Area
AS_5 Drainage Area
AS_6 Drainage Area
AS_7 Drainage Area
AS_8 Drainage Area
AS_9 Drainage Area
Site 14 Drainage Area
AS_8
AS_5
AS_6 / Site 206
East Rain Gauge
AS_1
Front Rain Gauge
AS_4
Site 14
AS_9
AS_7
N
0
0.13
0.25
0.5 Miles
ACHD
connecting you to more

Section 2: Monitoring Sites, Equipment, and Sample Types

Data was collected at the following monitoring sites during WY 2023: AS_1, AS_4, AS_5, AS_6, AS_7, AS_8, AS_9, Site 14, Site 206, Front, and East (Figure 1). Details on each of the monitoring sites, including subcatchment areas, pipe characteristics, and equipment deployment start and end dates, are found in Table 1. Figure 2 shows the locations of the monitoring sites in relation to each other using a conceptual layout of the storm drain system.

Site 14 is the Americana outfall monitoring station used in the National Pollutant Discharge Elimination System Phase I Stormwater Outfall Monitoring program. This monitoring site is equipped with a flowmeter and sampler to collect water level, velocity, flow, and composite samples. Water level, velocity, and flow data are collected at 15-minute intervals during dry weather and 1-minute intervals when the equipment is setup to monitor a forecasted storm event

Site 206 is a subcatchment of the Americana subwatershed. Similar to Site 14, it is equipped with a flowmeter and sampler to collect flow and water quality data during targeted storm events.

AS_7 is a secondary outfall to Site 14, with a connection between storm drain pipes farther up in the system. This site is equipped with a flowmeter to capture continuous water level, velocity, and flow data at 5-minute intervals.

The AS_8 site was installed during the second quarter of WY 2023 to replace the AS_5 site. Past data from AS_5 subwaterhed has shown that the AS_5 subwatershed is not a source of dry weather flow, with the exception of Hull's Gulch influence during high flow. The AS_8 subwatershed is much smaller than the AS_5 subwatershed, however it still captures Hull's Gulch flows into the Americana storm drain system.

The AS_9 site was added to measure dry weather flow at AS_4 by splitting the subwatershed into two areas, with AS_4 representing the upstream portion of the AS_9 subwatershed.

The AS_6 logger site was discontinued in the second quarter of WY2023, however site 206 still collects flow and water quality data during targeted storm events.

AS_1, AS_4, AS_5,AS_6, AS_8, and AS_9 represent subcatchment areas within the Americana subwatershed. Each site is equipped with a water level logger to collect in-pipe water level data. The loggers continuously record pressure readings at 5-minute intervals. The pressure readings are corrected using local barometric pressure and converted to water level.

Front and East are rain gauge sites and are equipped with tipping bucket rain gauges. The rain gauges collect continuous precipitation data in 0.01-inch increments using event data loggers. The precipitation data are used to determine the date and times of wet weather storm events and dry weather periods.

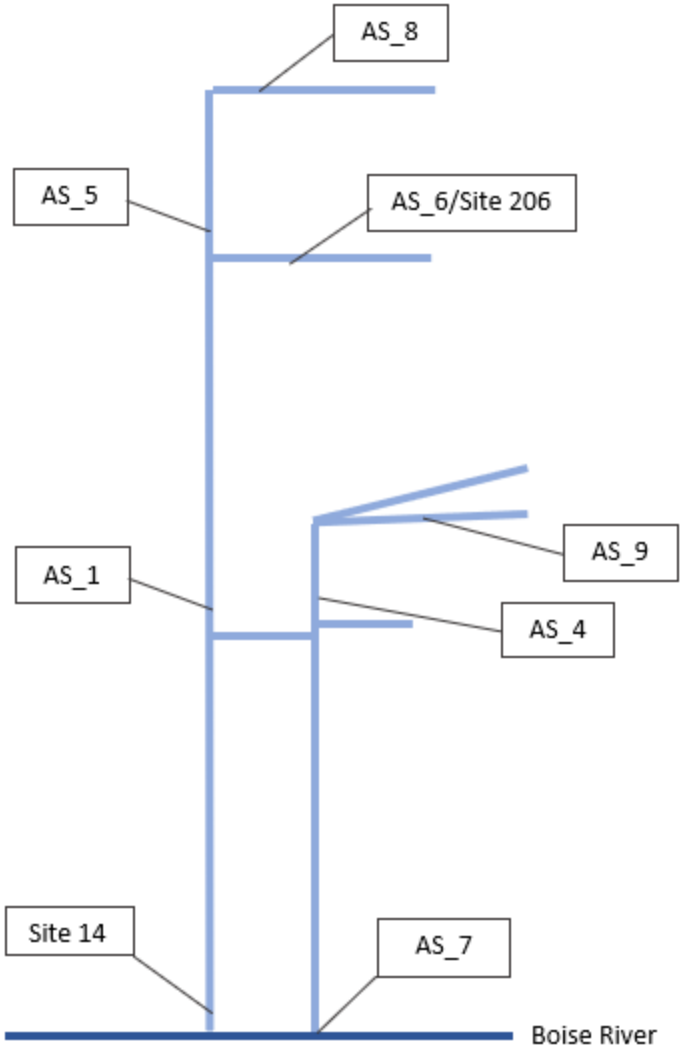


Figure 2. Conceptual Layout of Monitoring Sites

2.1 Water Quality Sample Types

The sample types collected during WY 2023 include grab samples and composite samples. Grab samples represent a discrete measurement from the overall storm discharge while composite samples represent the entire discharge.

Grab samples were manually collected from the discharge stream using a swing sampler. The grab samples were submitted to the Boise City Water Quality Laboratory and analyzed for *E. coli*. At the time that the grab samples were collected, field parameters (temperature, pH, dissolved oxygen, and conductivity) were measured using In-Situ smarTROLL or In-Situ Aqua TROLL handheld instruments.

Composite samples were collected using automatic samplers, which worked in conjunction with flowmeters. After a predetermined volume of flow was discharged, the flowmeters triggered the sampler to collect a subsample. Each subsample was deposited into a 15-liter carboy, resulting in a flow-proportional composite sample. The composite samples were submitted to Boise City Water Quality Laboratory where they were split for analysis. The following constituents were analyzed: biological oxygen demand, 5-day (BOD_5); chemical oxygen demand (COD); hardness as calcium carbonate ($CaCO_3$); turbidity; total suspended solids (TSS); total dissolved solids; total phosphorus; orthophosphate, as P; ammonia; nitrate + nitrite; total Kjeldahl nitrogen (TKN); total arsenic; dissolved and total cadmium; dissolved and total copper; dissolved and total lead; dissolved and total mercury; and dissolved zinc.

Section 3: Americana Subwatershed Monitoring Results

This section describes water level monitoring results and water quality results and provides high-level conclusions and outcomes based on WY 2023 data.

3.1 Water Level Monitoring Results

For WY 2023, water level data from eight monitoring sites (AS_1, AS_4, AS_5, AS_6, AS_7, AS_8, AS_9, and Site 14) were evaluated for occurrences of increasing or decreasing water level not attributed to precipitation. Though the pipe size at each site differs, the change in water level is still evident in the data. When a change in water level is seen at one or more sites, the discharge must originate from the site that is farthest “up-pipe” in the storm drain system. Figures 3–6 show hydrographs for each quarter of WY 2023. Color bands were applied to the hydrographs to indicate periods where no rain was recorded, but the water level fluctuated at one or more sites. Fluctuations of less than 2 hours were not included in the analysis as non-stormwater sources. Fluctuations lasting more than 72 hours are marked as extended periods of non-stormwater flow and are denoted in the hydrographs with hatched color bands. The following conclusions were extracted from visually inspecting the hydrographs:

- Sudden water level increases and decreases were observed, which are likely caused by human-related activities such as turning on a pump or opening a headgate.
- Concurrent water level increases and decreases were observed at AS_1, AS_4, AS_7, and Site 14. Using the conceptual pipe layout in Figure 2 as a reference, it becomes apparent that there must be another piped connection between the AS_1 and AS_4 subcatchments.
- Extended periods of non-stormwater flow originating from AS_1 subcatchment (which includes downtown Boise) occurred on the following dates:
  - October 17, 2022–January 30, 2023 (approx. 105 days)
  - January 31, 2023–February 2, 2023 (approx. 2 days)

  - February 2, 2023–February 10, 2023 (approx. 7 days)
  - February 18, 2023–February 20, 2023 (approx. 3 days)
  - February 20, 2023–February 25, 2023 (approx. 5 days)
- Extended periods of non-stormwater flow originating from AS_8 subcatchment occurred on the following dates:
  - March 14, 2023–March 24, 2023 (approx. 10 days)
  - March 30, 2023–March 31, 2023 (approx. 1 day).
  - April 10, 2023–April 13, 2023 (approx. 3 days).
  - September 15, 2023 (approx. 9.5 days)

  The non-stormwater source is likely snow melt in Hull's Gulch.
- No sudden water level increase or decrease was observed at AS_9. There are extended periods of non-stormwater flow originating from the AS_9 subcatchment detailed below. After the installation of the AS_9 monitoring point there continued to be sudden water level fluctuations originating from the AS_4 subcatchment.
- Extended periods of non-stormwater flow originating from the AS_9 subcatchment occurred on the following dates:
  - July 26, 2023–August 15, 2023 (approx. 19 days)
- Extended periods of non-stormwater flow originating from Site 14 subcatchment occurred on the following dates:
  - April 20, 2023–April 25, 2023 (approx. 5 days)
  - April 25, 2023–May 19, 2023 (approx. 24 days)

  The non-stormwater source from April through June is likely from the Boise River surcharge.
- Non-stormwater discharge originated from the AS_7 subcatchment 64 times.
  - Quarter 1 and quarter 2 had no fluctuations of AS_7 independently (no other concurrent fluctuations with other monitoring points) observed.
  - In quarter 3 there were 16 anomalies observed generally occurring between 0000-0100 (93%) with no anomalies occurring on Fridays.
  - In quarter 4 there were 48 anomalies observed generally occurring between 0000-0200 (88%) with no anomalies occurring on Fridays.
  - During routine field work it was noted that flow was being recorded when there was no flow observed in the pipe.
  - Possible debris on the sensor was noted during quarter 4.
  - Troubleshooting of the equipment is recommended to determine if equipment error is the source of the observed fluctuations.

3.2 Water Quality Monitoring Results

During WY 2023, water quality samples from wet weather discharges were collected from one subcatchment site (Site 206) to compare with the Americana outfall site (Site 14). Samples were collected from six storm events. A summary of the storm dates and sample types collected is provided in Table 3-1. Attempts were made to collect samples from both Site 14 and Site 206 during the same storm event. When paired samples were successfully collected from both sites, the water quality results were directly compared to one another. Results from samples that were collected

from only one of the two sites were omitted from the subsequent discussion; however, the values will be used when calculating statistics for the final report. Comprehensive analytical results from all samples collected are included in Table 2, attached.

Table 3-1. Storm Event Summary

Storm Event Date	Site 14	Site 206
10/22/22	Grab, composite [a]	Grab, composite [a]
01/09/23	Grab [b]	Grab [b]
03/10/23	Grab	Grab, composite [c]
03/29/23	Grab, composite	Grab, composite [c]
05/05/23	–	Composite
08/21/23	Composite	Composite

– No data

[a] Composite sample is qualified due to lack of representativeness (50%–75%).

[b] Data rejected due to insufficient rainfall (< 0.08 inch).

[c] Incomplete water quality analysis due to low composite sample volume.

3.2.1 Grab Samples

Paired grab samples were collected from Site 14 and Site 206 on October 22, 2022, and March 29, 2023. They were analyzed for *E. coli*, temperature, pH, dissolved oxygen, and conductivity. Notable conclusions from each storm event are provided below.

October 10, 2022

- *E. coli* at Site 206 was 1.5 times higher than at Site 14.

October 22, 2022

- *E. coli* at Site 206 was two times higher than at Site 14.

March 29, 2023

- *E. coli* at Site 206 was nearly five times higher than at Site 14.

3.2.2 Composite Samples

Paired composite samples were collected from Site 14 and Site 206 on March 29, 2023, and August 21, 2023. Due to low composite sample volume, the March 29, 2023, composite from Site 206 was not analyzed for TSS.

Event-specific pollutant loads for each analyzed constituent were calculated by multiplying the volume of discharge as measured at the site by the constituent concentration. The pollutant loads, in pounds, are in Table 3, attached.

To evaluate the contribution Site 206 had on the overall pollutant load discharging from the Americana outfall, the percentage of the pollutant load was compared to the percentage of discharge volume. When the percentage of the pollutant load is greater than the percentage of discharge volume, the pollutant load discharging from the subcatchment is disproportionately high. This logic statement is illustrated below.

$$\frac{pollutant\ load\ (lbs) from\ subcatchment}{pollutant\ load\ (lbs) from\ outfall} > \frac{discharge\ volume\ (cf) from\ subcatchment}{discharge\ volume\ (cf) from\ outfall} \quad \begin{matrix} IF \\ THEN \end{matrix}$$

$$pollutant\ load\ from\ subcatchment\ is\ disproportionately\ high$$

The percent contribution of pollutant load and the percent contribution of discharge volume was calculated for both Site 206 and Site 14 from each storm event (Figures 7 and 8). The graphs include a vertical orange line indicating the value for the percent of discharge. Constituent loads that exceed the red line are disproportionately high. Noteworthy outcomes from each paired storm event are presented below.

March 29, 2023

- Load contributions from Site 206 were disproportionately high for most constituents except for the following parameters: hardness as $CaCO_3$, nitrate + nitrite as N, total arsenic, and total mercury.
- The percent pollutant load from Site 206 was between 2.5 to 3.0 times higher than the percent discharge volume for the following parameters: total phosphorus, orthophosphate as P, and dissolved lead.
- The percent pollutant load from Site 206 was between 2.0 to 2.5 times higher than the percent discharge volume for the following parameters: BOD_5, and COD.
- The percent pollutant load from Site 206 was between 1.5 to 2.0 times higher than the percent discharge volume for the following parameters: TKN, total cadmium, and total lead.
- TSS was not evaluated as the TSS parameter was not analyzed by the lab due to incomplete water quality analysis due to low composite sample volume.

August 21, 2023

- Load contributions from Site 206 were disproportionately high for most constituents except for the following parameters: hardness as $CaCO_3$, ammonia as nitrogen, nitrate + nitrite as N and total cadmium.
- The percent of BOD_5 load from Site 206 was approximately 4 times higher than the percent of discharge volume.
- The percent pollutant load from Site 206 was between 3.0 to 3.5 times higher than the percent discharge volume for the following parameters: COD, total phosphorus, and orthophosphate as P.
- The percent pollutant load from Site 206 was between 2.0 to 2.5 times higher than the percent discharge volume for the following parameters: total dissolved solids, TKN, and dissolved lead.

- The percent pollutant load from Site 206 was between 1.5 to 2.0 times higher than the percent discharge volume for the following parameters: TSS, dissolved cadmium, dissolved copper, and total mercury.

Tables

Table 1. Monitoring Site Information

Table 2. Field and Analytical Data Summary

Table 3. Event Pollutant Loading Estimates in Pounds

Table 1. Monitoring Site Information

Location Name	Study ID	Latitude/ Longitude	Manhole ID (SWMM File)	Manhole ID (Americana Manholes Files)	Subcatchment Total Area (acres)	Subcatchment Impervious Area (acres)	Pipe Diameter (in)	Pipe Construction	Manning's Coefficient (n value)	Pipe Slope	Water Level During Installation (in)	Equipment ID	Equipment Deploy Start Date	Equipment Deploy End Date	Installation Notes
Americana Monitoring Station	Site 14	Americana Monitoring Station	NA	NA	915	291	48	concrete	NA	NA	NA	Hach Flowmeter (FL-23)	2013	9/8/2020	
												Hach Sampler (SA-17)	2013	9/8/2020	
												ISCO Signature Flowmeter (FL-29)	9/8/2020	NA	
												ISCO 6712 Sampler (SA-20)	9/8/2020	NA	
16th & Front St	AS_1	43°37'7.57"N 116°12'52.66"W	J87872	33634	869	255	42	concrete	0.015	0.0001	4.13	HOBO logger SN:20029104	8/10/2018	11/7/2023	
												HOBO Logger SN: 20029105	11/7/23	NA	Logger installed downstream of manhole with conduit facing downstream
												ISCO 2150 Flowmeter (FL-21)	10/25/2019	1/24/2020	
Americana_River_South	AS_2	43°37'4.63"N 116°13'0.20"W	J5567	35568	39	28	42	concrete	0.015	0.0001	1.5	HOBO logger (SN:20029109)	8/10/2018	4/28/2020	Large pipe downstream of manhole (south) that leads to secondary outfall with conduit facing downstream flow
Americana_River_East	AS_3	43°37'4.63"N 116°13'0.20"W	J5567	35568	10	5	16	concrete	0.015	0.0001	2	HOBO logger (SN:20029106)	8/10/2018	1/6/2021	Small pipe upstream of manhole (east) with conduit facing upstream
Americana_River St	AS_4	43°37'4.63"N 116°13'0.20"W	J5567	35568	29	23	42	concrete	0.015	0.0001	2	HOBO logger (SN:20029101)	8/10/2018	NA	Large pipe upstream of manhole (north) with conduit perpendicular to flow
											1.7	ISCO 2150 Flowmeter (FL-21)	7/10/2020	3/5/2021	Water level at installation: 2.7 inches
15th_Resseguie	AS_5	43°37'36.17"N 116°12'21.10"W	J5577	23810	289	49	30	concrete	0.015	0.0001	1.5	HOBO logger (SN:20029105)	8/10/2018	2/17/2023	Logger installed downstream of manhole with conduit facing downstream
14th_Resseguie	AS_6/Site 206	43°37'35.73"N 116°12'16.60"W	J16834	13187	206	23	22	corrugated metal	0.024	0.0001	NA	HOBO logger (SN:20029102)	8/17/2018	3/7/2023	Installed downstream of vault
					203	22	22	corrugated metal	0.024	0.0001	NA	Hach Flowmeter (FL-25)	1/23/2020	3/4/2020	Installed upstream of vault, has smaller drainage area than HOBO logger
												Hach Flowmeter (FL-18)	3/4/2020	NA	
												Hach Sampler (SA-11)	1/23/2020	10/9/2020	Installed upstream of vault, has smaller drainage area than HOBO logger
												Hach Sampler (SA-13)	10/9/2020	12/10/2021	
												Hach Sampler (SA-09)	12/10/2021	NA	
Americana East	AS_7	43°36'57.66"N 116°13'17.75"W	NA	NA	40	30	42	concrete	0.015	0.0001	NA	ISCO 2150 Flowmeter (FL-20)	1/11/2019	NA	ISCO flowmeter installed
13th_Lemp to Heron	AS_8	43°37'59.05" 116°12'11.83"	NA	NA	1	0	36	corrugated metal	0.024	0.0001	NA	HOBO logger (SN: 20029106)	2/24/2023	11/7/2023	
												HOBO logger (SN:20029104)	11/7/2023	NA	
16th_Rhodes	AS_9	43°37'7.18" 116°12'52.07"	NA	NA	10	5	21	concrete	0.015	0.0001	NA	HOBO logger (PT09)	2/24/2023	NA	

Table 2. Field and Analytical Data Summary

Sample Date	Monitoring Station	Sample ID Grab	Field Parameters					Analytical Parameters																					
			Dissolved Oxygen mg/L	pH S.U.	Conductivity uS/cm	Temperature C	*E. coli* mpn/100 mL	Sample ID Composite	BOD_5 mg/L	COD mg/L	Hardness as $CaCO_3$ mg/L	Turbidity NTU	TSS mg/L	TDS mg/L	Total Phosphorus mg/L	Orthophosphate as P mg/L	Ammonia as N mg/L	Nitrate + Nitrite as N mg/L	TKN mg/L	Arsenic, total ug/L	Cadmium, dissolved ug/L	Cadmium, total ug/L	Copper, dissolved ug/L	Lead, dissolved ug/L	Lead, total ug/L	Mercury, total ug/L	Zinc, dissolved ug/L
10/22/2022	Site 14	221022-14-WG	8.05	7.03	367.6	17.12	648.8	221022-14-WC	225 [2J]	416 [2J]	55.9 [2J]	62.5 [2J]	125 [2J]	244 [2J]	1.07 [2J]	0.712 [2J]	1.25 [2J]	0.927 [2J]	5.26 [2J]	5.1 [2J]	<0.025 [2J]	0.19 [2J]	10.1 [2J]	0.14 [2J]	8.2 [2J]	0.0147 [2J]	61.6 [2J]
	Site 206	221022-206-WG	8.30	7.08	325.9	14.83	1299.7	221022-206-WC	680 [2J]	1200 [2J]	51.3 [2J]	106 [2J]	301 [2J]	542 [2J]	2.84 [2J]	1.96 [2J]	1.5 [2J]	0.890 [2J]	9.29 [2J]	4.5 [2J]	<0.025 [2J]	0.23 [2J]	13.6 [2J]	0.77 [2J]	15.0 [2J]	0.0309 [2J]	119 [2J]
1/9/2023	Site 14	230109-14-WG	9.98 [2R]	6.60 [2R]	517.1 [2R]	9.51 [2R]	2850.0 [2R]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Site 206	230109-206-WG	7.66 [2R]	6.89 [2R]	200.8 [2R]	6.36 [2R]	157.6 [2R]	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
3/10/2023	Site 14	230310-14-WG	11.16	7.44	1282.6	6.68	547.5	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
	Site 206	230310-206-WG	10.84	7.53	1252.9	6.01	920.8	230310-206-WC	50.9	964	184	665	1190	565	1.7	0.218	0.284	0.181	11.5	13.6	–	0.54	--	--	66.2	0.0782	–
3/29/2023	Site 14	230329-14-WG	10.42	7.67	481.7	7.65	218.7	230329-14-WC	9.64	62.0	133	45.8	38.6	318	0.205	0.0914	0.633	1.08	1.90	3.6	0.023	0.065	3.4	0.080	3.6	0.0300	20.5
	Site 206	230329-206-WG	9.41	7.85	247.3	5.75	1046.2	230329-206-WC	21.4	145	123	69.4	–	354	0.528	0.266	0.600	0.387	2.84	3.2	0.028	0.099	4.8	0.22	6.5	0.0181	23.9
5/5/2023	Site 206	–	–	–	–	–	–	230505-206-WC	74.9	298	42.0	88.0	204	163	1.51	0.927	1.33	0.310	5.23	3.5	0.022	0.14	15.7	0.72	10.6	0.0182	54.5
8/21/2023	Site 14	–	–	–	–	–	–	230821-14-WC	67.7	213	57.7	57.1	80.0	184	0.625	0.355	0.676	0.758	3.41	3.6	0.023	0.13	9.0	0.22	5.6	0.0118	62.5
	Site 206	–	–	–	–	–	–	230821-206-WC	309	875	55.5	83.5	136	420	2.54	1.47	0.529	0.417	8.40	3.8	0.040	0.12	18.3	0.61	6.7	0.0237	99.1

Notes:

– No data

[2J] Data qualified due to lack of representativeness (50%–75%)

[2R] Data rejected due to insufficient rainfall (< 0.08 inch)

Table 3. Event Pollutant Loading Estimates in Pounds																				
Event Date	BOD_5		COD		Hardness as CaCO3		TSS		TDS		Total Phosphorus		Orthophosphate as P		Ammonia as N		Nitrate + Nitrite as N		TKN	
	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206
3/29/2023	32.9	2.13	212	14.4	454	12.2	132	–	1086	35.2	0.700	0.0524	0.312	0.0264	2.16	0.0596	3.69	0.0384	6.49	0.282
8/21/2023	617	142	1942	401	526	25.4	729	62.3	1678	192	5.70	1.16	3.24	0.673	6.16	0.242	6.91	0.191	31.1	3.85

Notes:

– No data

Table 3. Event Pollutant Loading Estimates in Pounds																
Event Date	Arsenic, total		Cadmium, dissolved		Cadmium, total		Copper, dissolved		Lead, dissolved		Lead, total		Mercury, total		Zinc, dissolved	
	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206	Site 14	Site 206
3/29/2023	0.0123	0.000318	0.0000785	0.00000278	0.000222	0.00000983	0.0116	0.000477	0.000273	0.0000219	0.0123	0.000646	0.000102	0.00000180	0.0700	0.00237
8/21/2023	0.0328	0.00174	0.000210	0.0000183	0.00119	0.0000550	0.0821	0.00838	0.00201	0.000279	0.0511	0.00307	0.000108	0.0000109	0.570	0.0454

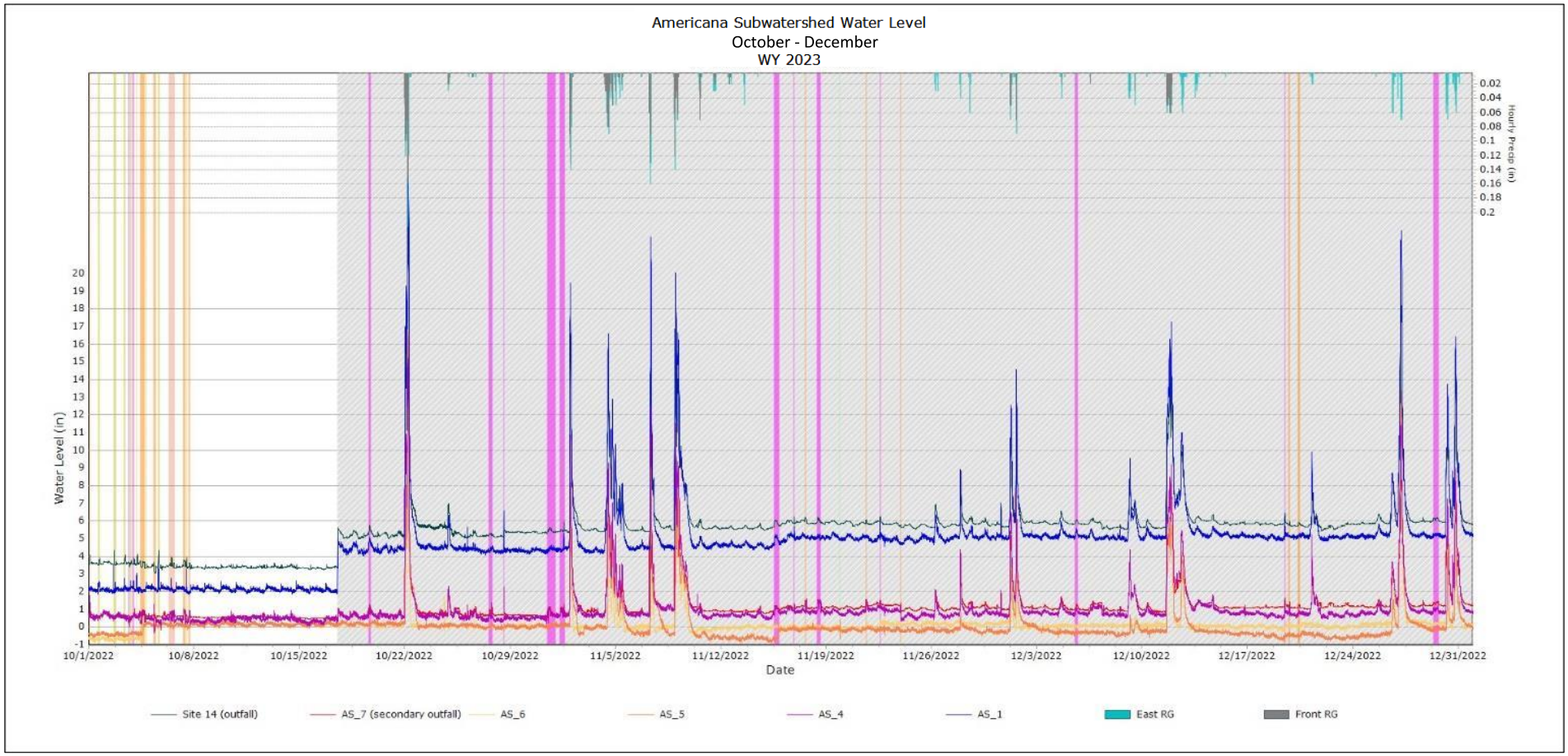
Notes:

– No data

Figures

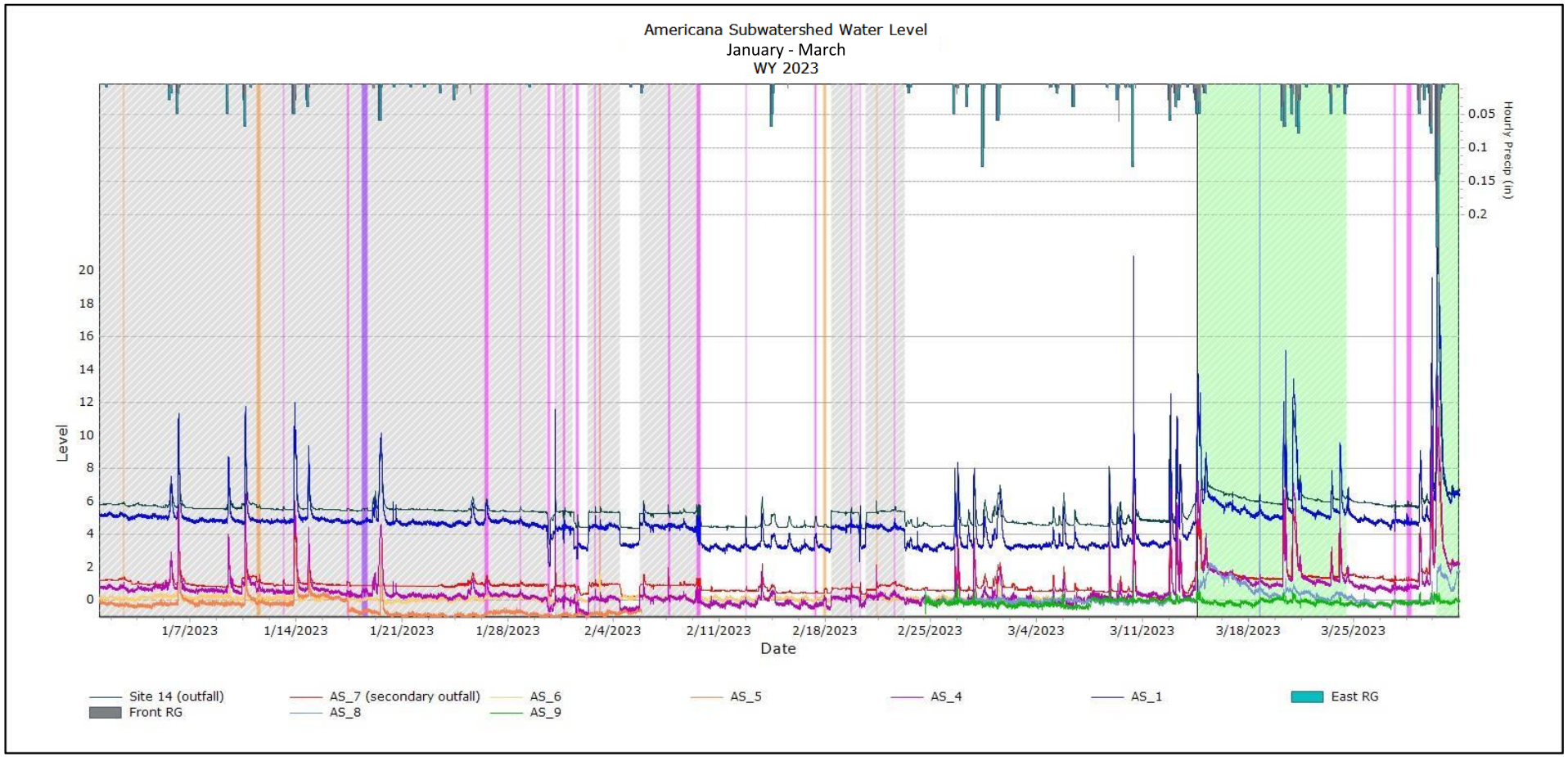
Figure 3. Americana Subwatershed Water Level WY 2023 October–December
Figure 4. Americana Subwatershed Water Level WY 2023 January–March
Figure 5. Americana Subwatershed Water Level WY 2023 April–June
Figure 6. Americana Subwatershed Water Level WY 2023 July–September
Figure 7. Percent Contribution for Storm Event 03/29/2023
Figure 8. Percent Contribution for Storm Event 08/21/2023

Figure 3


Americana Subwatershed Water Level
October - December
WY 2023
Water Level (in)
Hourly Precip (in)
Date
10/1/2022
10/8/2022
10/15/2022
10/22/2022
10/29/2022
11/5/2022
11/12/2022
11/19/2022
11/26/2022
12/3/2022
12/10/2022
12/17/2022
12/24/2022
12/31/2022
Site 14 (outfall)
AS_7 (secondary outfall)
AS_6
AS_5
AS_4
AS_1
East RG
Front RG

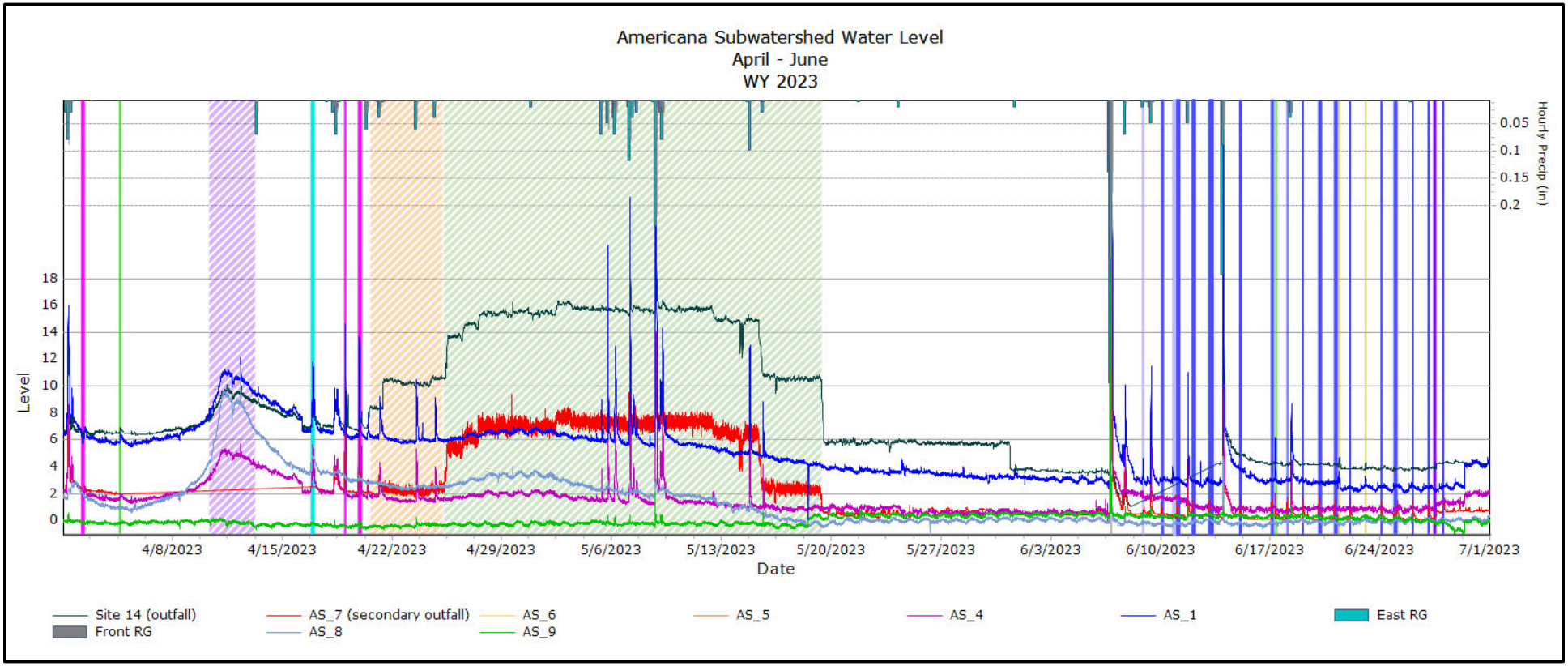
Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	10/1/2022 1:00:00	2.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/1/2022 14:30:00	4.5	AS_1, Site 14	AS_1 subcatchment
	10/2/2022 15:30:00	5.0	AS_1, Site 14	AS_1 subcatchment
	10/3/2022 8:30:00	3.5	AS_1, Site 14	AS_1 subcatchment
	10/3/2022 15:30:00	2.5	AS_4, Site 14	AS_4 subcatchment
	10/3/2022 18:30:00	2.5	AS_1, Site 14	AS_1 subcatchment
	10/3/2022 22:00:00	4.0	AS_1, Site 14, AS_7	AS_1 subcatchment
	10/4/2022 3:30:00	3.0	AS_1, Site 14	AS_1 subcatchment
	10/4/2022 9:30:00	9.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/4/2022 19:00:00	2.0	AS_1, Site 14	AS_1 subcatchment
	10/5/2022 7:30:00	5.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/5/2022 14:30:00	3.5	AS_1, Site 14	AS_1 subcatchment
	10/6/2022 8:00:00	3.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/6/2022 11:30:00	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/6/2022 14:00:00	4.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/7/2022 7:00:00	4.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/7/2022 11:00:00	2.0	AS_1, Site 14	AS_1 subcatchment
	10/7/2022 15:30:00	4.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	10/17/2022 13:00:00	1811.0	AS_1, AS_4, AS_7, Site 14 (elongated)	AS_1 subcatchment
	10/19/2022 14:00:00	5.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/27/2022 14:00:00	7.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/28/2022 14:00:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	10/31/2022 11:00:00	15.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/1/2022 7:30:00	9.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/15/2022 13:00:00	9.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/16/2022 20:30:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/17/2022 14:30:00	3.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	11/18/2022 9:30:00	7.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/19/2022 21:30:00	2.0	AS_5	AS_5 subcatchment
	11/21/2022 15:00:00	3.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	11/22/2022 13:30:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	11/23/2022 22:30:00	2.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	12/5/2022 13:00:00	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	12/19/2022 11:00:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	12/19/2022 17:30:00	3.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	12/20/2022 8:00:00	5.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	12/29/2022 8:00:00	10.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment

Figure 4


Americana Subwatershed Water Level
January - March
WY 2023
Level
Hourly Precip (in)
0.05
0.1
0.15
0.2
20
18
16
14
12
10
8
6
4
2
0
1/7/2023
1/14/2023
1/21/2023
1/28/2023
2/4/2023
2/11/2023
2/18/2023
2/25/2023
3/4/2023
3/11/2023
3/18/2023
3/25/2023
Date
Site 14 (outfall)
Front RG
AS_7 (secondary outfall)
AS_8
AS_6
AS_9
AS_5
AS_4
AS_1
East RG

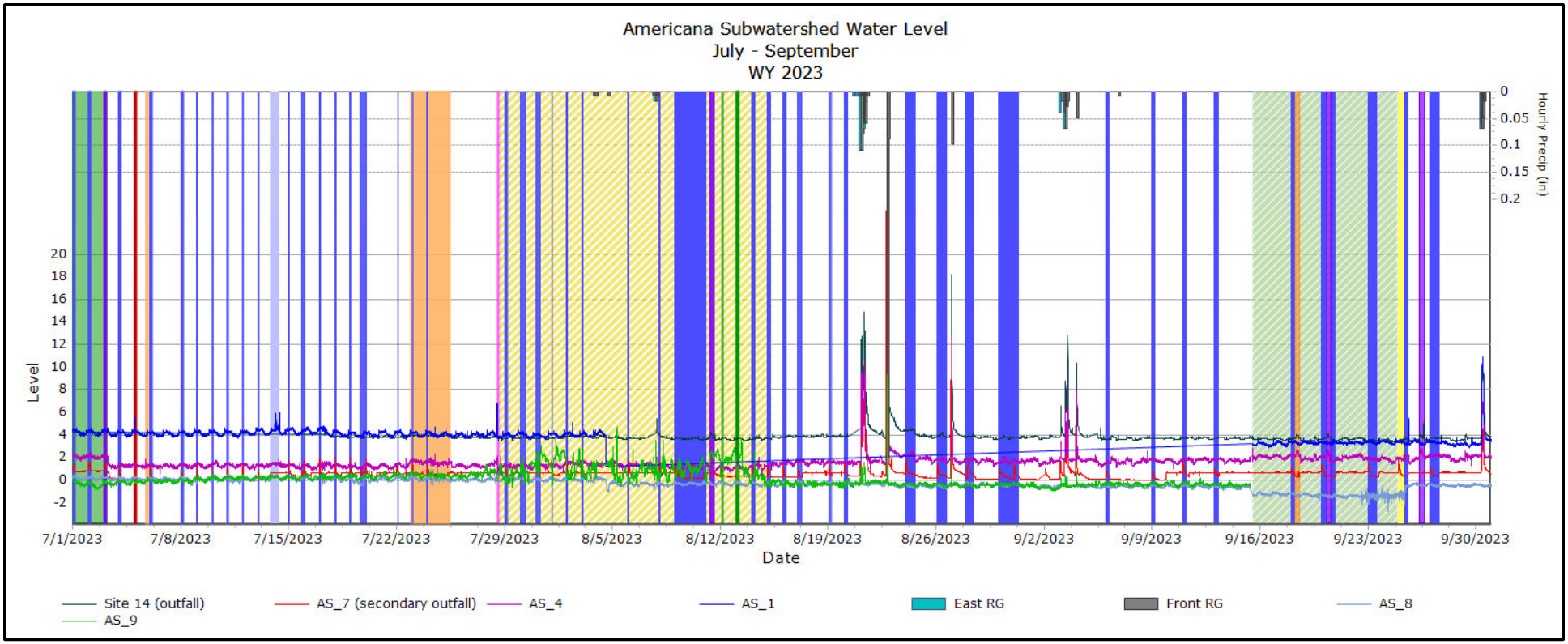
Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	10/17/2022 13:00:00	2057.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/2/2023 14:00	3.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	1/11/2023 10:00	7.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	1/13/2023 3:30	3.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/17/2023 9:00	5.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/18/2023 8:00	11.0	AS_4, Site 14	AS_4 subcatchment
	1/26/2023 11:00	9.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/28/2023 20:00	3.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/30/2023 15:30:00	6.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/31/2023 3:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/31/2023 5:00	28.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	1/31/2023 16:00	5.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/1/2023 13:00	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/1/2023 3:00	2.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/2/2023 7:30	53.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/2/2023 18:30	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/3/2023 2:30	3.0	AS_1, AS_4, AS_6, AS_7, Site 14	AS_6 subcatchment
	2/5/2023 17:00	98.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/6/2023 10:30	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/7/2023 14:30	4.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/8/2023 14:00	5.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/9/2023 11:30	8.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/12/2023 17:30	3.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/13/2023 18:00	5.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/17/2023 7:30	4.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/17/2023 21:30	6.5	AS_4, AS_7, Site 14	AS_4 subcatchment
	2/18/2023 9:00	45.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/19/2023 16:30	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/20/2023 7:30	2.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/20/2023 16:30	63.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/21/2023 9:00	2.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	2/22/2023 13:00	4.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	2/24/2023 2:00	2.5	AS_1, Site 14	AS_1 subcatchment
	3/2/2023 7:00	11.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	3/3/2023 8:00	10.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	3/14/2023 16:00	238.0	AS_8 (previously AS_5)	Likely Hull's Gulch
	3/18/2023 17:30	2.5	AS_1, AS_4, AS_7, AS_8, and Site 14	AS_8 subcatchment
	3/27/2023 15:30	4.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	3/28/2023 11:30	9.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	3/30/2023 11:00	37.0	AS_8 (previously AS_5)	Likely Hull's Gulch

Figure 5


Americana Subwatershed Water Level
April - June
WY 2023
Level
Hourly Precip (in)
0.05
0.1
0.15
0.2
18
16
14
12
10
8
6
4
2
0
4/8/2023
4/15/2023
4/22/2023
4/29/2023
5/6/2023
5/13/2023
5/20/2023
5/27/2023
6/3/2023
6/10/2023
6/17/2023
6/24/2023
7/1/2023
Date
Site 14 (outfall)
Front RG
AS_7 (secondary outfall)
AS_8
AS_6
AS_9
AS_5
AS_4
AS_1
East RG

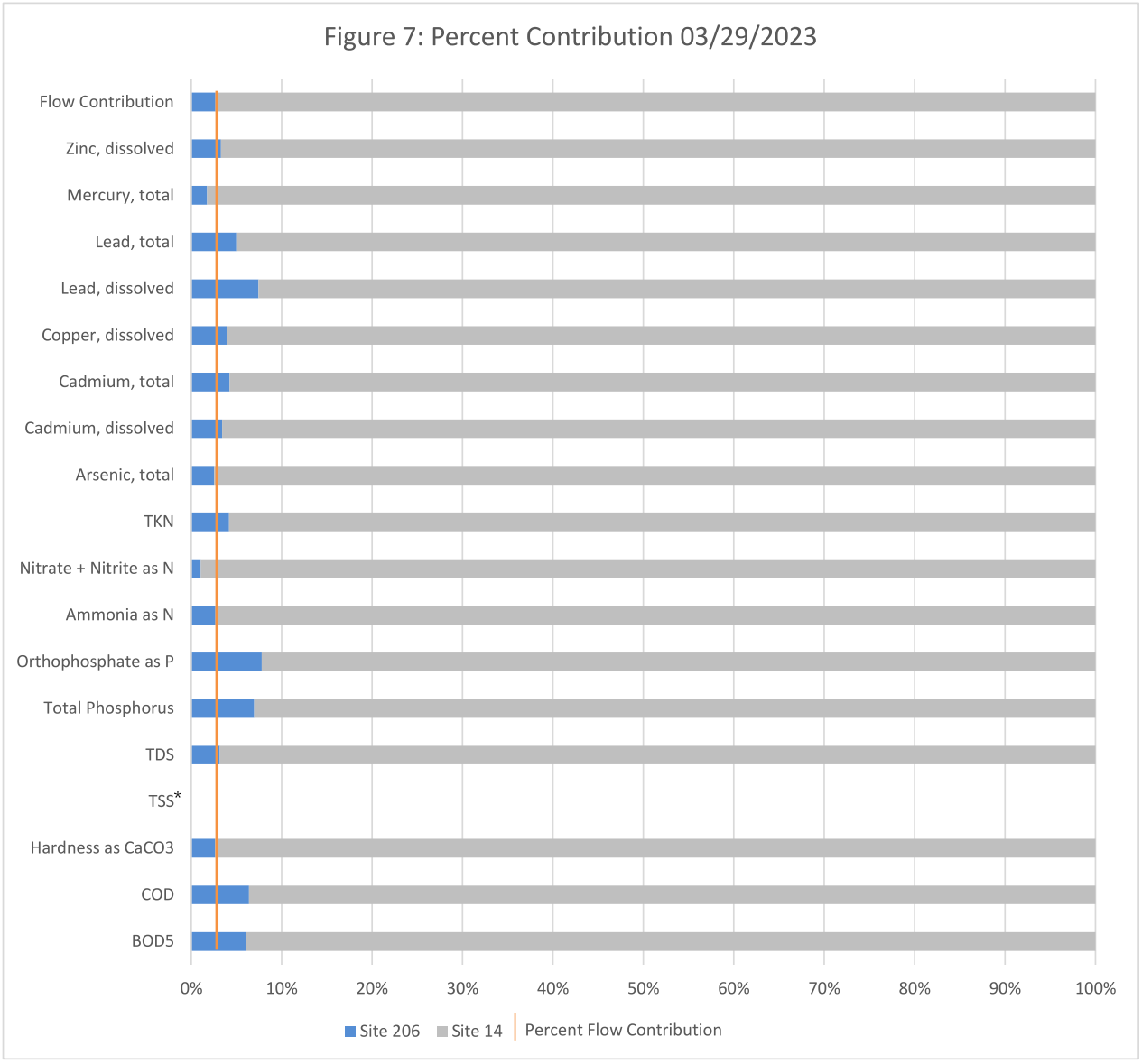
Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	4/2/2023 4:30:00	6.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	4/4/2023 15:00:00	5.5	AS_1, AS_4, Site 14	AS_1 subcatchment
	4/10/2023 8:00:00	72.5	AS_1, AS_4, AS_8, Site 14 (elongated)	Hull's Gulch
	4/16/2023 20:00:00	5.0	AS_1, AS_4, AS_8, Site 14	Hull's Gulch
	4/18/2023 23:00:00	4.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	4/19/2023 20:30:00	5.5	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	4/20/2023 15:00:00	113.0	AS_7 Site 14 (elongated)	Site 14 (likely Boise River surcharge)
	4/25/2023 8:00:00	580.0	AS_1, AS_4, AS_7, Site 14 (elongated)	Site 14 (likely Boise River surcharge)
	6/8/2023 20:00:00	2.0	AS_1	AS_1 (likely construction dewatering)
	6/10/2023 0:30:00	3.0	AS_7	AS_7 subcatchment
	6/10/2023 18:30:00	2.5	AS_1	AS_1 (likely construction dewatering)
	6/11/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	6/12/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	6/13/2023 1:00:00	4.0	AS_7	AS_7 subcatchment
	6/15/2023 1:00:00	4.0	AS_7	AS_7 subcatchment
	6/17/2023 1:00:00	2.5	AS_7	AS_7 subcatchment
	6/17/2023 7:00:00	2.0	AS_1, AS_4, Site 14	AS_1 subcatchment
	6/18/2023 1:00:00	2.0	AS_7	AS_7 subcatchment
	6/19/2023 1:00:00	2.5	AS_7	AS_7 subcatchment
	6/20/2023 1:00:00	6.5	AS_7	AS_7 subcatchment
	6/21/2023 0:30:00	7.0	AS_7	AS_7 subcatchment
	6/21/2023 8:30:00	3.0	AS_1, Site 14	AS_1 (likely construction dewatering)
	6/22/2023 1:00:00	4.0	AS_7	AS_7 subcatchment
	6/23/2023 1:00:00	2.0	AS_1, Site 14	AS_1 subcatchment
	6/24/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	6/24/2023 21:00:00	7.0	AS_7	AS_7 subcatchment
	6/26/2023 1:00:00	2.5	AS_7	AS_7 subcatchment
	6/27/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	6/27/2023 10:00:00	5.0	AS_4, Site 14	AS_4 subcatchment
	6/28/2023 0:30:00	3.0	AS_7	AS_7 subcatchment

Figure 6


Americana Subwatershed Water Level
July - September
WY 2023
Level
Hourly Precip (in)
Date
7/1/2023
7/8/2023
7/15/2023
7/22/2023
7/29/2023
8/5/2023
8/12/2023
8/19/2023
8/26/2023
9/2/2023
9/9/2023
9/16/2023
9/23/2023
9/30/2023
Site 14 (outfall)
AS_7 (secondary outfall)
AS_4
AS_1
East RG
Front RG
AS_8
AS_9

Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	7/1/2023 0:00:00	56	AS_4, AS_7	AS_4 subcatchment
	7/1/2023 0:00:00	3.5	AS_7	AS_7 subcatchment
	7/2/2023 0:00:00	3.5	AS_7	AS_7 subcatchment
	7/3/2023 0:00:00	3.5	AS_4, Site 14	AS_4 subcatchment
	7/4/2023 0:00:00	2.5	AS_7	AS_7 subcatchment
	7/5/2023 0:00:00	2.5	AS_1, AS_7	AS_1 subcatchment
	7/5/2023 17:30:00	3.5	AS_4	AS_4 subcatchment
	7/6/2023 0:00:00	2.5	AS_7	AS_7 subcatchment
	7/8/2023 0:30:00	3.0	AS_7	AS_7 subcatchment
	7/9/2023 0:30:00	3.0	AS_7	AS_7 subcatchment
	7/10/2023 0:30:00	2.0	AS_7	AS_7 subcatchment
	7/11/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/12/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/13/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/13/2023 20:00:00	15.0	AS_1	AS_1 subcatchment
	7/15/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/15/2023 21:00:00	6.0	AS_7	AS_7 subcatchment
	7/17/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/18/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/19/2023 0:00:00	3.0	AS_7	AS_7 subcatchment
	7/19/2023 16:00:00	11.0	AS_7	AS_7 subcatchment
	7/22/2023 0:30:00	2.0	AS_7	AS_7 subcatchment
	7/23/2023 0:00:00	2.0	AS_7	AS_7 subcatchment
	7/23/2023 23:30:00	3.0	AS_7	AS_7 subcatchment
	7/22/2023 21:30:00	65.0	AS_4	AS_4 subcatchment
	7/26/2023 15:00:00	427	AS_9 (elongated amount of time)	AS_9 subcatchment
	7/28/2023 12:00:00	3.0	AS_1, AS_4, AS_7, Site 14	AS_1 subcatchment
	7/29/2023 1:30:00	2.5	AS_7	AS_7 subcatchment
	7/30/2023 1:30:00	4.5	AS_7	AS_7 subcatchment
	7/31/2023 1:30:00	8.5	AS_7	AS_7 subcatchment
	8/1/2023 1:30:00	2.5	AS_7	AS_7 subcatchment
	8/2/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	8/3/2023 1:00:00	3.0	AS_7	AS_7 subcatchment
	8/6/2023 0:00:00	4.0	AS_7	AS_7 subcatchment
	8/8/2023 0:00:00	4.0	AS_7	AS_7 subcatchment
	8/9/2023 1:00:00	50.0	AS_7	AS_7 subcatchment
	8/11/2023 8:00:00	8.0	AS_4, Site 14	AS_4 subcatchment
	8/12/2023 1:30:00	2.5	AS_4, AS_7	AS_4 subcatchment
	8/13/2023 1:00:00	2.0	AS_4, AS_7	AS_4 subcatchment
	8/14/2023 1:00:00	7.0	AS_7	AS_7 subcatchment
	8/15/2023 1:00:00	7.0	AS_7	AS_7 subcatchment
	8/16/2023 1:00:00	7.0	AS_7	AS_7 subcatchment
	8/17/2023 1:00:00	8.0	AS_7	AS_7 subcatchment
	8/19/2023 1:00:00	6.0	AS_7	AS_7 subcatchment
	8/20/2023 1:00:00	6.0	AS_7	AS_7 subcatchment
	8/24/2023 1:00:00	16.0	AS_7	AS_7 subcatchment
	8/26/2023 1:30:00	15.5	AS_7	AS_7 subcatchment
	8/27/2023 22:00:00	6.0	AS_7	AS_7 subcatchment

Color Code	Beginning Date Time	Duration (hrs)	Sites Included	Non-stormwater source
	8/30/2023 2:00:00	8.0	AS_7	AS_7 subcatchment
	9/6/2023 0:00:00	6.0	AS_7	AS_7 subcatchment
	9/9/2023 0:00:00	6.0	AS_7	AS_7 subcatchment
	9/11/2023 0:00:00	6.0	AS_7	AS_7 subcatchment
	9/13/2023 0:00:00	9.0	AS_7	AS_7 subcatchment
	9/15/2023 12:00:00	228.0	AS_8 (elongated amount of time)	Likely Hull's Gulch
	9/18/2023 0:00:00	8.0	AS_7	AS_7 subcatchment
	9/18/2023 8:00:00	8.0	AS_4, AS_7, Site 14	AS_4 subcatchment
	9/20/2023 0:00:00	8.0	AS_7	AS_7 subcatchment
	9/20/2023 8:00:00	8.0	AS_4, Site 14	AS_4 subcatchment
	9/20/2023 16:00:00	7.0	AS_7	AS_7 subcatchment
	9/23/2023 0:00:00	16.0	AS_7	AS_7 subcatchment
	9/25/2023 0:00:00	10.0	AS_7, AS_8	AS_8 subcatchment
	9/25/2023 10:00:00	6.0	AS_7	AS_7 subcatchment
	9/26/2023 8:00:00	10.0	AS_4, Site 14	AS_4 subcatchment
	9/27/2023 0:00:00	16.0	AS_7	AS_7 subcatchment



Notes:

**Incomplete water quality analysis (no TSS parameter) due to low composite sample volume*

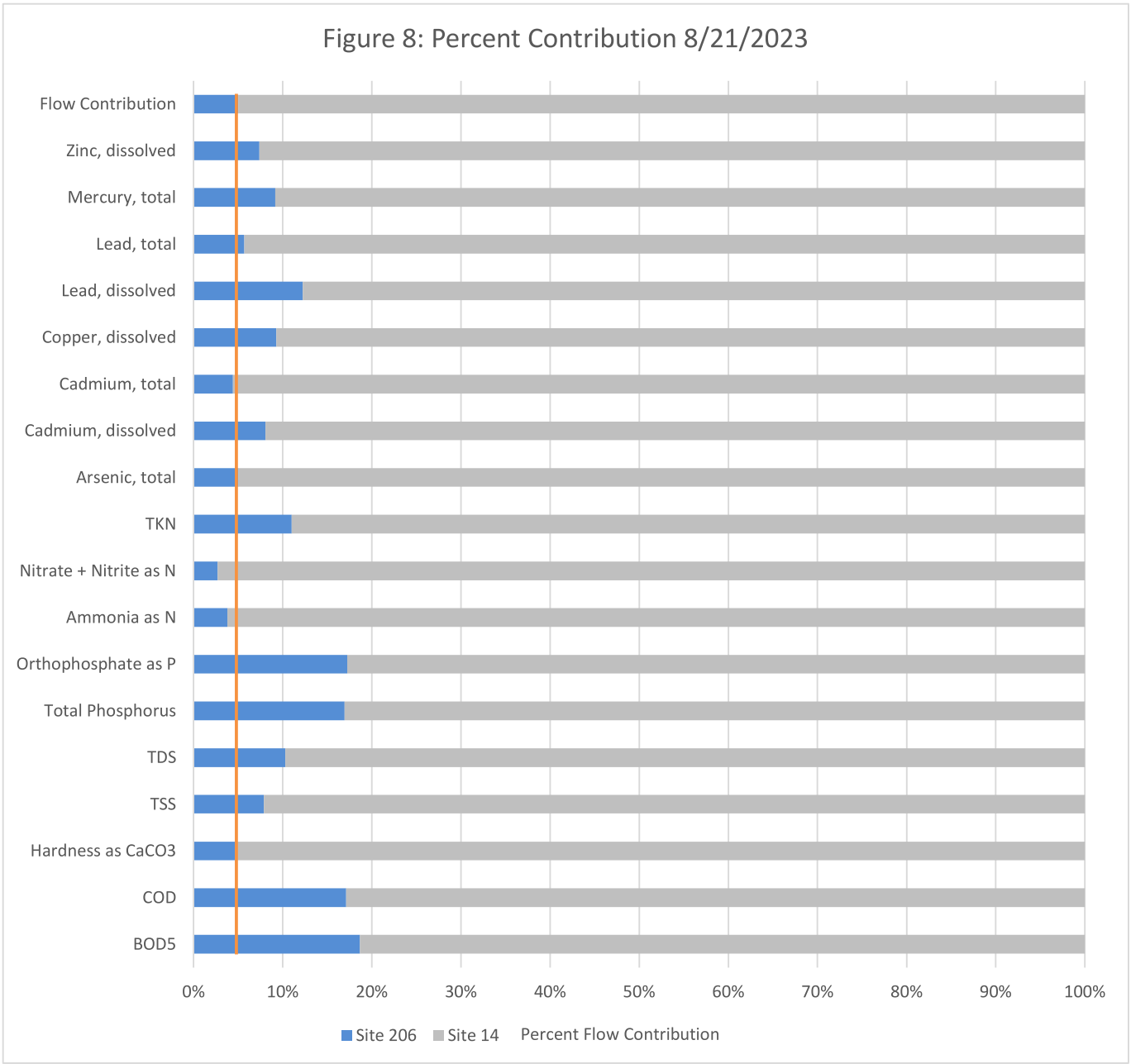


Figure 8: Percent Contribution 8/21/2023
Flow Contribution
Zinc, dissolved
Mercury, total
Lead, total
Lead, dissolved
Copper, dissolved
Cadmium, total
Cadmium, dissolved
Arsenic, total
TKN
Nitrate + Nitrite as N
Ammonia as N
Orthophosphate as P
Total Phosphorus
TDS
TSS
Hardness as CaCO3
COD
BOD5
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Site 206
Site 14
Percent Flow Contribution

Appendix 9

Temperature Monitoring Summary WY 2023

Temperature Monitoring Summary WY 2023

Ada County Highway District

1/4/2023

Table of Contents

1. Introduction 1
2. Monitoring Sites, Equipment, and Sample Type 1
3. Results 2
Appendix A: Figures A-1

1. Introduction

Ada County Highway District, Boise State University, City of Boise, City of Garden City, Drainage District #3, and the Idaho Transportation Department District #3 (Permittees) were issued a National Pollutant Discharge Elimination System Phase I Permit #IDS027561 (Permit) on October 1, 2021. The Permit authorizes the Permittees to discharge from municipal separate storm sewer (MS4) outfalls to the Boise River and its tributaries. According to Permit Part 4.1, *Temperature Monitoring,* Permittees must monitor temperature in stormwater discharges from the MS4 to the Boise River including assessment units 17050114SW005_06, 17050114SW005_06a, and 17050114SW005_06b. The Boise River assessment units (AU) within the Permit area are 17050114SW011a_06 and 17050114SW005_06. The remaining two AUs, 17050114SW005_06a and 17050114SW005_06b, are not in the Permit area and therefore do not receive Permittee stormwater contributions. Temperature data is collected from all water quality samples collected from the MS4 to the Boise River and other waterways. The following summary provides temperature data collected during water year (WY) 2023 (October 1, 2022 – September 20, 2023) from the MS4 directly to the Boise River assessment units 17050114SW011a_06 and 17050114SW005_06.

2. Monitoring Sites, Equipment, and Sample Type

Temperature monitoring occurred at 13 outfalls that discharge to the Boise River assessment units 17050114SW011a_06 and 17050114SW005_06. Temperature measurements are collected as either discrete or continuous. Discrete measurements represent one instance in time and were measured manually using an In-Situ aquaTroll or smarTroll handheld instrument. Continuous measurements were taken at a specified interval by equipment that is installed at the outfall site. In WY 2023, continuous temperature readings were taken at four outfall locations: three using area-velocity sensors and one using a Hobo Temperature Logger. Table 2-1 below shows the number of outfalls where temperature data was collected, the outfall ID, sample type, receiving water and assessment unit designation. Figure 1 is a map of the sampled outfall locations.

Table 2-1. Temperature Monitored Outfalls

Receiving Water	Assessment Unit	# of Temperature Monitored Outfalls	Outfall ID (Station Name)	Sample Type
Boise River	17050114SW011a_06	11	3n2e04_010 (Main)	Discrete and Continuous
			3n2e05_011	Discrete
			3n2e09_024 (AS_7)	Discrete and Continuous
			3n2e09_025 (Americana)	Discrete and Continuous
			3n2e10_012	Discrete
			3n2e10_022	Discrete
			3n2e14_012	Discrete
			3n2e14_013	Discrete
			3n2e14_017	Discrete
			3n2e24_006	Discrete
			3n2e24_025	Discrete
	17050114SW005_06	2	4n2e30_012 (Plantation)	Continuous
			4n2e32_015	Discrete

3. Results

Discrete temperature results are depicted in Figure 2. These results were derived from both wet weather and dry weather discharges, which are symbolized by a circle or a star, respectively. Table 3-1 contains all discrete measurements by Outfall ID.

Graphs of continuous temperature results are found in Figures 3-6. The graphs from sites where temperature is recorded using an area-velocity sensor (Figures 3-5) displays water temperature, water level and hourly precipitation for reference. Temperature at the Plantation site is recorded using a Hobo Temperature Logger that records data associated with the presence of water. Data gaps in the temperature data shown in Figure 6, indicate water is not present. Unlike the other graphs of continuous temperature results, water level data are not available at this monitoring site. Sediment was observed on the temperature logger in October 2023 during routine data download. The presence of sediment yielded results water was present when it was observed the site was dry. Additionally, water was present, based on the recorded temperature data, when rainfall was not recorded and dry weather flows at this site have not been observed. During WY24, ACHD will increase the frequency of inspections of the Hobo Temperature Logger to learn more about site conditions and if the logger is suitable for the site.

Table 3-1. Discrete Temperature Results

Outfall ID (Station Name)	Date	Weather	Temperature (C)
3n1e01_010	08/09/22	Dry Weather	19.36
3n2e04_010 (Main)	10/22/2022 3/10/2023 3/29/2023	Wet Weather	17.07 7.99 7.74
3n2e05_011	9/11/2023	Dry Weather	20.51
3n2e09_024 (AS_7)	2/22/2023 6/27/23	Dry Weather	12.75 20.00
3n2e09_025 (Americana)	2/22/2023	Dry Weather	10.67
3n2e09_025 (Americana)	10/22/2022 3/10/2023 3/29/2023	Wet Weather	17.12 6.68 7.65
3n2e10_012	3/27/2023 9/12/23	Dry Weather	3.64 16.19
3n2e10_022	2/22/23 9/12/23	Dry Weather	10.11 20.84
3n2e14_012	3/27/23 5/22/23	Dry Weather	8.21 14.78
3n2e14_013	3/27/2023 9/13/23	Dry Weather	7.06 16.16
3n2e14_017	3/27/2023 9/13/23	Dry Weather	10.2 19.04
3n2e24_006	5/22/2023	Dry Weather	17.19
3n2e24_025	5/22/2023	Dry Weather	16.15
4n2e32_015	8/1/2023	Dry Weather	17.85

Appendix A: Figures

Figure 1. Overview Map

Figure 2. Discrete Temperature Results

Figure 3. Continuous Temperature Results – Main

Figure 4. Continuous Temperature Results – AS_7

Figure 5. Continuous Temperature Results – Americana

Figure 6. Continuous Temperature Results – Plantation

Figure 1

WY2023 Temperature Monitored Outfalls

Created: 12/20/2023

Figure 2

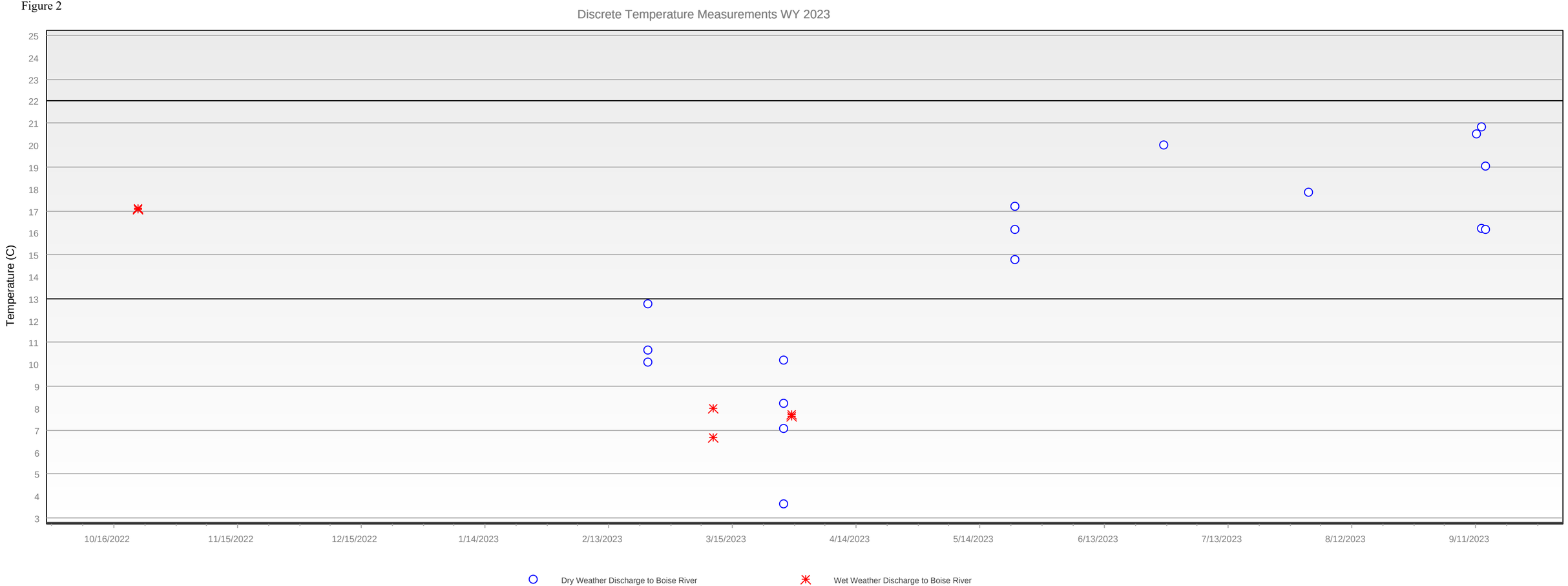

Discrete Temperature Measurements WY 2023
Temperature (C)
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
10/16/2022
11/15/2022
12/15/2022
1/14/2023
2/13/2023
3/15/2023
4/14/2023
5/14/2023
6/13/2023
7/13/2023
8/12/2023
9/11/2023
Dry Weather Discharge to Boise River
Wet Weather Discharge to Boise River

Figure 3

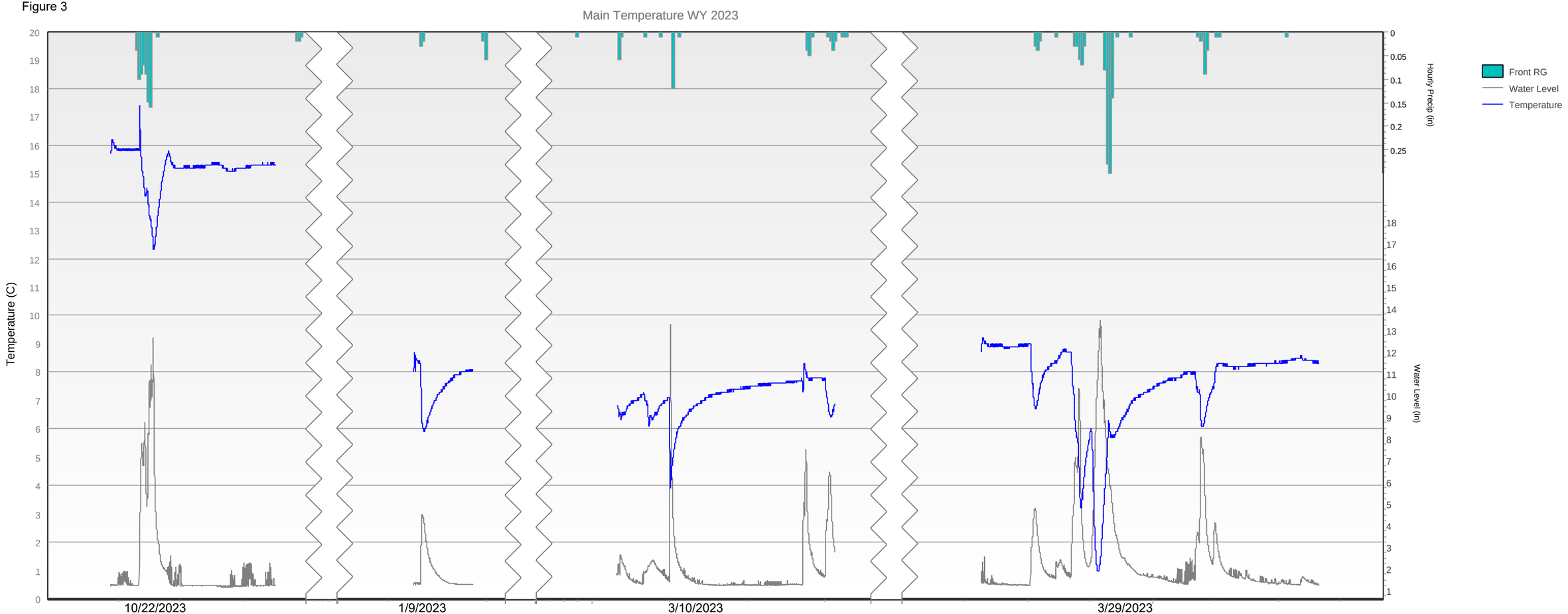

Main Temperature WY 2023
Temperature (C)
Hourly Precip (in)
Water Level (in)
Front RG
Water Level
Temperature
10/22/2023
1/9/2023
3/10/2023
3/29/2023

Figure 4

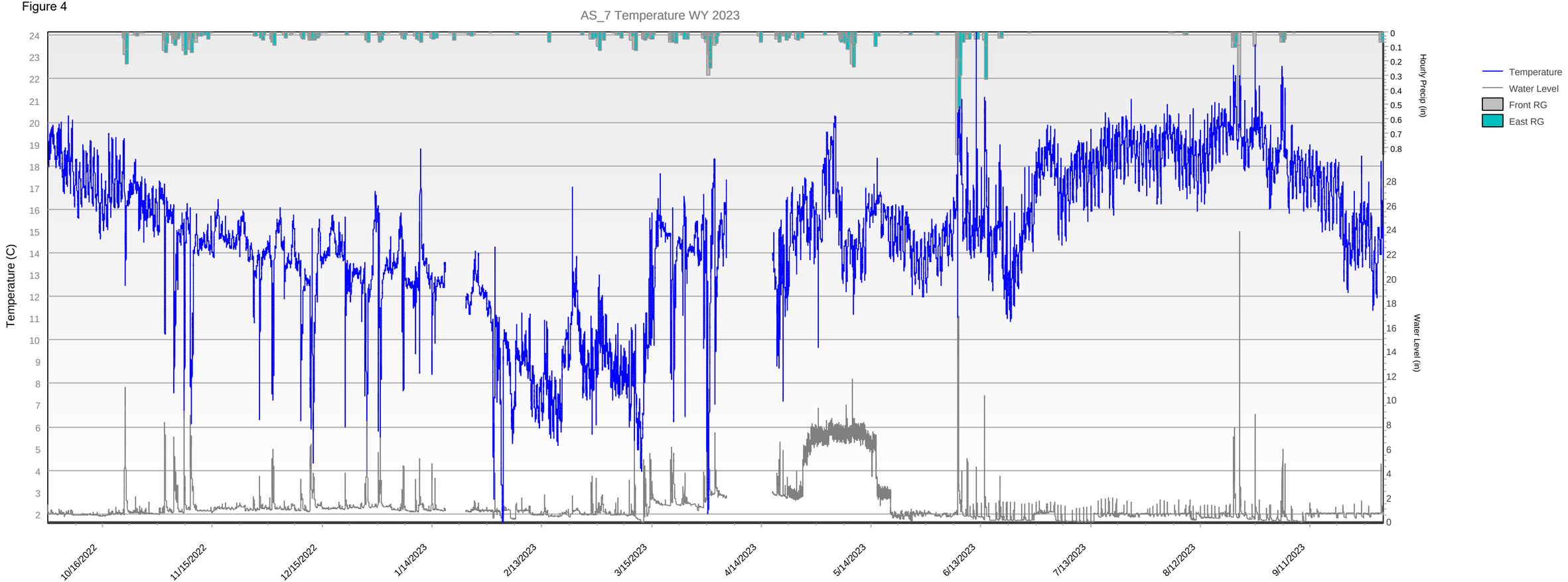

AS_7 Temperature WY 2023
Temperature (C)
Hourly Precip (in)
Water Level (in)
Temperature
Water Level
Front RG
East RG
10/16/2022
11/15/2022
12/15/2022
1/14/2023
2/13/2023
3/15/2023
4/14/2023
5/14/2023
6/13/2023
7/13/2023
8/12/2023
9/11/2023

Figure 5

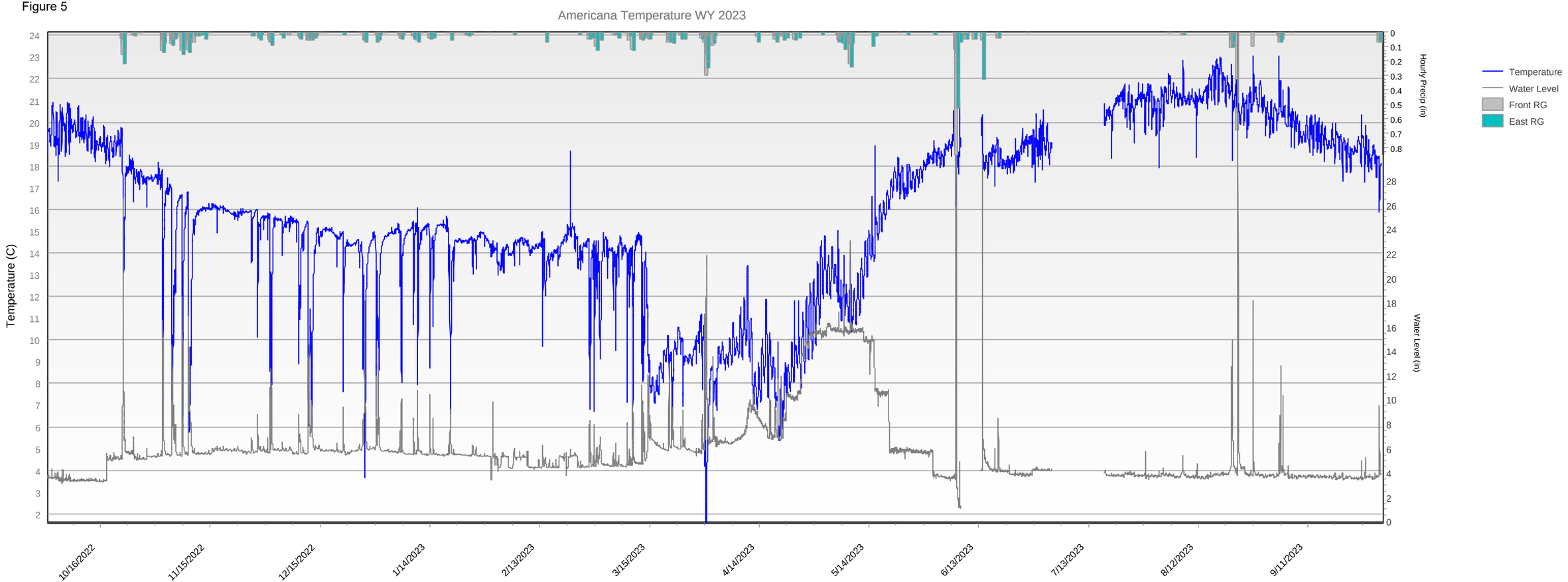
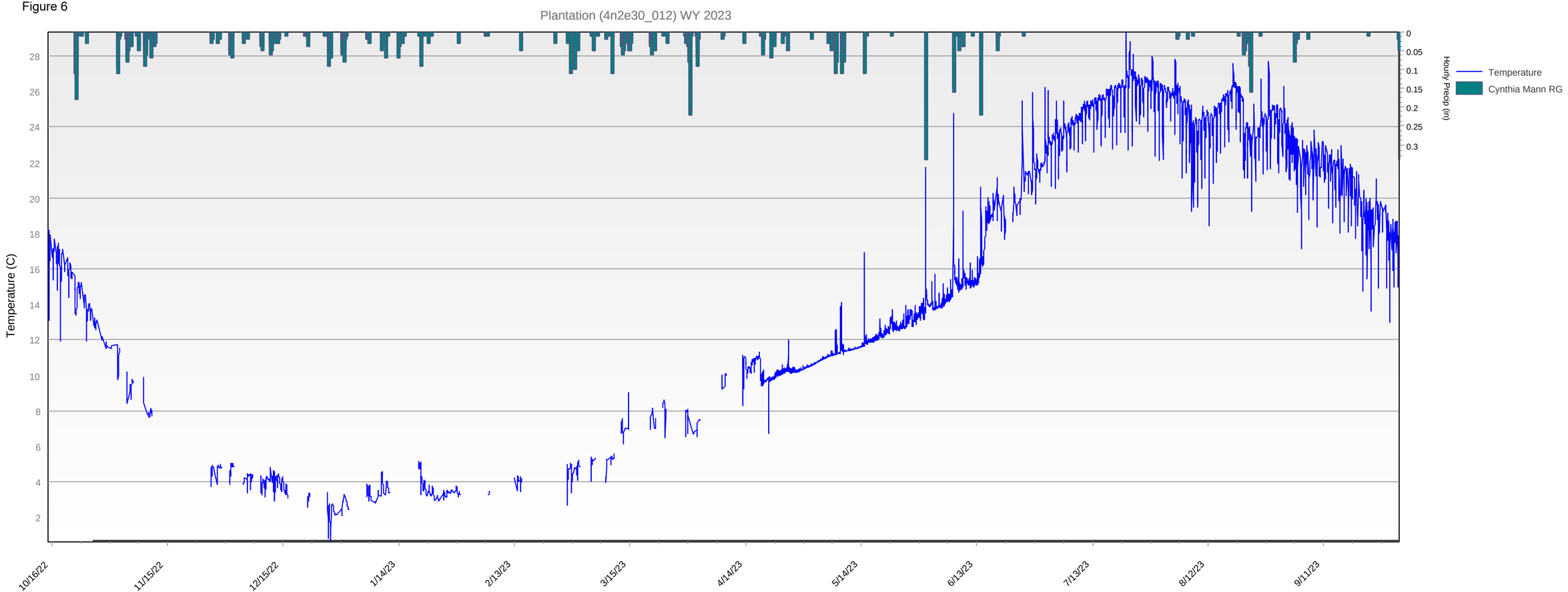

Americana Temperature WY 2023
Temperature (C)
Hourly Precip (in)
Water Level (in)
Temperature
Water Level
Front RG
East RG
10/16/2022
11/15/2022
12/15/2022
1/14/2023
2/13/2023
3/15/2023
4/14/2023
5/14/2023
6/13/2023
7/13/2023
8/12/2023
9/11/2023

Figure 6


Plantation (4n2e30_012) WY 2023
Temperature (C)
28
26
24
22
20
18
16
14
12
10
8
6
4
2
0
0.05
0.1
0.15
0.2
0.25
0.3
Hourly Precip (in)
Temperature
Cynthia Mann RG
10/16/22
11/15/22
12/15/22
1/14/23
2/13/23
3/15/23
4/14/23
5/14/23
6/13/23
7/13/23
8/12/23
9/11/23

Appendix 10

Phase 1 MS4 Permit Annual Report Responses

APPENDIX 10

PHASE I MS4 PERMIT ANNUAL REPORT RESPONSES

Section II. Permittee Responsibility:

Please answer all questions. If the answer is "No," or "Not Applicable" and no other direction is provided, use the Comments field at the end of this section to explain the reason and the expected date(s) that the requirement will be met, and/or to explain why the requirement does not apply.

1 - The Amended and Restated Intergovernmental Agreement for Roles and Responsibilities Under the NPDES Permit #IDS027561 and Operating Guidelines were updated in September 2022 and executed in December 2022. These documents are available in Boise State University's SWMP, Appendix B.

2 - Boise State works cooperatively with other State and local entities as described in the Boise State University Stormwater Management Program (SWMP) Section 1.2 Applicability, but does not share implementation responsibilities with non-permittee entities.

3. Authority is delegated by Boise State University policy 9140. It establishes the scope and nature of the University's responsibility and commitment to provide a safe and healthy environment for the University community. Additionally, discharge regulations and requirements are covered by Boise City Code 10-6-2.

5 -

Annual Expenditures and Estimated Budget (IV.C.3.c.viii.)

Boise State University
Storm Water Budget for 10/1/22 through 9/31/23

Activity	Budget
Operation and Maintenance of storm water structures	$2,500
Street and Parking Lot Sweeping	$4,000
Litter Control	$25,000
Infrastructure Improvements and SPCC maintenance	$3,000
Monitoring Cost Share	$8,800
Public Education and Outreach Cost Share	$1,800
Total	$45,100

6. In addition to annual reporting, Boise State University tracks related activities to set priorities and assess compliance through regular meetings with co-permittees, including ACHD who's involvement with Boise State University pertaining to the permit is described in Boise State University SWMP - 2023, Appendix 1.

7. responsibility for SMWP implementation has not changed due to a Transfer of Ownership or Operational Authority over a geographic portion of the MS4.

Section III. Status of SWMP Control Measures

Please answer all questions for each SWMP control measure and associated component activity. In the Comments field, cite any relevant information and/or statistics that helps illustrate the Permittee's implementation of the required action/activity.

If the answer is "No," use the Comments field to explain the reason, and outline the expected dates that the requirement will be met.

If the requirement does not apply to the Permittee's organization, mark "NA" and explain why it does not apply in the Comments field.

Public Education, Outreach and Involvement Program (Permit Part 3.1)

Comments on Public Education, Outreach, and Involvement Program:

Use this Comments field to explain or discuss unique implementation schedules, summarize nature of the education, outreach, and public involvement activities conducted during the reporting period

8-14: The City of Boise is the lead Permittee responsible for implementing the education, outreach and involvement activities required by the Permit throughout the Phase I permit area, according to the Intergovernmental Agreement and Operating Guidelines provided in Appendix 1 Boise State University SWMP - 2023 . A comprehensive summary of education, outreach and involvement activities is available in Appendix 6 2023 Public Education, Outreach and Involvement Program.

Illicit Discharge Detection and Elimination Program (Permit Part 3.2)

Comments on Illicit Discharge Detection and Elimination Program:

Use this Comments field to explain any unique implementation schedules, highlight investigation results or follow-up actions, discuss subsequent enforcement actions, etc. that were conducted during the relevant reporting period.

16 - Boise State University conducts and enforces multiple programs which result in the detection and elimination of illicit discharges into the MS4 including complaint response activities, regular outfall inspections, and the Spill Prevention Control and Countermeasure (SPCC) plan. Boise State University will continue to refine and formalize this program.

17 - A current MS4 map and outfall inventory are included in Appendix 1 Boise State University SWMP - 2023.

18 - Authority is delegated by Boise State University policy 9140. It establishes the scope and nature of the University's responsibility and commitment to provide a safe and healthy environment for the University community. Additionally, discharge regulations and requirements are covered by Boise City Code 10-6-2.

24 - Dry weather analytical and field screening monitoring program is implemented by ACHD on behalf of Boise State University using ACHD's dry weather screening plan in accordance with the intergovernmental agreement in Appendix 1 Boise State University SWMP - 2023, Appendix B.

25 - All 12 of Boise State University's MS4 outfalls were investigated for dry weather discharge and sampled when applicable.

27 – See Appendix 2 Dry Weather Outfall Inspection and Sampling Summary

28 – See Appendix 2 Dry Weather Outfall Inspection and Sampling Summary

29 - The source of dry weather flows were not identified.

30 - Boise State University maintains a Spill Prevention, Control, and Countermeasure (SPCC) plan.

31 - The City of Boise is the lead Permittee responsible for implementing the education, outreach and involvement activities required by the Permit. Educational materials on rules, pick- up schedule, and other information on proper disposal of household hazardous waste are made available to the public by the City of Boise at www.cityofboise.org/departments/public-works/curb-it/hhw/. Boise State University's Environmental Health Safety and Sustainability Department in conjunction with appropriate local entities ensures appropriate education and training for employees responsible for disposal or recycling of hazardous waste.

Construction Site Runoff Control Program (Permit Part 3.3)

Comments on Construction Site Runoff Control:
Use this Comments field to explain unique implementation schedules, summarize the number of site inspections, follow-up actions, and/or any subsequent enforcement actions, etc that were conducted during the relevant reporting period.

33 - See Appendix 1 Boise State University SWMP - 2023 Section 3.1. Projects which occur on state land and are greater than or equal to one acre are operated by the Division of Public Works.

34 - Boise State University defers to the respective agency with appropriate jurisdictional authority for final approval of construction site plans.

35 - 36 - Construction sites are monitored for issues and/or deficiencies related to erosion and sediment control. Issues are reported to the Boise State Project Manager for resolution.

37 - Boise State University does not have a written, formal ERP for construction site runoff control.

38 - - People responsible for ESC and SWPPP requirements attend training provided by a qualified third party agency.

Comments on Construction Site Runoff Control:
Use this Comments field to explain unique implementation schedules, summarize the number of site inspections, follow-up actions, and/or any subsequent enforcement actions, etc that were conducted during the relevant reporting period.

See Boise State University's SWMP Section 3.1 for information on construction site runoff control.

Post Construction Stormwater Management in New Development & Redevelopment (Permit Part 3.4)

41.b This Permittee organization cooperates in the implementation of the Green Infrastructure Strategy to employ innovative approaches to control stormwater quality and quantity in the Lower Boise River watershed. *Use this field below to describe any relevant Permittee actions during the reporting period, as applicable.*

42 - Boise State University has not specifically identified permanent stormwater controls (PSCs) at new development and redevelopment sites (of at least one or more acres) as “high priority” for annual inspection. However, all PSC’s are checked on an annual basis.

43 - All PSC’s are checked on an annual basis. PSC’s are cleaned and maintained on an as needed basis.

45 - - At this time, Boise State manages their own permanent stormwater controls, including coordinating required maintenance and verifying they are functioning as intended.

46 - People responsible for PSC requirements attend training provided by a qualified third party agency.

Comments on Post Construction Stormwater Management in New Development and Redevelopment

Use this Comments field as necessary to explain any unique implementation schedules, summarize inspections, actions, etc. that were conducted during the relevant reporting period.

See Boise State University’s SWMP Section 3.2 and the subsequent table, as well as Appendices 3 & 4 for PSC inspection summaries.

Stormwater Infrastructure and Street Management (Permit Part 3.5)

Comments on Stormwater Infrastructure and Street Management

Use this Comments field as necessary to explain any unique implementation schedules, summarize inspections, actions, etc. that were conducted during the relevant reporting period

47 - See Boise State University’s SWMP Section 2.2. All MS4 catch basins are inspected annually and cleaned as needed.

48 and 49 - See Appendix 1 Boise State University SWMP section 3.4 for a description of water quality maintenance and pollution prevention measures. A map of material storage locations is included in Appendix 5 Boise State University Pollution Prevention Plan.

50 - Street sweeping operations for pollution prevention are described in Appendix 1 Boise State University SWMP section 3.4, but do not meet the requirements established in Permit Part 3.5.5. The university will be evaluating the sweeping program and updating the Street Sweeping Plan. A description of the street sweeping plan will be available in the Phase I SWMP no later than April 3, 2026.

51 and 52 - Appendix 1 Boise State University SWMP - 2023 describes activities implemented to address pollution prevention and good housekeeping for MS4 operations. The university will review, update, and develop planning and guidance documents and implement as needed to ensure its stormwater infrastructure and management program includes the required SWMP control measure components described in Permit Parts 3.5.2 through 3.5.10.

53 – Site specific SWPPPs are described in Appendix 5 Boise State University Storm Water Pollution Prevention Plan

Industrial and Commercial Stormwater Discharge Management (Permit Part 3.6)

55. ***This Permittee organization maintains an inventory of industrial & commercial facilities within the Permit Area, and inspects such facilities on a prioritized basis as required by Permit Part 3.6.***

Use this comment box to summarize Permittee activities related to Permit Part 3.6.

Section V. Response to Excursions Above Idaho Water Quality Standards

58. Provide a summary of the Permittee's efforts to date that address the MS4 discharges contributing to the original water quality excursion, including the results of any monitoring, assessment, or evaluation efforts conducted during the reporting period.

Temperature Monitoring (Permit Part 4.1) and Stormwater Monitoring and Evaluation Program (Permit Part 6.2)

ACHD, on behalf of the Permittees, continued to conduct wet weather stormwater monitoring and subwatershed monitoring as required under the Stormwater Monitoring and Evaluation Program requirements in Permit Part 6.2. Annual monitoring summaries for activities conducted in reporting year 2022-2023 are provided in the following attachments to this annual report:

Appendix 7 - Stormwater Outfall Monitoring Summary WY 2023
Appendix 8 - Americana Subwatershed Monitoring Summary WY 2023
Appendix 9 - Temperature Monitoring Summary WY 2023

Additional monitoring activities included in reporting year 2022-2023 includes an update to the Stormwater Outfall Monitoring Plan and NPDES Phase I Temperature Monitoring Approach. These documents are provided as Attachment L to this report.