City of Omaha
Jean Stothert, Mayor

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Robert G. Stubbe, P.E.
Public Works Director

December 20, 2019

Ms. Shelley Schneider
Nebraska Department of Environment and Energy
Suite 400, The Atrium
1200 N Street
P.O. Box 98922
Lincoln, NE 68509-8922

RE: 2019 CSO Annual Report
City of Omaha Combined Sewer Overflows NPDES Permit No. NE0133680

Ms. Schneider:

Attached please find three (3) copies of the 2019 City of Omaha CSO Annual Report as required in Part VIII of NPDES Permit No. NE0133680. The report documents activities related to the City of Omaha combined sewer system for the period of 10/1/2018 to 9/30/2019. Electronic copies of the document will be emailed.

If you have any questions or require additional information, please feel free to contact me at (402) 444-3910 or Pat Nelson at (402) 444-5456.

Sincerely,

Michael T. Arends, Plant Manager
City of Omaha Missouri River WRRF

CC: Brett Anderson, NDEE,
Patrick Ducey, NDEE
James Theiler, City of Omaha,
Steve Andersen, City of Omaha
Jennifer Morales, City of Omaha
Adam Wilmes, City of Omaha
Tom Heinemann, CSO Program
Patricia Nelson, CSO Program

2019 **Annual Report**

October 1, 2018 - September 30, 2019

CSO!
Clean Solutions for Omaha

City of Omaha, Nebraska
Jean Stothert, Mayor

City of Omaha
Combined Sewer Overflow
Annual Report
NPDES Permit No. NE0133680
October 1, 2018 through September 30, 2019

CSO!
Clean Solutions for Omaha

Report of 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 gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief. true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

	December 20, 2019
Signature of Authorized Representative or Cognizant Officer	Date
Michael T. Arends, P.E.	WRRF Manager
Print Name	Title

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Attachments

Figures

Tables

Acronyms and Abbreviations

°C	degrees Celsius
<	less than
<=	less than or equal to
%	percent
APRR	Annual Project Progress Report
BOD_5	5-day biochemical oxygen demand
C&D	construction and demolition
CCTV	closed-circuit television
cfs	cubic feet per second
Cfu	colony forming units
CIP	Capital Improvements Plan
City	City of Omaha
CMOM	capacity, management, operations, and maintenance
CNR	Change Notifications Request
COF	consequence of failure
CSO	Combined Sewer Overflow
CSO!	Clean Solutions for Omaha!
CSS	combined sewer system
CTS	collector tunnel system
DBE	disadvantaged business enterprise
DO	dissolved oxygen
DTS	deep tunnel system
EEIT	Economic Equity and Inclusion Team
EQCD	City of Omaha Environmental Quality Control Division
EPA	U.S. Environmental Protection Agency
FOG	fats, oils, and grease
gpd	gallons per day
gph	gallons per hour
gpm	gallons per minute
HPA	High Performing Alternative
I/I	inflow and infiltration

IMP	Implementation Monitoring Plan
LF	linear feet
LOF	likelihood of failure
LTCP	Long Term Control Plan
MG	million gallons
mg/L	milligram per Liter
MGD	million gallons per day
MH	manhole
min	minute
mL	milliliter
mMHO/cm	millimho per centimeter
MNP/100mL	most probable number per 100 milliliters
MPN	most probable number
MRWRRF	Missouri River Water Resource Recovery Facility
MS4	City of Omaha municipal separate storm sewer system
M.U.D.	Metropolitan Utilities District
N/A	not applicable
NDEE	Nebraska Department of Environment and Energy
NDEQ	Nebraska Department of Environmental Quality
NMC	Nine Minimum Controls
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPP	Nebraska Pretreatment Program
NRD	Natural Resources District
O&M	operation and maintenance
OERP	Overflow Emergency Response Plan
OPW	Omaha Public Works
PACP	Pipeline Assessment Certification Program
PCWRRF	Papillion Creek Water Resource Recovery Facility
PDR	Project Definition Report
PEX	Packinghouse Express
PM	preventive maintenance

PMT	Program Management Team
POTW	Publicly Owned Treatment Works
RTB	Retention Treatment Basin
SCREAM	System Condition Risk-Enhanced Assessment Model
SCRTB	Saddle Creek Retention Treatment Basin
SEB	Small and/or Emerging Business
SIFM	South Interceptor Force Main
SL-RAT	Sewer Line Rapid Assessment Tool
SMA	sewer management area
SOIA	South Omaha Industrial Area
SOP	standard operating procedure
SSES	sanitary sewer evaluation survey
SSO	sanitary sewer overflow
SSOMM	Sewer System Operation and Maintenance Manual
TACS	Technical Assessment for Cost Savings
TKN	total Kjeldahl nitrogen
TSS	total suspended solid
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
VFD	variable frequency device
WIFIA	Water Infrastructure Finance and Innovation Act
WOER	Wastewater Overflow Emergency Response
WRRF	Water Resource Recovery Facility

I. Introduction

A National Pollutant Discharge Elimination System (NPDES) Permit for City of Omaha (City) Combined Sewer Overflows (CSO) (No. NE0133680) issued by the Nebraska Department of Environmental Quality (NDEQ) was reissued in 2015 and is effective from October 1, 2015, thru September 30, 2020.

This Annual Report is for the period of October 1, 2018, through September 30, 2019, and is submitted in accordance with the CSO Permit. The report meets the requirements of the permit, which is to submit a report within 90 days following each yearly (October 1 through September 30) anniversary. Throughout the report, the permit will be referred to as the CSO NPDES Permit or CSO Permit, which is in effect from October 1, 2015, to September 30, 2020, as modified.

The CSO NPDES Permit contains the following language:

> "This permit specifically authorizes wet weather discharges from the City of Omaha's combined sewer system (CSS) through CSO outfalls according to the requirements, conditions, and limitations set forth in the permit. CSO outfalls are defined as designated overflow points in the combined sewer system (CSS) designed for the purpose of allowing the discharge of wet weather flows to receiving waters prior to receiving complete treatment in the City's Wastewater Treatment Plants."

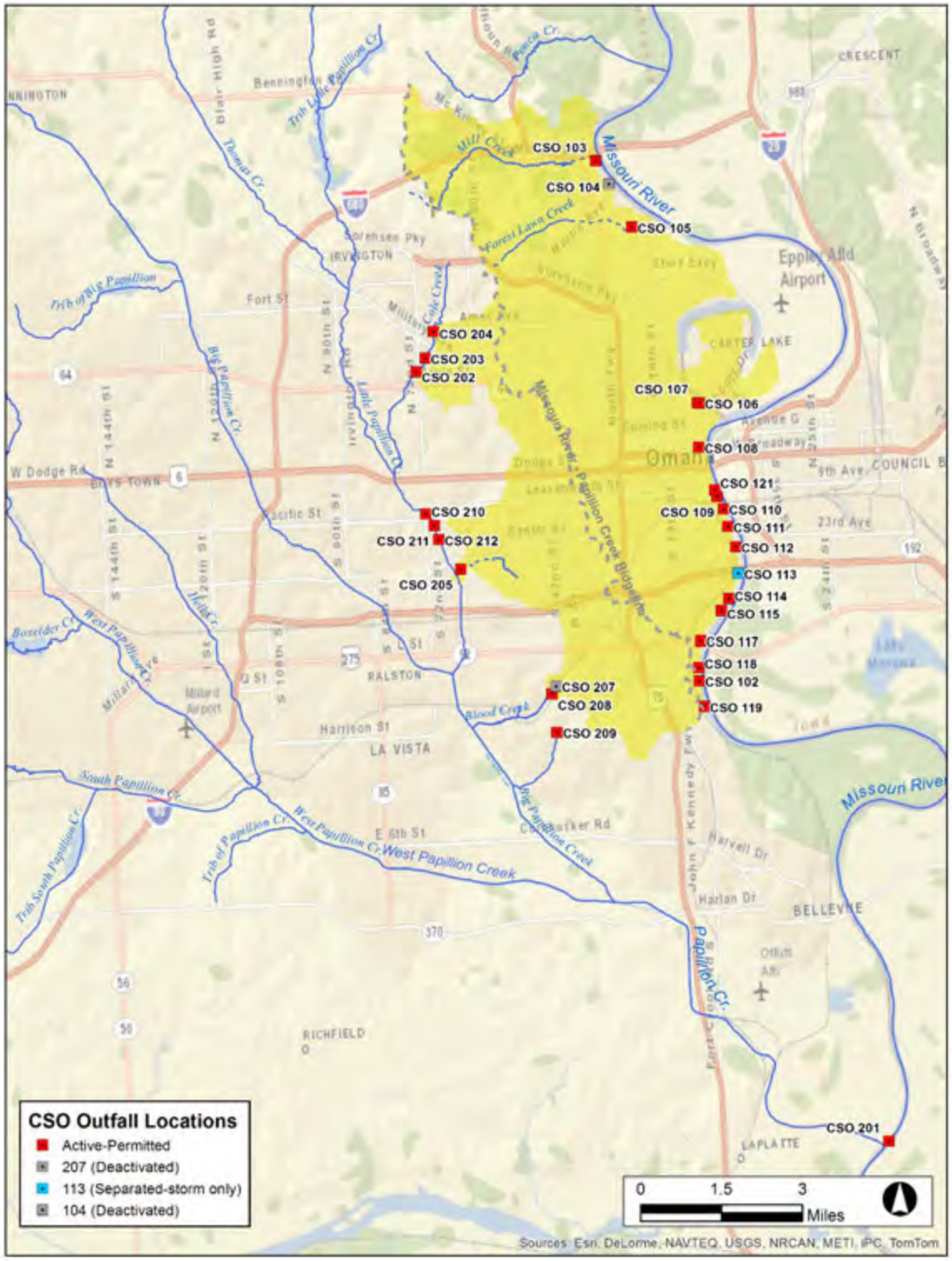
Under the CSO Permit, as shown on Figure 1-1, the City has 26 permitted CSO outfalls; 16 of these are associated with the Missouri River Water Resource Recovery Facility (MRWRRF) collection system; the other 10 are associated with the Papillion Creek Water Resource Recovery Facility (PCWRRF) collection system. At this time only CSO 102 at the MRWRRF undergoes treatment prior to discharge.[1]

This Annual Report includes actions, activities, and measures taken by the City with regard to the Nine Minimum Controls (NMC), the Long Term Control Plan (LTCP) and its compliance schedule, CSO outfall monitoring, in-stream monitoring, and Performance Report for CSO controls and if controls are achieving their intent. The last section is reserved for other information on Program success measures not covered elsewhere in the report.

The City's Public Works Department, Environmental Services oversees the administration of the CSO NPDES Permit and ensures that the City is in compliance with the permit requirements. The information provided in this report is a result of the cooperation among the Sewer Maintenance Division, Environmental Quality Control Division (EQCD), PCWRRF, MRWRRF, and consultant engineers and the Public Works Department and Program Management Team (PMT) staff that formulate the CSO PMT.

[1] The MRWRRF manages CSO Outfall 102 which, under approved conditions, discharges combined wastewater that has received primary but not secondary treatment. The CSO 102 discharge will be disinfected once the B2 project is complete.

Figure 1-1: CSO Outfall Locations



II. Executive Summary

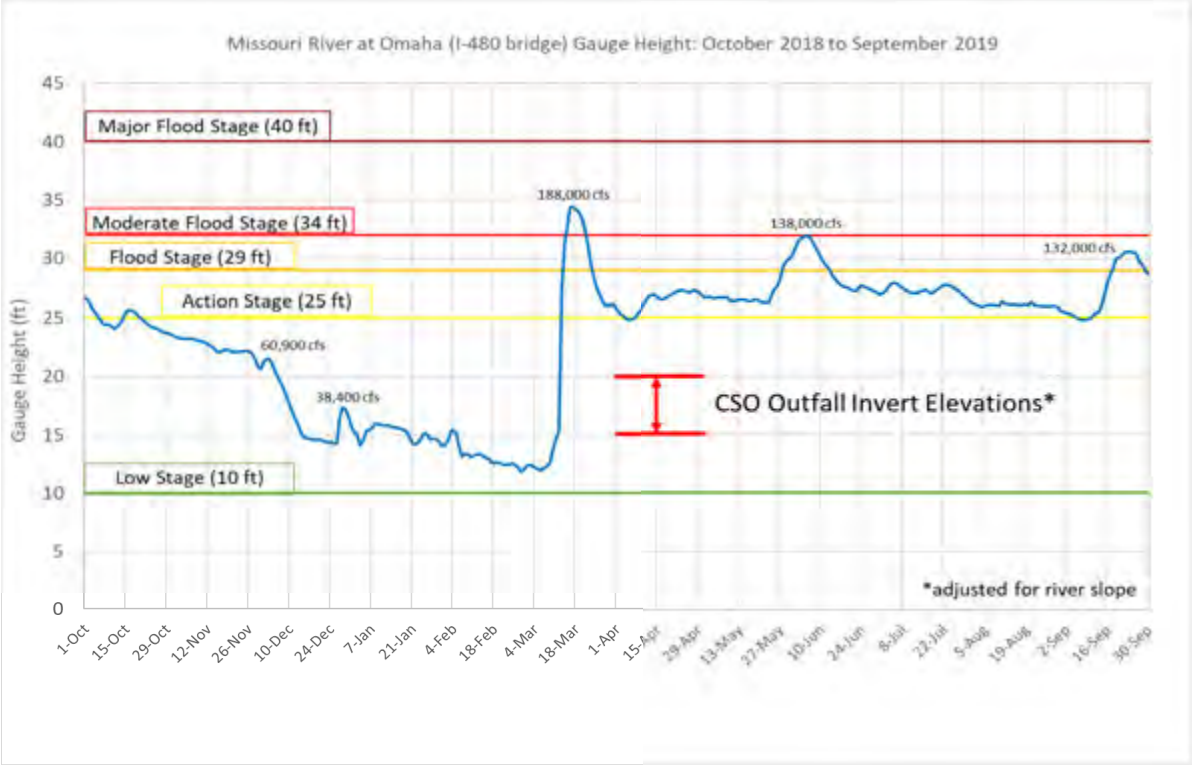
The 2019 CSO Annual Report summarizes information on activities, actions, and measures taken by the City and the CSO Program Management Team (PMT) to comply with the CSO NPDES Permit. The items upon which the City is required to report are:

- Nine Minimum Controls (NMC)
- LTCP Documentation
- Compliance Schedule
- CSO Outfall Monitoring
- In-stream Monitoring
- Other Information

Other information includes measures of success and other requested information that demonstrates the effective management of the wastewater collection and treatment systems in the CSS Area.

During this report year, the City experienced significant flooding. The Missouri River levels have been above Action Stage since March of 2019 and were above Flood Stage three times during the year. Figure ES-1 Shows the Missouri River flows over the report year.

Figure ES-1: Missouri River at Omaha



The 2019 flooding was much different than the 2011 flood. The 2019 Flood included the Platte River and local tributaries, and it hit much quicker—without advance warning or opportunities to prepare. The flooding also impacted the MRWRRF and the PCWRRF, the latter of which was flooded and offline for several months.

On April 4, 2019, the City notified Nebraska Department of Environment and Energy (NDEE), as required under the Consent Order, that the flooding was a Force Majeure event. On June 3, 2019, the City requested a modification to the submission date of the LTCP update from March 1, 2020 to March 31, 2021. The letter also requested modifications to the expiration dates for the City's CSO NPDES permit and the permits for the MRWRRF and PCWRRF to correspond with the change in the LTCP date. These requests were made to address staffing and other impacts of the flooding. Modifications to address these items and others were finalized in a permit modification issued November 1, 2019; a modified Consent Order was signed October 15, 2019.

Additional information on the flooding can be found Part III. B of the Report. The remainder of the Executive Summary addresses the various sections of the Report.

A. Nine Minimum Controls (NMC)

The CSO NPDES Permit defines NMC as "…operations and procedures that will reduce combined sewer overflows and their effects in receiving water quality that do not require significant engineering studies or major construction and are consistent with the complete LTCP." The City continues to implement the NMC Plan[1] with the goal of reducing CSOs and improving water quality. Following is a brief review of each NMC and advancements or modifications completed by the City during the reporting period:

1. **Proper Operation and Maintenance (O&M):** As required, revisions or additions to the O&M procedures for the combined sewer treatment and collection systems are included in this section. The Sewer System O&M Manual (SSOMM) for the Sewer Maintenance Division (Brown and Caldwell, 2006) is reviewed semiannually and three procedure documents were updated this year. The updated procedures documents are included in Attachment 1 and include:

    - Appendix D – Standard Operating Procedure for Reporting and Public Notification of Wastewater Bypass, Unpermitted Combined Sewer Overflow & Sanitary Sewer Overflow
    - Appendix B – CSO Station & Monitoring Device Procedures and Locations
    - Appendix F – CSO Station Procedure Manual

The City continued refinement of the procedures that make up the *Wastewater Overflow Emergency Response (WOER) Plan* (Burns and McDonnell, 2019), which was phased into practice this year, with finalization to occur after a training and feedback session from staff. The roll-out and training was delayed as a result of the Missouri River flooding and wet weather response, however the draft plan was tested during this time and revisions made as a result. This WOER Plan will include better clarification of current procedures, a new overflow response form, and sampling procedures, and will be used as a training tool. The WOER Plan and procedure updates will become appendices to the SSOMM.

In addition, Sewer Maintenance continued to refine processes related to implementation of field tablets and work management that integrate with GIS-based data management

[1] NMC Plan is defined in Section III, Nine Minimum Controls, and consists of a series of submittals to the NDEQ.

software. The City developed a simple pre-survey manhole inspection form for use by jetting crews to collect basic information to update inventory (cover type and depth from rim to invert) and general condition ratings (included in Attachment 1).

2. **Maximizing the Use of the Collection System for Storage:** As required, the City shall continue to implement the programs to maximize the use of the collection system for storage. Program element updates include:

   - Inspection of the collection system and removal of obstructions continued. The City inspected 96,851 linear feet (LF) of pipe, performed preventive maintenance (PM) cleaning on 933,853 LF, and corrective cleaning on 103,129 LF in the CSS.
   - Additional PM program improvement efforts continued this year and will be leveraged into future Asset Management efforts to develop PM Basis documents to document the following:
     - What kind of PM is needed, and why it is needed
     - PM frequency
     - Decision criteria
     - Feedback loop for when to convert the PM into a construction project to eliminate PM need.

     Other improvement efforts included:

     - Completion of 1,578 pre-survey manhole in CSS, simple inspections by jetting crews
     - Pilot tested a sewer inspection acoustic technology called Sewer Line Rapid Assessment Tool (SL-RAT) (199,345 LF of SL-RAT inspections were completed during the reporting period, 613 LF of which were in the CSS)
   - As part of the goal of eliminating dry weather discharges through combined sewer outfalls, the City continued to increase efforts to plan for and conduct cleaning of the larger-diameter sewers. Sewer Maintenance implemented a cleaning and televising project of mid-size pipelines (18-inch to 48-inch) in the MR-7.6 and MR-7.8 Sewer management areas (upstream of the new Leavenworth Lift Station), with the primary goal of identifying debris issues.
   - CSO 207 diversion structure was removed as part of the 42nd and Q Sewer Separation project (OPW 52257), and the City monitored the downstream CSO 208 diversion through spring and summer 2019.
   - The City contracted sanitary sewer evaluation survey (SSES) in Sewer Management Areas LP 12.10 and LP-12.12. In total, about 73,150 LF were scoped for inspection and the City completed closed-circuit television (CCTV) on about 62,400 LF (approximately 85 percent). The City spent about 90 hours on heavy cleaning of debris from the pipes in this project.
   - Lamping investigation of 114 manholes was performed as a pre-investigation to assist the scoping of more detailed sewer condition assessment investigations of 11.7 miles of 60-inch- to 144-inch-diameter sewers in 2020.

3. **Review and Modification of Pretreatment Programs:** As required, the City must continue to minimize impacts of industrial facilities and report any new significant industries:

    - This program is administered through the EQCD. A total of 14 categorical industries with NPP permits were in the CSS area and were operating during this permit year.

4. **Maximization of Flow to the Publicly Owned Treatment Works (POTW) for Treatment:** As required, the City shall evaluate and implement simple modifications to the CSS and procedures at WRRFs, as appropriate, to achieve maximization of flow to the POTW.

    The City has previously evaluated various methods for maximizing flow to the WRRFs. Much of the evaluation supported the decisions that resulted in the LTCP; however, some operational changes were made and are ongoing to allow for better wet weather management and improved water quality. For example, since the new South Interceptor Force Main (SIFM) has become operational, the City no longer closes the CSO 106 or CSO 107 dry weather flow gates during wet weather events. As a goal for this NMC, the City continues to consider ways for maximizing treatment of wet weather flows, which will be incorporated into the next LTCP update.

5. **Prohibition of CSOs during Dry Weather:** As required, the City shall document overflows that occur during dry weather and respective corrective actions:

    - The City adhered to the immediate reporting policies for all discovered dry weather overflows.
    - There were 21 overflows that were contained and did not reach waters of the State.
    - There were 13 dry weather overflows that reached waters of the State.

    Each of these events were evaluated for true cause and appropriate long-term corrective action. The City has also placed an increased emphasis on design and construction controls for sewers. As a result of these efforts, the City has seen better finished products from contractors—in one case a manufacturer made modifications to their product (manholes) to help meet the City's Specifications requirements. In addition, the City updated the Wastewater Collection Systems Design Manual (adopted August 27, 2019), and Draft 2018 Standard Specifications and Standard Plates for Public Works Construction are out for public comment.

6. **Control of Solid and Floatable Materials in CSOs:** As required, the City shall implement site-specific controls, in relatively simple measures and as appropriate. Any reassessment or implementation of new controls is reported here:

    - Construction of the Burt-Izard Lift Station was underway during the Annual Report year and includes replacement of the existing pumps to add more capacity, replacement of the mechanically cleaned bar screen with a new bar screen, addition of a gate for channel isolation, a new bar rack, and concrete modifications to the screen channel to accommodate the new bar screen and gate in the Bar Screen Room.

- The City began work to design improvements to the 6th and Leavenworth grit facility, which will continue to be used after the construction of the Leavenworth Flood Mitigation CSO project. The purpose of the Flood Mitigation project is to maximize dry weather and some wet weather flows to the new Leavenworth Lift Station during high river conditions.
- The Saddle Creek Retention Treatment Basin (RTB) construction began, which includes a new grit pit for the RTB and another grit pit for the dry weather flow. The RTB is designed to capture floatables at design flows.

7. **Pollution Prevention:** As required, the City shall document any new pollution prevention methods here:
   - The management of this item is shared between several divisions and work groups within the City: Sewer Maintenance, EQCD, and Street Maintenance.
   - The municipal separate storm sewer system (MS4) Annual Report (City of Omaha, 2019) includes pollution prevention effort details, including inlet cleaning and grit removal.
   - Efforts continue with Papillion Creek Watershed Partnership and the nonprofit organization Keep Omaha Beautiful for stormwater pollution prevention and outreach.
   - The City completed 305 work orders for PM jet-vac tasks, with 193 of these on the combined system.
   - Additional corrective measures included (unplanned) cleaning tasks on 1,406 storm structures (for example, inlet/catch basin, grated manholes, and/or junction boxes).
8. **Public Notification:** As required, the City shall document any revisions or updates to public notification procedures and provide any public announcement in Annual Report:
   - The Sewer Maintenance Division inspects signs at the CSO outfalls twice per year for visibility and condition and replace as needed. CSO outfall sign inspections were completed in fall 2018 (from October 9 through 22, 2018 and January 10, 2019, once the Missouri River water levels receded further) and spring 2019 (April 24 and 25, 2019). Some spring 2019 CSO sign inspections were not completed (signs were submerged) or delayed because of the high Missouri River levels. The City has work orders in place to replace or repair missing or damaged signs.
   - Public notifications were issued during the reporting period because of the following reasons: significant untreated wastewater discharges from the flood-damaged PCWRRF; non-operational Monroe St. lift station at Monroe Street CSO 119 on March 15, 2019; the North Interceptor was significantly surcharged by the Missouri River resulting in local issues with service to customers that was temporarily addressed by the intentional dry weather bypass from CSO 105 from May 29 to July 3, 2019. These were significant dry weather overflows at CSOs. Public Works Assistant Director-Environmental Services determines “Significant” qualification in conjunction with NDEE, on a case-by-case basis under these guidelines: duration greater than 24 hours; quantity greater than 100,000 gallons, considering nature of pollutants and location.

9. **Monitoring to characterize CSO impacts and the efficacy of CSO controls:** As required, the City shall document any new CSOs discovered during routine inspections, and reports on other impacts of CSOs during the reporting period:

    - There were no known beach closings or fish kills. The City did issue advisories to downstream users when the PCWRRF was not fully operational, until full treatment resumed at the PCWRRF around May 20, 2019. There are no records of washed-up floatables.
    - Routine inspection of CSO diversions and outfalls continued. No new CSO locations were discovered. CSO 207 diversion was removed.
    - During wet weather, 21 basement backups were recorded. They were primarily related to 3 large wet weather periods with 6 significant events; 9 in mid-March, 13 at the end of May and early June, and 1 in late September. These wet weather events caused issues in multiple locations, due in part to the fact that the sewer system overall was stressed as a result of the sustained high river levels. Four additional wet weather overflow occurrences were at manholes or intentional bypasses at CSO outfalls during these same time periods.

B. LTCP Documentation

Part V of the CSO NPDES Permit requires the City to document and submit reports showing compliance with the conditions and requirements of this section. A list of the required reporting elements under LTCP Documentation and a brief description of any items of significance for each element are included.

1. **Characterization and Modeling of the CSO System.** As required, the City shall continue to characterize, monitor, and model the CSS:

    - The City reached a significant milestone this year, completing calibration of the updated Papillion Creek watershed portion of the InfoWorks collection system model (the Missouri River watershed portion was previously completed). The update added detail in combined sewer focus areas that better allows for the evaluation of the effectiveness of Green Infrastructure and/or stormwater control measures at specific locations in the system.
    - Other characterization efforts of the CSS include water quality monitoring of select outfalls (CSO 102 at this time, with future plans at CSO 205), gathering of field data in project areas, and overflow occurrence monitoring at CSO points through the CSO Block program.
    - For the reporting year, there were 30 permanent flow monitoring sites and 30 temporary flow monitoring sites to support a variety of efforts. Additionally, the City gathered precipitation data using 12 permanent City-managed and 9 temporary consultant-managed rain gauges and obtained radar processing of rainfall data for increased spatial accuracy.

2. **Public Participation Plan.** As required, the City shall continue a public participation process and document activities in the Annual Report:

    - The focus of the Public Participation Program continues to be centered on two major efforts: (1) continued involvement, education, and acceptance by the public about the need for the CSO Program and (2) the progress on the specific projects, in particular during construction.

3. **Consideration of Sensitive Areas.** As required, the City shall include any changes to the status of previously identified sensitive areas in the Annual Report:

    - No changes were made to the sensitive areas in the Annual Report year.

4. **Evaluation of Alternatives.** The CSO NPDES Permit requires any significant changes or revisions to the controls set forth in the LTCP be submitted to the NDEE by March 31, 2021, as changed in a permit amendment issued November 1, 2019. The following is provided as an update:

    - The City continued working towards the LTCP update. This included the City undertaking several tasks to define future projects or to evaluate potential alternative controls for the Missouri River Watershed.

    - The Deep Tunnel System (DTS) conceptual development continued in 2019, incorporating a refined approach based on the initial optimization evaluation. One of the outcomes from the initial optimization evaluation was to further evaluate a shorter but larger-diameter tunnel option, the Collector Tunnel System (CTS). The CTS appears to be a less costly option for the City while still providing CSO reduction benefits.

    - Because of the significant cost associated with the DTS that is included in the current LTCP, the City and PMT began an optimization evaluation in 2018 to make sure that the City implements the most cost-effective and beneficial approach for capturing the remaining volume of combined sewage. The City and PMT have developed High Performing Alternatives (HPAs), which will be further evaluated in the following manner: performing further cost validations; performing representative-year runs with InfoWorks; assessing performance under high-river-level conditions; estimating the benefits of employing advanced control techniques in the system; and investigating performance enhancement approaches. As a result of the task complexity and significance, it continued through all of 2019 and is scheduled to be completed in 2020 in time for inclusion in the LTCP Update due in 2021.

5. **Cost/Performance Considerations.** As required, the City will submit a financial report with the LTCP update by March 31, 2021. The report will include a strategy to obtain sufficient revenue to fund the CSO Program through at least 2026. The City's current rate ordinance sets sewer use fees through 2023 and is based on a detailed rate model. Rate model projections indicate that a total escalated CSO budget of $2.378 billion could be afforded, which is slightly more than the current total escalated Program cost. However, financial projections become increasingly uncertain over time.

6. **Operational Plan.** As required, the City shall report updates to the wet weather operational strategy plan. This plan shall be updated as major CSO projects are constructed and are operationally complete. There were no changes to the operational plan during the year.
    - The South Omaha Industrial Area (SOIA) Lift Station wet weather operations evaluations continued in 2019. The system is functioning as designed; however, issues with the pumps continued to be evaluated to mitigate vibration and address issues with the pump seals. A manufacturing defect was identified in the pump shafts and required shaft replacement for each pump, which was completed in 2019. The City is continuing to monitor operation of the pumps.
7. **Maximizing Treatment at the Existing POTW Treatment Facilities.** As required, the City must continue to evaluate opportunities to maximize treatment, and a summary of any new processes shall be included in Annual Report. No new approaches were identified since the 2018 Annual Report.
8. **Implementation Schedule.** As required, the City shall include progress reports on implementation of the CSO Projects as set forth in the compliance schedule:
    - The City requested an amendment to the Consent Order to modify the LTCP update submittal from March 1, 2020, to March 31, 2021. The modification was needed as the result of the 2019 flooding (Force Majeure event). The modification was obtained October 16, 2019.
    - The City requested an amendment to the CSO NPDES Permit to modify milestone dates for Phase 4 Major Projects and Phase 6 Sewer Separation, as well as modification of the submission date of the Financial Report and LTCP Update to March 31, 2021.
    - The CSOs 207/208, 42nd and Q project was the only project completed during the Annual Report period.
    - Project-specific progress reports on implementation of the CSO major projects and sewer separation projects are included in Attachment 2.
9. **Post-Construction Compliance Monitoring Program.** As required, the Annual Report includes in-stream monitoring data and the results of studies performed to verify eliminating CSO points following completion of sewer separation:
    - The City's Post-Construction Monitoring Program includes outfall monitoring at designated CSO points, in-stream monitoring, and verification of sewer separation projects. See Sections VII, In-Stream Monitoring Data, and VIII, Performance Report, for results.

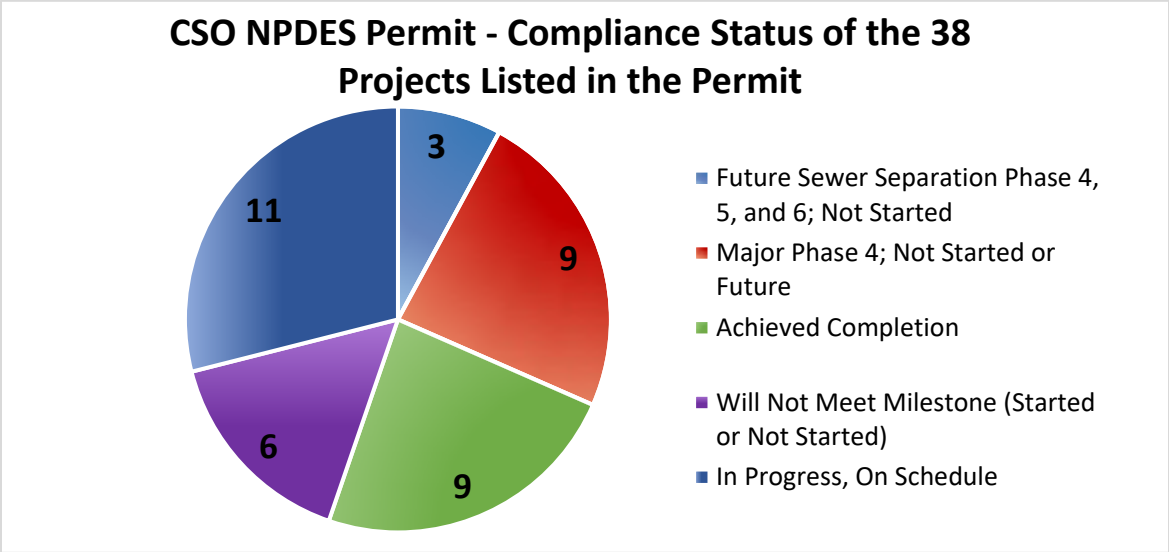
C. Compliance Schedule

As required, a summary of construction activities, actions, and other measures completed according to the Compliance Schedule for Implementation of CSO Control Projects set forth in Part V of the permit are included in this Annual Report (see Figure ES-2):

- Annual Project Progress Reports (APPR) are submitted in Attachment 2 for projects with reportable activity.

- Construction start and completion dates are not expected to meet the LTCP schedule for Ohern-Monroe CSO 119 South Barrel Sewer Separation Project as a result of delays during the development of the Conceptual Basis of Design Report. Construction was scheduled to be completed by June 30, 2023, for Phases 5A and 5B. A Change Notifications Request (CNR) was signed to reflect the new anticipated date of December 31, 2023, for Phases 5A and 5B.
- The Nicholas Street Sewer Extension Phase 3 Project was combined with the 18th and Seward Project as a part of LTCP Phase 6 for more efficient design and construction. The Nicholas Phase 3 Project will now be constructed in two construction contracts, Phase 3A and Phase 3B. This project's construction completion date in the LTCP was December 31, 2021. With the changes shown in the CNR, the overall project will be considered complete when the Phase 3B construction is complete, anticipated in the spring of 2024.
- The LTCP lists construction of CSO 202 Phase 2 to be completed by June 30, 2022. It is anticipated that final design and construction of CSO 203 would be completed prior to the construction of CSO 202 Phase II; given the schedule of CSO 203, a CNR was signed to reflect this delay. The updated anticipated substantial completion date for this project is now September 30, 2025.
- The current cost of the Program is estimated to be $2.362 billion through 2037. Through September 2019, approximately $659 million in costs have been incurred by the City. Significant savings in future costs are anticipated to result from the ongoing optimization evaluation.

Figure ES-2: Compliance Status of the 38 Listed Projects in the Permit



D. CSO Outfall Monitoring

As required, a summary of monitoring data from CSO Outfall 102 is included. The Interim Requirements for CSO Outfall 102, as defined in Table 3, Part II of the NPDES Permit, are in effect for this permit year:

- The conditions for approved bypass of combined sewer complied with these requirements. CSO 102 had 64 days with overflow events. Results from the monitoring are reported on quarterly discharge monitoring reports.
- A permit modification changed the date for the discharge from CSO 102 to meet effluent limits from January 1, 2022 to January 1, 2023. The permit modification was issues on November 1, 2019.
- Interim requirements for the monitoring of CSO Outfall 205 were not in effect this year. As the result of an approved Permit Modification, these requirements are not set to begin until the next permit cycle, with anticipated monitoring to begin in 2024.

E. In-Stream Monitoring

As required, a summary of in-stream monitoring data consistent with the Implementation Monitoring Plan objectives is included. The following is a summary of the City's efforts:

- Sewer Maintenance Division staff monitored seven sites (along the Papillion Creek system) for water quality parameters.
- U.S. Geological Survey (USGS) continued water quality sampling for the City at four sites along the Missouri River and the City monitored one site; therefore, there are five Missouri River sites between the City and USGS in-stream sampling. Data provided by USGS for 2018 and up to July 2019 are approved. Data for 2019 from August to October are considered provisional.
- The City and USGS monitoring locations are listed in Section VII, In-Stream Monitoring Data, and shown on Figure 7-1.
- The USGS data are summarized in Table 7-3 in Section VII, In-Stream Monitoring Data.

F. Performance Report

As required, a performance report is submitted to demonstrate that each CSO overflow occurrence was the result of wet weather, and to report the number of CSO discharges and whether controls are achieving design intent, as follows:

- During the report period, City staff logged 1,821 total CSO checks; 1,536 were post-rain and snowmelt checks, and the remainder were biweekly checks for potential dry weather occurrences. There were a total of 283 routine inspections recorded for the CSO points that the City are able to check. Dry weather CSOs are reported in Section III, Nine Minimum Controls.
- City staff could not historically check CSO 119, Monroe Diversion Structure, for occurrence of overflow by using the common practice of the block program because of extreme and dangerous atmospheric conditions, and difficult accessibility. CSO block devices were installed for CSO 119 at five diversion structures on December 20, 2018. Since then, these block devices have been incorporated into the City's wet weather and routine check procedure.

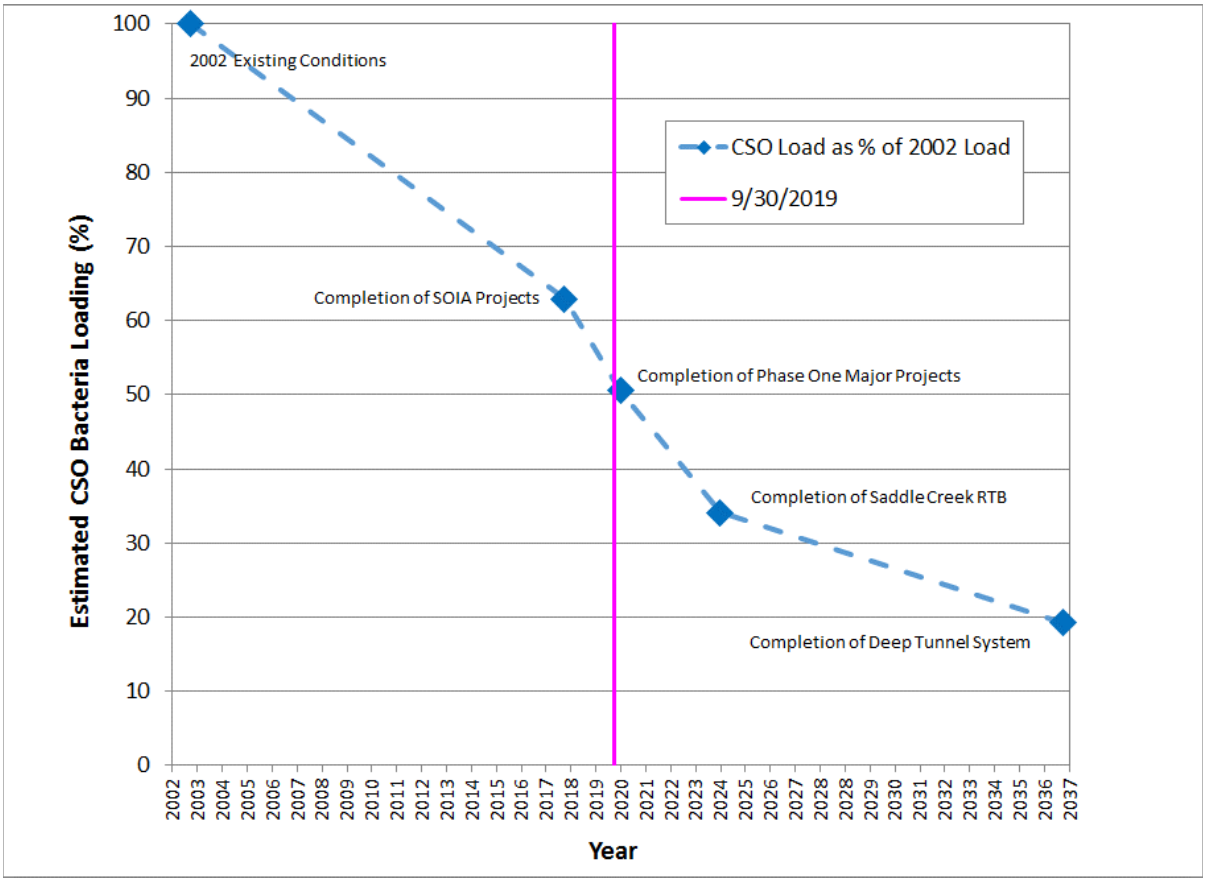
- Table 8-1 in Section VIII, Performance Report, provides a summary of the CSO frequency for each outfall. They range from 2 at CSO 103, CSO 111, and CSO 201 to 54 at CSO 204. Occurrences at CSO 102 are reported by day, so that a single storm might result in a CSO spanning 2 calendar days: the total number at CSO 102 was 64 days.
- The rainfall during the report year was just over 37 inches. When compared against the average annual rainfall of 31 inches, this was a heavier-than-average rainfall year. Eppley Airport rain data registered 131 days with precipitation. Of that, 74 of the recorded rain events were 0.1-inch or greater.
- Attachment 4 contains reporting on CSO occurrence for each rain or snow melt event. Thirteen dry weather occurrences are reported in Section III.E, Prohibition of CSOs during Dry Weather.
- The City evaluated the percent by volume of the combined sewage collected in the CSS during precipitation events on a systemwide annual average basis that has been eliminated or captured for treatment based on the current constructed Wet Weather Controls in place. The 2019 model results show the capture of representative year wet weather volume for the Missouri River Watershed is 56 percent. For the Papillion Creek Watershed, the capture of representative year volume is 84 percent.

G. Other Information

The CSO NPDES Permit, Part VII.F, requires an "Other Information" section of the Annual Report. Information in this section highlights factors relevant to the CSO Program not reported elsewhere. Following is a list and brief description for each item discussed in this year's report:

1. Reduction in the Number of Overflow Events and CSO Outfalls: During this reporting year, the number of CSO outfalls has been reduced by 1 with the reconstruction of CSO 207 diversion to prevent any overflows. No reduction in CSO events were noted.
2. Receiving Water Quality: Previously significant reduction in *E. coli* load to the Missouri River occurred with the implementation of the SOIA Lift Station, Force Main, Gravity Sewer projects, and the MRWRRF Schedule A project. Figure ES-3 indicates a prediction in the reduction of *E. coli* loading over time as a result of LTCP implementation. A further reduction will be realized next spring with the disinfection of the the combined sewage during the recreation season (May 1 to September 30).

Figure ES-3: Modeled E. Coli Reduction over LTCP Implementation



3. Material Management: Waste material including building demolition materials, general construction debris, and soil were taken to landfills and industrial fill sites in the area from construction of capital projects associated with the CSO Program. Several projects commenced or continued construction in 2019, but only a few generated excess soil or waste material that required landfill disposal. Approximately 218 tons of construction and demolition (C&D) waste were disposed of at Mills County Landfill. Approximately 94 tons of soil were taken to an industrial fill site. No hazardous waste was disposed of in 2019. The City monitors and tracks contaminated soils and other waste material and uses this report to update the NDEE Waste Management Division.

4. The City pursued numerous contractor engagement strategies for each project in 2019, aiming to involve the contractor community throughout all project phases. As a result of Omaha's challenging construction market, promoting opportunities and hosting outreach events has proven vital. The CSO Program and REACH hosted contractor outreach meetings to provide project information and encourage informed contractor bidding. Other activities, such as pre-bid meetings, bid notification, early advertisement of bidding documents, and small and/or emerging business (SEB) engagement all contributed to the City's cost management and cost control process of the CSO Program.

5. The City has contracted with a team of consultants to develop a Master Plan for the City's two water resource recovery facilities (WRRFs). The Master Plan impacts the CSO Program in several ways, including evaluating the impacts of wet weather flows at the City's two WRRFs, site requirements at the MRWRRF, and the significant cost of WRRF improvements ,which may affect the implementation schedule of the CSO Program.
6. The CSO Programs Economic Equity and Inclusion Team (EEIT) continues to promote the economic benefits of the CSO Program to various audiences at every appropriate opportunity. This includes working with the REACH program and mentoring young people to purse jobs in engineering and construction.
7. Because of the reliance on large-diameter sewers as part of the CSO controls, the City is implementing an assessment of their conditions. During the late spring and summer 2019, lamping of manholes along the targeted sewers was performed to provide a preliminary indication of pipe and manhole condition, verify access, and determine the anticipated magnitude of debris. The City will be hiring a contractor to perform future evaluations. The results of the individual asset recommendations will be evaluated, specific projects will be identified, and business cases will be provided based on the assets total risk rating.

III. Nine Minimum Controls

As defined in the CSO NPDES Permit, NMCs are operations and procedures that can reduce combined sewer overflows and their effects in receiving water quality, do not require significant engineering studies or major construction, and are consistent with the City's LTCP. The City and the NDEE have worked together over the last several years toward implementing NMCs per U.S. Environmental Protection Agency's (EPA) Guidance Document 832-B-95-003, *Combined Sewer Overflows - Guidance for Nine Minimum Controls* (1995), which states:

- "The NPDES Permitting authority should … develop and issue Phase I NPDES Permits requiring CSO communities to implement the NMCs."
- "The NPDES Permitting authority should… develop and issue Phase II NPDES Permits requiring continued implementation of the NMCs and implementation of an LTCP."
- "Minimum Controls are not temporary measures; they should be part of long-term efforts to control CSOs."

On October 1, 2002, the NDEE issued a CSO Phase I Permit to the City, which contained a series of required submittals and reporting requirements that demonstrated the development and initial implementation of the NMCs. Summaries of the NMC objectives and required submittals are on record in the City's 2007 Combined Sewer Overflow Permit Annual Report NPDES Permit No. NE0133680**.** The collection of submittals and reports are on file at the Sewer Maintenance Division and referred to in this report as the NMC Plan.

On October 1, 2007, the NDEE issued the Phase II CSO Permit to the City. Subsequent CSO Program-related permits were issued in 2010 and 2015, which continue to fulfill the documentation and reporting requirements to assure the NMCs are met in accordance with the following:

- The initial NMC submittals that were a part of the Phase I Permit, as documented in the 2007 CSO Annual Report; and modifications/updates to those initial submittals along with subsequent CSO Annual Reports.
- EPA NMC Guidance.
- EPA CSO Control Policy (April 19, 1994, at 59 Fed. Reg. 18688).

The City has continued to implement the NMCs in accordance with the submittals on record with the NDEE and in accordance with EPA guidance and policy. The NMC documentation that follows is written according to the conditions and requirements of Part IV of the CSO NPDES Permit. Additional information is included to annually document measures of success or identify a focal area of improvement.

A. Proper Operation and Maintenance (O&M)

Per the requirements of the CSO NPDES Permit, proper O&M of the CSS and CSO outfalls should include periodic reviews of O&M procedures, updates to the procedures as needed, and proper procedure documentation. A major emphasis of the NMC is the elimination of

dry weather overflows. When a significant procedure is changed updated or added, the City will provide the required documentation to NDEE. Revisions and additions to the O&M procedures that occurred during the October 1, 2018, to September 30, 2019, reporting period are included in Attachment 1 of this Annual Report and are listed below.

The City continues to follow a periodic review of procedures that are a part of proper O&M of the CSS. The O&M procedures involved are carried out across the several workgroups in the City's Public Works Department, Environmental Services as described in previous CSO Annual Reports.

The SSOMM (Brown & Caldwell, 2006) has historically been reviewed semiannually and has many parts, including the WOER Plan. The following items were updated as a part of the review process during this reporting year:

1) The City continued refinement of the procedures that make up the draft 2019 WOER Plan, which was phased into practice this year, with finalization to occur after a training a feedback session from staff. The roll-out and training was delayed as a result of the Missouri River flooding and wet weather response, however the draft plan was tested during this time and revisions made as a result. This revised Plan will include better clarification of current procedures, a new overflow response form, and sampling procedures, and will be used as a training tool. The WOER Plan and procedure updates will become appendices to the SSOMM. For this report year the following updates are included:

    a. SSOMM Appendix D, *Standard Operating Procedure for Reporting and Public Notification of Bypass, Dry Weather Combined Sewer Overflow & Sanitary Sewer Overflow*: updated contact lists, job titles, acronyms, bypass memorandum, and Overflow Report Form; added organizational chart; added consistent terminology with WOER Plan terms and definitions, overflow scenario diagrams, and how, when, and where to test overflows for water quality (included in Attachment 1).

    The City will host training sessions with the WOER Plan consultant in Quarter Four of 2019 for City staff (particularly O&M response foremen) to gain better understanding of overflow response and mitigation. The finalized WOER Plan will be part of SSOMM with semiannual review.

2) Appendix B: CSO Station & Monitoring Device Procedures and Locations

    a. Consists of a single page list and outline of general instruction for monitoring for wet weather CSOs and prevention of dry weather CSOs, CSO Station & Monitoring Device Procedures and Locations (included within Attachment 1)

        i. Five new CSO check points were added to procedures in the last reporting period, but not updated on this list at that time. These five locations (for the 17th and Monroe area, upstream of CSO 119) were updated on the list during this reporting period.

3) Appendix F: Combined Sewer Overflow Station Procedure Manual has been updated and the updated cover sheet is included within Attachment 1.

4) Sewer Maintenance continued to refine processes related to implementation of field tablets and work management that integrate with GIS-based data management software. The City developed a simple pre-survey manhole inspection form for use by jetting crews to collect basic information to update inventory (for example, cover type and depth from rim to invert) and general condition ratings (included in Attachment 1). Using this approach, the City inspected 1,578 manholes in the CSS area during this reporting year. Manholes that receive a poor condition as noted on the pre-survey were investigated further by technical staff.

Several internal training workshops and guidance documents were prepared; however, they are not part of the SSOMM. The City will continue to adhere to the NMC Guidance to properly operate and maintain the CSS and the CSO outfalls by using current procedures and implementing new procedures as necessary.

B. Maximize Use of the Collection System for Storage

The CSO NPDES Permit requires the City to continue to implement NMC efforts to maximize the use of the collection system for storage as well as review the CSS, as appropriate, to identify locations where minor modifications can be made to increase in-system storage. The permit requires that modifications be implemented as the City is able and documented in this Annual Report.

No modifications were made regarding storage in the collection system during this report period. As noted in Section IV. LTCP Documentation, use of system storage utilization is being evaluated. The following is a summary of practices within the City that contribute to maximizing the use of collection system.

Inspection of the collection system and removal of obstructions. The Sewer Maintenance Division is the primary organization involved with inspection and maintenance of the collection system and lift stations. Procedures are in place to identify and provide corrective maintenance, which includes inspection, cleaning, and removing blockages. Several corrective repairs to inlet, manholes, and pipelines were performed during the Annual Report year. A 5-year cycle jetting program for 15-inch and smaller pipes, and a PM program, are among the practices to meet this control. The City contracts services to clean a small percentage of large-diameter pipelines. The City is also in the process of evaluating transition to a risk-based prioritization approach for sewer inspection and cleaning, using Asset Management principles. For the report year, the City accomplishments include:

- Inspected 96,851 LF in the CSS
    - 22,968 LF were pipe larger than 15 inches in diameter
    - 50,777 LF were PM Basis CCTV
- Performed PM cleaning on 933,853 LF in CSS
    - 742,631 LF were part of the 5-year cleaning program
    - 191,222 LF were part of the additional, more frequent PM program
- Performed corrective cleaning on 103,129 LF in CSS

- Additional PM program improvement efforts continued this year and will be leveraged into future Asset Management efforts to develop a PM Basis document for each PM to document the following:
    - What kind of PM is needed, and why it is needed
    - PM frequency
    - Decision criteria
    - Feedback loop for when to convert the PM into a construction project to eliminate the need for the PM.

Other improvement efforts included:

- Completed 1,578 pre-survey manhole in CSS, simple inspections by jetting crews.
- Pilot tested SL-RAT (sewer inspection acoustic technology), which provides information about sewer blockages for 6-inch- to 12-inch-diameter gravity sewers (199,345 LF of SL-RAT inspections were completed during the reporting period, 613 LF of which were in the CSS).
- Performed 30,275 LF of SL-RAT inspections as quality control to PM cleaning (none in CSS); pilot work will provide benefits from knowledge gained that can be applied to the CSS in the future.
- Performed 112,592 LF of SL-RAT inspection on 2018 annexed areas to provide preliminary condition information (none in the combined sewer area); work included lamping of some pipes. Flagged poor condition pipes for more detailed condition investigation. Followed up with construction contractors and inspectors, resulting in better construction products that meet City standards.
- Evaluated existing Pipeline Assessment Certification Program (PACP) and System Condition Risk-Enhanced Assessment Model (SCREAM) scored inspection data to identify sewer pipes not on a PM schedule but near other PM lines, to determine if they need to be added to PM projects.

- Area Jetting Program underwent quality assurance with a GIS exercise to verify that all 8-inch to 15-inch wastewater collectors are on at least a 5-year cleaning cycle. Several gaps were identified and added to a cleaning schedule.
- As part of the goal of eliminating dry weather discharges through combined sewer outfalls, the City continued to increase efforts to plan for and conduct cleaning of the larger-diameter sewers.
    - Sewer Maintenance implemented a cleaning and televising project of mid-size pipelines 18 to 48 inches in the MR-7.6 and MR-7.8 Sewer Management areas (upstream of the new Leavenworth Lift Station), with the primary goal of identifying debris issues.
- CSO 210 diversion structure current configuration allows for debris to accumulate in the junction box in the conveyance channel to the dry weather pipe that leads to the grit structure. There is currently a design project underway for sewer separation in

CSO 210 area, with a current schedule of completion in 2022. Sewer Maintenance recommended an intermediate improvement to this diversion by 1) reconstructing the flat box channel to a half-pipe with gradient toward the outlet and 2) consider raising the weir a few inches. This work has yet to be completed, however this location is currently on a PM schedule. The Project Team is being consulted to determine potential impacts of interim adjustments to the diversion structure configuration. The diversion remains on a robust inspection and maintenance schedule.

- CSO 207 diversion structure was removed as part of the 42nd and Q Sewer Separation project (OPW 52257). The City monitored the downstream CSO 208 diversion through spring and summer 2019, and determined that CSOs are still occurring. The City will continue investigations in this sewershed to identify remaining sources of wet weather flows and/or inflow and infiltration (I/I) sources through smoke testing next year.
- The City contracted SSES in Sewer Management Areas LP 12.10 and LP-12.12. SSES work consists of collecting field data to determine the condition of sewers and provides a basis for defining the needs for future work such as maintenance activities and rehabilitation. In total, about 73,150 LF was scoped to be inspected and the City completed CCTV on about 62,400 LF (approximately 85 percent). About 10,700 LF of pipe was not CCTVd and about 40 percent of that was in locations on the interceptor. The City was able to CCTV and clean parts of the interceptor; segments not inspected were in areas that were difficult to access. As part of this effort, the City spent about 90 hours on heavy cleaning of debris from the pipes in this project.
- Lamping investigation of 114 manholes was performed as a pre-investigation to assist the scoping of more detailed sewer condition assessment investigations of 11.7 miles of 60-inch- to 144-inch-diameter sewers in 2020.

Maintenance, repair, and replacement of tide (river) and control gates. Gate inspections at key CSO facilities occur once every year, at a minimum, with appropriate follow-up actions. Flap gates are inspected weekly by the Levee and Lift Station when the gates are visible (when river levels do not submerge gates) to confirm the gates are sealing. During the reporting year, elevated Missouri River levels impacted O&M on the collection system and lift stations because reduced velocities in the CSO outfalls along the river allow grit and sediment to settle in the pipes and can increase corrosion. If the river water level is elevated for a long period of time, as it was in 2019, more frequent cleaning of pipes may be needed.

Elevated river levels can also result in intrusion of water from the Missouri River or groundwater into the collection system, particularly in low-lying areas along the Missouri River. The City has an ongoing plan to replace CSO outfall flap gates and/or flap gate seals to reduce river intrusion. The following activities occurred during this reporting year:

- Repairs were made to the three CSO 105 (Minne Lusa) flap gates.
- The City finished the redesign of and re-advertised for the Leavenworth Flood Mitigation project construction bids. The project was redesigned and bid because the original construction bid was too high, and the project was refined to better manage risk. The project is designed to reduce the influence of elevated river levels on the

new Leavenworth Lift Station by maximizing flow to the station via a closed pipe system that is not influenced significantly by river level or intrusion from the CSO 109 outfall pipes.

Future CSO projects, which are still in the planning phases, will consider river intrusion by replacing flap gates at additional CSO outfall locations.

During periods of sustained high river elevations, the City uses existing infrastructure as much as possible to reduce river intrusion. Table 3-1 lists the Missouri River water level gauge heights at the I-480 bridge in downtown Omaha associated with the City's action levels for emergency O&M of the wastewater and levee systems.

Table 3-1. Missouri River Water Level Gauge Heights (in feet) at USGS Gauge 06610000 at I-480 Bridge

Gauge Height (feet)	Description of Impacts Related to Gauge Height
40	Major Flood Stage in Figure 3-1.
34.4	Peak of March 16, 2019.
32	Interstate 680 West between the Mormon Bridge and Interstate 29 begins to flood. Interstate 29 between Crescent and Council Bluffs begins to flood. Moderate Flood Stage in Figure 3-1.
29	Water nears the base of the Council Bluffs levee. Significant lowland flooding occurs in NP Dodge Park, Freedom Park, Tom Hanafan Park, Fontenelle Forest, and Haworth Park. This is the official flood stage action level when the City initiates emergency operations of the wastewater and levee systems. Minor Flood Stage in Figure 3-1.
28	Most of the flood gates for the City of Council Bluffs are closed.
27	NP Dodge Park, Freedom Park, Tom Hanafan Park, and Fontenelle Forest begin to flood.
25	A casino parking lot begins to flood along the Iowa side of the river. In addition, Haworth Park located in Bellevue begins to flood. Action Stage in Figure 3-1.

Table 3-2 lists the Missouri River water level gauge heights near Plattsmouth, NE. The uses these for reference for the PCWRRF emergency O&M due its proximity.

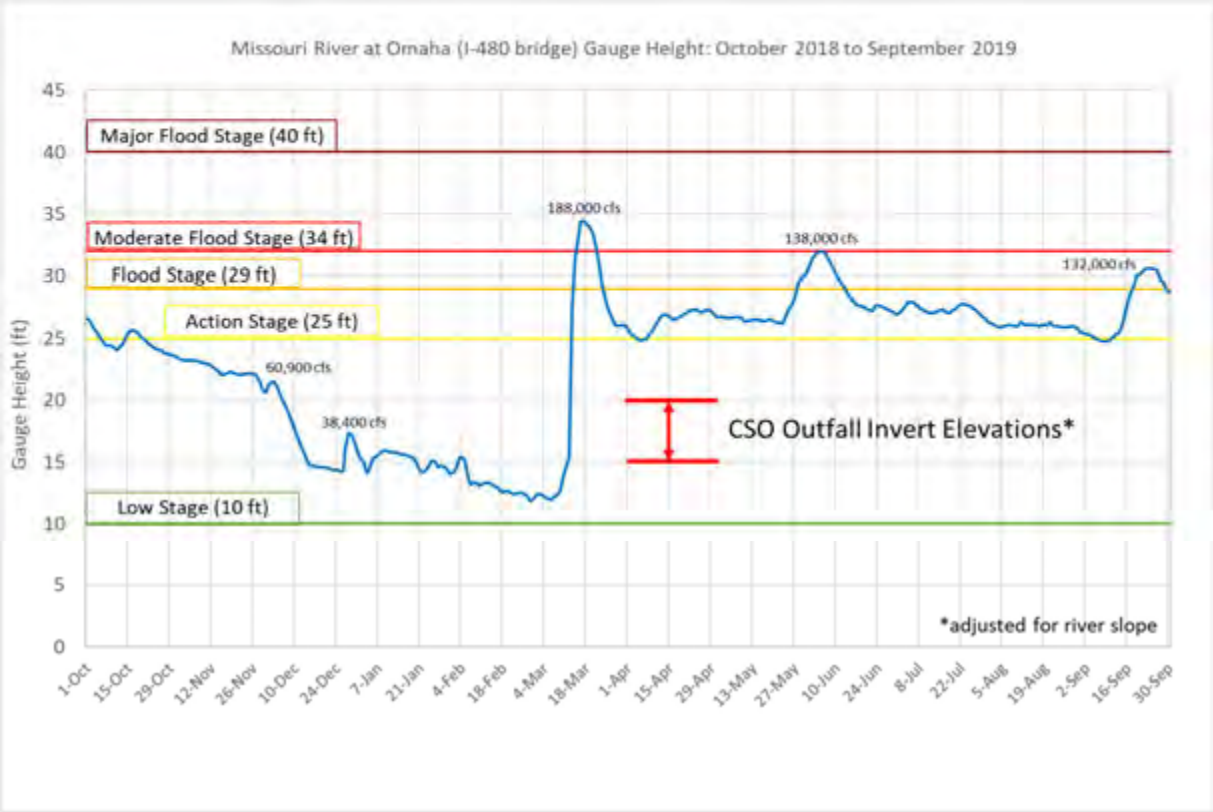
Table 3-2. Missouri River Water Level Gauge Heights (in feet) at USGS Gauge 06805600 at Plattsmouth

Gauge Height (feet)	Description of Impacts Related to Gauge Height
40.6	Peak of March 16, 2019.
39	Levee near PCWRRF overtopped elevation 970 feet NAVD88 on March 15, 2019.
35	Major Flood.
32	Moderate Flood.
26	Minor Flood.
25	Action Level.

In the reporting period, the Missouri River level, as measured by the USGS gauge 06610000 at the I-480 Bridge, sustained elevated water levels for the spring, summer, and up to September 30, 2019. This resulted in submerging most of the CSO outfalls for most of the year and creating saturated groundwater conditions that produced sustained river intrusion into the collection system. The Missouri River level, as measured by the USGS gauge 06805600 at Plattsmouth, is also referenced by the City as a result of its proximity to the PCWRRF. The Plattsmouth gauge also had sustained elevated water levels for the spring, summer, and through September 30, 2019, impacting water surface elevations at the PCWRRF outfall. Figure 3-1 shows the Missouri River Gauge Heights at Omaha (USGS Gauge 06610000) for the 2019 water year. Note that the river levels were above Action Stage from March through September 2019 and were above Flood Stage three times during the year.

Figure 3-1: Missouri River Stage at I-480 Bridge (downtown Omaha) October 2018 through September 2019 with Flood Stages Associated with Action Levels for Operation of Wastewater and Levee Systems Emergency

Source: USGS Gauge 06610000 Missouri River at Omaha, NE



On March 15, 2019, the Papio-Missouri Natural Resources District (NRD) notified the City that flood waters were overtopping levees near the confluence of Platte and Missouri Rivers, including the Papillion Creek levee. As a result, the City shut down and evacuated the PCWRRF, which was subsequently inundated with several feet of floodwaters, inaccessible

for days, and inoperable for several weeks as a result of the flood damages. If the Papillion Creek levee had been higher, the City could have kept the PCWRRF in operation and either pumped the treated effluent out to the river or, if needed, installed and operated temporary bypass pumping of raw sewage from the Papillion Creek interceptor at a location near the PCWRRF. Either keeping the PCWRRF in operation (which was not possible once the levee overtopped) or relieving the interceptor flows via bypass pumping was needed to prevent sewage from backing up into homes and businesses, avoid sewage spilling onto the ground via surcharging manholes, and to protect the health and safety of the public.

Before evacuating the PCWRRF, the City did not open the gate that bypasses Papio interceptor flow from the PCWRRF to the Missouri River near the confluence with Papillion Creek. The City chose to keep the PCWRRF bypass gate closed before evacuating because, based on modeling data and the City's experience during Missouri River flood events, the City assumed that opening the bypass gate would have negatively impacted the upstream community more severely by letting the flooded river backflow into the interceptor and the PCWRRF than the potential impacts of temporary interceptor bypass pumping. Therefore, sewage flowing to the Papio interceptor from the western Omaha metro area (including large portions of Douglas and Sarpy County) rapidly accumulated in the Papio interceptor without being able to drain either to the PCWRRF (which was submerged under several feet of floodwaters) or bypassing the PCWRRF to the Missouri River (which was at historic flood levels). This meant that the Papio interceptor was effectively serving as a storage facility for the sewage with no outlet besides backing up into the lateral systems connected to the interceptor, which ultimately connect to thousands of homes and businesses.

The City's staff immediately began finding accessible locations to install temporary bypass pumping facilities to pump approximately 65 million gallons per day (MGD) (the amount of dry weather flow in the interceptor) of sewage out of the Papio interceptor to the Papillion Creek to keep the Papio interceptor from surcharging at multiple locations. The river levels peaked on March 16, 2019; by March 28, 2019, the City was in the process of moving the distributed interceptor bypass pumping operations to a consolidated location near the PCWRRF.

The PCWRRF was under about 8 feet of water as a result of the March 2019 flood described above, and the Papio interceptor flowmeter just upstream of the PCWRRF was lost. The PCWRRF was unable to operate for several weeks. During this period, City employees and contractors worked around the clock to restore wastewater treatment to the community. The facility was brought back online in sequence over a period of time to ensure that some form of treatment was performed while the rest of the plant was being repaired. The PCWRRF secondary treatment system was operating again by May 16, 2019. Primary treatment had restarted approximately 1 month prior. Disinfection processes were operational since the primary treatment was restarted, however it was not completely effective. At the MRWRRF, the City obtained HESCO baskets from the U.S. Army Corps of Engineers (USACE) to provide containment around the areas of the plant not protected by the levee. The MRWRRF was kept in operation during the flooding, except for the Monroe Lift Station, although the plant was taking flood waters into the system. The Burt Izard Lift Station CSO project was put on hold until river levels decreased because work on the gates required lower river flows. Eriksen, the contractor, was deployed to help get the PCWRRF operational and to perform repairs on the CSO 105 flap gates.

The City used the extended Missouri River levels in 2019 to continue the development and refinement of a High River Operation Plan. This work-in-progress includes identifying critical monitoring of locations impacted by elevated river levels, planning for the possible need to install temporary pumps, and identifying impacts to the system (including changes to the cost, schedule, and design/construction of ongoing projects). These wastewater system impacts are influenced by the way USACE operates the Missouri River by controlling the flow releases from upstream reservoirs. USACE operates the Missouri River system based on many factors, including water levels in the upstream flood control and recreation reservoirs, anticipated snow melt and runoff, precipitation events, and other needs. Because several of the CSO outfalls were submerged by the Missouri River in 2019, the wastewater collection system is impacted by elevated river levels.

The USACE and USGS 2019 water year coincides with this reporting period and the total volume of flow in the Missouri River during this timeframe was the second highest historically (Figure 3-2), by a small margin. The only (slightly) higher total annual volume during that time occurred during the 2011 flood. During the 2019 water year, the 7-day average stream flow in the Missouri River at Omaha was at or above the 75-percent-above-normal flows for most of the year (Figure 3-3). The City is continually adapting O&M plans to improve wastewater system operation effectiveness during high river levels. City staff developed a web-based GIS dashboard for real-time coordination that included information regarding Missouri River current and projected levels, weather forecasts, references to USGS stream flow and level gages, critical flood stages, and locations and status of temporary pumping facilities along the levee and low-lying areas. This GIS dashboard was created and used as the authoritative data source on the 2019 temporary pump sites and flood control infrastructure for flood operations managers.

Figure 3-4 shows the annual flow totals in the Missouri River at Omaha as compared to other water years since 2002, which is another way to illustrate the annual cumulative flow volume data over a period of record shown on Figure 3-2. Figure 3-4 shows annual totals for the water years 2002 through 2019, whereas Figure 3-2 shows the 2019 annual total flow (thick black line) in the Missouri River compared to a longer period of record (back to at least 1957). While elevated water levels in the Missouri River above the Action Level are usually infrequent, what was once an anomaly is becoming a more common occurrence. Note that the 2019 water year was second in annual volume only to the 2011 water year by a small margin.

Figure 3-2: USGS Cumulative Streamflow Hydrograph for Missouri River Stage at Omaha (USGS 06610000), 66-Year Record

Source: https://water.weather.gov/ahps2/hydrograph.php?wfo=oax&gage=omhn1 (accessed October 2, 2019)

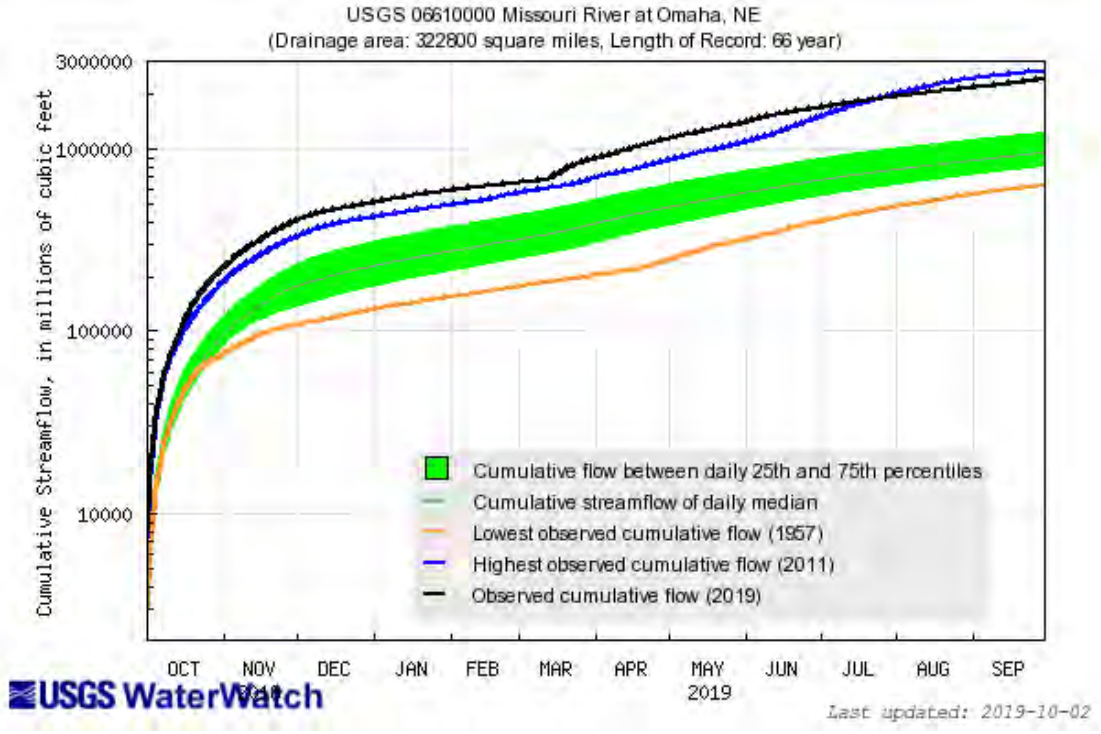
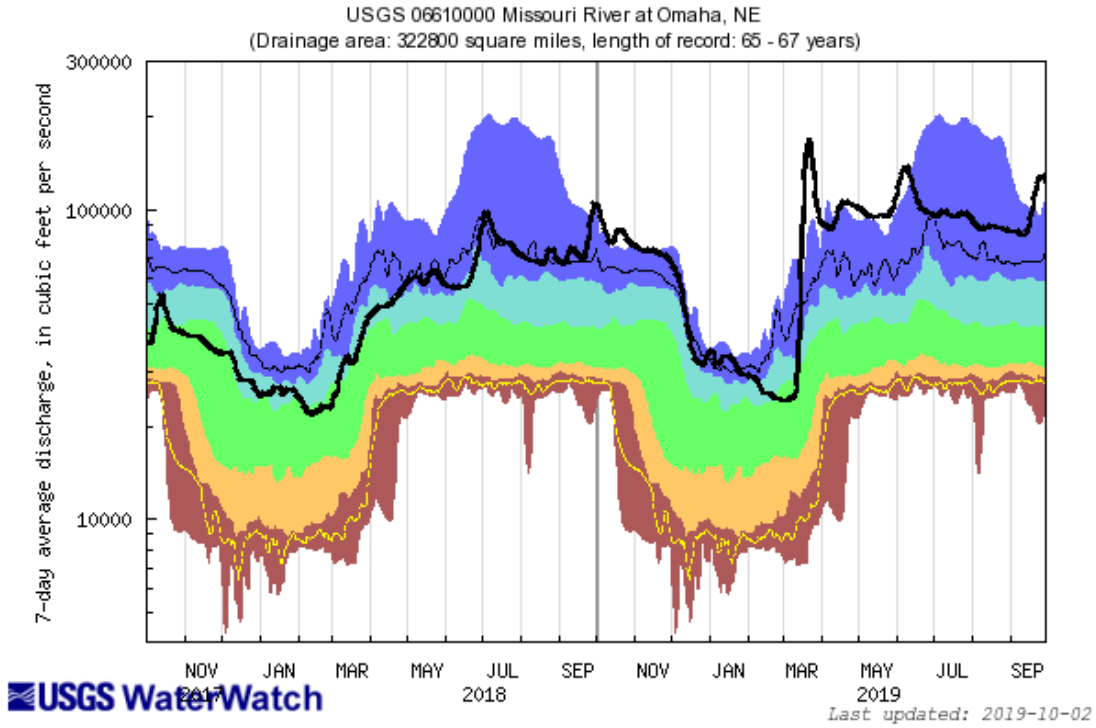


Figure 3-3: USGS 7-Day Streamflow Duration Hydrograph for Missouri River Stage at Omaha (USGS 06610000), 66-Year Record

Source: https://water.weather.gov/ahps2/hydrograph.php?wfo=oax&gage=omhn1 (accessed October 2, 2019)



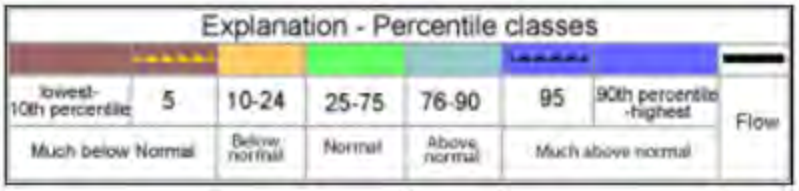
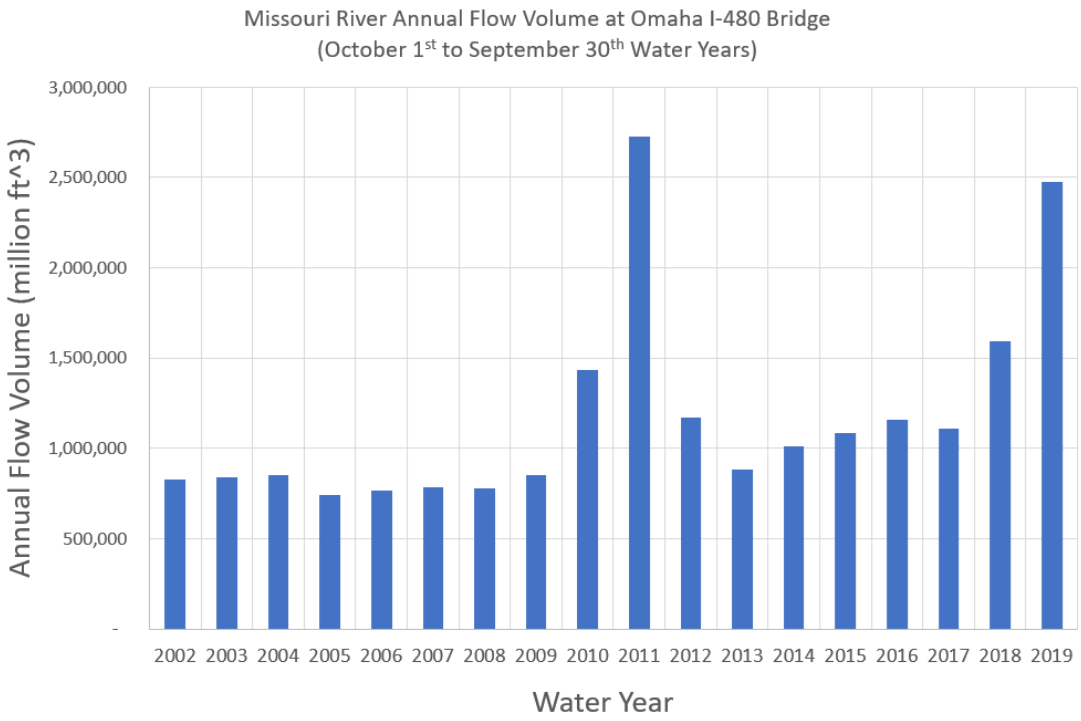


Figure 3-4: Missouri River Annual Flow at I-480 Bridge (downtown Omaha), Volume 2002 to 2019



Installation and adjustment of regulators: Previous studies have indicated that there is limited capacity for in-line storage in the existing sewer system of the Missouri River Watershed. However, ongoing activities described further in Section IV. D. Evaluation of Alternatives (for example, the Optimization work) are evaluating multiple potential alternatives for in-line storage. The use of the sewer model and other technologies to optimize the system that go beyond the NMC requirements may be pursued in the future with the City's adaptive management strategy as part of the LTCP. The City will evaluate the addition and modification of regulators on a case-by-case basis.

In the Papillion Creek Watershed the City uses regulators to maximize in-line storage in the Papillion Creek interceptor to maximize the amount of wet weather that goes to the PCWRRF and minimize activation of CSO 201. As a result of 2019 flooding, the interceptor had to be used to store as much as possible, but water that infiltrated into the system and continuous sanitary flows from upstream consumed most of this storage capacity while river levels were elevated. The Papillion Creek interceptor flowmeter just upstream of the PCWRRF was damaged during the March 2019 flood. The replacement meter will be connected into the plant's SCADA system so the data can be pushed to the Sewer Maintenance Division.

Reduction and retardation of inflows and infiltration: Stormwater management practices are required to be evaluated during the design of all CSO projects for applicability, cost effectiveness, and long-term maintenance requirements. The City continues to include and evaluate these methods of inflow reduction in management of the CSS.

- Two illicit connections were removed from storm and routed to a sanitary sewer: 5611 Howard St. was confirmed April 30, 2019, and rerouting completed by May 10,

2019. 5516 Howard St. was confirmed May 7, 2019, rerouting was completed May 10, 2019. Also, 5011 Capitol Ave was notified to remove downspout connection on May 3, 2019 but the disconnection deadline extends to spring 2020 as a result of complexity.

- An inflow reduction project was completed during the previous reporting period to remove stormwater inlets from loading to the SOIA Lift Station, reducing the wet weather peaking factors at the lift station and overflows to the Monroe Barrels and CSO 119. Documentation of the investigation into inflow sources to the SOIA Lift Station was completed in the spring of 2019. While the major inflow sources were removed, the SOIA Lift Station pumps continued to be worked on to improve performance. More information is provided regarding the SOIA Lift Station pumps in later sections.
- 18th and Fort Sewer Separation project design continued. The primary goal of this project is to reduce and potentially eliminate the surcharging experienced in the 36-inch combined line in Fort Street between approximately 16th and 20th Streets. Despite the extensive sewer separation work that has occurred upstream of this line, wet weather continues to overwhelm the system, regularly displacing the manhole lid at MH 0032057, and leading to combined sewage flooding Fort Street and adjacent properties. Because this 36-inch line directly ties into the North Interceptor, CCTV of the North Interceptor will be conducted with this project. The effects of river intrusion in the North Interceptor and systems feeding into it is yet another factor that needs to be addressed to improve conditions in the area.
- The City recently started developing a more formalized procedure and list of techniques for I/I reduction. This is a task within the current CSO PMT's scope of work but will be used through the combined sewer and separate systems. More details on this are include in Section IX, Other Information.

Although the peak Missouri River levels occurred at 40.6 feet on March 16, 2019 (creating an upset condition as defined in the City's CSO NPDES Permit) the river level was elevated throughout the spring, summer, and fall of 2019, resulting in other impacts to the system, particularly to areas connected to the North Interceptor. On May 28, 2019, the City experienced a significant rainfall (approximately 2 inches) in the CSS area that had a 15-minute intensity meeting the 5- to 10-year recurrence interval. This event impacted the sanitary and combined sewer systems. To alleviate interior flooding in the downtown area, the City informed NDEE of a necessary dry-weather CSO bypass at CSO 105 starting on May 29, 2019 through July 3, 2019. The City also began emergency wet-weather operations plan consisting of bypass pumping in several parts of downtown and at CSO points.

Emergency repairs to the three outfall flap gate structures at the Minne Lusa CSO 105 location began at this time and several attempts were made before repairs were adequate to minimize river intrusion. While CSO 105 was bypassing and the City was performing gate repairs, a force main collapsed that was connected to the downstream North Interceptor system. The City reported the force main failure separately on June 14, 2019, with a follow-up letter to NDEE on June 21, 2019 (501 Avenue H Sanitary Sewer Overflow). This force main is near a 24-inch combined sewer that was impacted by surcharged condition from high river level, which led to loss of soil integrity. To complete the force main repair

and minimize further damages to the system and private property, the City continued bypassing at CSO 105. The CSO 105 bypass ended July 3, 2019, after the force main and gate repairs were completed.

The City recently started developing a procedure and techniques for I/I reduction. More details on this task are include in Section IX, Other Information.

Upgrade/adjustment of pumps: The Sewer Maintenance Division's Levee Group maintains the lift stations associated with the CSO system. Personnel are responsible for maintaining facilities as necessary so that the lift stations perform as designed. During the Annual Report year, the City continued with the design of the pump replacement and lift station upgrades at the Monroe Lift Station to replace aging equipment and increase the pumping capacity to the MRWRRF. The Burt Izard Lift Station Improvements Project to send more flow (total of 50 MGD) to the MRWRRF started construction, and a project commenced design to replace the pumps at the MRWRRF Transfer Lift Station.

Real-time monitoring: The operators at the MRWRRF are responsible for monitoring the SCADA system 24 hours per day. Most remote stations are on the SCADA system, and the remainder have auto dialers. The system includes gates that are controlled remotely to maximize flows into the WRRF. As new facilities are built, permanent meters are installed and connected to the SCADA system for real-time monitoring at the WRRFs.

C. Review and Modification of Pretreatment Programs

The CSO NPDES Permit requires the City to minimize the impacts of discharges into the CSS from non-domestic sources. When new significant industrial users are added to the CSS, the City is required to determine what impact the dischargers would have on the quality and quantity of CSO discharges during wet weather events. In addition, as current Service Agreements with bulk user customers expire every 10 years or there are changes to the wastewater of the wholesale customers, the City continues the ongoing process of renegotiating new agreements with current monitoring requirements and references to state code. For example, as a result of 2019 flooding, the City of Bellevue lost their Paradise Lift Station, which pumped wastewater to the PCWRRF. The City is working with Bellevue as they implement temporary repairs and plan for long-term replacement of this lift station, which may include changes to the service area and monitoring location.

The EQCD is responsible for the review and modification of the Pretreatment Program. The categorical industries with Nebraska Pretreatment Program (NPP) permitted discharges, either through voluntary agreements or through the NPP permit, are requested, whenever possible, to restrict or prohibit discharges during rain events.

A total of 14 categorical industries with NPP permits addressing wet weather discharges were in the CSS area and operating during this reporting period (Table 3-3). Three of the industries listed last year were in the CSS but did not have wet weather discharges and therefore did not have wet weather restrictions. These were included in the 2018 Annual Report because by the time the state issues a NPP permit, it is too late for the City to make changes to add or remove the wet weather restrictions. The City is trying to coordinate with the state to review draft NPP permits before they are final to make changes as needed, however, the state generally does not give the City the opportunity to review draft NPP

permits—the City gets to see the approved permits when they are on public notice on the state website. The posted NPP terms are then in place for a 5-year period.

Table 3-3 includes the current categorical industries with wet weather discharges. All industries are regulated batch dischargers, except Skylark, which is a continuous discharger.

Table 3-3: NPP Industries in CSS

Name	Address	CSO area	Regulated Batch Discharge?
ABS Corp.	7031 No. 16th Street	106 and 107	Yes
G&G Manufacturing	4432 McKinley Street	103	Yes
Industrial Plating	1149 Florence Blvd.	102	Yes
JN-International Medical Corp.	2720 North 84th Street	201	Yes
Koleys	2951 Harney Street	108	Yes
LBT, Inc.	11502 "I" Street	201	Yes
Lozier Corp.	6316 John Pershing Dr.	106 and 107	Yes
Lozier Corp.	4224 No. 22nd Street	107, 106, and 108	Yes
Merck Animal Health	21401 West Center Road	201	Yes
Modern Equipment Company, Inc.	6161 Abbot Drive	106	Yes
Radio Engineering Industries, Inc.	6534 "L" Street	201	Yes
Silverstone Inc.	4350 McKinley Street	103	Yes
Skylark Meats LLC	4430 South 110th Street	201	No, continuous discharger
Syngenta Crop Protection, Inc.	4111 Gibson Road	115	Yes

D. Maximization of Flow to the Publicly Owned Treatment Works for Treatment

The CSO NPDES Permit requires, as appropriate, the City to evaluate and implement simple modifications to the CSS and procedures at the WRRFs to maximize flow to the POTWs and document such modifications in Annual Reports.

In 2005 and 2006, the City evaluated various methods for maximizing flow to the WRRFs. Much of the evaluation supported the decisions that resulted in the LTCP; however, some operational changes were made immediately and are ongoing to allow for better wet weather management and improved water quality. For example, since the new SIFM has become operational the City no longer closes the CSO 106 or CSO 107 dry weather flow gates during wet weather events. Therefore, more flow gets to the MRWRRF. As a goal for this NMC, the City continues to consider ways for maximizing treatment of wet weather flows, which will be incorporated into the next LTCP update.

E. Prohibition of CSOs during Dry Weather

As stated in the CSO NPDES Permit, "Dry weather overflows from the City CSS are prohibited." The City is required to document all dry weather overflows related to the CSS and the measures taken to correct the cause of the overflow and report them in this Annual Report.

The City continues to work to comply with meeting the control of prohibition of dry weather overflows. The City exercises procedures for response, documentation, and reporting of dry weather overflows to prevent subsequent events where possible. Table 3-4 includes summaries of the dry-weather overflows discovered during the report period that did not reach a water of the State. Table 3-5 lists the locations where discharges did reach waters of the State as defined below:

> *"Waters of the State means all waters within the jurisdiction of this State including all streams, lakes, ponds, impounding reservoirs, marshes, wetlands, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface or underground, natural or artificial, public or private, situated wholly or partly within or bordering upon the State."* (Title 123, Ch. 1, Nebraska Department of Environmental Quality)

Additional information for each event was submitted to NDEE, in accordance with reporting requirements in the CSO NPDES Permit.

- There were 21 dry weather overflows or basement backups that were contained and did not reach waters of the State. These resulted from: construction debris or debris/tile and rocks; roots; line defects; water main breaks; sewer overload; private business fats, oil, and grease (FOG) contributor; grease or roots; mechanical malfunctions; power failure; lift station operations affected by high Missouri River levels; and line defects (Table 3-4).
- There were 13 dry weather overflows that reached waters of the State, 8 directly through permitted CSO discharge point and 5 by a waterway or nearby separate storm sewer. Cause included grit/debris in the system, water main breaks, line defects, or mechanical malfunction (Table 3-5).

Each of these events were evaluated for true cause and appropriate long-term corrective action. The City also placed an increased emphasis on sewer design and construction controls. Construction specifications regarding pipeline and manhole channel construction, and removing debris remaining in new pipe, are being enforced with the goal of eliminating maintenance issues and dry weather CSOs. As a result of these efforts, the City has seen better finished products from contractors, and in one case a manufacturer made modifications to their product (manholes) to help meet the City's Specifications requirements. The City has updated the Wastewater Collection Systems Design Manual (adopted August 27, 2019), and Draft 2018 Standard Specifications and Standard Plates for Public Works Construction are out for public comment.

Table 3-4: Basement Backups or Contained Dry Weather Overflows

Start (Discovery) Date	Location of Overflow	Cause	Mitigation Steps	Long Term Corrective Action
10/18/2018	2201 Paul St.	Line Defect Grease Construction Debris	Jet Line	Scheduled Inspection To EQCD for FOG
12/8/2018	4155 N. 65 St.	Construction Debris	Jet Line	Scheduled Inspection
12/26/2018	2704 N. 50 St.	Debris	Remove Debris	Scheduled Inspection
12/27/2018	5028 N. 33 St.	Mechanical Malfunction	Repaired	Repair/Replace Scheduled Inspection
2/15/2019	5817 S. 22 St.	Other	Jet Line Saw Line	Scheduled Inspection
4/4/2019	3026 N. 48 Ave. (Lake James Park CSO Project)	Construction Ops Failure	Containment Repaired	None
5/5/2019	4455 A. St.	Roots	Jet Line	Scheduled Inspection
5/13/2019	2002 Deer Park Blvd.	Line Defect	Jet Line	Repair/Replace To Engineering
5/14/2019	1506 Abbott Dr.	Line Defect	Containment	Repair/Replace
6/14/2019	501 Ave. H	Line Defect	Containment	Repair/Replace
7/8/2019	N. 11th St. and Clark St.	Other	Remove Debris Bypass Pumped	None
7/21/2019	3618 Harrison St.	Beyond City Control	Jet Line Notified Other Entity	(None) Unavoidable
7/21/2019	3630 Harrison St.	Beyond City Control	Jet Line Notified Other Entity	(None) Unavoidable
7/21/2019	3626 Harrison St.	Beyond City Control	Jet Line Notified Other Entity	(None) Unavoidable
7/21/2019	3620 Harrison St.	Beyond City Control	Jet Line Notified Other Entity	(None) Unavoidable
7/21/2019	6822 S. 36 St.	Beyond City Control	Jet Line Notified Other Entity	(None) Unavoidable
7/21/2019	3616 Harrison St.	Beyond City Control	Jet Line Notified Other Entity	(None) Unavoidable
7/21/2019	3715 Harrison St.	Beyond City Control	Jet Line Notified Other Entity	(None) Unavoidable
8/18/2019	3408 S. 50 St.	Construction Debris	Jet Line	(None) Unavoidable
9/20/2019	5028 N. 33 St.	Mechanical Malfunction	Repaired	Repair/Replace

Table 3-5: Dry Weather Overflows Reached Waters of the State

Start (Discovery) Date	Location of Overflow	Duration	Estimated Quantity	Cause	Mitigation Steps	Long Term Corrective Action
11/15/2018	4160 N. 61 St. (CSO 204)	Unknown	5 gpm	Water Main Break	Water Main Repaired	(None) Unavoidable
11/29/2018	Bridge St. CSO 103	Unknown	< 90 gpm	Power Failure	Repaired	Repair/Replace Modify Procedure
12/28/2018	Riverview Lift Station (near 3910 Gibson Rd.)	Unknown	1/2 in deep in a 8 ft box	Debris	Remove Debris	Preventive Maintenance Modify Procedure
12/28/2018	North Interceptor CSO 106 (near 1506 Abbot Dr.)	Unknown	5 inches by 7 feet	Debris	Remove Debris	Preventive Maintenance Modify Procedure
1/31/2019	7229 Bedford Ave.	Unknown	Unknown	Water Main Break	Other	(None) Unavoidable
3/14/2019	Grace St. CSO 107/North Interceptor 106	Unknown	Unknown	Sewer Overload Other, Extended wet-weather overflow, reported as dry weather when 24 hours exceeded	Missouri River flooding related, Other	(None) Unavoidable, City is evaluating long-term measures through the next LTCP update
3/15/2019	CSO 103	Unknown	3 million gpd	Sewer Overload Other	Other	Other Repair/Replace
3/18/2019	4966 Newport Ave.	Unknown	20 gph	Other	Jet Line, Remove Debris	Scheduled Inspection
4/24/2019	599 Marcy St. (CSO 109)	45 minutes	1,000 gpm	Water Main Break	Water Main Repaired	(None) Unavoidable
5/29/2019	7198 JJ Pershing Dr. (Minne Lusa CSO 105)	19 hours	10 MGD	Mechanical Malfunction Sewer Overload	Other	Repair/Replace
6/24/2019	Grace St. CSO 107/North Interceptor CSO 106	3.25 hours	3.12 MG total	Sewer Overload	Bypass Pumped	(None) Unavoidable
7/8/2019	N. 11th St. and Clark St.	Unknown	Unknown	Other	Remove Debris Bypass Pumped	None
8/11/2019	MRWRRF	45 minutes	360,000 gallons	Power Failure	Other	Repair/Replace
8/30/2019	2014 N. 66th St. (CSO 210)	Unknown	2.5 gpm	Debris	Vacuumed, Jet Line	Preventative Maintenance OPW Project

< = less than
gpd = gallons per day
gph = gallons per hour
gpm = gallons per minute
MG = million gallons

F. Control of Solid and Floatable Materials in CSOs

The CSO NPDES Permit restates the objective of this NMC as "control of solid and floatable materials in CSOs is intended to reduce visible floatables and solids using relatively simple measures." The permit requires the City to, as appropriate, re-assess and implement site-specific processes to control solids and floatables in CSOs using relatively simple measures. Re-assessments, the conclusions, and implementation of control measures are documented in this Annual Report. During the reporting year, City staff cataloged grit facilities and stormwater facilities and developed information packets for maintenance crews so they have ready access to information on how to properly maintain the facilities.

Based on previous evaluations, many of the CSO points are not conducive to the implementation of floatable controls without significant modification. Some of the existing screening facilities were impacted by the 2019 flooding. There is a set of bar racks at the CSO 107 Grace Street diversion. The north bar rack was operational during the reporting year, but the south bar rack was removed in 2011 and has not been replaced. The Grace Diversion Bar Rack Project A project to replace both the north and south bar racks is being performed by Erikson Construction (OPW53254) and was started in spring 2019 but was put on hold as a result of the sustained high Missouri River levels and leaking bulkheads and flap gates. Eriksen plans to continue work in the CSO 107 diversion structure in mid-December 2019, when the river level is expected to be low enough (less than 15 feet gauge height at I-480 bridge USGS gauge) to resume work. The floatables screen in the Grace Street ditch CSO channel downstream of CSO 106 North Interceptor and CSO 107 Grace Street (near the access road off N 6th Street from Abbot Drive) was damaged by the March 2019 flooding. This is a traveling rake arm that was inundated and ceased to work electrically. To address the potential issue of blinding the screen during CSO events, the City removed one of the racks that were part of this floatables removal system and continued to function that way through the reporting period, as the City develops a project for repairing the screening system and tries to secure FEMA reimbursement. There are also two horizontal, manual bar racks just upstream of the flap gates downstream of CSO 108 (Burt-Izard). The north bar rack was dislodged and got stuck in the north flap gate during a rain event during summer 2019. It sustained enough damage to prohibit reinstallation, so it was removed. Erickson Construction is scheduled to replace both bar racks as part of their ongoing work at the Burt Izard Lift Station.

These sites continue to be maintained by the Levee Group (part of the Sewer Maintenance Division). As new stormwater facilities are built, grit and floatables controls are incorporated into these designs. Construction at the Burt Lift Station was underway for the report year—when completed in 2021, it will include replacement of the existing and mechanically cleaned bar screen, addition of a gate for channel isolation, a new bar rack, and concrete modifications to the screen channel to accommodate the new bar screen and gate in the Bar Screen Room. The work will also include updating the Bar Screen room for addition of a second screen, new gates, installation of new screenings handling, and replacement of the existing flap gates on the CSO 108 outfall pipes. When the improvements are complete, the City will allow flow from the Burt Izard Lift Station to flow through the new SIFM and improve floatables controls to improve pump operations.

The City also began work to design improvements to the 6th and Leavenworth Grit Facility (not a CSO Program project), which will continue to be used after the construction of the Leavenworth Flood Mitigation CSO Project. The purpose of the Flood Mitigation Project is to maximize dry weather and some wet weather flows to the new Leavenworth Lift Station, while preventing river intrusion to the lift station during high river conditions.

G. Pollution Prevention

As stated in the CSO NPDES Permit, "Pollution prevention is intended to keep contaminants from entering the CSS and accordingly the receiving waters by way of the CSOs." The CSO NPDES Permit requires the City to document in this Annual Report any new pollution prevention measures enacted by the City.

Pollution prevention efforts are shared between several divisions and work groups within the Public Works Department. Most records for pollution prevention are compiled and included in an Annual Report as required by the City's MS4 NPDES Permit NE0133698. Specifically, the MS4 Annual Report contains a section on Pollution Prevention/Good Housekeeping and includes a summary of storm sewer cleaning and other sewer maintenance records as well as street sweeping efforts from January 1 to December 31, 2018.

A specific query of routine PM jet-vac tasks for the 2018-2019 Annual Report period showed that the City completed the following tasks:

- 305 work orders, with 193 of these on the combined system.
- Unplanned cleaning tasks on 1,406 storm structures (for example, inlet/catch basin, grated manholes, and/or junction boxes):

Additional measures for pollution prevention in the sewer collection system are shared duties between the Sewer Maintenance Division O&M Group and the Levee Group for sewer system grit removal. In general, the Levee Group is responsible for the maintenance of structures associated with the CSO lift stations, the CSO screens located at CSO 106/107 and CSO 108, and aerated and non-aerated grit facilities associated with some of the larger CSO points. The Sewer Maintenance O&M Group is responsible for maintenance of small grit pits located throughout the collection system, with some of these being associated with diversion structures and pits located near the smaller CSO overflow points. Each Maintenance Group is responsible for recording and documenting their own activities. The Levee Group maintains these records in a log located at the MRWRRF. The Sewer Maintenance O&M Group tracks work in Cityworks AMS, a GIS-centric and web-based software package to help schedule and track operations and maintenance work.

The EQCD also continues its outreach through the Papillion Creek Watershed Partnership and through a contract with Keep Omaha Beautiful to implement a stormwater pollution prevention and public education program that also provides benefits to the CSO program. No additional pollution prevention measures have been implemented during this report period.

H. Public Notification

As stated in the CSO NPDES Permit, "Public notification is intended to inform the public of location of CSO outfalls, occurrences of CSOs, plus health and environmental effects of

CSOs." The CSO NPDES Permit requires the City to document revisions or updates to public notification procedures in the Annual Report and include public announcements related to CSO discharges.

Locations of CSOs have been identified for the public through specific signage posted near the outfalls, as well as along marina locations and public trails that parallel receiving streams. Per standard procedure, signs at the CSO outfalls are inspected twice per year for visibility and condition. Procedure responsibilities continue to be carried out by Sewer Maintenance Division staff. CSO outfall sign inspections were completed in this reporting period in fall 2018 (from October 9 through 22, 2018 and January 10, 2019, once the Missouri River water levels receded further) and spring 2019 (April 24 and 25, 2019). Some spring 2019 CSO sign inspections were not completed (signs were submerged) or delayed because of the high Missouri River levels. The City has work orders in place to replace or repair missing or damaged signs.

For occurrences of dry weather overflows, overflows that continue after the effects of wet weather have subsided, or any other instance of a non-permitted overflow or bypass, the City follows reporting requirements outlined in the City's *Standard Operating Procedure (SOP) for Reporting and Public Notification of Bypass, Dry Weather Combined Sewer Overflow & Sanitary Sewer Overflow*, which was updated this reporting year as described in Section A of this report and is included in Attachment 1. This SOP is reviewed semi-annually. No other policies or procedures for Public Notification have been revised or updated.

Public notifications were issued during the reporting period because of the following reasons: significant untreated wastewater discharges from the flood-damaged PCWRRF; non-operational Monroe Street Lift Station at Monroe Street CSO 119 on March 15, 2019; the North Interceptor was significantly surcharged by the Missouri River, resulting in local issues with service to customers that was temporarily addressed by the intentional dry weather bypass from CSO 105 from May 29 to July 3, 2019. These were significant dry weather overflows at CSOs. Public Works Assistant Director-Environmental Services determines "Significant" qualification in conjunction with NDEE, on a case-by-case basis under these guidelines: duration greater than 24 hours; quantity greater than 100,000 gallons, considering nature of pollutants and location. A summary is provided documenting public informational methods with regards to understanding CSOs and the CSO program in LTCP Documentation for Public Participation.

I. Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls

As stated in the CSO NPDES Permit, "Monitoring to Characterize CSO impacts involves inspections and other simple methods to determine the occurrence and apparent impact of CSOs." The CSO NPDES Permit requires the City to document in this Annual Report any additional CSOs discovered by the City during routine inspections.

Information on efforts made during implementation of the LTCP to characterize the CSS system can be found in Section IV.A, Characterization and Modeling of the CSO System. No additional CSO outfalls were identified during this reporting year. The OPW 52257 42nd and Q St. Area Sewer Separation Project removed the existing CSO 207 diversion structure. The CSO 208 diversion is downstream of the 42nd and Q St. project area and was monitored for overflows during the reporting period. Monitoring of existing overflow locations near

15th and Monroe Street (upstream of CSO 119) was performed during the reporting year. Monitoring of CSO impacts is reported in this section as per previous years' reporting. The efficacy of CSO Controls is in Section VIII, Performance Report.

Monitoring of CSO Impacts

During the implementation of this NMC, under requirements of a preceding NPDES Permit, a report to record beach closings, wash-up of floatables, fish kills, hazards to navigation, and basement flooding caused by CSO events was established. The following is provided to meet this requirement:

In the period of October 1, 2018 to September 30, 2019 there were no known beach closings or fish kills. The City did issue advisories to downstream users for each of the Missouri River flood notices when the PCWRRF was not fully operational, until full treatment resumed at the PCWRRF around May 20, 2019. There are no records of washed-up floatables.

The City monitors and tracks any occurrence of basement backup or manhole overflows in the CSS. Dry weather occurrences are reported in Section III.E, Prohibition of CSOs during Dry Weather. During the report year, 23 basement backups were recorded during wet weather. They were primarily related to 3 large wet weather periods with 6 significant events; 9 in mid-March, 13 at the end of May and early June, and 1 in late September. These wet weather events caused issues in multiple locations, due in part to the fact that the sewer system overall was stressed as a result of the sustained high river levels. Four additional wet weather overflow occurrences were at manholes or intentional bypasses at CSO outfalls during these same time periods. The storm events are outlined in Table 3-6, and additional information regarding these three reported events are listed in Table 3-7.

Table 3-6: Storm Events

Date	Duration (Hours)	Total Rainfall (Inches)	Reoccurrence Interval (NOAA)
March 12-14, 2019	~3 days	1.72	< 1 year
Summary: Daily peak 1.08 inches, peak duration ~3.25; peak hour intensity = 0.35 inch; 3 days of light rainfall and historic snow melt, caused record flowrates in the Papillion Creek system.			
March 22, 2019	2.5	0.26	< 1 year
Summary: Peak Hour intensity of 0.14 inch per hour			
May 28-29, 2019	1.0	1.92	5 year
Summary: Peak Hour intensity of 1.54 inches per hour, Peak 15 minute = 1.02 inches			
June 3, 2019	2.0	0.50	< 1 year
Summary: Peak Hour intensity of 0.30 inch per hour			
September 19, 2019	3.5	2.17	2 year
Summary: Peak Hour intensity of 1.15 inches per hour			
September 21-22, 2019	17hrs	2.49	5 year
Summary: Peak Hour intensity of 1.55 inches per hour. Peak 15 minute=1.12. Also 2.63 inches on 9/19/2019			

Table 3-7: Reported Basement Backups or Manhole Overflows During Wet-weather CSOs

Date	Category	Location of Overflow	CSO Outfall
3/13/2019	CSO - Excursion (Confined to Basement or Private Property)	1902 Martha St.	CSO 109 – Leavenworth CSO 121 – Jones
3/13/2019	CSO - Excursion (Confined to Basement or Private Property)	1506 Spring St.	CSO 115 – Riverview
3/13/2019	CSO - Excursion (Confined to Basement or Private Property)	2605 S. 13 St.	CSO 115 – Riverview
3/13/2019	CSO - Excursion (Confined to Basement or Private Property)	6313 Boyd St.	CSO 204 – Cole Creek
3/13/2019	CSO - Excursion (Confined to Basement or Private Property)	3928 N. 37 St.	CSO 105 – Minne Lusa
3/13/2019	CSO - Excursion (Confined to Basement or Private Property)	1477 Ames Ave.	CSO 107 – Grace
3/14/2019	CSO - Overflow in CSO Service Area (Not at Outfall) – Bypass pumping to Grace St. ditch	Grace St. CSO 107/ North Interceptor 106	CSO 106 – North Interceptor CSO 107 – Grace
3/14/2019	CSO - Excursion (Confined to Basement or Private Property)	1814 Fort St.	CSO 106 – North Interceptor
3/14/2019	CSO - Overflow in CSO Service Area (Not at Outfall) - Street Flooding	9th and Grace St.	CSO 107 – Grace
3/22/2019	CSO - Excursion (Confined to Basement or Private Property)	1619 S. 54 St.	CSO 205 – Saddle Creek
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	3929 N. 42 St.	CSO 105 – Minne Lusa
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	4006 N. 42 St.	CSO 105 – Minne Lusa
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	1809 N. 46 Ave.	CSO 205 – Saddle Creek
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	2021 N. 30 St.	CSO 107 – Grace
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	4323 S. 17 St.	CSO 117 – Missouri Avenue
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	2626 N. 68 St.	CSO 202 – Cole Creek
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	1901 NW Radial Hwy.	CSO 205 – Saddle Creek
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	3512 N. 39 St.	CSO 105 – Minne Lusa
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	3906 N. 48 St.	CSO 105 – Minne Lusa

Date	Category	Location of Overflow	CSO Outfall
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	4253 Wirt St.	CSO 105 – Minne Lusa
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	1814 Fort St.	CSO 106 – North Interceptor
5/28/2019	CSO - Excursion (Confined to Basement or Private Property)	4531 Hamilton St.	CSO 205 – Saddle Creek
5/29/2019	CSO - Overflow in CSO Service Area (Not at Outfall)	11th St. and Avenue H	CSO 107 – Grace
6/3/2019	CSO - Excursion (Confined to Basement or Private Property)	2912 Pratt St.	CSO 107 – Grace
9/21/2019	CSO - Overflow in CSO Service Area (Not at Outfall)	N 12th and Mike Fahey St.	CSO 108 – Burt Izard

All basement backups and manhole overflows are evaluated for actual cause or conditions that lead to the backup or overflow. Omaha Public Works Environmental Services engineering groups will refer properties for back-water valves if CSS capacity is determined to be the cause. Sewer system evaluation surveys are referred if chronic occurrences and regions of the service area are affected by wet weather. In some cases, minor repairs to reduce I/I sources are completed. The City uses all assessment information to determine if a capital project may be required or if modifications to O&M procedures are needed.

IV. LTCP Documentation

The City submitted the original LTCP to NDEE September 25, 2009, in fulfillment of NPDES Permit requirements and EPA's CSO Control Policy. The LTCP was approved by NDEE on February 10, 2010. An update to the LTCP was submitted to NDEE September 29, 2014, which was approved by NDEE January 23, 2015. Minor modifications to the LTCP Update were submitted and approved by the NDEE April 3, 2015; August 28, 2015; July 19, 2017; May 20, 2019; and July 9, 2019.

Through the Permit and Consent Order, the City is required to submit documentation and reports applicable to the LTCP in its Annual Report according to the conditions and requirements specified in each document. The following nine sections in this Annual Report address those requirements and are presented in the same order that is outlined in Part VIII of the Permit.

A. Characterization and Modeling of the CSO System

As stated in the CSO NPDES Permit, protocols for characterization, monitoring, and modeling of the CSS are included in Section 2 of the 2009 LTCP, Baseline Conditions/Study Basins Descriptions. This section of the LTCP addressed the response of the CSS to various precipitation events; identified the number, location, frequency, and characteristics of CSOs; and identified water quality impacts that resulted from CSOs. The LTCP Update provided new information on these items. The permit requires the City to continue to characterize, monitor, and model the CSS. A narrative summary of changes during the last 12 months to the characterization, monitoring, and modeling of the CSS as construction and sewer separation projects are implemented must be included in each Annual Report.

Currently the CSS is almost completely mapped in GIS with regular updates occurring as field differences are discovered or per as-built record drawings for projects. The CSO system characterization continues to be updated as LTCP projects are designed and implemented. Consultants are asked to review existing system data and to gather additional information to form the basis of their designs. The data and designs are then included in the City's computer model to ensure the level of control specified in the LTCP is ultimately achieved. The following is a summary of the City's activity during this report period.

Characterization Efforts

Characterization efforts of the CSS can be broken down into three areas:

1. **Documentation and recording of additional collection system information:** As part of the study phase for sewer separation projects, field data are obtained on the conditions of the CSS, such as smoke testing, CCTV of sewer lines, dye testing, and condition and manhole evaluation and lamping. In addition, the City conducts its own SSES, either with City staff or through managed field services contracts. Survey findings are incorporated back into the City GIS, which results in updated sewer mapping. Improvements to the collection system that result from the completion of CSO and other projects are then uploaded back into the City's GIS.
2. **CSO Block Program:** The City maintains a block program, also commonly referred to as CSO device checks. Under this program a "block" or some type of device is

placed to indicate if there is an overflow. Section VIII, Performance Report, discusses the results of this program.

3. **Flow monitoring:** Temporary and permanent flow monitoring continue in both the CSS and sanitary collection system to support long-term planning and individual projects. Rainfall monitoring is included in this effort. Further information is below.

Monitoring Efforts

The City has been performing flow monitoring of its CSS, specifically related to the characterization of the system, since 2004. The City continued City-wide flow monitoring of the Papillion Creek Interceptors and conducted temporary flow monitoring in multiple locations. For the reporting year, 33 permanent flow monitoring sites and 29 temporary flow monitoring sites supported a variety of studies. Additionally, the City gathered precipitation data using 12 permanent City-managed and 9 temporary consultant-managed rain gauges. The City also obtained radar processing of rainfall data from April 1 through July 31, 2019, to provide increased spatial accuracy. The Sewer Maintenance Division coordinates with the CSO Program Management Team and other City divisions to plan the flow and rain monitoring program and meet the needs of the CSO Program.

Figure 4-1 provides a location map for the flow monitors and rain gauges used in 2019, including locations of gauges within the Papillion NRD alert rain gauge system, which is used to supplement the City's rain gauge network. Rain gauges are listed in Table 4-1, and permanent and temporary flow monitoring locations are listed in Tables 4-2 and 4-3, respectively.

Table 4-1: Rain Gauges

Rain Gauge Title	Longevity	Purpose
RG 1 - 10205 U St. (Oak Heights Pool)	Permanent	Sanitary
RG 2 - 3200 Ed Creighton (Hanscom Park)	Permanent	CSS
RG 3 - 5120 Maple St. (Benson High School)	Permanent	CSS
RG 4 - 4845 Curtis Ave. (Wakonda Elementary School)	Permanent	CSS
RG 5 - 1313 N. 156th St. (Grace Abbott Elementary School)	Permanent	Sanitary
RG 6 - 5304 S. 172nd St. (Russell Middle School)	Permanent	Sanitary
RG 7 - 7198 JJ Pershing Dr. (Minne Lusa Grit Station)	Permanent	CSS
RG 8 - 5425 S. 43rd and T St. (Roth)	Permanent	CSS
RG-9 - 100 Martha St. (Martha CSO Diversion)	Permanent	CSS
RG-10 - 19615 Old Lincoln Highway (Elkhorn WRRF)	Permanent	Sanitary
RG-11 - 24th and Dodge (Family Lutheran Service Building)	Permanent	CSS
RG-12 - 2232 S. 64th Ave. (Aksarben Village Parking Garage)	Permanent	CSS
TREKK 2019 RG 1 - 6275 N. 30th St.	Temporary	CSS
TREKK 2019 RG 2 - 3602 Vinton St.	Temporary	CSS
TREKK 2019 RG 3 - 1049 S. 20th St.	Temporary	CSS
TREKK 2019 RG 4 - 4916 S. 24th St.	Temporary	CSS
TREKK 2019 RG 5 - 2214 Washington St.	Temporary	CSS
TREKK 2019 RG 6 - 3105 Q St.	Temporary	CSS
TREKK 2019 RG 7 - 6940 Dodge St.	Temporary	CSS
TREKK 2019 RG 8 - 4951 Dodge St.	Temporary	CSS
TREKK 2019 RG 9 - 6710 Grover St.	Temporary	CSS

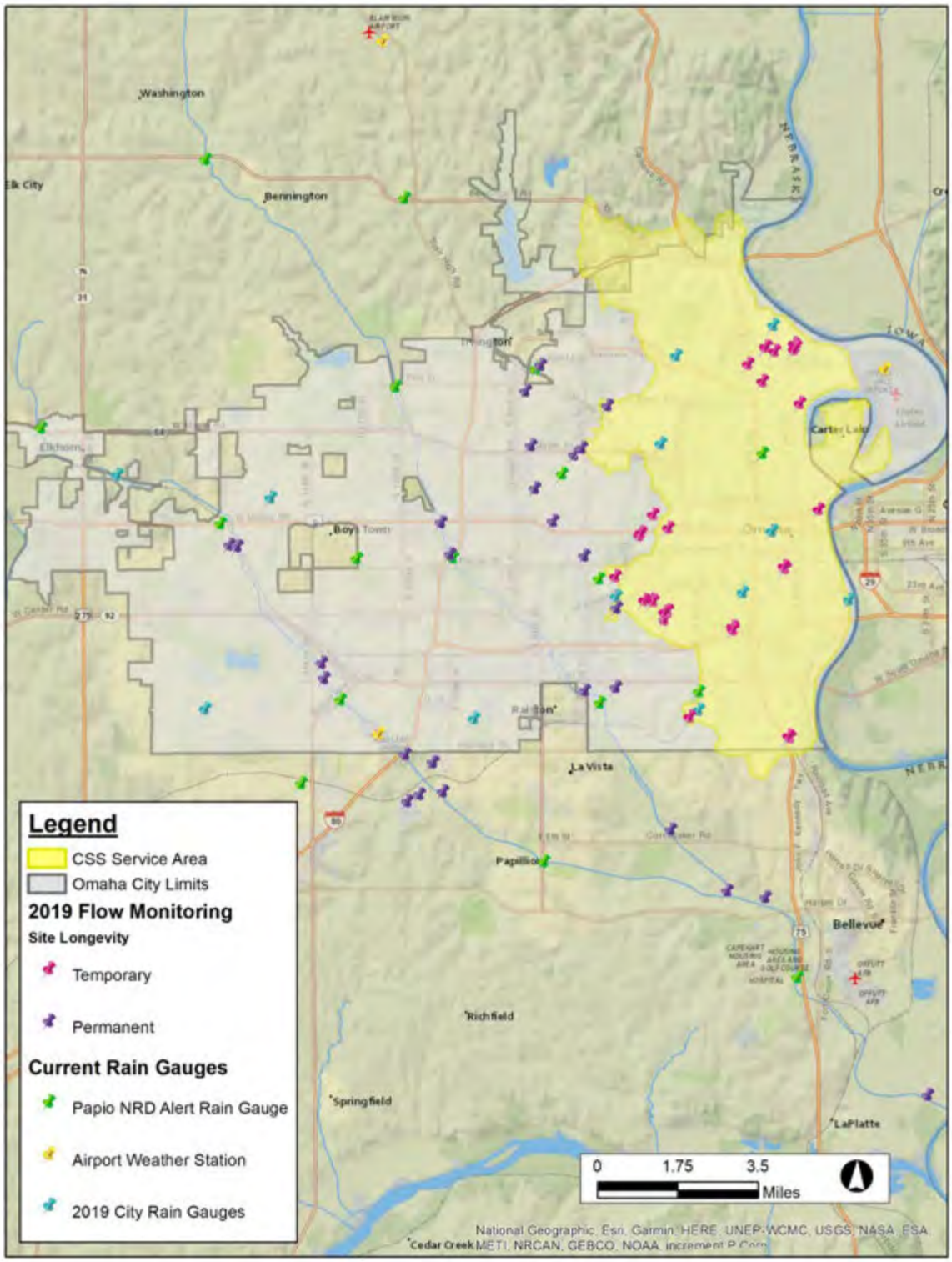
Table 4-2: Permanent Flow Monitoring Sites

Location	Pipe Size	Longevity	Purpose
0225352 - 6900 Ames Ave.	30-inch circular	Permanent	CC Int.-E/CSS
0225354 - 6900 Ames Ave. North	12-inch circular	Permanent	CC Int.-E/CSS
0225354 - 6900 Ames Ave. Southwest	21-inch circular	Permanent	CC Int.-E/CSS
0246042 – 7601 Corby Circle	24-inch circular	Permanent	CC Interceptor-W
0247046 – 7306 Maple St.	18-inch circular	Permanent	CC Int.-E/CSS
0265099 - 8019 Cass St.	42-inch circular	Permanent	LP Interceptor
0293022 - 1501 N. 85th St.	36-inch circular	Permanent	LP Interceptor
0297005 - 3020 Keystone Dr.	24-inch circular	Permanent	LP Interceptor
0302017 - 8769 Browne St.	30-inch circular	Permanent	LP Interceptor
0390004 - 10875 West Dodge Rd.	30-inch circular	Permanent	LP Interceptor
0692078 - 2615 S 64th Ave.	10-foot by 12-foot box	Permanent	Saddle Creek CSO Outfall
0699028 - 6303 L St.	66-inch circular	Permanent	LP Int./CSS
0719008 - 4949 South 66th Plaza (removed in March 2019)	72-inch circular	Permanent	Sanitary
0726052 - 402 Rose Blumkin Dr.	60-inch circular	Permanent	LP Int./CSS
0737008 - 7310 N. Plaza	72-inch circular	Permanent	BP Interceptor
0839020 - 10800 Leavenworth St.	54-inch circular	Permanent	BP Interceptor
0941005 - 4131 S. 143rd Circle	48-inch circular	Permanent	WP Interceptor-W
0942004 - 4526 S. 140th St.	30-inch circular	Permanent	WP Interceptor-E
1141001 - 16226 Harney St.	18 inches	Permanent	WP Interceptor-E
1141017 - 323 S. 166th St.	30 inches	Permanent	WP Interceptor-W
4001001 - 15705 Harlan Lewis Rd.	9-foot x 9-foot box	Permanent	Papio Int./CSS
4026001 - 25th and Hwy. 370	96-inches	Permanent	Papio Int./CSS
4051002 - 11820 Harry Andersen Ave.	60-inch circular	Permanent	WP Interceptor
4052005 - 10808 Olive St.	18-inch circular	Permanent	Hell Creek Int
4052015 - 10900 Harry Andersen Ave.	72-inch circular	Permanent	WP Interceptor
4052051 - 11435 S. 36th St.	78-inch circular	Permanent	WP Interceptor
4052060 - 10808 Olive St.	30-inch circular	Permanent	Hell Creek Int
4062002 - 8970 S. 48th St.	90-inch circular	Permanent	LP Int./CSS
4079029 - 8001 S. 120th St.	30-inch	Permanent	SP Interceptor-N
4088200 - 8001 S. 120th St.	42 inches	Permanent	SP Interceptor-S
0515351G - MRWRRF- SIFM	48-inch force main	Permanent	Lift station
0517512 - Leavenworth Diversion	144 inches x 100 inches	Permanent	Lift station (level only)
0517514 - Leavenworth Interceptor	54 inches	Permanent	Lift station (level only)

Table 4-3: Temporary Flow Monitoring Sites

Location	Pipe Size	Longevity	Purpose
0012131 - 14th Ave. and Ames Ave.	72 inches	Temporary	CSO
0016001 - 6405 JJ Pershing Dr.	10 inches	Temporary	RNC/Post Separation
0016103 - 6425 N. 16th St.	10 inches	Temporary	RNC/Post Separation
0035040 - 6315 Florence Blvd.	72 inches	Temporary	CSO
0036016 - 6847 N. 16th St.	10 inches	Temporary	RNC/Post Separation
0052156 - 26th and Fort	21 inches	Temporary	CSO
0056356 - 25th Ave. and Reddick Ave.	60 inches	Temporary	CSO
0079002 - 30th and Laurel	44.5 x 43 inches	Temporary	CSO
0140019 - 50th St. and Capitol Ave.	10 inches	Temporary	CSO
0166080 - Happy Hollow Blvd. and California St.	12 inches	Temporary	CSO
0556147 - 20th St. and Pierce St. (Influent)	60 x 84 inches	Temporary	CSO
0556162 - 1321 S. 20th St.	48 inches	Temporary	CSO
0556165 - 20th St. and Pierce St. (Overflow)	60 x 54 inches	Temporary	CSO
0571004 - Railroad Ave. and Jefferson St. (South Barrel)	114 x 132 inches	Temporary	CSO
0571054 - 6525 Railroad Ave.	132 x 132 inches	Temporary	CSO
0571057 - Railroad Ave. and Jefferson St. (North Barrel)	132 x 132 inches	Temporary	CSO
0599359B - 35th and Vinton (effluent)	24 inches	Temporary	CSO
0599517 - 35th and Vinton (facility overflow)	36 inches	Temporary	CSO
0599523 - 35th and Vinton (influent overflow)	36 inches	Temporary	CSO
0645025 - 45th St. and U St.	12 inches	Temporary	CSO
0655013 - 2620 S. 50th St.	36 inches	Temporary	CSO
0655026 - 5034 Bancroft Circle	15 inches	Temporary	CSO
0655053 - 5047 Frederick Circle	78 inches	Temporary	CSO
0667041 - 322 S. Happy Hollow Blvd.	18 inches	Temporary	CSO
0673011 - 5701 Center St.	10 inches	Temporary	CSO
0673514 - 5555 Center St.	84 inches	Temporary	CSO
0689056 - 6454 Woolworth Ave. (North)	27 inches	Temporary	CSO
0689056 - 6454 Woolworth Ave. (East)	15 inches	Temporary	CSO
3001008 - 10th and Mike Fahey (MECA Lot D)	30 inches	Temporary	CSO

Figure 4-1: Flow and Rain Monitoring Locations



Modeling Efforts

The City uses and upgrades the InfoWorks ICM computer model (InfoWorks) of the combined, sanitary, and storm sewer systems during the implementation phase of the CSO Program. Updates occur as additional information in the system is discovered and as the system is modified as CSO controls are implemented.

In addition to these upgrades, the City reached a significant milestone this year, completing calibration of the updated Papillion Creek watershed portion of the model. The effort to update the model to provide more detailed information on the CSS in upstream areas of the watersheds/sewersheds was completed last year, along with the calibration of the Missouri River watershed portion of the model. The model was upgraded beginning in 2017 and continuing into 2018, which was discussed in last year's Annual Report. Also this year, the updated model was used as a basis to create new LTCP and 2002 Existing Conditions models in the Papillion Creek Watershed.

In addition to the program-level work, models of smaller areas are created as part of many design efforts for individual projects under the CSO Program. A hydrologic and hydraulic modeling approach technical memorandum is developed by each project's design consultant to ensure consistency with CSO Program goals. The details added to these models are included where deemed appropriate in the City's master model.

B. Public Participation

During the Annual Report year, the CSO Program facilitated engagement with neighborhoods and the general public. This, in addition to conveying timely and accurate project information, resulted in building strong relationships and advancement toward the community acceptance of the LTCP.

Sharing the stories behind the Program was also an effective communications tactic in 2019, most notably when highlighting the public's involvement, and connecting youth to the Program's work and the people who are behind it.

The following are two examples of public involvement in CSO Program Projects.

Fontenelle Park Lagoon

From the first Fontenelle Park Lagoon public meeting in 2012 to the official unveiling in August 2019, the transformation of Fontenelle Park from a public golf course to a functional, community amenity has been a public involvement success story. During this project's public meeting and stakeholder communications, the neighborhood developed an appreciation and a different mindset about the revitalization of the park and lagoon, and therefore the associated LTCP.

During construction, the neighborhood was provided frequent project updates. Construction on the project was completed in the spring of 2019, marking the end of project updates and shifting communications to the results and benefits of the park and lagoon. This included outlining the cost savings and highlighting community assets like the deeper lagoon with more opportunities to fish, the trail, parks designed for families, and the benefits of the green infrastructure incorporated to reduce combined sewer overflows to the Missouri River.

Stories of public involvement ranged from volunteers who helped clean the park throughout the project to students at the nearby high school who benefited from speakers on relevant topics, along with public meetings, neighborhood updates, and examples of residents who are enjoying the park after its completion. The project culminated with an event featuring local elected officials and neighborhood residents, along with many of those who worked on the lagoon.

Saddle Creek Project

While Fontenelle Park Lagoon was successful both as a CSO project and a community amenity, the Saddle Creek Retention Treatment Basin (SCRTB) Project has very different attributes. Public outreach on this Project started in 2011 with planning and design phases. The project is surrounded by an entertainment/sports arena, a few small businesses, a major utility, and a burgeoning mixed-use development area. Here, public outreach was needed to communicate about odor control, steps being taken to make the facility blend into the neighborhood, and the benefits and operation of a retention treatment basin.

Because of the federal funding received for this project, it presented opportunities to educate local construction companies and workforce about labor and materials that would be needed during construction, to help meet Disadvantaged Business Enterprises (DBE) goals.

Throughout the design process the project and public outreach teams met with neighbors and neighborhood groups, new mixed-use development occupants, and elected officials to engage and inform them about the project. Three construction informational sessions with general contractors, subcontractors, and DBEs were held to provide a project briefing, DBE and small business session, and a bidding information event to encourage bidding competition.

Now underway, the project outreach uses Twitter, project update flyers, and e-mail communications to specific stakeholders who have requested updates. Most stakeholders are not directly impacted, but still have an interest in the project's benefit of cleaner water in the Little Papillion Creek, which runs past the project site. Public outreach has been an opportunity to develop collaboration and to further the understanding of the overall LTCP effort. These efforts will be ongoing until 2023. Figures 4-2, 4-3, and 4-4 provide pictures of the construction site.

Figure 4-2: Panorama of the SCRTB Construction (summer 2019)

Figure 4-3: Excavation of the basin at the SCRTB Site (summer 2019)

Figure 4-4: Construction in the CSO 205 channel at the SCRTB site (summer 2019)

Community outreach/engagement

The public outreach team has developed additional methods for education of the public about the program. This includes a new media channel to promote CSO Program updates and major accomplishments that have occurred this year. CSO Program messages were tweeted from the Public Works account two to three times a month, opening strategic messaging to a wider audience (the account has more than 3,800 followers). Figure 4-5 provides some examples of tweets sent.

Figure 4-5: Examples of Tweets regarding the CSO Projects

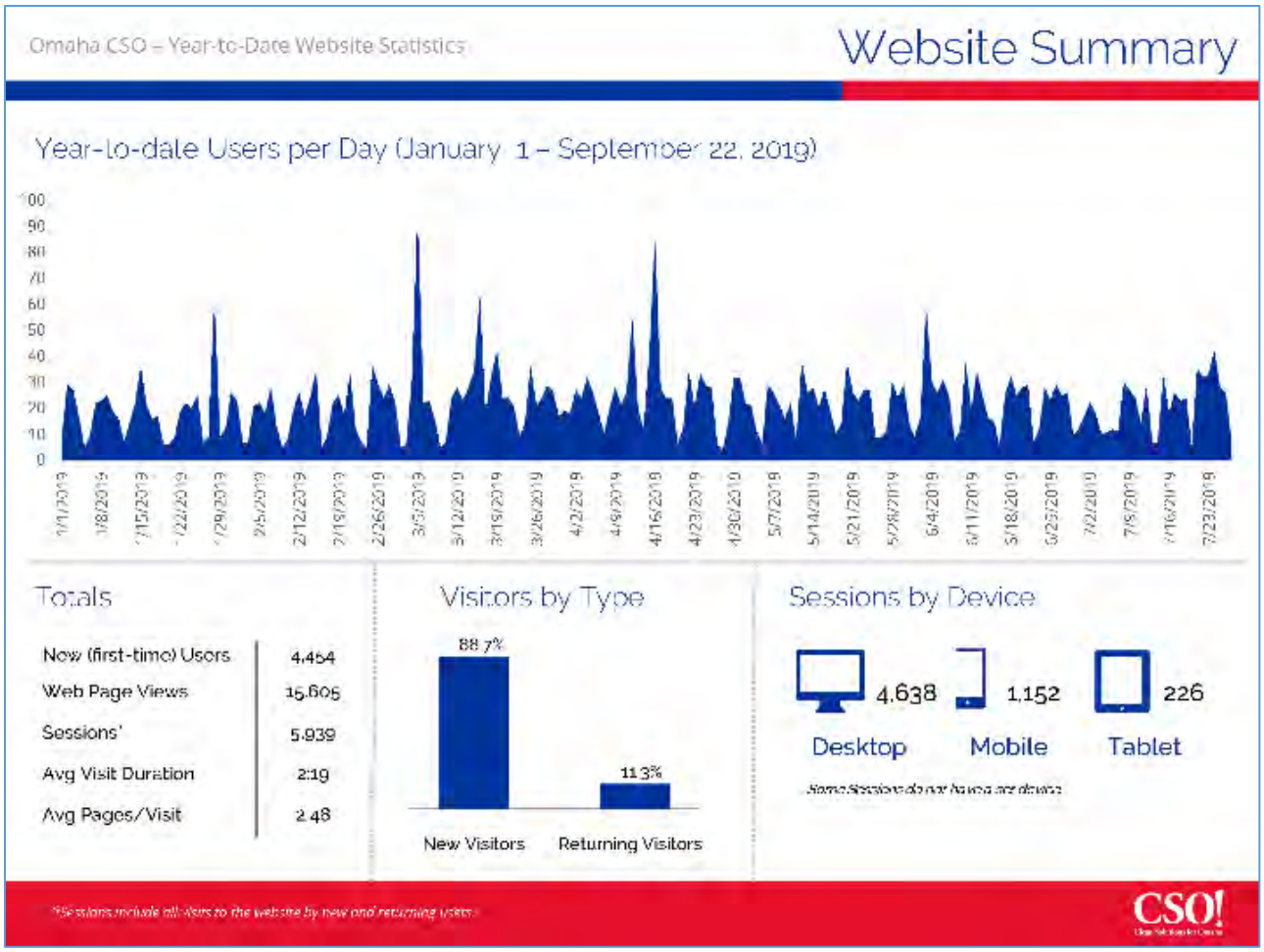
The website continues to provide frequent updates, including new content and graphics to the general public to educate them on the program. More graphics and illustrations are being used to concisely communicate data, and videos about the CSO Program and projects have recently been incorporated to engage the public. The overall strategy is to make what can be complex engineering content more easily understood by the general public.

Omaha residents have access to many resources on the OmahaCSO.com website, among them:

- Quarterly Reports, monthly Snapshots, and the Annual Report
- Active Project updates and photos
- Timelines
- Meeting dates and events
- Economic Inclusion updates in the Construction Corner

The website is a major source of information to the general public on the program. Figure 4-6 shows usage statistics from January 1 to September 22, 2019. During the Annual Report year the website had 4,454 new (first-time) users.

Figure 4-6: Omaha CSO Public Website Summary



The CSO Program uses many other multi-disciplinary tactics to keep the public informed about relevant project updates, activities, opportunities, and results. Communications are strategically planned to engage the public throughout a project to completion. Because each project has unique audiences and attributes, the public outreach coordinator develops a specialized outreach plan detailing timing and messaging.

CSO Program members attended 31 neighborhood association meetings and neighborhood association alliance meetings to address concerns and answer questions on specific projects in the area, answering questions. These relationships are especially important for the identification of opportunities that can enhance community benefits.

The CSO Program also has two traveling kiosks that are displayed in busy, public places (for example, libraries and Douglas County Treasurer locations) (Figure 4-7). These colorful, free-standing displays contain updated, high-level information about the project and direct residents to the CSO website for more details. These kiosks were placed in 19 prominent locations throughout the year, spending about 2 weeks at each location.

Figure 4-7: CSO Program Traveling Kiosk

Youth engagement also continued to be a priority for the CSO Program. In September, 285 students from Omaha South Magnet High School science classes visited Spring Lake Park to learn about green infrastructure, engage in career-oriented games, and explore occupations related to the CSO project (for example, engineering and landscaping). During the visit, students toured the project and were encouraged to complete a green infrastructure worksheet, with information about dry ponds, wetlands, and more. At the conclusion, each student went home with greater awareness of Omaha's work toward clean water goals and knowledge of potential job and career opportunities for the future, along with a shower timer to remind them how they can have a role in improving water quality and reducing overflows. More than 20 CSO Program and project volunteers helped make the field trips a success. Figure 4-8 shows some photos from the event.

Science Teacher James Ballarin, who is one of the three teachers who participated, provided feedback. "Our students at South benefited greatly from the field trip opportunity that the CSO Program provided," he said. "They gained an understanding of the effort necessary to have cleaner water, the careers associated with a program of this magnitude and how their neighborhoods will benefit. Thank you for the effort to make it happen."

Figure 4-8: Photos from the Omaha South Magnet High School visit to Spring Lake Park (September 2019)

The CSO Program organized outreach booths again at the 2019 Omaha Earth Day Celebration and World O' Water, an annual free, family-friendly, educational event focused on water and the environment.

As an enhancement to this year's World O! Water experience, the CSO team distributed 400 educational activity guides explaining the CSO Program at an age-appropriate level (Figure 4-9). Reading-age children were able to spin the Clean Water Quiz Wheel and answer water conservation questions from the activity guide before receiving their own shower timer. Volunteers at the booth distributed 300 shower timers.

Figure 4-9: Photos from the Omaha Earth Day Celebration and World O' Water Day (September 2019)

C. Consideration of Sensitive Areas

Sensitive areas include waters with threatened or endangered species and their designated critical habitat, waters with primary contact recreation, public drinking water intakes, and any other areas identified by state or federal agencies. An update of the known sensitive areas was included in the LTCP Update. The CSO NPDES Permit states the City should provide any changes to the status of previously identified sensitive areas in the Annual Report. No changes were made this year to the sensitive areas during the Annual Report period.

D. Evaluation of Alternatives

The process the City originally undertook to identify, screen, evaluate, and select CSO control technologies and alternatives for the Missouri River and the Papillion Creek watersheds is described in the LTCP and the LTCP Update. The process resulted in a group of selected CSO controls that included two retention treatment basins, upgrades to the MRWRRF, replacement of force mains, a deep tunnel for conveyance and equalization, green infrastructure, and sewer separation projects. All selected CSO controls were anticipated to satisfy the presumption approach of EPA's CSO Control Policy while not precluding adherence to water quality standards.

The CSO Permit requires that any significant changes or revisions to the controls set forth in the LTCP be submitted to the NDEE by October 1, 2019. As noted later in this section, on March 27, 2019, the City submitted a request to modify this date to March 1, 2020 to correspond to the date in the 2018 amended Consent Order. On June 3, 2019, the City requested a modification to the submission date of the LTCP Update from March 1, 2020, to March 31, 2021 as a result of the historic flooding that occurred on the Missouri River and other local streams. The Consent Order has also been amended to change the date to March 31, 2021.

During the last year the City has continued taking steps toward the 2021 LTCP Update. This includes the City undertaking several tasks to define future projects or to evaluate potential alternative controls for the Missouri River Watershed, including the DTS Conceptual Development Task and Optimization Evaluation. These tasks are summarized in this report.

Deep Tunnel System

The conceptual development of the DTS continued in 2019. The 3-year evaluation of the deep tunnel includes supplemental geotechnical site investigations, selection of a horizontal and vertical alignment for the tunnel, property acquisition assistance, hydraulics updates, development of a conceptual Development TM, and Procurement Evaluations (including alternative delivery). The first activity was the Phase 1A geotechnical investigations focused on performing 15 rock borings to assist in the identification of a horizontal alignment for the tunnel. Shannon & Wilson began geotechnical investigations in November 2018 but were restricted in operations because of cold weather in January and February 2019. Boring operations in the critical zone of the Missouri River levee also were restricted from March through June because of high river elevations delaying the completion of the geotechnical investigations/borings. Two additional borings were identified to supplement the horizontal alignment evaluation and are to be completed in October 2019.

Due to significant costs associated with the DTS, an optimization evaluation is being conducted to make sure the City ultimately chooses the most cost-effective and beneficial approach for combined sewage volume capture. Refer to Optimization Evaluation section for more detail. One of the outcomes from the initial optimization evaluation was to further evaluate a shorter, but larger, diameter tunnel option, the CTS. In contrast to the DTS, the CTS would extend from Grace St. to Pierce St., south of the new Leavenworth Lift Station. The CTS appears to be a less costly option for the City while still providing CSO reduction benefits.

The horizontal alignment evaluation included multiple workshops with the City focused on the near surface facilities (diversions to the tunnel, drop shafts, and solids handling facilities) on the Leavenworth, Burt-Izard, Grace, and North Interceptor outfalls. Preliminary locations for each of these Near Surface Facilities were identified. These locations will be finalized in 2020.

It is currently anticipated that the horizontal alignment evaluation will be completed by March 2020. Once the horizontal alignment is determined, Phase 1B geotechnical investigation is scheduled to commence. This will involve additional borings and investigations needed to determine the vertical alignment of the tunnel.

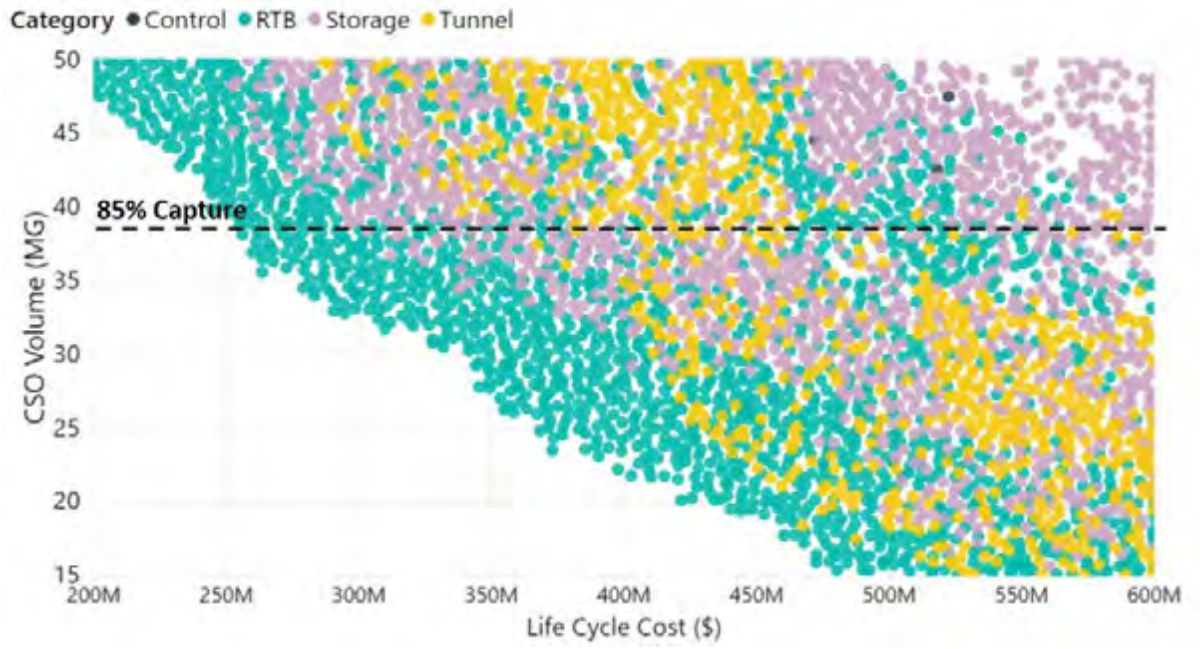
Optimization Evaluation

The LTCP Update calls for the construction of a DTS to provide the final volume capture in the Missouri River Watershed that is required to achieve a minimum of 85 percent volume capture in the representative year as stated in the City's amended Consent Order. The basic components of the DTS include collector sewers, drop shafts, a deep tunnel, a deep tunnel lift station, and a retention treatment basin for high-rate treatment. The estimated costs associated with the DTS are significant, and the City will implement the most cost-effective and beneficial approach for remaining volume capture. An Optimization Evaluation by the City and PMT began in 2018 to make sure the City moves forward with the best options. The result of this evaluation could range from maintaining the current DTS concept "as-is" to replacing this concept with a no-tunnel combination of other improvements, or some combination thereof. Due to the complexity and significance of the optimization evaluation, the process continued in 2019 and is scheduled to be completed in 2020.

The optimization evaluation employs the CSO Program's InfoWorks model of the collection system, along with optimization software named Optimizer. This software was selected by the Optimization team because it is the current industry standard. Numerous alternative components were identified by the City and PMT, consisting of various CSO control technologies, such as sewer separation, conveyance, green infrastructure, lift stations, storage tanks, real time controls, in-line storage, and retention treatment basins, in addition to various tunnel configurations. These alternative components were incorporated into the InfoWorks model, which establishes how the combined sewer system would perform with the added components. Optimizer orchestrates the InfoWorks model by having it run thousands of combinations of these components to see how they perform and what they would cost in terms of both capital and lifecycle. This process is not done at random; Optimizer actually "learns" which component combinations have better performance and lower cost.

More than 100,000 solutions (combinations of alternative components that achieve various levels of volume capture) were evaluated by Optimizer/InfoWorks. The speed at which each evaluation can be performed was greatly reduced by developing a simplified model and identifying a precipitation "proxy period" that provides good statistical correlation with the entire representative year of precipitation. Detailed cost curves were also developed for use by Optimizer. Using tools developed by the Optimization team, solutions are plotted on a performance graph, such as the one shown on Figure 4-10. The results on Figure 4-3 are classified according to technology based on which technology—control, RTB, storage, or tunnel—has the greatest cost for that solution. As shown, an annual CSO volume of approximately 38 MGD or less equals to a volume capture of 85 percent using the proxy period. This type of graph facilitates understanding of the tradeoffs between benefit (CSO reduction) changes and related cost changes.

Figure 4-10: Example Performance Graph of Results from an Optimization



Out of the thousands of solutions that were developed, 26 "Solutions of Interest" were identified based on cost and volume capture, inclusion of a range of technologies and of specific items (for example, use of the old South Interceptor Force Main to convey flow to the MRWRRF and consideration of volume capture at individual CSO outfalls). The City and PMT then scored the solutions of interest to arrive at five HPAs by the end of 2019.

The five HPAs will be further evaluated in a manner including the following: performing further cost validations; performing representative year runs with InfoWorks; performance under high river level conditions; estimating the benefits of employing advanced control techniques in the system; and investigating performance enhancement approaches. It is anticipated that a final decision will be made by the end of 2020 to allow for the development of the next LTCP Update, which is due to NDEE by March 31, 2021.

As noted in the 2018 Annual Report, the City has contracted with a specialty consultant to help identify opportunities to use technology, such as sensors and real-time controls, to develop possible strategies for enhanced operation of the collection system in the Missouri

River Watershed. The inclusion of this technology is intended to maximize flows to the WRRFs and use of the system through improved operation of the existing and future controls in the collection system. The specialty consultant is currently evaluating the HPAs developed through the optimization process. These strategies will be incorporated into the optimization evaluation and LTCP Update as appropriate.

E. Cost/Performance Considerations

An evaluation of the benefit/cost ratios for CSO control levels and financial capability analysis is included in Section 3, Control Alternative Evaluation, and Section 6, Financial Capability Evaluation, of the LTCP (see also LTCP Update).

The CSO NPDES Permit requires that the City submit a financial report to the NDEE by October 1, 2019[1]. The report must set forth a strategy to obtain sufficient revenue to fund the CSO program. Sufficient funding means that it must be through at least the year 2024 for the specific projects in the Implementation Schedule, Section 7 of the LTCP and LTCP Update.

Figure 4-11: Missouri River WRRF – Chlorine Contact Basin Chemical Building

The City adopted a new rate ordinance August 21, 2018. The new ordinance sets sewer use fees for 2019 through 2023, which are based on a rate study performed by the City's rate consultant and considers the Financial Capabilities Assessment that evaluated the burden of the sewer rate increases on the Omaha community and various sectors of the community. Based on EPA Residential Indicator calculations, the Financial Capabilities Assessment showed the overall City and service area experience as a Medium Burden. However, it also was shown that a significant portion of the City (more than 44,000 households) is already well above the High Burden threshold, and this will get worse. By reducing the rate of increase in sewer use fees compared with previous forecasts, the City was able to reduce the burden on City ratepayers. However, areas of High Burden remain. Key factors that allowed the City to implement slightly reduced rate increases include:

- More favorable borrowing terms
- Fund balance validation
- Low interest loans, such as the Water Infrastructure Finance and Innovation Act (WIFIA) loan for the SCRTB project and state revolving loans for the MRWRRF
- Updates to CSO cost projections and cost savings

The next rate ordinance, to be finalized in 2023, will reflect any changes that are made in the next LTCP Update.

[1]The date was changed to March 31, 2021, in a permit modification dated November 1, 2019.

F. Operational Plan

The CSO NPDES Permit requires the City to update the *Monitoring Program and CSO Wet Weather Operations Plan* as CSO controls are constructed and sewers are separated.

A submittal was provided on November 13, 2015, to NDEE. The Plan included a summary of the anticipated operation of the MRWRRF once the construction is complete. The modifications to the MRWRRF were substantially complete in August 2019, but they were not operationally complete during the Annual Report year. The City will have until January 1, 2023[2], to perfect the operation of the treatment system before having the meet the effluent limits in the permit.

As noted in the previous Annual Report, the SOIA Lift Station wet weather operations continued, as the pumps were continuing to show vibration and seal issues. Pumps were found to have shaft deflection, which was fixed by the manufacturer. In addition, new seals have been installed on the pumps to mitigate issues associated with constituents (for example, grit, grease.) in high-strength industrial wastewater. The lift station is continuing to perform as designed in terms of capacity and flow.

G. Maximizing Treatment at the Existing POTW Treatment Facilities

An evaluation of the feasibility of expanding wet weather treatment at both the MRWRRF and the PCWRRF is included in Section 3 of the 2009 LTCP and the LTCP Update. Major projects included in the LTCP and being implemented during the next few years (including completion of Schedule B2 facilities at the MRWRRF and design/construction of the Burt-Izard, Riverview, and Monroe St. lift stations) will be major factors in maximizing treatment of combined wastewater at the MRWRRF.

The CSO NPDES Permit requires the City to continue to evaluate opportunities to maximize treatment at the WRRFs as part of the adaptive management strategy for implementation of the LTCP and provide a summary of any new approaches identified to maximize treatment of combined wastewater at the WRRFs in this Annual Report. No new approaches have been identified since the last Annual Report.

Projects related to current strategy are discussed in more detail in the relative progress report in the APPRs in Attachment 2. Expansion of the treatment capacity of the PCWRRF has not been identified under the CSO Program and falls under the NPDES Permit for that facility.

H. Implementation Schedule

The 2009 LTCP Section 7, Implementation Schedule, outlined an implementation schedule that complied with the October 1, 2024, deadline for completing the CSO projects. The 2011 Missouri River Flood constituted a force majeure event that impeded the City's design and construction efforts and impacted the schedules of several projects. As a result of the 2011 Missouri River Flood, a modified deadline of October 1, 2027, was put into effect. On January 17, 2018, NDEE approved a 10-year extension to the CSO Consent Order, resulting in a final completion date of October 1, 2037.

[2] The date was changed in a permit modification dated November 1, 2019.

On March 27, 2019, the City submitted a request to modify several dates in the CSO Permit, including:

- In Part V. Long Term Control Plan, D. Evaluation of Alternatives, the October 1, 2019, date be modified to March 1, 2020.
- In Part IV.E. Schedule for Phase 4 Major Projects of the LTCP milestone for "Begin Final Design" of December 31, 2019, be removed or modified to December 31, 2023.
- In Part IV.J Schedule for Phase 6 Sewer Separation "Commence bidding of one project" be modified from June 30, 2020, to December 31, 2020, in the CSO Permit (the City later requested the date be modified to December 31, 2021).

On April 4, 2019, the City notified the NDEE of a force majeure event because of the historic flooding that occurred on the Missouri River and other local streams. On June 3, 2019, the City requested a modification to the submission date of the LTCP Update from March 1, 2020, to March 31, 2021. The letter also requested modifications to the expiration dates for the City's CSO NPDES Permit and the permits for the MRWRRF and PCWRRF to correspond with the change in the LTCP date.

In addition, the City requested the date to Part II. C Final E. coli Requirements for CSO Outfall 102 be modified to January 1, 2023, since the 2019 flooding meant the facility lost a recreation season to operate.

The City was granted its request for the extension of the LTCP Update, the modifications in the milestone dates, and submittal as documented in the CSO Permit modification issued November 1, 2019.

Section V, Compliance Schedule, provides a status update on the implementation of the CSO Major and Sewer Separation projects. Attachment 2 contains an APPR for each of the active projects under a compliance schedule.

System Reliability Projects

The LTCP identified four projects (Burt Izard Lift Station, Bridge Street Lift Station, Riverview Lift Station, and Monroe Lift Station) as system reliability projects to address current and future system support. The implementation schedule is "as necessary and when funding is available." The status of the three active projects is listed below (modifications to the Bridge Street Lift Station have not yet begun). The Transfer Lift Pump Replacement Project, which is not a LTCP project, was undertaken to improve the reliability of the lift station pumps, and its status is included below.

Burt Izard Lift Station – The project includes lift station improvements, including replacing the inlet isolation gates and actuators; two bar screens; three wastewater pumps, piping, and valves; a new electrical room; and removing concrete in the existing grit basins to maximize the available capacity. These improvements will allow for flows up to 50 MGD to be conveyed to the MRWRRF during wet weather events. Construction Notice-to-Proceed was issued in August 2018. Construction was impacted by the Missouri River Flooding in May 2019 because of high river elevations for 90 days. The inlet isolation gates have been replaced, and the grit basins are being modified to support bypass pumping operations to

allow for pump and electrical system replacement in 2020. Construction is anticipated to be completed in April 2021.

Riverview Lift Station: The project includes construction of Grover Diversion Structure, a 42-inch sewer along Gibson Road that will convey flows from the Grover Sewer to the Riverview Sewer, and the Riverview Diversion Structure, a 7-MGD lift station and a gravity sewer extending south from the Spring Street Lift Station to a new lift station near Blake Street (Blake Street Lift Station). The Blake Street Lift Station project includes a gravity sewer extending south from the Spring Street Lift Station to a new lift station near Blake Street. A force main will extend south from the new lift station to Grover Street, where the flows will be discharged into the existing Grover Street sewer for subsequent conveyance to the new Riverview Lift Station. The overall project will maximize flow to the MRWRRF during wet weather events and is being constructed under two construction contracts. Bid advertisement of the overall project was delayed for 18 months due to property negotiations with the BNSF Railway for the new Riverview Lift Station. The Riverview Lift Station construction contract was advertised-for-bids in July 2019 with bids received September 25, 2019. Construction of the lift station is anticipated to commence in January 2020 and extend for 30 months to June 2022. The Blake Street Lift Station construction contract will bid in 2020 and extend for a duration of approximately 12 months.

Monroe Lift Station: The project includes improvements to the existing lift station to replace/rehabilitate pumps, screens, valves, electrical systems, and instrumentation and controls to provide operational flexibility to maximize the conveyance of wet weather flows to the MRWRRF. Conceptual design was completed in December 2018, and preliminary design is anticipated to be completed in late 2019 or early 2020. The project is expected to proceed into final design in 2020 followed by construction in 2021.

MRWRRF Transfer Lift Station: The project includes replacement of the pumps installed under MRWRRF Schedule A. Although the current pumps can deliver the 64 MGD as designed, replacement is needed for long-term reliability. Design of the MRWRRF Transfer Lift Station Pump Replacement project commenced in late 2018 and extended through 2019. The project was advertised for bids on September 11, 2019, with bid opening scheduled for October 23, 2019. Construction of the MRWRRF Transfer Lift Station Pump Replacement project is anticipated to commence in 2020.

I. Post-Construction Compliance Monitoring Program

An outline of a post-construction compliance monitoring program is included in Section 8 of the 2009 LTCP Monitoring Program and CSO Wet Weather Operations Plan; in addition, a draft document *Water Quality Monitoring for the Implementation Monitoring Plan (IMP)* was included with the CSO NPDES Permit application received by NDEE on March 29, 2010.

As required by the CSO NPDES Permit, in-stream monitoring data are provided in Section VII, In-Stream Monitoring Data, and Attachment 5. No modifications were made to the monitoring plan during the Annual Report period.

For this Annual Report period, the 42nd and Q Street sewer separation project was completed, and involved reconstruction of the CSO 207 diversion structure so that it no longer overflows to the waterway at 44th and T. The separated sanitary flows drain to the system that overflows during wet weather at CSO 208 near 45th and Y. CSO 208 discharged

on three occasions after the sewer separation construction was substantially complete. This drainage area will undergo a post-construction I/I study to determine if the basin has been completely separated.

V. Compliance Schedule

This section provides information about the LTCP implementation as required by the City's CSO NPDES Permit and the Complaint and Compliance Order by Consent (or Consent Order), dated August 8, 2007, NDEQ Case No. 2710 issued to the City (amended May 30, 2012, January 17, 2018, and October 16, 2019) and the status of individual or component projects. The January 17, 2018, amendment to the Consent Order changed the completion date from October 1, 2027, to October 1, 2037. The October 2019 amendment to the Consent Order changed the LTCP Update submittal date from March 1, 2020, to March 31, 2021.

The City, through quarterly progress meetings and correspondence, has communicated any potential changes to the schedule. The CSO NPDES Permit sets compliance schedules for the permit cycle based on the LTCP Update schedule and subsequent schedule approvals with NDEE.

During the Annual Report year, the City worked with NDEE to obtain a modification to the CSO NPDES Permit, which involved modifying several milestones.

A. Implementation Requirements

The requirements for implementation are set forth in the CSO NPDES Permit and the Consent Order. Details about each are presented in this section. The CSO NPDES Permit states: "…the City of Omaha shall implement the compliance schedule [as listed in the Permit] for construction projects set forth in the LTCP. This schedule may be modified in accordance with NDEQ Title 119 and written notice from the NDEQ. The City of Omaha shall include a yearly summary of construction activities, actions, and other measures applicable to this compliance schedule in the Annual Report."

These requirements are achieved though the summary tables and figures in this section and through the APPRs in Attachment 2. As stated in the CSO NPDES Permit, the following definitions shall apply to compliance schedule dates. The italicized wording has been added in this Annual Report to provide additional clarification:

- **Bid Year –** The year when the bidding process for a specific project is started. *This will be noted in the tables below as the "bidding" date and corresponds to the day the project was advertised for bid. This compliance action only applies to sewer separation projects.*
- **Begin Final Design –** The date when a Notice to Proceed is issued to a design consultant, or in the case of a design completed by City staff, the date when work is started. *In some projects, an amendment to the original contract for Preliminary Design will serve as the date the Final Design began.*
- **Commence Construction –** The date the Notice to Proceed is issued to the construction contractor.
- **Complete Construction –** When a major project or sewer separation project is substantially complete. *For sewer separation and major facility projects, substantial completion is issued to the construction contractor. For major projects "Completion of Construction" is when the project is considered "Operationally Complete" as defined below.*

- **Operationally Complete –** When a Major CSO project is substantially complete, is ready for its intended use, and has been made ready to operate by the City. *For sewer separation projects in general, the "complete construction" and "operationally complete" date are the same date.*

Consent Order Directives

The Consent Order also provided a requirement for the Annual Report, which states the report shall contain:

- A statement identifying each component project timeframe in the period preceding the initial, or thereafter, the most recent previous report, calling for commencement, completion, implementation or some other action to be taken, and whether and to what extent such action was taken by the City within the respective component project timeframe.
- A general description of the work performed pursuant to the LTCP and component project timeframe schedule for the period covered by the report and whether it conformed to the LTCP and timeframe schedule.
- A statement of any future planned or expected deviations from the LTCP and component project timeframe schedule and the reasons for such deviations.

These requirements are achieved through the submittal of the APPRs in Attachment 2. In addition, planned or expected deviations are tracked through an internal CSO Program process to document variations in schedule, scope, or budget. The CNR process includes identifying the reason or justification for a schedule change, potential impacts to related projects or LTCP Phases, and possible mitigation efforts. Current CNRs for the reporting year are in Attachment 3.

B. Major CSO Control Projects

Implementation of the Major CSO Control Projects continued in the reporting year. Major CSO Control Projects in Phase 1, 2, and 4 are listed in Tables 5-1, 5-2, and 5-3. These tables cite the action or activity that took place during the reporting period, the LTCP Milestone date facing the project, the actual date the milestone was achieved, and a brief summary on compliance with the LTCP Update schedule. All completed component projects will continue to be included in the Annual Report until the particular phase is achieved.

Phase 4 of the Major CSO Control Projects has a milestone date of December 31, 2019. A permit modification was requested, and the permit was modified as of November 1, 2019, to change the requirement to start final design on one project by December 31, 2019, to December 31, 2023. It is anticipated the projects in Table 5-4 will be modified as part of the LTCP Update due in 2021.

Table 5-4 lists system reliability projects that have had activity but do not have a specific schedule for construction under the LTCP.

Table 5-1: Phase 1 Major CSO Control Project Status and Compliance

Major Project Phase 1: Missouri River Water Resource Recovery Facility Improvements
CSO Permit Requirement: All projects shall be operationally complete by December 31, 2019

ID	Project Name	OPW Number	Action	*LTCP Milestone Date*[a]	Actual Date	Compliance
1D	MRWRRF Improvements	51875 52200 52570 52494 52648	Under Construction	*Complete construction by 12/31/2019*	**In Progress**	On Schedule

[a] LTCP Milestone Date is the name and associated date of the next milestone as noted in Chapter 5 of the LTCP Update. For Major Projects there are three Milestone dates, commence final design, commence construction and complete construction.

Table 5-2: Phase 2 Major CSO Control Project Status and Compliance

Major Projects Phase 2
CSO Permit Requirement: Project shall be operationally complete by December 31, 2023
LTCP Requirement: Projects shall be operationally complete by December 31, 2023

ID	Project Name	OPW Number	Action	LTCP Milestone Date[a]	Actual Date	Compliance
2C	Saddle Creek CSO 205 – 64th and Dupont Retention Basin	52049	Under Construction	*Complete Construction by 12/31/2023*	**In Progress**	On Schedule

[a] LTCP Milestone Date is the name and associated date of the next milestone as noted in Chapter 5 of the LTCP Update. For Major Projects there are three Milestone dates: commence final design, commence construction, and complete construction.

Table 5 3: Phase 4 Major CSO Project Status and Compliance

Major Projects Phase 4

CSO Permit Requirement: Commence Final Design on one of project on or before December 31, 2019[a,c]
LTCP Requirement: Commence Final Design on one of project on or before December 31, 2019[a]
Begin construction of one project by December 31, 2023
All projects operationally complete by September 30, 2027

ID	Project Name	OPW Number	Action	LTCP Milestone Date[b]	Actual Date	Compliance
4G	LV Jones Street to Leavenworth Diversion	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Not Started**	Delayed[b] See CNR
4B	Deep Tunnel Lift Station and Force Main	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Not Started**	Delayed[b] See CNR
4A	CSO Deep Tunnel and Drop Shafts	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Not Started**	Delayed[b] See CNR
4H	Deep Tunnel Grit Basin Facilities	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Not Started**	Delayed[b] See CNR
4C	Conveyance to Deep Tunnel Drop Shafts	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Future** (2022)	Delayed[b] See CNR
4I	CSO 119 Monroe Basin Storage Facility	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Future** (2021)	Delayed[b] See CNR
4D	MRWRRF Retention Treatment Basin	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Future** (2023)	N/A
4K	CSO 118 MRWRRF Storage Facility	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Future** (2023)	N/A
4E	CSO 204 Storage Facility (If needed)	N/A	No Activity This Report Period	*Commence Final Design by 12/31/2019*	**Future** (2025)	N/A

[a] Permit modification issued November 1, 2019, changed the milestone date to December 31, 2023.

[b] LTCP Milestone Date is the name and associated date of the next milestone as noted in Chapter 5 of the LTCP Update. For Major Projects there are three Milestone dates: commence final design, commence construction, and complete construction.

Table 5-4: System Reliability Projects

System Reliability Projects
CSO Permit Requirement: NONE; LTCP Critical Milestones: NONE

Project Name	OPW Number	Action	LTCP Milestone Date[a]	Actual Date	Compliance
Burt-Izard Lift Station Improvements	52472	Construction	*N/A*	**In Progress**	N/A
Riverview Lift Station Replacement	52402 52402a 53270[b]	Bidding	*N/A*	**In Progress**	N/A
Monroe Street Lift Station Improvements	53082	Preliminary Design	*N/A*	**In Progress**	N/A

[a] LTCP Milestone Date is the name and associated date of the next milestone as noted in Chapter 5 of the LTCP Update. For Major Projects there are three Milestone dates: start final design, commence construction, and complete construction.

[b] Includes the Blake Street Lift Station and associated gravity sewer/force main construction contract.

N/A = not applicable

C. Sewer Separation Projects

Implementation of Sewer Separation Projects continued in the reporting year. Sewer Separation Phases 1, 2, and 3 are complete and will not be further reported here. Sewer Separation Phases 3 through 6 are listed in Tables 5-5 through 5-8. These tables cite the action or activity that took place during the reporting period, the LTCP target date for a particular action, the actual date if achieved, and compliance with the LTCP Update schedule. Future phases are included only to show if any projects within that phase have taken action during the report year. All completed projects will continue to be included in the Annual Report until the particular phase is completely achieved. During this period, Phase 3 Sewer Separation was completed.

Sewer Separation projects listed in LTCP Update under Phase 7 had no projects with activity in the report year.

Table 5-5: Phase 4 Sewer Separation Projects Status and Schedule Compliance

Sewer Separation Phase 4

CSO Permit Requirement: Commence bidding on one of project on or before December 31, 2016
LTCP Requirement: Complete Construction of all projects by June 30, 2022

ID	Project Name	OPW Number	Action	*LTCP Milestone Date*[a]	Actual Date	Compliance
4B	Burt-Izard (CSO 108-3, Nicholas Street, Phase 3)	52721	Final Design	*Commence Bidding by 12/31/2016*	**In Progress**	On Schedule[b]
4G	Minne Lusa (CSO 105-15, Forest Lawn Separation)	52470	Bidding	*Commence Bidding by 12/31/2016*	**On Hold**	On Hold: See CNR
4M	Lake James to Fontenelle Park	52658/ 52659	Under Construction	*Complete Construction by 6/30/2022*	**In Progress**	On Schedule
4N	South Interceptor (CSO 117-1, Missouri Avenue Phase 2)	51997[c]	Under Construction	*Complete Construction by 6/30/2022*	**In Progress**	On Schedule
4P	Papillion Creek South (CSOs 207/208, 42nd and Q)	52257	Complete	*7/16/2019*	**Complete**	ACHIEVED
4Q	Cole Creek (CSO 204, Phase 2)	52814	Final Design	*Commence Bidding by 12/31/2016*	**On Hold**	On Hold
4R	Burt-Izard (CSO 108-3, Nicolas and Webster Separation, Phase 2)	N/A	No activity this report period	*Commence Bidding by 12/31/2016*	**Not Started**	Delayed[d]; See CNR

[a] LTCP Milestone Date is the name and associated date of the next milestone as noted in Chapter 5 of the LTCP Update. For Sewer Separation Projects there are two milestone dates: start bidding and complete construction.

[b] At the end of the Annual Report year it was anticipated to meet LTCP Milestone completion, but has since been delayed.

[c] Slight delay in construction schedule due to coordination with Metropolitan Utilities District (M.U.D.) but anticipated to meet LTCP Milestone completion.

[d] Scheduled start of preliminary design was August 2017. Currently evaluating the need for the project. See CNR.

Table 5-6: Phase 5 Sewer Separation Projects Status and Schedule Compliance

Sewer Separation Phase 5

CSO Permit Requirement: Commence bidding on one of the following projects on or before December 31, 2019
LTCP Requirement: Complete construction of all projects on or before December 31, 2023

ID	Project Name	OPW Number	Action	*LTCP Milestone Date*[a,b]	Actual Date	Compliance
5A	Papillion Creek North 210-2 Inflow Reduction Project	N/A	No Activity to Report This Period	*Commence Bidding by 12/31/2019*	**Future** (2025)	See CNR
5B	Cole Creek 204, Phase 3	N/A	Final Design	*12/31/2019*	**In Progress**	On Schedule
5C	Cole Creek 203-1 Sewer Separation	53059	Final Design	*Commence Bidding by 12/31/2019*	**In Progress**	On Schedule
5D	Cole Creek 202, Phase 1	53059	Under Construction	*Complete Construction by 6/30/2020*	**In Progress**	On Schedule
5E	Cole Creek 202, Phase 2	53059	Preliminary Design	*Commence Bidding by 12/31/2019*	**In Progress**	Delayed, See CNR
5F	Papillion Creek North 212-1, Separation	51685	No activity to report this period	*Commence Bidding by 12/31/2019*	**Future** (2020)	N/A
5G	Papillion Creek North 210-1, Separation	53320	Final Design	*Commence Bidding by 12/31/2019*	**In Progress**	On Schedule
5H	Papillion Creek North 211-2, Inflow Reduction Project	N/A	No activity to report this period	*Commence Bidding by 12/31/2019*	**Future** (2020)	Not Applicable

[a] LTCP Milestone Date is the name and associated date of the next milestone as noted in Chapter 5 of the LTCP Update.
[b] For Sewer Separation Projects there are two milestone dates: commence bidding and complete construction.

Table 5-7: Phase 6 Sewer Separation Projects Status and Schedule Compliance

Sewer Separation Phase 6

CSO Permit Requirement: Commence bidding on one of the following projects on or before June 30, 2020[e]
LTCP Requirement: Complete construction of all projects by September 30, 2027

ID	Project Name	OPW Number	Action	*LTCP Milestone Date*[a,d]	Actual Date	Compliance
6B	South Interceptor 110-1, Pierce Street	NA	No Activity During Reporting Period	*Commence Bidding by 6/30/2020*	**Future** (2020)	Delayed
6C	Ohern/Monroe - 119-5A, South Barrel Conversion	53149	Preliminary Design	*Commence Bidding by 6/30/2020*	**In Progress**	Delayed; See CNR[b]
6D	Ohern/Monroe - 119-5B, South Barrel Conversion	53149	Preliminary Design	*Commence Bidding by 6/30/2020*	**In Progress**	Delayed, See CNR[b]
6F	Burt-Izard 108-8, 18th and Seward	52721	Preliminary Design	*Commence Bidding by 1/1/2021*	**In Progress**	On Schedule[c]

[a] LTCP Milestone Date is the name and associated date of the next milestone as noted in Chapter 5 of the LTCP Update.
[b] Delay in final design to December 2021. See CNR.
[c] Project is part of Nicholas Street Phase 3, Sewer Separation Phase 5. See CNR.
[d] For Sewer Separation Projects there are two milestone dates: start bidding and complete construction.
[e] Permit modification issued November 1, 2019, changed the milestone date to December 31, 2021.

The Consent Order in Paragraph 29, item b, requires the City provide, "A general description of the work performed pursuant to the LTCP and component project time frame schedule for the period covered by the report and whether it conformed to the LTCP and time frame schedule" as part of the Annual Report. The APPRs provide summary information regarding this objective in Attachment 2. This section addresses the overall status of the LTCP implementation.

Schedule

The schedule for the overall program considers phasing and future financial planning to achieve the goals of the LTCP. Adaptive Management of the LTCP allows for the implementation of lessons learned and the adjustment of scheduling of the projects in the LTCP, with the concurrence and approval of the NDEE. As noted previously, the City has communicated and will continue to communicate any potential impacts it may have to the scheduling and completion of projects to the NDEE.

Table 5-8 provides a summary of the status of the milestones as described in the permit and LTCP Update along with subsequent modifications. Anticipated schedules for specific projects have been reported in the APPRs for each active project and can be found in Attachment 2.

Figure 5-1 shows the count of projects per the LTCP Update and reflects the June 2017 LTCP modifications. It also shows project types and status (completed and remaining), Figure 5-2 shows the general status of completed and in-progress projects relative to their stage of study, design, and construction.

Figure 5-1: LTCP Projects Counts Graph Per LTCP Update

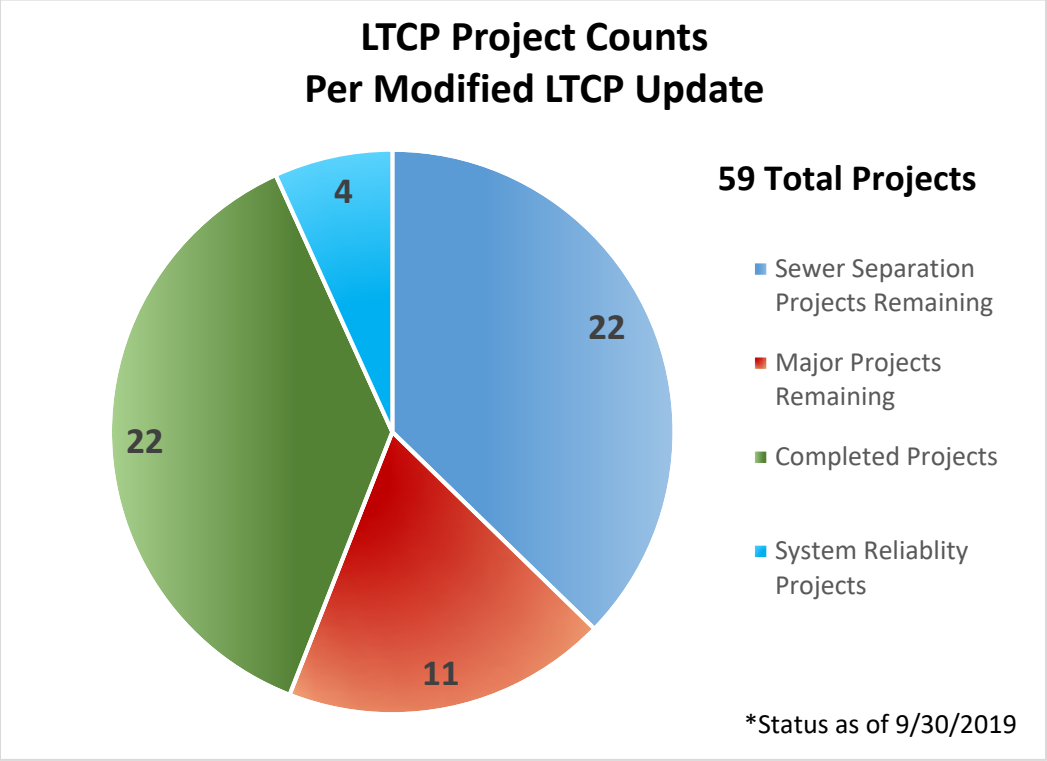
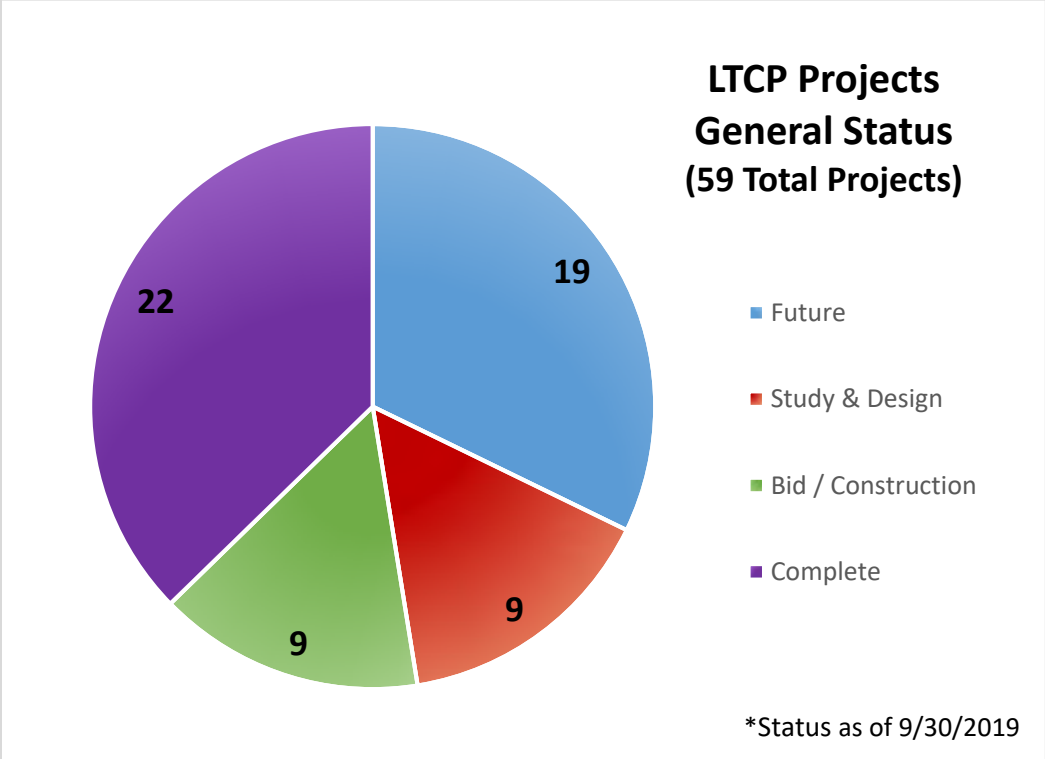


Figure 5-2: LTCP Projects Counts Graph by General Status



In the CSO Permit currently 38 are projects listed, and 30 of those projects with milestone dates that will be met are updated in this Annual Report. As shown on Figure 5-3, the majority of these projects are either active or construction has been completed (one project was completed within the last year).

Of the active projects that will not meet their permit milestones, two are delayed (Nicholas Street Phase 3 and Cole Creek 202 Phase 2).

There are four non-active projects: two that have CNRs that have moved dates into the future past their milestones (Nicholas Webster Phase 2 and Pierce Street) and two are on hold. CSO 204 Phase 2 and Forest Lawn Separation continue to be on hold while the City evaluates the best approach.

A revised schedule will be developed and provided in the LTCP Update.

Figure 5-3: Compliance Status Summary

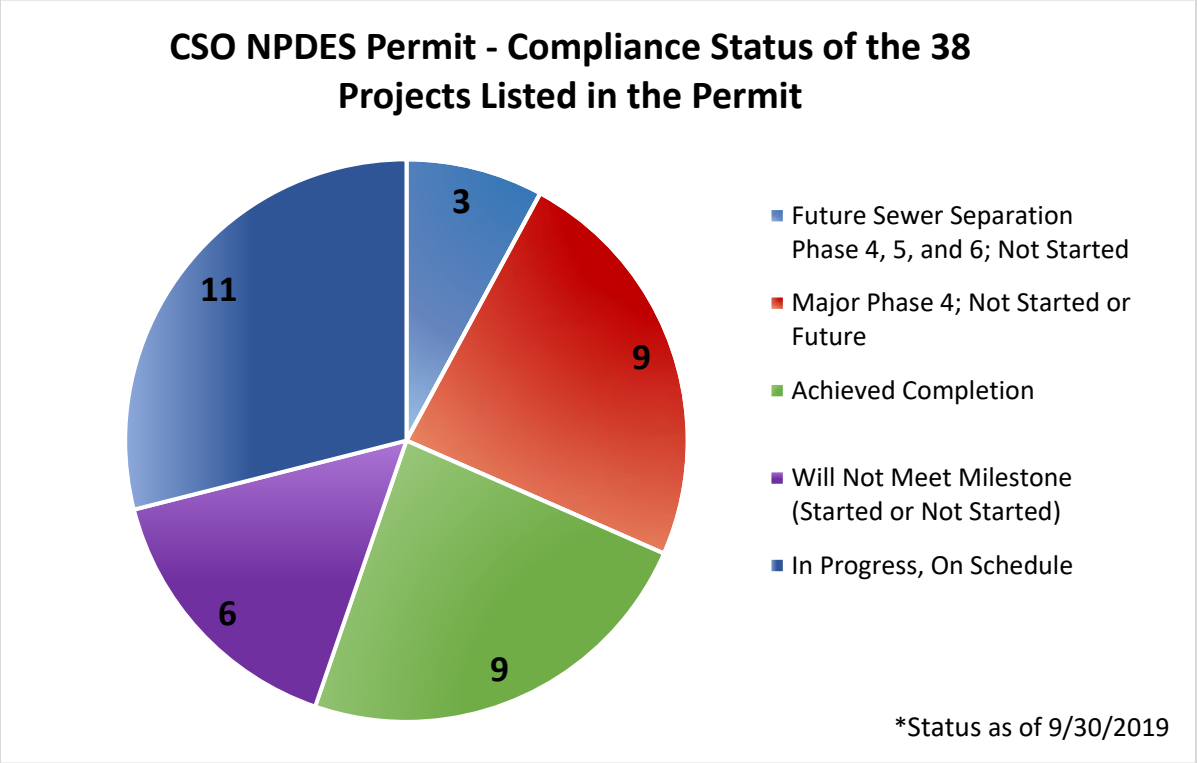


Table 5-8 provides an overview of the status of milestones as noted in the LTCP Update and CSO NPDES Permit. A permit modification was obtained in November 1, 2019, that addresses both the Major Projects Phase 4 and Sewer Separation Phase 6 milestones. As part of the LTCP Update due in 2021, these dates will be re-evaluated and may change.

Table 5-8: Phase Milestones Status Overview

PHASE MILESTONES				
Milestone Name	**Projects**	**Milestone Date**	**Compliance/ Anticipated Date[a]**	**Notes**
MAJOR CSO				
MRWRRF Improvements – Complete Construction	MRWRRF Improvements	12/31/19	12/31/19	MRWRRF Schedule B2.
Phase 2 – Complete Construction	SCRTB, Aksarben Village, Bohemian Cemetery	12/31/23	*06/06/23*	SCRTB is the last project to be completed. Construction began in April 2019.
Phase 4 – Begin Final Design of One Project	Jones St. to Leavenworth Diversion, Deep Tunnel Lift Station, Deep Tunnel and Drop Shafts, Deep Tunnel Girt Basin Facilities, Conveyance to Tunnel Drop Shafts, CSO 119 - Monroe Storage Basin, CSO 118 - Ohern Storage Basin, MRWRRF RTB, Cole Creek Storage Facility	12/31/19		Permit modification obtained 11/1/2019 modifies date to 12/31/2023.
Phase 4 – Begin Construction of One Project	Jones St. to Leavenworth Diversion, Deep Tunnel Lift Station, Deep Tunnel and Drop Shafts, Deep Tunnel Girt Basin Facilities, Conveyance to Tunnel Drop Shafts, CSO 119 - Monroe Storage Basin, CSO 118 - Ohern Storage Basin, MRWRRF RTB, Cole Creek Storage Facility	12/31/23		Date will be addressed in LTCP. Update due in 2021.
Phase 4 – Complete Construction	Jones St. to Leavenworth Diversion, Deep Tunnel Lift Station, Deep Tunnel and Drop Shafts, Deep Tunnel Girt Basin Facilities, Conveyance to Tunnel Drop Shafts, CSO 119 - Monroe Storage Basin, CSO 118 - Ohern Storage Basin, MRWRRF RTB, Cole Creek Storage Facility	09/30/27		Date will be addressed in LTCP. Update due in 2021.

PHASE MILESTONES				
Milestone Name	**Projects**	**Milestone Date**	**Compliance/ Anticipated Date[a]**	**Notes**
Sewer Separation				
Phase 4 – Complete Construction	Lake James to Fontenelle Park; Forest Lawn Separation, CSO 117-1 Missouri Avenue Phase 2, Nicholas Phase 3, 42nd and Q; CSO 204 Phase 2; Nicholas and Webster Separation Phase 2	06/30/22		Lake James to Fontenelle is scheduled to be completed fall 2019. Forest Lawn is on hold. Nicholas Phase 3 is being completed in phases. Nicholas Phase 3A has completed Final Design. Missouri Avenue Phase 2 may be completed Spring 2020. Date will be addressed in LTCP Update due in 2020. CSO 204 Phase 2 is on hold. Nicholas Webster will be delayed or eliminated; and therefore, will not meet the date.
Phase 5 – Complete Construction	210 Inflow Reduction Project, CSO 204 Phase 3, CSO 202 Phase 1 and 2, CSO 212 Sewer Separation, CSO 210-1 Sewer Separation, CSO 211 Inflow Reduction	12/31/23		
Phase 6 – Sewer Separation, Begin Bidding of one project	Pierce St. Sewer Separation, CSO 119-5A/5B South Barrel Conversion, 18th and Seward	06/30/20	*06/30/20*	119-5A and 119-5B South Barrel Conversion project are anticipated to bid first. CNR is being developed for the South Barrel projects. Permit amendment obtained 11/1/2019 to change Begin Bidding Date to 12/31/2021.
Phase 6 – Complete Construction	Pierce St. Sewer Separation, South Barrel Conversion A and B, 18th and Seward	12/31/23		Pierce St. will not meet this date. Date will be addressed in LTCP Update due in 2020. 18th & Seward has been combined with Nicholas St. Phase 3. CNR developed for the South Barrel projects.
Phase 7 – Sewer Separation, Begin Bidding of one project	Hickory Street Sewer Separation, CSO 204 Phase 4 and 5, Cole Creek Diversions	06/30/22		Hickory St. Sewer Separation on Critical Path.
Phase 7 – Complete Construction	Hickory Street Sewer Separation, CSO 204 Phase 4 and 5, Cole Creek Diversions	09/30/27		Cole Creek Diversions and CSO 204 Phase 5 on Critical Path.

[a] Anticipated dates are in italics.

Costs

The City uses various tools to track the costs of the LTCP projects as controlling costs ensures the program is as affordable as possible for the ratepayers while maintaining the LTCP Compliance schedule. The estimated cost of the program has been escalated using the Capital Improvements Plan (CIP) tool developed by the CSO Program. The current cost of the program with contingencies is $2.362 billion through 2037. Rates are in place for 2019 to 2023, as noted previously. The City has been successful in reducing the remaining cost of the program by 20 percent, and that cost reduction is reflected in the program cost estimate noted above. As noted elsewhere, significant additional savings are anticipated to result from the ongoing optimization evaluation.

Through September 2019, the City has paid $659 million to implement the LTCP. Approximately $417 million of that amount has been for construction. The City has awarded more than $500 million in construction contracts, and approximately 88 percent of that has been successfully won by local Omaha contractors. Another $86 million in construction value is currently under design.

Adjustments in schedules and costs of the individual projects within the program are included in Attachment 2.

VI. CSO Outfall 102 and 205 Monitoring Data

The CSO NPDES Permit requires a summary of monitoring data from Outfall CSO 102, located at MRWRRF, and Outfall CSO 205, located at 64th St and Dupont St. Figure 7-1, in Section VII, shows the locations of the CSO outfalls, along with the in-stream monitoring locations.

A. Missouri River Resource Recovery Facility – Outfall 102

The Interim Requirements for CSO Outfall 102, as defined in Table 3, Part II of the NPDES Permit, were in effect for this Permit year. The conditions for approved bypass of combined sewer complied with these requirements.

There were 64 overflow events at CSO 102 from October 1, 2018, through September 30, 2019. Results from these events are reported on quarterly discharge monitoring reports submitted to NDEE. Table 6-1 summarizes the data for CSO 102. The values reported are defined as follows:

- Flow rate - average flow rate of each event in the reporting period
- Total flow - total of each event in the reporting period
- Duration of discharge - total of each event in the reporting period
- Total suspended solids and biochemical oxygen demand - average concentration of each event in the reporting period.
- Dieldrin and polychlorinated biphenyls - less than 0.0001 milligram per liter (mg/L), which is the analysis detection limit.
- E. coli - geometric mean of the events in the reporting period.
- pH - maximum and minimum values of the events in the reporting period.

Table 6-1: CSO 102 Monitoring[1]

Parameter	Value		Units
Flow Rate	7.16		MGD
Total Flow	457.97		MG
Duration of Discharge	542.00		hours
Total Suspended Solids	196		mg/L
Biochemical Oxygen Demand	106		mg/L
Dieldrin	< 0.0001		mg/L
Polychlorinated Biphenyls	< 0.001		mg/L
E. coli	1,173,824		No. 100 mL
pH 00400	Min = 7.02	Max = 7.80	Standard Units

B. 64th and Dupont Retention Treatment Basin – Outfall 205

The CSO NPDES Permit, Part III specifies interim requirements for the monitoring of CSO Outfall 205. This requirement was originally drafted in the permit to be effective on October 1, 2020. During a Permit modification, effective June 2016, this was changed to January 1, 2024.

[1] It should be noted that effluent limits do not apply to CSO 102 at this time.

A level float was installed in the diversion this reporting year and will be a permanent installation until the Saddle Creek RTB is complete. Section IV lists all flow monitoring sites. See Section V for the status of the Saddle Creek RTB project and LTCP Program compliance schedule and Section VIII for CSO occurrences during wet weather.

VII. In-Stream Monitoring Data

The current NPDES Permit requires a summary of in-stream monitoring data, consistent with the *Draft-Implementation Monitoring Plan* objectives, to include monitoring station identification, stream identification, the list of parameters, and monitoring results. The *Draft-Implementation Monitoring Plan* was originally submitted with the 2009 LTCP and was resubmitted in 2010 with the CSO Permit Application. It is important to note that although in-stream monitoring was included as part of the March 2010 *Draft-Implementation Monitoring Plan*, it also states in the plan:

> *"Although not legally required by state or federal regulations, the City has included in-stream water quality monitoring as part of the water quality monitoring plan. An in-stream water quality monitoring network within portions of the Papillion Creek, its tributaries, and the Missouri River will provide water quality data that benefits both the CSO Program and the Stormwater Program."*

This Annual Report summarizes the in-stream monitoring data. Figure 7-1 is a map showing the locations of the in-stream monitoring sites. Sections VIIA and VIIB summarize the data.

A. City In-Stream Monitoring

The in-stream monitoring for this reporting year was performed by the City's Sewer Maintenance Division. The objectives of the monitoring were twofold: (1) to meet requirements of CSO NPDES Permit, and (2) to meet the requirements of the City's MS4 NPDES Permit. However, the MS4 Permit submitted a modification request in March 2016, which was approved by NDEE in April 2016 and which eliminated an element of the *Stormwater Monitoring Plan* that included the in-stream monitoring.

The City collected samples from in-stream monitoring sites CC1, CC2, LPC3, BPC3, PC1, LPC1, and BPC4 and analyzed through Midwest Laboratories Inc. in accordance with the *Implementation Monitoring Plan*. The City has contracted with USGS for sampling at sites MR 1, MR CB, MR 4, and MR 5, which is covered in the next section. Refer to Table 7-1 for descriptions of each monitoring site the City staff administers. As stated in this report, the frequency of sampling is as follows:

> *"… The in-stream monitoring will be performed during the spring (March 1 to May 31), summer (June 1 to August 31) and fall (September 1 to November 30) seasons. The frequency of monitoring will be twice per season, one of which will be during wet weather."*

Table 7-2 summarizes the results for the wet weather and dry weather sampling for the 2019 reporting period. The most apparent conclusion to be drawn from these data is there is a significant increase in total coliform/E. Coli during wet weather. Additionally, the City had a few intentional dry weather CSOs during the reporting year to protect the upstream system during high Missouri River water levels. These intentional dry weather CSOs could have resulted in the high E. coli levels recorded during season 2. The Missouri River sites were also sampled by USGS during this report period as described in more detail in the next section. Season 3 (September 1 to November 30) sampling results are not included in this year's report as these samples were collected after the end of the reporting year. Season 3 sampling results will be included in next year's report.

Figure 7-1: In-Stream Water Quality Monitoring

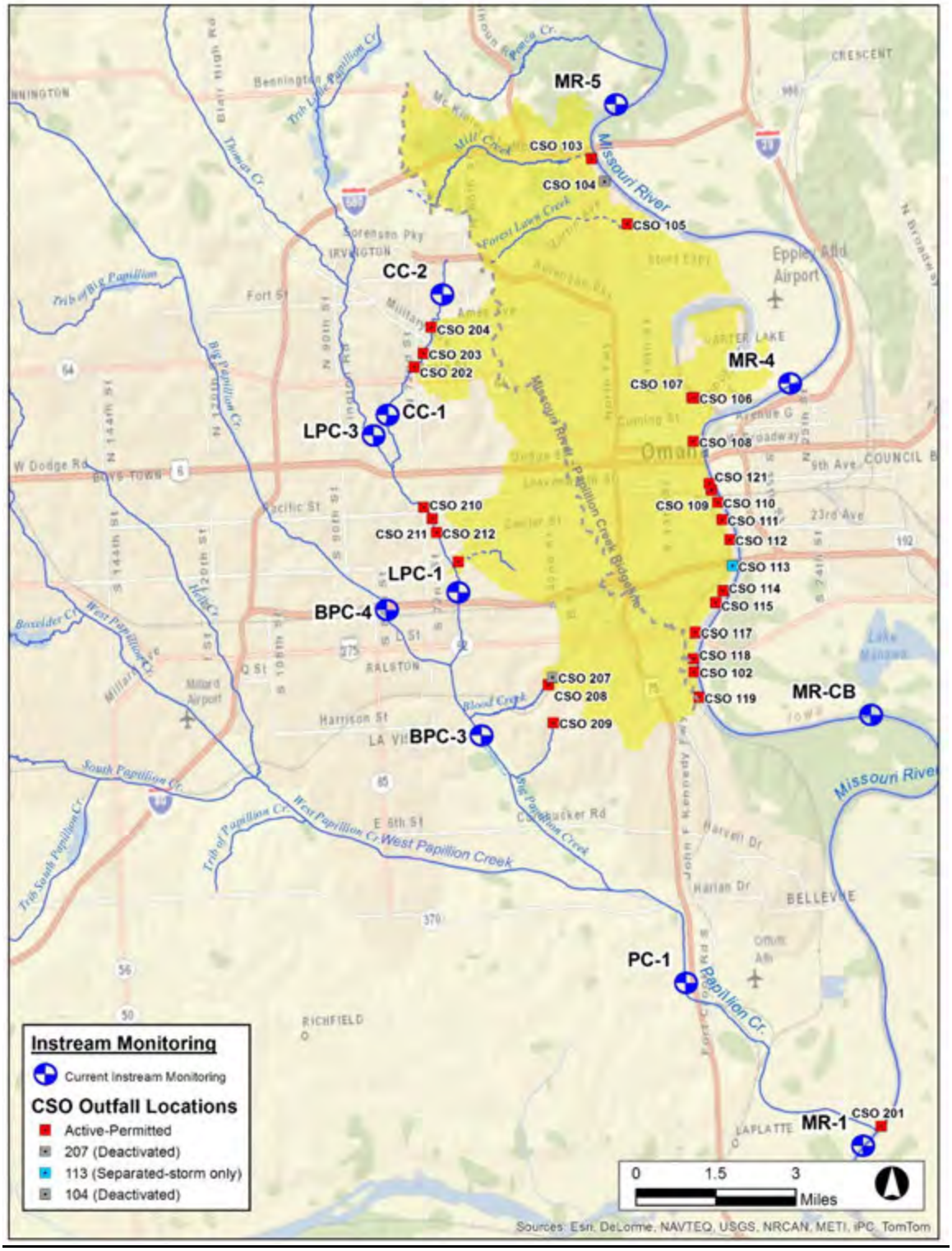


Table 7-1: 2019 City In-Stream Monitoring Site Descriptions

Monitoring Station Identification	Stream	Location Description
PC-1	Papillion Creek	Downstream of the confluence with Big Papillion Creek
BPC-4	Big Papillion Creek	Upstream of the confluence with Little Papillion Creek
BPC-3	Big Papillion Creek	Downstream of the confluence with Little Papillion Creek
LPC-3	Little Papillion Creek	Upstream of the confluence with Cole Creek
LPC-1	Little Papillion Creek	Downstream of CSO discharges and upstream of confluence with Big Papillion Creek
CC-2	Cole Creek	Upstream of CSO discharge points
CC-1	Cole Creek	Downstream of CSO discharge points

Table 7-2: 2019 City In-Stream Monitoring Results

2019 SEASON 1 - DRY - MARCH 1 TO MAY 31							
PARAMETER/SITE	CC - 2	LPC - 3	CC - 1	BPC - 3	LPC-1	BPC-4	PC-1
DATE	4/10/2019	4/10/2019	4/10/2019	4/10/2019	4/10/2019	4/10/2019	4/10/2019
TIME	10:15	11:20	10:50	12:55	12:25	12:00	13:20
FIELD TEMP, C°	11.7	12.9	13.8	13.9	14.5	13.2	13.4
FIELD CONDUCTIVITY (mMHO/cm)	1060	805	1010	672	900	643	695
FIELD pH	7.83	8.09	8.11	8.32	8.08	8.24	8.15
FIELD DO (%)	114%	105%	118%	108%	129%	101%	96%
FIELD DO (mg/L)	12.34	11.03	12.23	11.15	13.13	10.63	9.96
BOD (mg/L)	3	3	6	2	4	4	3
TSS (mg/L)	8	7	6	26	13	27	23
Total Coliforms (MPN/100 mL)	7270.0	908.0	780.0	17330.0	3169.0	15530.0	10460.0
E. coli (Cfu/100 mL)	392.0	88.0	168.0	600.0	192.0	900.0	600.0
Solids or Foam Present?	NO	NO	NO	NO	NO	NO	NO
2019 SEASON 1 - WET - MARCH 1ST TO MAY 31ST							
PARAMETER/SITE	CC - 2	LPC - 3	CC - 1	BPC - 3	LPC-1	BPC-4	PC-1
DATE	5/8/2019	5/8/2019	5/8/2019	5/8/2019	5/8/2019	5/8/2019	5/8/2019
TIME	9:55	10:45	10:30	12:20	11:45	11:30	12:55
FIELD TEMP, C°	12.3	13.0	12.4	12.7	12.8	12.6	12.9
FIELD CONDUCTIVITY (mMHO/cm)	162	298	189	268	240	295	264
FIELD pH	8.60	8.18	8.13	8.20	8.02	8.20	7.72
FIELD DO (%)	87%	88%	93%	85%	81%	79%	81%
FIELD DO (mg/L)	9.31	9.21	9.87	8.96	8.55	8.36	8.54
BOD (mg/L)	6	7	12	8	14	69	11
TSS (mg/L)	348	928	424	904	1040	1120	2010
Total Coliforms (MPN/100 mL)	228200.0	242000.0	1414000.0	505000.0	816400.0	313000.0	488000.0
E. coli (Cfu/100 mL)	4400.0	4300.0	84000.0	30000.0	26100.0	4800.0	25000.0
Solids or Foam Present?	YES	YES	YES	YES	YES	YES	YES

2019 SEASON 2 - DRY - JUNE 1ST TO AUGUST 31ST							
PARAMETER/SITE	CC - 2	LPC - 3	CC - 1	BPC - 3	LPC-1	BPC-4	PC-1
DATE	8/6/2019	8/6/2019	8/6/2019	8/6/2019	8/6/2019	8/6/2019	8/6/2019
TIME	10:00	11:10	10:40	12:40	12:05	11:45	13:20
FIELD TEMP, C°	22.0	24.7	24.1	25.2	25.1	23.9	25.0
FIELD CONDUCTIVITY (mMHO/cm)	986	587	700	602	686	574	605
FIELD pH	7.83	8.33	8.20	8.35	8.16	8.41	8.30
FIELD DO (%)	70%	81%	74%	81%	83%	78%	78%
FIELD DO (mg/L)	6.14	6.73	6.19	6.67	6.79	6.55	6.42
BOD (mg/L)	2	3	<	2	2	3	<
TSS (mg/L)	8	50	6	69	45	82	47
Total Coliforms (MPN/100 mL)	130000.0	43520.0	38730.0	23000.0	3740.0	43520.0	11870.0
E. coli (Cfu/100 mL)	4000.0	900.0	516.0	730.0	900.0	930.0	350.0
Solids or Foam Present?	NONE	NONE	NONE	NONE	NONE	NONE	NONE
2019 SEASON 2 - WET - JUNE 1ST TO AUGUST 31ST							
PARAMETER/SITE	CC - 2	LPC - 3	CC - 1	BPC - 3	LPC-1	BPC-4	PC-1
DATE	8/15/2019	8/15/2019	8/15/2019	8/15/2019	8/15/2019	8/15/2019	8/15/2019
TIME	12:15	13:00	12:40	14:00	13:40	12:25	14:30
FIELD TEMP, C°	18.9	20.5	20.1	20.9	21.0	20.9	21.8
FIELD CONDUCTIVITY (mMHO/cm)	1011	568	600	570	588	480	540
FIELD pH	7.67	8.26	8.08	8.24	8.08	8.35	8.18
FIELD DO (%)	70%	80%	71%	78%	81%	81%	80%
FIELD DO (mg/L)	6.45	7.22	6.40	6.95	7.23	7.26	6.98
BOD (mg/L)	3	12	3	7	9	6	3
TSS (mg/L)	30	148	9	516	488	260	74
Total Coliforms (MPN/100 mL)	461100.0	242000.0	41400.0	331000.0	461100.0	160700.0	62000.0
E. coli (Cfu/100 mL)	26800.0	7600.0	2200.0	6000.0	3730.0	6600.0	1200.0
Solids or Foam Present?	YES	YES	YES	YES	YES	YES	YES

B. USGS Sampling and Analysis

In July 2012, the City requested the USGS Nebraska Water Science Center implement a Missouri River water-quality monitoring program at selected points near the Omaha metropolitan area. The agreement with USGS has been extended through to 2020 and is anticipated to continue. This program is consistent with the *Draft-Implementation Monitoring Plan*. The scope for the USGS work includes the following key components:

1. Provide continuous stage and discharge records for the Missouri River at locations important to the pursuit of understanding the water quality in the river. Continuous stage discharge is provided by the USGS for the Omaha area at the I-480 Bridge gauging station. Data from location at the I-480 bridge can be found at: http://waterdata.usgs.gov/nwis/uv?site_no=06610000

2. Provide monthly discrete water-quality sampling of selected compounds at locations important to the pursuit of understanding on water quality in the river. The four discrete sampling locations are:

    - MR-5 USGS Site Number: 412126095565201
      Missouri River at NP Dodge Park (above the City)
    - MR-4 USGS Site Number: 411636095535401
      Missouri River at Freedom Park (below the Airport)

- MR-CB USGS Site Number: 06610505
  Missouri River near Council Bluffs, IA (below MRWRRF and above the confluence with Papillion Creek, North/East side of the river)
- MR-1 USGS Site Number: 410333095530101
  Missouri River near La Platte (downstream of the PCWRRF and below the confluence with Papillion Creek but above the Platte River)

Field parameters monitored at these locations include stream discharge, pH, temperature, dissolved oxygen, specific conductance, turbidity, E. coli and total coliforms, total suspended solids (TSS), total phosphorous, 5-day biochemical oxygen demand (BOD_5), total Kjeldahl nitrogen (TKN), nitrogen, nitrate, ammonia nitrogen, and floating debris.

The USGS indicates whether there were wet weather conditions in Omaha or upstream during the sampling event. Apart from E. coli and total coliforms, samples are a composite of the cross section of the stream. Discrete sampling data were collected by USGS staff and analyzed through Midwest Laboratories, Inc. and USGS Labs. Samples were collected from a boat and are based on depth-integrated sampling procedures used by the USGS to obtain samples that represent a composite of the cross-section of the Missouri River at the sampling location.. Discrete sampling locations as described are shown on Figure 7-1. Except for site MR-4, continuous sampling is also collected at these same locations for selected parameters. The continuous sampling is further discussed below.

3. Provide continuous monitoring of selected water-quality parameters at locations important to the pursuit of understanding the water quality in the river. USGS obtains continuous data for the Missouri River at the following sites for pH, temperature, dissolved oxygen, specific conductance, and turbidity. These data are provided to the City directly, and published on the USGS website for the sampling site:

   Data for MR-5 may be found at:
   http://waterdata.usgs.gov/ne/nwis/uv/?site_no=412126095565201

   Data for MR-CB can be found at:
   http://waterdata.usgs.gov/ne/nwis/uv/?site_no=06610505

   Data for MR-1 can be found at:
   http://waterdata.usgs.gov/ne/nwis/uv/?site_no=410333095530101

Results from this effort will provide the City with information to support long-term planning goals and regulatory compliance. The data from this study will be used in the future to study temporal trends and evaluate water-quality variations during different discharge conditions. This study reinforces the goals of the USGS science direction by providing citizens, communities, natural-resources managers, and policymakers with clearer knowledge of the status of the Missouri River, an increased capacity to discover trends over time, and an improved ability to make decisions about future strategies and policies.

Table 7-3 provides a range of results for the parameters listed at each of the monitoring sites. These results show the general increase in discharge, TSS, total coliform, and E. coli as the gauge locations move downstream. In addition, it shows that E. coli levels can be very low

at times. The discharge remains fairly consistent as the sites move downstream as these large flows occurred when the Missouri River was at flood stage. See Section III, E. Prohibition of Dry weather CSOs for significant discharges to Missouri River that may have impacted results. Attachment 5 provides summary of past monitoring and recent provisional results through October 10, 2019.

Table 7-3: 2019 USGS Monitoring Parameter Results

Parameter	Monitoring Site (Upstream to Downstream)							
	MR-5 N.P. Dodge		MR-4 Freedom Park		MR-CB Council Bluffs		MR-1 LaPlatte	
	Max	Min	Max	Min	Max	Min	Max	Min
Discharge (cfs)	104,000	26,000	107,000	26,000	106,000	26,000	106,000	26,100
Temperature (^{0}C)	28.9	0	25.8	0	28.9	0[a]	28.6[a]	0[a]
Dissolved Oxygen (mg/L)	13.9[a]	5.9	13.3	6.5	13.5	5.8	13.9[a]	5.6[a]
BOD_5 (mg/L)	3	2	3	2	3	2	4	2
pH	8.5[a]	7.7	8.4	8	8.4[a]	7.5	13.5[a]	5.9[a]
TSS (mg/L)	198	20	202	28	200	28	202	29
E. Coli (MPN/100 mL)	550	10	500	10	1,200	22	12,000	21
Total Coliform (MPN/100 mL)	16,000	200	13,000	300	24,000	200	130,000	180

Note: Data presented in Table 7-3 are provisional unless otherwise noted.

[a] Data approved by USGS

°C = degree(s) Celsius

cfs = cubic feet per second

MPN = most probable number

VIII. Performance Report

As stated in the CSO Permit, Part VIII, Section E, the performance report consists of:

- Reporting the number of times each CSO outfall has an overflow and evaluating whether the controls are achieving their design intent
- Providing documentation that demonstrates each CSO overflow occurrence was the result of a wet weather event
- Once in the term of the Permit, providing the percent by volume of the combined sewage collected in the CSS during precipitation events on a systemwide annual average basis that is eliminated or captured for treatment

A. CSO Occurrence Inspection

Per *Combined Sewer Overflow Guidance for Nine Minimum Controls* (EPA, 1995), "The municipality should record the number of CSO overflows at as many outfalls as feasible." The City monitored all 26 active CSO points in the reporting year, when possible. The high Missouri River levels impacted some of the records. These records are maintained at Sewer Maintenance Division. MRWRRF and PCWRRF are responsible for recording the number of occurrences for CSOs 102 and 201 and providing to Sewer Maintenance Division for filing. CSO 109 and CSO 205 are monitored by level sensors and periodically field visited for quality control. The remainder are monitored by visual observation per the CSO device check procedure.

Access and safety were considered in development of the procedures. The discharge point to the receiving stream is not always the safest or most accessible location for visual observation. If the system has an upstream diversion structure, a "block" or device is placed that, when moved from its original location, functions as a simple physical indicator that an overflow has occurred. A typical arrangement would be the placement of the device on the top of a weir wall or edge of an overflow pipe in a CSO diversion structure. The occurrence of an overflow is indicated when the device is moved off of the weir wall in the downstream direction.

This reporting year the procedure for CSO 119 visual inspection was improved. This CSO historically has not had a device at the Monroe Lift Station diversion structure because of extreme hazardous atmospheric conditions and difficult accessibility. After confirming the network in the SSES from the CSO Project in the area, CSO block devices were installed at 5 upstream diversion structures on December 20, 2018. These diversion structures, where overflows can occur, are MHs 0551001, 0551020, 0551021, 0571049, and 0551030. The main objective of these inspections is to prevent any dry-weather CSOs. Although the Monroe Lift Station diversion structure is still too hazardous to use a block or maintain a flow meter, the MRWRRF operators provide data on wet-well levels and crews are deployed to look at the outfall.

The City' standard procedure continued this year to inspect the designated CSO structures and devices after rain or snow melt events and make a record of the inspection in the bypass tracking database. City personnel are dispatched within 24 hours of wet weather occurrences, including weekends and holidays, to meet current permit requirements. The inspections are performed and documented by the Sewer Maintenance Division. Routine preventive

maintenance checks at the lift stations and control gates also allow for a check of potential dry weather CSO occurrences. Apart from CSO 102, the visual observations are logged into a single database maintained at the Sewer Maintenance Division.

Table 8-1 shows the counts of wet weather CSOs in the reporting year. Note that the Missouri River elevations were above Action Stage from March to beyond September of 2019 and were above Flood Stages three times during the reporting year, which has impacted the CSO accounting.

Table 8-1: Wet Weather CSO Occurrences

CSO Outfall	Receiving Water	CSO Frequency (days)
102	Missouri River	64[a]
103	Missouri River	2
105	Missouri River	11
106	Missouri River	5
107	Missouri River	4
108	Missouri River	4
109	Missouri River	28
110	Missouri River	5
111	Missouri River	2
112	Missouri River	22
114	Missouri River	3
115	Missouri River	5
117	Missouri River	4
118	Missouri River	23
119	Missouri River	31
121	Missouri River	21
201	Papio/Missouri Confluence	5[b]
202	Cole Creek	33
203	Cole Creek	32
204	Cole Creek	54
205	Little Papio Creek	51
207	Blood Creek to Little Papio	3
208	Blood Creek to Little Papio	5
210	Little Papio Creek	25
211	Little Papio Creek	10
212	Little Papio Creek	20

[a] Reported as each day on which CSOs occurred, which leads to the highest frequency of CSOs at 102 compared to other CSOs counted as 1 occurrence for multi-day wet-weather events

[b] March 14, 2019 and 4 rain events while bypass gate open from March 29, 2019 - April 17, 2019.

The bypass gate at CSO 201 was opened once on March 14, 2019, to relieve wet-weather flows and reclosed as the river began to rise. The flood happened on March 15, 2019, and the bypass gate stayed closed when the PCWRRF was evacuated. The gate was opened on March 29, 2019,

to bypass as a result of the MWRRRF damage and was closed on April 17, 2019. Four rain events occurred during this time period.

During the report period, City staff logged 1,821 total CSO checks: 1,536 were post-rain and snowmelt checks, and the remainder were biweekly checks for potential dry weather occurrences. A total of 283 routine inspections were recorded for the CSO points the City was able to check. During that period, there were 79 days with rain events, 47 of which had rain greater than 0.1 inch. The CSO locations in the Papillion Creek Basin reflect a CSO frequency as high as 54, while the CSO locations along the Missouri River show a frequency that is much lower than values reported in previous years, because the high river level precluded visual inspections. Multi-day rain or snowmelt events were often only counted once in the tracking database due to visual inspection occurring after rain event had ended. Dry weather CSOs are reported in Nine Minimum Controls Section III.D of this Annual Report.

B. Evaluation of Completed Controls

The CSO NPDES Permit requires reporting annually as to whether the controls are achieving their design intent. When CSO controls are completed as identified in the LTCP, the City monitors the effectiveness of that control.

CSOs 207/208 - A construction project was completed this year to separate the sewer system for CSO 207. The CSO 207 diversion structure was reconstructed in January 2019 to convey only sanitary flow. A few remaining construction activities were completed in April 2019, with the separation officially completed on April 30, 2019. The CSO occurrences reported in Table 8-1 are from October 1, 2018, to January 14, 2018. CSO 208 underwent flow monitoring in the summer of 2019, following the completion of construction. Some CSOs occurred during the flow monitoring period. The City will continue to monitor this CSO to evaluate the potential to close the diversion because much of the wet weather influence should have been removed with the separation project.

CSO 103 , Bridge Street Lift Station - The 36th Street and McKinley sewer separation project was completed in November 2014. A significant 2018 flow monitoring effort by the City yielded a final report in 2019. The results for Bridge Street Basin are as follows (GBA, 2019):

A subsystem is considered to have excessive I/I if it averaged 2% or greater total rain volume entering the sanitary sewer… had greater than 2% rain to sewer: 0114005 … had excessive infiltration, but not excessive inflow. Subsystems with excessive infiltration are based on an infiltration rate above 2,500 gpd/IDM, which is based on historical records from flow monitoring areas of similar size and makeup. 0114005 with a subsystem infiltration rate of 4,091 gpd/IDM.

The objective in the LTCP is to deactivate this CSO outfall pending verification of effective inflow reduction and additional monitoring. This CSO discharged only twice during the report period; it previously averaged about 11 overflows per year. In Q4 2019 a level sensor is planned to be installed in the chamber that receives the influent flow, near the CSO overflow pipe. This will be used to determine if the outfall can be partially closed, thereby raising the overflow elevation and ending CSO discharges. The basin rehabilitation plan for I/I reduction will be assessed among the City risk-based asset management decision matrix. The City also started a study phase for a lift station upgrade.

C. Wet Weather CSO Occurrences

The CSO NPDES Permit requires documentation to be provided in the Annual Report, demonstrating that each CSO overflow occurrence was the result of a wet weather event. If there is a CSO discharge that occurred during dry weather, this will be reported in Section III.D, Prohibition of CSOs during Dry Weather.

Documentation is provided in Attachment 4 to demonstrate that each CSO overflow occurrence was the result of a wet weather event. The rainfall during the report year at Eppley Airfield was just over 37 inches. When compared with the average annual rainfall of 31 inches, this was a heavier-than-average rainfall year. October, December, May, August, and September were at least 1 inch wetter than average (ranging from 1.04 to 3.38 inches above average), while April, June, and July were at least 1 inch drier than average (ranging from 1.20 to 1.89 inches below average).

Attachment 4 identifies the CSO outfall inspected, the date and time of the inspection, and the person who completed the inspection. It provides the reason for the overflow, identifies whether an overflow occurred, and notes if it was still occurring during the inspection. Comments and the rainfall amount are noted. The depth of flow at CSO 205 is also recorded as per City procedure, using a level sensor installed in 2018 that allows the monitoring of CSOs and peak depths during construction of the SCRTB.

The City reviews available rain data during the year and compares to the results of the inspections. The MRWRRF is responsible for recording and reporting wet weather discharges from CSO 102. There were 64 days with overflows at CSO 102. The City uses this accounting as an additional check for the other CSOs. If there is another CSO with a greater frequency than CSO 102, City staff will take a closer look at the data and perform quality assurance queries to confirm the CSO occurred during a wet weather event. There were no other CSOs with a greater frequency than CSO 102 in the reporting year.

Part of procedure is to check against Eppley Airport rain data, which registered 131 days with precipitation. Of that, 74 of the recorded daily precipitation depths were 0.1-inch or greater. The highest frequency of CSO occurrences of 54 is within this rain event count.

As a result of the spatial variation of rain, the number of occurrences and amount of rain recorded at Eppley Airport are only used as a starting point of reference. On dates where only trace amounts are recorded by Eppley Airport, the City-maintained rain gages in the CSS area are compared and corrections are made to the tracking database to more accurately represent rainfall totals.

D. Percent by Volume Captured

The CSO NPDES Permit requires that once in the term of the Permit, the City should provide the percent by volume of the combined sewage collected in the CSS during precipitation events on a systemwide annual average basis that has been eliminated or captured for treatment. The analyses use the representative year rainfall (to evaluate average conditions) with an InfoWorks model simulation of the sewer system at the end of 2019.

In the Missouri River Watershed, two projects will either be complete by the end of 2019, or soon thereafter. These projects were included, although their completion is outside the Annual

Report year. The two projects are: (1) CSO 117 – Missouri Avenue/Spring Lake Park Sewer Separation Phase 2, and (2) Hanscom Park Green Infrastructure.

The results from the 2019 model show the following for the Missouri River Watershed:

- A 56 percent capture of representative year wet weather volume
- A significant increase in flow receiving secondary treatment during wet weather due to increased treatment capacity at MRWRRF and increased pumping capacity at the new Leavenworth Lift Station; the treated volume was 40 percent greater than in 2002 (Existing Conditions)

These values can be compared to the 2002 Existing Conditions value of 30 percent capture of representative-year wet weather volume. In addition, several projects are in construction or design that will significantly boost the percent capture in the near future:

- Burt-Izard Lift Station (in construction) – will increase pumping capacity from 25 to 50 MGD
- Riverview Lift Station (recently bid) – will increase pumping capacity from 3.5 to 7 MGD
- Monroe Lift Station (in design) – will increase pumping capacity from 40 to 65 MGD
- Monroe South Barrel Separation (in design) – will isolate the Monroe South Barrel to significantly reduce combined sewage volume at CSO 119

In the Papillion Creek Watershed, the 2019 model shows 84 percent capture of representative year wet weather volume (compare to 78 percent capture for 2002 Existing Conditions). The increased capture is due to sewer separation projects (including the elimination of CSOs 207 and 209) and increased flow to PCWRRF. Based on historical data, the peak day flow into PCWRRF is 130 MGD, whereas the peak flow rate used to model the 2002 conditions was 105 MGD, based on operations at that time. In addition to the plant accepting a higher peak flow rate, the gate that prevents overflows at CSO 201 is rarely opened under current operations. Due to the length of the interceptor conveying flow to PCWRRF, typical current operations allow most peak flows to be temporarily stored in the interceptor, avoiding the need to open the CSO 201 gate unless extreme conditions occur.

Several sewer separation projects are currently in design or construction in the Papillion Creek Watershed, including CSOs 202 and 203, part of 204, and 210. In addition, construction has started on the SCRTB at CSO 205, which will significantly improve water quality in the watershed in the next few years.

IX. Other Information

The CSO Permit, Part VII.F, suggests the City could include other information about measures of success for the Program; these may include the reduction in the number of overflow events and in the number of CSO outfalls, or other indicators of improved receiving water quality.

As a result, this year's report includes information about the reduction in overflows and CSO outfalls, receiving water quality, and associated benefits of the CSO Program. At the NDEE Waste Management Division's request, this report includes a section for materials management within each CSO Program project. This section of the report will also highlight other effective measures enacted by the City and the CSO program to ensure success.

A. Reduction in the Number of Overflow Events

As LTCP projects are implemented, the number of overflow events will reduce. CSO occurrences have been reduced by 70 to 90 percent at Bridge Street Lift Station, CSO 103; 66th St. and Pacific St., CSO 211; and 45th St and Y St., CSO 208. The level of reduction in the number of overflow events will vary based on the following factors:

- The type of control being established for a given CSO point through the implementation of the LTCP
- The time when the control of a CSO point will be fully implemented as a part of the LTCP
- The unpredictability and varied nature of wet weather that impacts the magnitude, volume, and duration of the overflows at a given CSO point

Monitoring the overflow occurrences as discussed in Section VIII, Performance Report, will help the City evaluate the progress of, and understand the success of, the LTCP and its projects as they are being implemented. As more projects come online, a system will be developed in cooperation with NDEE to report the compliance monitoring associated with the CSO Program.

B. Reduction in the Number of CSO Outfalls

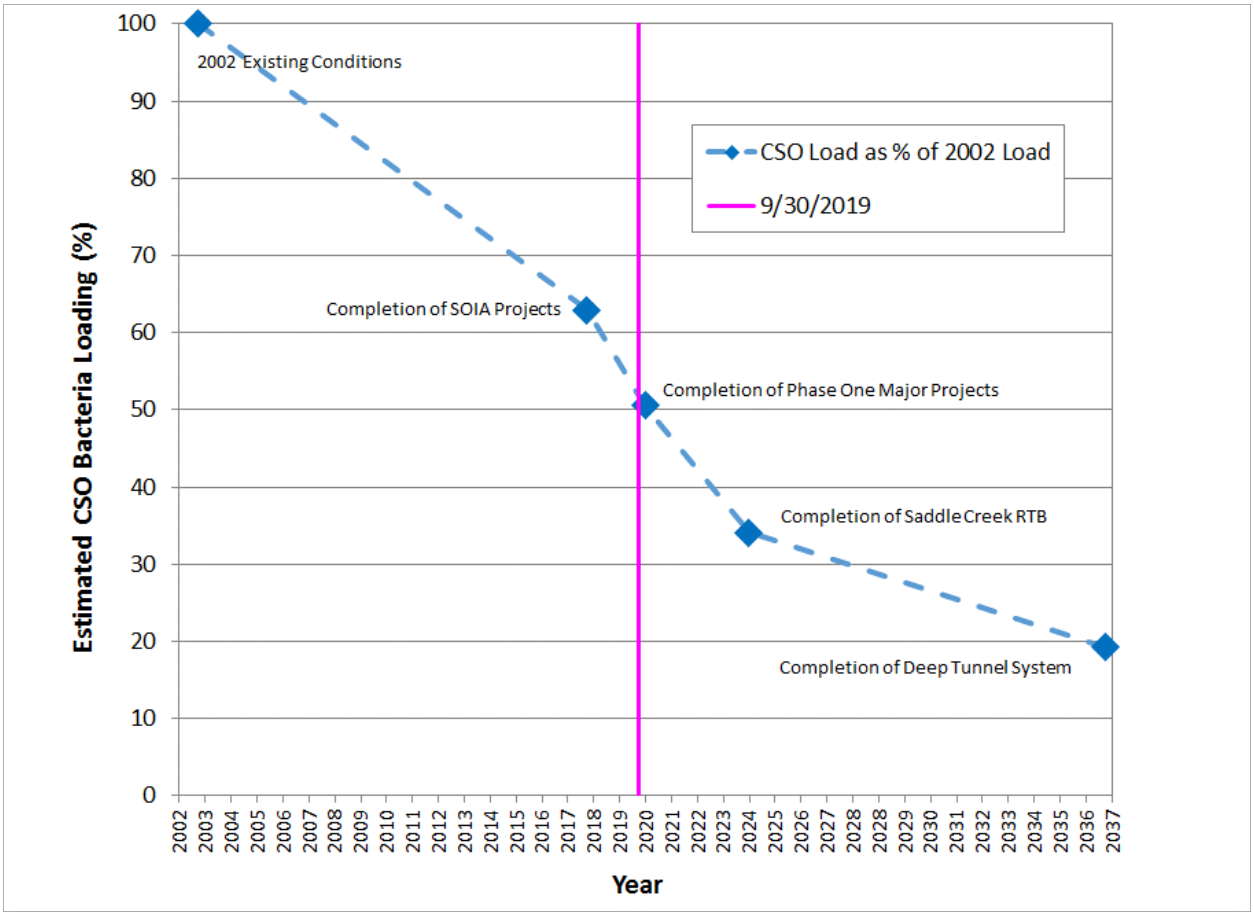
To date, the City has worked to eliminate the occurrence of CSOs at several permitted outfalls. Four have been eliminated completely: (1) CSO 209, (2) CSO 104, (3) CSO 113, and (4) CSO 207. During this reporting year, the number of CSO outfalls has been reduced by 1 with the reconstruction of CSO 207 diversion to convey only sanitary flow, cutting off ability to discharge at the permitted point. This leaves 25 active permitted CSO points. The wet weather flows from former CSO 207 diversion are currently being conveyed to CSO 208 discharge point. This drainage basin contains several pre-CSO program sewer separation projects and will require study to determine if all significant inflow sources have been removed.

Bridge Street Basin completed initial post-construction I/I analysis and will progress in the next year with planning system rehabilitation and lift station improvements. Real-time level sensor monitoring will be used to determine if CSO 103 overflows are true, and if an overflow weir can be raised to minimize discharges. Sewer separation and inflow reduction projects in the basins of CSOs 202, 203, 208, and 210 are currently underway or are planned in the future, with the goal of deactivating the outfalls.

C. Receiving Water Quality

Figure 9-1 shows the expected reduction in E. coli from CSOs resulting from the implementation of the LTCP. The E. coli load to the Missouri River was reduced significantly with the implementation of the SOIA Lift Station, Force Main, and Gravity Sewer, as well as the MRWRRF Schedule A improvements. Another major reduction occurred with the completion of the MRWRRF Schedule B projects.

Figure 9-1: Modeled E. coli Reduction over LTCP Implementation



D. Water Quality Modeling

Highlights of the Work Plan

The previous spreadsheet model was adequate to estimate total downstream loadings of E. coli to the receiving water under a variety of scenarios, but was limited in terms of spatial resolution and daily time step, and did not account for the in-stream decay of E. coli. A work plan was developed that addresses each limitation in the spreadsheet model approach and explains how the limitations will be resolved by a more robust model. The proposed model will be fully integrated with the City's existing InfoWorks model.

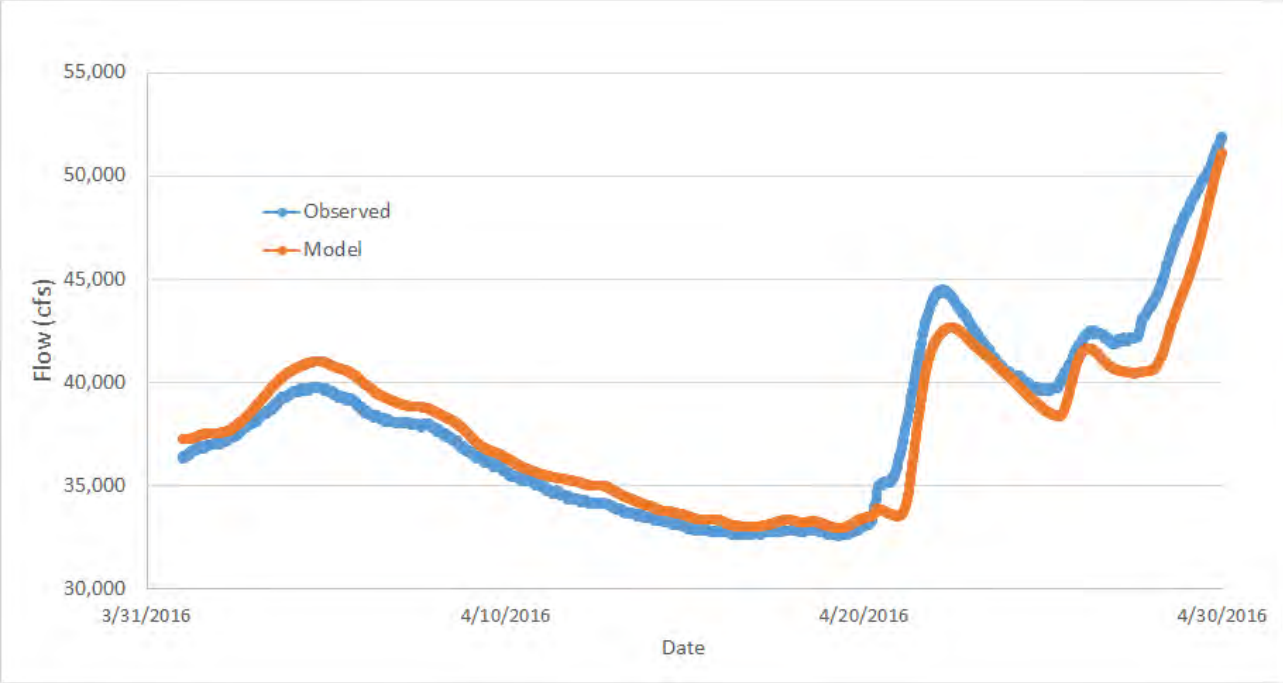
The model development is structured to develop two separate bacteria water quality models in two separate phases. Phase 1 is a model of the Missouri River between NP Dodge Park and the

Platte River confluence. This will provide information relative to the impacts of the various CSOs along the Missouri River. Phase 2 may be a model of the Papillion Creek Watershed. The phased approach benefits the City in variety of ways:

- The Phase 1 and Phase 2 models will be built separately, to increase flexibility and efficiency at reduced model run times, and to adequately characterize two very different types of waterbodies.
- The phased approach allows the City to evaluate progress and results of the Missouri River model before the development of the Phase 2 Papillion Creek model. The Papillion Creek Watershed will be more complex to model because of the presence of multiple tributaries.
- The Phase 1 and Phase 2 modeling efforts will each start with the development, calibration, and validation of an InfoWorks model. Existing HEC-RAS models of the Missouri River and Papillion Creek Watershed will be used. Inflows from CSOs, stormwater discharges, WRRFs, and tributaries will be incorporated.
- The validated surface water hydraulic model will be overlaid with the water quality model component. Input concentrations of bacteria at dry and wet weather conditions will be applied based on existing monitoring data. The InfoWorks bacteria water quality models will be calibrated and validated against in-stream data collected in wet weather.

The development of the water quality model started in 2019 and will be completed in 2020. Currently, the hydraulic portion of the Missouri River model has been developed. Figure 9-2 provides an example of the results showing the actual river flow as compared to the modeled flow. The water quality portion of the model will developed during the next reporting year.

Figure 9-2: Observed Data and Model Output – Missouri River Flow at Omaha USGS Gauge



E. Condition Assessment of Large Diameter Sewers

The City has realized the value and significance of protecting the large-diameter combined conveyance systems. With the investment in SSES for several CSO projects, the City has learned that this 100-year old collection system is at risk for debris deposition from decades of roadway and development construction, as well as deteriorated brick manholes and pipelines. The success of some of the CSO controls rely on the large-diameter sewers for proper conveyance and storage.

The CSO Program has selected approximately 11.3 miles of large-diameter combined sewers in the Missouri River watershed for condition and risk assessments. The large-diameter sewers to be investigated have been prioritized based on the criticality to achieve LTCP compliance and to operate the collection system. These condition assessments focus on one or more of the older, larger-diameter sewers that may be used more frequently, those with different hydraulic conditions, or those used for inline storage as part of the overall strategy to achieve LTCP compliance. These sewers include some of the oldest sewers placed into service in Omaha, dating back to the early 1900s. The same sewers also have high consequence-of-failure (COF) risk ratings due to their large service areas (large number of impacted customers) and location (cost to repair or replace sewers).

During late spring and summer 2019, manholes were lamped; this consisted of investigating sewers through manholes using cameras and lights generally attached to a pole or rope. Lamping took place along the targeted sewers to provide a preliminary indication of pipe and manhole condition, verify access, and estimate the magnitude of debris that may be anticipated. Specifications are being prepared for the competitive procurement of an outside contractor to perform multi-sensor investigations of the targeted sewers. The data collected by the contractor will be used to update the asset's likelihood-of-failure (LOF) risk rating. The data will be further analyzed and evaluated by members of the PMT to develop alternatives for repair/ rehabilitation/replacement and, if needed, recommendations for additional analyses or inspections. The results of the individual asset recommendations will likely be evaluated in the latter half of 2020; specific projects will be identified, and business case evaluations completed based on the total risk rating of the assets.

F. Material Management

During the 2019 reporting year, waste material associated with CSO Program project construction was transported to landfills or industrial fill sites in the area. Material included building demolition materials, general construction debris, and soil. The City monitors and tracks contaminated waste materials and soils and uses this report to update the NDEE Waste Management Division.

Several projects commenced or continued construction in 2019, but only a few generated excess soil or waste material that required disposal in a landfill. These projects and the volume of soil or waste material disposed are presented in Table 9-1. No hazardous waste was disposed of in 2019.

As part of the design process, additional environmental and geotechnical investigations occurred on a variety of projects. The cuttings were disposed in accordance with applicable rules and regulations.

In addition, to provide the contractor with the necessary guidance and protocols to manage and dispose of soil and groundwater generated during the implementation of the LTCP, the City collaborated in the 2012 to 2013 timeframe with NDEE to develop an NDEE-approved Program-related Materials Management Plan for Soil and Groundwater referenced in the Project Manual of the Construction Documents.

Table 9-1: Volume of Waste Disposed during LTCP Projects

LTCP Project	OPW Number	Material Taken to Landfill	Material Taken to C&D Landfill or Industrial Fill Site
Spring Lake Phase 2 – Missouri Ave CSO 117	51197B	Pheasant Point: 1,510 tons (refuse, debris, and soil)	0
MRWRRF Improvements – Schedule B2	52642	0	Mills County Landfill: 218.4 tons (debris)
Saddle Creek RTB	52049	0	Industrial Fill Site: 93.758 tons (soil)

G. Contractor Engagement Process

The construction market in the Omaha metro area is very challenging, with a low unemployment rate, a lack of available labor, material cost uncertainty, and an overall lack of general contractors bidding CSO Projects because of the strong economy. The Omaha market leads the nation in development projects per capita for the third year in a row (*Lincoln Journal Star*, 2019). In addition to the private developments (Google, Facebook, Avenue One, Hartwood Preserve), the metro area includes significant construction projects and programs with Omaha Public Schools, Nebraska Department of Transportation, Omaha Airport Authority, Council Bluffs Interstate System, and Metropolitan Utilities District. The CSO Program is tracking numerous regional upcoming bid opportunities and is coordinating bid periods with metro area agencies and utilities to help maximize the number of contractors bidding projects.

The labor shortage within the construction market, coupled with Nebraska leading the country in the number of economic development projects per capita, requires a robust contractor engagement process. Given the limitations of contractor and labor availability, the following activities are considered for each project:

- A Constructability Review Workshop may be conducted to solicit contractor input at the 50 to 60% design level. A public notice is issued, inviting all contractors to participate. Examples of topics discussed are site constraints, constructability enhancements, construction sequencing, risk issues, cost saving alternatives, schedule feasibility, and phasing options.
- Project Update Meetings, called "Industry Days" were included on the Saddle Creek RTB project. These meetings provided the contracting community a status update on a project as its development progressed. The goal was to disseminate ample information to the contracting community to familiarize prospective bidders with the project and create bidder interest.

- A Contractor Prequalification process was done for Saddle Creek RTB. This project may be considered in the future when special expertise is required of a contractor on a particular type or size of project. Contractors are screened and only those meeting the minimum required qualifications may submit a bid. This is intended to reduce the risk and potential damages or claims due to the actions of an inexperienced or unqualified contractor, before the bid takes place.
- Bidding documents may be advertised early at the 95% design development level to allow a longer period of time for the contracting community to consider a specific project before actual project advertisement.
- Small and/or Emerging Business (SEB) engagement through Omaha's REACH program. The goal is to inform both general contractors and small businesses (City-certified SEBs or not) about the construction bid opportunity. These meetings support information sharing and provide the opportunity for the Project Team to discuss the project and for attendees to ask questions. This is also a networking opportunity for small businesses to meet and discuss the project with general contractors who may be bidding the project.
- Bid notification is achieved through public notice in newspapers, email, and postcards, as well as through the City of Omaha's online bidding platform. Prospective bidders also have access to the up-to-date planholders list so they can understand the possible market and level of competition for each project.
- The CSO Program has a webpage dedicated to contractor outreach, "Contractors Corner" (https://omahacso.com/contractors-corner/), which includes information such as project type, estimated bid advertising timing, estimated beginning of construction timing, estimated contract value, and anticipated SEB categories of work.

These activities and resources serve as valuable tools to strengthen the competitive advantage of all industry peers, especially those who service the many markets that are similarly challenged as development-rich and/or talent-poor. Outreach is a critical component of the CSO Program to engage the contractor community and to keep general contractors and small businesses informed during each phase of a project. These practices all help provide cost control and the cost management of the CSO Program by achieving the best value for a given project while providing a means to improve project schedule and constructability, reduce operating and overall project costs, and mitigate risk.

H. Economic Inclusion and Engagement

The EEIT continues to promote the economic benefits of the CSO Program to various audiences at every appropriate opportunity. For example, the team shared additional career paths in the overview presentation about the CSO Program to the students from Omaha South Magnet High School and Omaha North High School at the fall programs.

The EEIT, in collaboration with the REACH Program and the City's Human Rights and Relations Department, planned and participated in five Project construction briefings as noted under the contractor engagement process. Multiple companies attended, and the briefings provided small businesses with tools and information for bidding on projects or connecting with general contracts as subcontractors. These information sessions have helped small businesses build their companies and increase their capacity.

The EEIT participated in the high school youth engagement efforts this fall and conducted additional classroom outreach throughout the year.

I. Water Resource Recovery Facilities Master Plan

The City has contracted with a team of consultants to develop a Master Plan for the City's two WRRFs. The two facilities are the MRWRRF and the PCWRRF. The basic purpose of the Master Plan is to identify near- and long-term facility improvements over a planning horizon of 20 years to meet current and future effluent limits, treat future wastewater flows and loadings, and meet appropriate condition and reliability requirements. Future permit limits are anticipated to include more stringent ammonia limits and those for nutrients (nitrogen and phosphorus). A 5-year capital improvements plan for the facility improvements will be developed, along with a 20-year schedule. It is expected that the improvements will cost more than several hundreds of millions of dollars.

The Master Plan impacts the CSO Program in several ways:

- The Master Plan will evaluate the impacts of wet weather flows on the two facilities. At the MRWRRF, this will include the treatment of 64 mgd of flow through secondary treatment and disinfection. Recent improvements to the facility under the CSO Program provide for a wet weather treatment capacity of 150 mgd through preliminary and primary treatment and 64 mgd through secondary treatment. Future process changes must accommodate these flows, including dewatering flows from future CSO facilities, such as tanks and tunnels. The Master Plan will also evaluate a wet weather treatment capacity for the PCWRRF, which may affect overall wet weather volume capture.
- Site requirements for new treatment facilities will impact the ability to locate any wet weather facilities at the space-limited MRWRRF. The Master Plan and CSO PMT will need to coordinate their efforts to meet the needs of both the CSO Program and wastewater treatment to establish efficient and cost-effective approaches.
- The significant cost of WRRF improvements and required schedules may affect the implementation schedule of the CSO Program. The CSO PMT, in coordination with the Master Plan Team, will conduct a prioritization task to balance the needs of CSO, the WRRFs and other costs associated with the City's collection and treatment system. The results of the prioritization task will be reflected in the 2021 LTCP Update.

The execution of the WRRF Master Plan has been impacted by the flooding that took place in 2019. It is currently scheduled to be completed by June 2020.

X. Works Cited

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Attachment 1 – O & M Procedure Updates and Revisions Summary

The O & M procedures, as documented in the *Sewer System Operation and Maintenance Manual for Sewer Maintenance Division* (Brown & Caldwell, 2006), had the following updates:

- Appendix B: CSO Station & Monitoring Device Procedures and Locations
- Appendix D, *Standard Operating Procedure for Reporting and Public Notification of Bypass, Dry Weather Combined Sewer Overflow & Sanitary Sewer Overflow*
- Appendix F: Cover Sheet of CSO Station Procedure Manual

In addition, a Simple "Pre-Survey" manhole inspection collection form, SOP, and condition rating level were developed and is included herein.

CITY OF OMAHA
PUBLIC WORKS
ENVIRONMENTAL SERVICES

STANDARD OPERATING PROCEDURE

For

REPORTING AND PUBLIC NOTIFICATION

Of

WASTEWATER BYPASS, UNPERMITTED COMBINED SEWER OVERFLOW & SANITARY SEWER OVERFLOW

DATE REVIEWED:	09/30/2019
NEXT REVIEW DATE:	**3/1/2020**
LAST REVISION:	3/1/2019
ORIGINATION DATE:	12/28/03 – Marty Grate

Reviewed By: J. Morales/W. Robinson	Updated: contact lists, job titles, acronyms, bypass memorandum and Overflow Report Form, added organizational chart, added consistent terminology with WOER Plan

SAFETY

Hazards	Protection Measures
1. N/A	1. N/A

KSA'S and STAFFING

Staffing will consist of Public Works Division Managers, supervisors, and field personnel who together must possess the following KSA's:

Knowledge of City of Omaha of the Water Resource Recovery Facilities and Combined Sewer System and the NPDES Permits reporting requirements.

Skill in preparing accurate and detailed reports, as well as carefully prepared statements for media distribution.

Ability to evaluate situations and conditions and exercise good judgment in determining a course of action

EQUIPMENT

-Telephone -Personal computer -Mobile device -Sewer Maps
(maps or app w/ waterbody, contours, parcels, City and SID boundaries)

TASK DESCRIPTION

As part of the City of Omaha Wastewater Overflow Emergency Response Plan (WOER Plan), this SOP addresses the overflow notifications and reporting procedure. NPDES Permits regulate discharges at the Water Resource Recovery Facilities and the Combined Sewer Overflow facilities. Violations to the Permit require reporting to the NDEE and shall apply when any of the following occur:

- Bypass – A wastewater release that occurs within or at a Water Resource Recovery Facility (WRRF) after the headworks or the diversion from any portion of the WRRF.

- Overflow – when used without qualification, shall be a general term to mean any release of any volume of wastewater from the collection or treatment system, for the purpose of action within the WOER Plan and this Notification SOP. This term shall be all inclusive of bypasses, backups, discharges, SSOs and reportable CSOs.

- Sanitary Sewer Overflow (SSO) – A wastewater release that occurs within or from the separate sanitary sewer system. SSOs could occur during dry and wet weather, and may or may not impact Waters of the State. A backup into private property, casued by the public system, is reportable as SSO.

- Unpermitted Combined Sewer Overflow (CSO) – A wastewater release that occurs within or from the combined sewer system, during dry or wet weather, not permitted to discharge under the NPDES Permit.

PROCEDURE - GENERAL

Upon discovery of a potential violation, critical information needs to be reported to the Nebraska Department of Environmental & Energy (NDEE) Regional Office within 24 hours. Verbal notification (via telephone or message system) is acceptable, but City procedure requires all discharges that reach the Waters of the State to have both a **verbal** and **written** communication within this timeframe.

In addition, any discharge within public ROW, or near areas where the public may be exposed, or would be raised up as a concern to City government or media needs to be elevated up the chain of command , as soon as is practicable, to the ***Sewer Maintenance Division Manager*** and ***Designee*** of the *Assistant Director of Public Works-Environmental Services.* One of these individuals shall be responsible to notify the Assistant Director and/or Director in some cases. This internal notification should generally be within 1 hour of discovery.

The **Initial Notification** must be made as soon as practicable to all Supervisors and the Manager with staff involved in the discovery and mitigation of the event. This immediate initial notification is needed to make decisions and carry out further portions of the notification procedure. See *Overflow Report Form* for appropriate information to report. Sewer Maintenance Division Manager and Designee will present information to the Assistant Director to determine criticality and impact to health of humans and environment. If warranted a **Public Notification** will be issue via the Mayor's Media coordinator.

A **Follow-Up Report,** in the form of a letter, citing final cause, mitigation and long term corrective action, shall be mailed to the NDEE Headquarters **within 5 days of the event.**

Designee is responsible for proper documentation and filing of all events reported sent to the State and periodic review of this SOP.

PROCEDURE – DETAILED

1. **DISCOVERY:** The City is made aware of an event, such as a sanitary sewer overflow (SSO, which includes basement backups), overflow in the Combined Sewer Service (CSS) area during dry weather, or an otherwise unscheduled bypass of treatment. Usually discovery is made in these ways:

    - A call is received by Sewer Maintenance Division dispatch, typically from a citizen, utility company, plumber, contractor, or other City staff and a Work Order is issued to the correct response crew.

- WRRFs, EQCD, or Sewer Maintenance Division staff discover an event during standard daily procedures and will involve other response staff as needed.

2. **CRITICALITY:** response or discovery crew to inform immediate supervisor to assess criticality and elevate information to appropriate manager.

   Response or Inspection Crew→Foreman Supervisors→ City Maintenance Supervisors →City Maintenance Superintendent or Engineering Supervisor→Sewer Maintenance Division Manager or WRRF Manager→ Assistant Director

   - **If reaching waters of the State**, and/or a defect or discharge of scale that would attract public and media concern, or impose a threat to human health and safety, require immediate notification to responsible City management to completely assess criticality. Discharges that reach a municipal separate storm system (MS4) or a combined sewer outfall (during dry weather) will be considered as "reaching waters of the State" unless specifically contained and prevention or clean up measures performed.

   - The Supervisor or Superintendent whose staff had the lead role in responding to or eliminating the overflow or unanticipated discharge must understand criticality and elevate information to appropriate manager. One must call the following personnel to discuss the severity of the discharge and determine the need for public notice (Step 6).

     1. WRRF or Division Manager of Crew Responding
     2. Designee of the Assistant Director of Public Works - Environmental Services
     3. Assistant Director of Public Works - Environmental Services

   Notice to Assistant Director will typically come from Division or WRRF Manager, or Designee in their absence. *Attachment 2* lists the incumbent staff.

3. **DETAILS:** Complete an ***Overflow Report Form*** or the ***Unscheduled Bypass Memorandum*** form (see Attachment 1). The employee(s) responding to or discovering the event must gather the required information, at a minimum, on the paper form.

- The paper form is a 2-sided document, with required information to be filled out on the front and guidance provided on the back. (printed on blue paper in Sewer Maintenance Division)

- The electronic form is available, and can be saved locally on a desktop computer, laptop, or mobile device. It is encouraged that most of the critical information gets filled in while out in the field. The forms are still available on the City Network and Google Drive:
  - P:\CSO\CSO_SSO\SOPs
  - Bypass Memorandum-https://docs.google.com/document/d/16hPUhNgrb-bGW4d-t4J0KZlng0D9Hbg_UoZrYBRPul8/edit?usp=sharing
  - New Overflow Report Form -https://drive.google.com/open?id=0B_nIAoEA_N-kNFpLRmx6UzRpZXVLaWxmb2hWS0FRZzBUU1RB
- A completed form can also be generated through data entry into the Bypass Tracking.mdb for New Bypass/Excursion Report. Hit the "Generate Report" button for a neat and complete version of the form.
  - If the responding crew is unable, untrained, or uncertain about this process, contact the Office Supervisor and assistance will be provided. Instructions for authorized users to obtain a copy of the database are in Attachment 7.

4. **INITIAL NOTIFICATION (Verbal):** notification to NDEE Field Office representative listed in Attachment 3 shall be made by the responding crew or management as decided in Step 2 for all prohibited bypasses or overflows reaching surface waters of the State.

   - If the NDEE Field Office representative is not available, a voice mail message will satisfy the requirement.

   - This shall serve as the Initial Notification to the NDEE. The Initial Notification shall be made as soon as possible and at all times must be made within 24 hours of the discovery of the event.

   - Verbal notification of wastewater discharges not reaching waters of the United States shall be at the discretion of the Division that discovers the discharge.

5. **INITIAL NOTIFICATION (written):** The *Overflow Report Form or Unscheduled Bypass Memorandum* shall be sent to the NDEE Field Office representative and circulated to appropriate City Staff as follows:

    - A phone call made within 24 hours to NDEE is sufficent if notification of all the pertinent information was relayed on the phone call. If it was not, then, the form shall serve as the complete **Initial Notification** to the NDEE. The employee(s) who responded/discovered the event are responsible for making the Initial Notification unless told otherwise by a supervisor or manager.

    - A **copy** of the completed *Overflow Report Form* or *Unscheduled Bypass Memorandum* form should be forwarded to appropriate manager(s). Copy Assistant Director of Public Works - Environmental Services and Designee for events that reached waters of the State. Copy the Office Supervisor for record keeping and to begin the Follow-Up Report (Step 8).

6. **PUBLIC NOTICE CRITERIA:** Determination of the need for a news release will be on a case-by-case basis and may be made in consultation with the NDEE and the Douglas County Health Department. Factors alone or in combination that support the need for a news release include the following:

    - The anticipated duration of the incident – is an overflow or bypass likely to continue for 24 hours or more?

    - The estimated quantity of wastewater discharged – is the quantity expected to exceed 100,000 gal?

    - The nature of the overflow – does the wastewater likely contain pollutants in concentrations presenting an imminent threat to health or the environment?

    - The location of the overflow – is the release in an area that cannot be secured or is likely to cause adverse impacts on health or the environment?

7. **ISSUING A PUBLIC NOTICE**: This will generally be determined by the ***Assistant Director of Public Works - Environmental Services***. If absent or unavailable, this responsibility will pass to the Designee.

    - This responsibility requires evaluating the need for and drafting any news release for notification to the public of an overflow or bypass event.

    - Use the general format provided in the ***Unscheduled Bypass News Release*** template provided as *Attachment 4*. Whenever possible, the draft release should be reviewed by the ***Assistant Director of Public Works - Environmental Services*** or the ***Public Works Director*** and then

forwarded to the Mayor's Media Coordinator for release. *Attachment 8* contains current contact information for the Mayor's Media Coordinator and instructions to follow if unable to make contact.

- When the magnitude or duration of the event may have adverse impacts on downstream communities, the person drafting the news release should email a copy of the final version to the local, state and regional contacts on the attached ***Bypass Email Addresses*** list provided as *Attachment 5*.

- **FOLLOW-UP REPORT:** The Facility or Division Manager whose staff had the lead role in eliminating the overflow or bypass will typically responsible for drafting the letter. For Sewer Maintenance Division, the Office Supervisor will prepare the follow up report for review by the Manager and Designee. The Designee shall offer assistance to writing report when requested. The letter must include the following information:

- A description and location of the discharge and cause.

- The period of event, including dates, times and quantity, or if not corrected, the anticipated time the discharge is expected to continue.

- Identification of the receiving steam and any environmentally sensitive areas impacted.

- The steps taken to reduce eliminate and prevent the reoccurrence of the overflow or bypass.

Attachment 6 is provided as a template for this letter. The MS Word file may be found at P:\CSO\CSO_SSO SOPS\Notif2_Follow-up_Letter_Template.doc

8. **REVIEW OF FOLLOW-UP REPORT**: bypasses and overflows reaching waters of the State should be reviewed by the Facility or Division Manager whose crew led mediation activities. For Sewer Maintenance Division, the Designee, at a minimum, shall review all reports prior to submission to NDEE.

- For Levee and Sewer Maintenance, email a draft report to the Office Supervisor who will circulate for review with Division Manager and Designee.

- Comments will be compiled and submitted back to the original author or edits will be made directly and report will be signed by the authorized reviewer.

9. **SUBMIT FOLLOW-UP REPORT:** Follow-up must be signed by an authorized Designee or Manager and mailed to the NDEE as soon as practically possible, postmarked no later than:

    - 5 calendar days after the initial notification**. For the purpose of this procedure, the City shall apply this deadline to any prohibited Bypass or Overflow that reach waters of the State.
    - 7 calendar days after becoming aware of any other noncompliance with the NPDES requirements.***

**This is prescribed by the NDEE Title 119 Rules And Regulations Pertaining To The Issuance Of Permits Under The National Pollutant Discharge Elimination System, Chapter 14, General Terms and Conditions (001.04G) and specifically outlined in the CSO NPDES Permit (NE0133680) for substantial dry weather overflows.
***Specifically outlined in the NPDES Permits for the Water Resource Recovery Facilities (NE0112810; NE0036358; NE0040096).

10. **COPY AND FILE REPORTS:** A signed copy of the final version of all Initial and Follow-Up reports must be provided as follows:

    - Both a hard copy and scanned electronic copy of the follow up letter shall be provided.

    - The Office Supervisor at Sewer Maintenance shall be responsible for cataloging all of this information, both in hard copy and electronically, under direction of the Designee. (See SOP for Bypass Records Retention)

    - Additionally, electronic copies shall be provided to the Assistant Director of Public Works - Environmental Services, and the Managers and Supervisors depending on which Division had the lead role in notification.

    - The electronic distribution of the follow reports mailed to NDEE shall occur, at a minimum, every two weeks.

11. **SOP REVIEW:** The Designee is responsible for review and updating this SOP semi-annually by March 1 and September 1, or more frequently as needed.

Attachement 1 - old form, still valid

Unscheduled Bypass ☐ / Excursion ☐ Memorandum

(Select Bypass or Excursion - See back of page for definitions and guidance notations – Fax front page to NDEE)

Discovery **Date:** _____ **Time:** _____ (1) Called Brett Anderson with NDEE (when required): Y / N (2)

Report made by: _____ (3) Contact Telephone #: 402-444-5332 or _____ (4)

***Location Address:** _____ (5) ***Receiving Water:** _____ (6)

Location of Cause (if different): _____ (7)

Approximate system location: ***UP MH**: _____ ***Down MH**: _____ (8)

***Why is bypass/excursion occurring?** _____ (9)

Wet Weather is contributing: _____ Yes ☐ (9a)

***What is being done to terminate the bypass/excursion?** _____ (10)

***When did bypass/excursion begin?** Time: _____ Date: _____ Unknown ☐ (11)

***When did or will the bypass/excursion end?** Time: _____ Date _____ Unknown ☐ (12)

***What is/was the volume (approximate) of wastewater bypassed?** _____ Unknown ☐ (13)

What treatment is or was the wastewater receiving? _____ None ☐ (14)

Description of wastewater (domestic, industrial, etc.): _____ (15)

Appearance of sample (Cloudy, Clear, Muddy, etc.): _____ (16)

Delivered Sample To (circle one): Mo River Lab Sewer Maintenance Midwest Labs Other

How could this bypass/excursion been prevented? _____ Unknown ☐ (17)

Are there alternatives to bypassing treatment? _____ None ☐ (18)

Have there been any adverse effects to the receiving stream? _____ None ☐ (19)

If so, what: _____

How will the public be notified of the occurring bypass? _____ Press Release ☐ NA ☐ (20)

Comments: _____ (21)

_____

_____

For Office Use:

This Hand-Written Form was faxed to NDEE? Yes ☐ (Date & Time) _____ @ _____ : _____

Immediate Reporting to for private issues reaching storm sewer or waterways (James Kee w/ QCD @ 402-444-3915x238)? Yes ☐

Attachement 1 - New WOER form

Overflow Report Form

[1]Incident Confirmation Date: _____ Time (Military): _____ [2]Called Brett Anderson with NDEE (402-679-1429): ☐ Yes ☐ No*
Date: _____ Time: _____ ☐ Voicemail

[3]Report Made By: _____

Shaded items - Provide information to NDEE for 24 hour notification

[4]Contact Phone #: 402-444-5332 or:
(if other than Sewer Maintenance/O&M) _____ [5]Response Location Address: _____

[7,8]Incident Cause Location(s)

- ☐ Public Sewer (Gravity) (US-DS Manhole #s) _____
- ☐ Public Manhole (Manhole #) _____
- ☐ CSO Outfall (Outfall #) _____
- ☐ WRRF (Facility Name) _____
- ☐ Lift Station (PS #) _____
- ☐ Public Sewer (Force Main) (PS #) _____
- ☐ Constructed SSO (SSO #) _____
- ☐ Private Manhole/Cleanout (Address) _____
- ☐ Private Sewer (Gravity) (Address) _____
- ☐ Private Sewer (Force Main) (Address) _____
- ☐ Grinder Pump Station (Public/Private) (Address) _____
- ☐ Other _____

[6]Destination(s) of Sewage / Release Location

- ☐ Ground
- ☐ Structure/Basement
- ☐ Storm Inlet[a]
  - ☐ Standing/flowing water at time of discharge
- ☐ Drainage Channel[a]
  - ☐ Standing/flowing water at time of discharge
- ☐ West Papillion Creek[a]
- ☐ Little Papillion Creek[a]
- ☐ Big Papillion Creek[a]
- ☐ Hell Creek[a]
- ☐ Cole Creek[a]
- ☐ Papillion Creek[a]
- ☐ Blood Creek[a]
- ☐ Copper Creek[a]
- ☐ Missouri River[a]
- ☐ Elkhorn River[a]
- ☐ Other _____

[a]*Waters of the State*

[9a]Precipitation

- ☐ Dry
- ☐ Wet (Rainfall/Snow Melt) _____ (in) last 24 Hours

System

- ☐ CSS
- ☐ SSS
- ☐ SID
- ☐ Non-Omaha Owned (e.g., Sarpy County)

Overflow Type

- ☐ Sewer Backup[b]
- ☐ SSO
- ☐ CSO - Permitted[b],*
- ☐ CSO - Unpermitted
- ☐ Bypass - Release
- ☐ Bypass - Diversion

[b]*No wastewater samples required, unless directed otherwise.*

[9]Cause of Incident

- ☐ Public Line Blockage
  - ☐ Debris ☐ Grease
  - ☐ Roots ☐ Grit
  - ☐ Rags ☐ Other _____
- ☐ Public Line Break (Not Utility/Construction-Related)
  - ☐ Gravity
  - ☐ Force Main
- ☐ Intentional Bypass (Diversion)
  - ☐ Repair ☐ Maintenance
  - ☐ Construction ☐ Flood
- ☐ Sewer Overload; Inadequate Capacity (Excessive Rainfall/Snow Melt)
- ☐ Unplanned Utility/Construction-Related Break
- ☐ Water Main Break *(Notify MUD 402-554-6666 ☐)*
- ☐ Private Line Break*
- ☐ Private Line Blockage*
- ☐ Equipment Failure
  - ☐ Power
  - ☐ Control System
  - ☐ Operation-Related
  - ☐ Maintenance-Related
- ☐ Illicit Connection
- ☐ Vandalism
- ☐ Unknown/Unsure
- ☐ Other _____

[10]Mitigation Effort(s)

- ☐ Overflow Pumped ☐ Repaired
- ☐ Jet Line ☐ Saw Line
- ☐ Remove Debris ☐ Vacuumed
- ☐ Water Main Repaired
- ☐ Other _____

**Initial NDEE 24 hour notification not necessary. If unable to notify NDEE from site (due to multiple, concurrent wet weather responses, for example), notify Designee as soon as safely practicable.*

Overflow Details

[11]Began: Date _____
Time _____
☐ Unknown

[12]Ended/Will End: Date _____
Time _____
☐ Unknown

[13]Estimated Volume: _____ (gal) _____ (gpm x min)
_____ (SF x in) ☐ Unknown

Rev. 10/18/2019

[15]Description of Wastewater

- ☐ Domestic (e.g., residential houses, apartments)
- ☐ Commercial (e.g., restaurants, hotels)
- ☐ Industrial (e.g., factories)
- ☐ Other _____
- ☐ Unknown

[16]Appearance of Wastewater

- ☐ Cloudy
- ☐ Clear
- ☐ Muddy
- ☐ Gray
- ☐ Oily
- ☐ Chemical Odor
- ☐ Foam
- ☐ Other _____

[19]Actual/Potential Adverse Impacts

- ☐ Significant Volume (>100,000 gallons)
- ☐ Significant Time (>24 hours)
- ☐ Significant Odor
- ☐ Fish Kill
- ☐ Public Exposure/Contact
- ☐ Unsightly Aesthetics
- ☐ Priority Area Impact
  - ☐ Reach Waters of the State
  - ☐ Environmentally Sensitive
  - ☐ Politically Sensitive
  - ☐ Highly Populated
- ☐ Other _____
- ☐ None Anticipated *(No wastewater samples required, unless directed otherwise)*
- ☐ ***Notify Superintendent, Supervisor, Designee, Manager, and Sewer Tech Crew via email if any checked other than "None Anticipated"***

Sample Delivery Site

- ☐ Sewer Maintenance Building
- ☐ Midwest Labs (13611 B Street, 402-344-7770)
- ☐ Missouri River WRRF Lab (402-444-3915 ext. 1136)
- ☐ Other _____

Sample Delivery Date: _____

Time: _____

Lab WO Number: _____

- ☐ No Sample Necessary
  - ☐ Sewer backup or CSO-Permitted
  - ☐ No actual/potential adverse impacts
  - ☐ Unsafe conditions _____

Follow-Up Investigation

- ☐ Recommended
- ☐ Not Necessary

[14]What treatment is/was the wastewater receiving? _____ ☐ None

[13]Are there alternatives to bypassing? _____ ☐ None

[17]How could this overflow been prevented? _____ ☐ Unknown

[21]Comments: _____

For Office Use:

Overflow Report Form submitted to NDEE:

Date: _____ Time: _____

Work Order No.: _____

[20]Public Notification

- ☐ Press Release
- ☐ Other _____
- ☐ None

NDEE Definition

- ☐ Bypass
- ☐ Excursion

Service Area

- ☐ Missouri River WRRF (NE0036358)
- ☐ Papillion Creek WRRF (NE0112810)
- ☐ CSO (NE0133680)
- ☐ MS4 (NE0133698)

Basin

- ☐ PC
- ☐ LP
- ☐ WP
- ☐ BP
- ☐ MR
- ☐ SP

Actual adverse impacts that occurred as a result of incident: _____

Attachment 3

NDEE Contact and Reporting Information

Initial Notification shall be provided to the **NDEE Field Office** in Omaha, NE as soon as possible and always within 24 hours verbally by phone, by fax, or by email per the requirements of this SOP. Follow-up Letters shall be mailed to the **NDEE Headquarters** in Lincoln, NE as soon as practically possible, postmarked no later than 5 or 7 days after initial notification per the requirements of the NPDES Permit and this SOP. Contact Information is as Follows. Provide a copy of the follow-up Letter to the NDEE Field office by mail or email. CC: Shelley Schneider (NDEE) Contact Information is as follows:

Mr. Brett Anderson
NDEE Field Office
8901 South 154th Street, Suite 5
Omaha, NE 68138-3621
Phone: 402-679-1429
Fax: 402-895-6543
Email: brett.anderson@nebraska.gov

Mr. Reuel Anderson
Nebraska Department of Environment & Energy
PO Box 98922
Lincoln, NE 68509-8922
Phone:402-471-1367
Reuel.anderson@nebraska.gov
shelley.schneider@nebraska.gov

Sample NDEE Notification Phone Call Script

This is *Report Made By* of the City of Omaha Sewer Maintenance Division. This is our 24 hour notification that we have experienced an overflow at *Response Location Address*. The overflow is a *Overflow Type* in the *System* system. We believe the incident was caused by a *Cause of Incident* at *Incident Cause Location*, resulting in sewage being released to *Destination of Sewage/Release Location*.

To mitigation the impacts of the overflow we have *Mitigation Effort(s)*. We believe the overflow began at approximately *Overflow Details (Begin Date and Time or Unknown)* and the overflow was stopped at *Overflow Details (End Date and Time or Unknown)*. The estimated overflow volume is *Overflow Details (Estimated Volume)*.

An Overflow Report Form with additional details will be submitted to your office within five days.

Please call 402-444-5332 if you have any questions or concerns regarding this incident.

Douglas County Health Department Contact Information

If the location of the overflow is in an area that may cause Public Health concerns, contact:

Russell Hadan
Environmental Supervisor
Phone: 402-444-6162
Cell: 402-547-0154
Email: Russell.hadan@douglascounty-ne.gov

OR

Dr. Larry Figgs
Division Chief of Environmental Health Division
Phone: 402-444-7490
Cell: 402-669-8485
Email: Larry.figgs@douglascounty-ne.gov

Papio-Missouri River NRD Contact and Reporting Information

If mitigation requires work within the Papio-Missouri River NRD's jurisdiction, such as closing a gate along the Papio levee system, contact:

Martin P. Cleveland, PE
Construction Engineer, Papio-MRNRD
Phone: 402-444-6222
Direct Line: 402-315-1707
Cell: 402-670-4304
E-Mail: mcleveland@papionrd.org

OR

Bill Warren
O/M Superintendent
Cell: 402-669-7744
Email: bwarren@papionrd.org

Attachment 4

Unscheduled Bypass news release template

<date>

City of Omaha, Nebraska
News Release for Wastewater Discharge to the <receiving stream>

Contact - Bob Stubbe, OPWD, 402-444-5228

Due to <problem> at approximately <time> on <date> at <location>, approximately <discharge rate> of untreated wastewater is being discharged to the <receiving stream>. Repairs to the <problem> that will allow treatment to resume are expected by <time/date>.

<If applicable insert…Seasonally cool temperatures are expected to limit recreational use of the river and therefore minimize adverse health impacts. However,> Until repairs are completed the Omaha Public Works Department is issuing the following advice:

Avoid wading, swimming and other primary body contact with the waters of the <receiving stream> in the area near and several miles downstream from <location A> to <location B>.

This advisory will remain in effect until further notice.

Attachment 5

Email Addresses & Emergency Phone Numbers for Bypass notification

Local officials:

Russell.hadan@douglascounty-ne.gov
cjacobsen@papionrd.org
Kirk.Morrow@Nebraska.gov
mcleveland@papionrd.org
tfoster@cityoflavista.org
jcalentine@cityoflavista.org
jefft@papillion.org
jchancellor@cityofralston.com
epiphany.ramos@bellevue.net
dick.mcclemons@bellevue.net
Larry.figgs@douglascounty-ne.gov
Brett.Anderson@Nebraska.gov
Pat.nelson@CH2M.com
publicworks@cityoflavista.org
jsoucie@cityoflavista.org
mfreese@papillion.org
dfreshman@cityofralston.com
jeff.roberts@bellevue.net
jhare@bellevue.net

Offutt AFB Civil Engineering: Jason Teem (402)294-5232

Regional officials:

earl.imler@nebraska.gov
elizabeth.esseks@nebraska.gov
howard.isaacs@nebraska.gov
Doug.Woodbeck@nebraska.gov
jackson.Robertw@epamail.epa.gov
dan.olson@dnr.iowa.gov
robert_f_stewart@ios.doi.gov
DDierks@CouncilBluffs-IA.Gov
todd.eichholz@ndr.mo.gov

Downstream officials:

elizabeth.basnett@sema.dps.mo.gov
Brian.Quinn@sema.dps.mo.gov
todd.farley@sema.dps.mo.gov
Tom.Masso@sema.dps.mo.gov
Michael.booth@sema.dps.mo.gov
Maureen.Burke@sema.dps.mo.gov
dawn.warren@sema.dps.mo.gov
Alan.Reinkemeyer@dnr.mo.gov
Cory.Jorgensen@dnr.mo.gov
ken.tomlin@dnr.mo.gov
deana.cash@dnr.mo.gov
jamie.gaggero@ks.gov
bob.jurgens@ks.gov
john.mitchell@ks.gov
mike.mcnulty@ks.gov

If it reaches the Missouri River, notify all three groups and the following emergency call centers: Missouri DNR 573-634-2436, Kansas emergency spill: 785-291-3333, Iowa DNR spill reporting line 515-725-8694.

Kansas Bureau of Water needs notification. Public Water supply: general office number (785) 296-5514. After Hours Emergency Contact Phone: (785) 296-1679

Attachment 6

City of Omaha
Jean Stothert, Mayor

Public Works Department
Omaha/Douglas Civic Center
1819 Farnam Street, Suite 601
Omaha, Nebraska 68183-0601
(402) 444-5220
Fax (402) 444-5248

Robert G. Stubbe, P.E.
Public Works Director

Date

Mr. Reuel Anderson
Nebraska Department of Environment & Energy
P.O. Box 98922
Lincoln, NE 68509-8922

RE: Location or Facility, Description of Event

Dear Mr. Anderson:

Description of Event. Include all relevant information. Refer to Notification of Bypass SOP when preparing this document and the Overflwo Report Form to make sure all required information is included in this document.

If you have any questions or require additional information, please do not hesitate to contact me at (402) 444-XXXX.

Sincerely,

Author
City of Omaha Public Works Department
Facility
Address

Cc: Brett Anderson (NDEE), Schneider (NDEE), Theiler (OPW), Andersen (OPW), Mertz (OPW), Diederich (OPW), Robinson (OPW)

Attachment 7

Bypass Tracking Database

A copy of the user “front end” of the database is located at ***Public on 'Omdotcfil03' (P:) \CSO\CSO_SSO Bypass Tracking\ Bypass Tracking.mdb).***

Users should copy this file and save to a location on their computer such as on their desktop. Users should be connected to the City network in order for the data to register in the “back end” of the master database.

The Bypass Tracking Database is maintained at Sewer Maintenance by the Designee.

See also *SOP for Bypass Tracking Database Entry of Initial Memorandum Reports.*

Attachment 8

Mayor's Media Coordinator Contact Information
And Media Distribution List

News Release shall be forwarded to one of the following personnel for proper media distribution:

Carrie Murphy
Deputy Chief of Staff - Communications
Phone (402) 444-3520
Cell (402) 679-6603

Brandi Preston
Community Services Manager
Phone (402)-444-6274
Cell (402)-659-3438

In cases of emergency where the above personnel cannot be reached after 1 hour of attempt, the drafted press release, approved by Director or Assistant Director to Public Works-Environmental Services, may be distributed among the list included here:

Omaha World-Herald <news@owh.com>, WOWT <sixonline@wowt.com>, Brian Mastre <brian.mastre@wowt.com>, Beeler, Cathy M <cbeeler@hearst.com>, Burbach, Christopher <Christopher.Burbach@owh.com>, Cate Folsom <cate.folsom@owh.com>, David Earl <dearl@hearst.com>, Jeff Bundy <jeff.bundy@owh.com>, Jeff Robb <jeff.robb@owh.com>, Cole, Kevin <Kevin.Cole@owh.com>, Kevin Westhues <kevin.westhues@wowt.com>, Ken Dudzik <ken.dudzik@ops.org>, Melissa Fry <MFry@hearst.com>, Roseann Moring <roseann.moring@owh.com>, roger.hamer@wowt.com <roger.hamer@wowt.com>, Glissmann, Bob <Bob.Glissmann@owh.com>, dave.z@wowt.com <dave.z@wowt.com>, Stone, Alexandra <alstone@hearst.com>, Tom Becka <tbecka@hotmail.com>, Jennifer Griswold <jennifer.griswold@kmtv.com>, Jake Wasikowski <jake.wasikowski@kmtv.com>, Chinh Doan <ctdoan@hearst.com>, Stanton, Tom <TomStanton@iheartmedia.com>, Olson, Roger (Omaha) <RogerOlson@iheartmedia.com>, Sadlemyer, Gary <GarySadlemyer@iheartmedia.com>, Connie White <connie.white@owh.com>, Aaron Sanderford <aaron.sanderford@owh.com>, news@kios.org <news@kios.org>, KPTM <news42@kptm.com>, Cassie Crowe <cassie.crowe@wowt.com>, John Chapman <john.chapman@wowt.com>, Jenna L. Garcia (CClk) <jlgarcia@omahalibrary.org>, Jill Bruckner <jbruckner@omahachamber.org>, KMTV 3 News Now <news@3newsnow.com>, Macdonald, Bobby <bobby.macdonald@3newsnow.com>, Marion Bailey <marion.bailey@wowt.com>, <LynnR@lonm.org>, Joe Jordan <jjordan@newschannelnebraska.com>, Joe Jordan <joeiteam@hotmail.com>, Roth, Geoffrey <Geoffrey.Roth@3newsnow.com>, Zozaya, Jose <Jose.Zozaya@hearst.com>, Gaarder, Nancy <GAARDER@owh.com>, Baker, Chris (KFAB) <chris@kfab.com>, Voorhees, Scott <scottvoorhees@iheartmedia.com>, Duffy, Erin <eduffy@owh.com>, <acortes@telemundonebraska.com>, <mrosado@telemundonebraska.com>, <aaron@telemundonebraska.com>, <adelgado@telemundonebraska.com>, Brianna Puccini <brianna_puccini@fischer.senate.gov>, <chanse_jones@fischer.senate.gov>, Baker, Holly (Fischer) <Holly_Baker@fischer.senate.gov>, <mike.hogan@ops.org>, KETV <news@ketv.com>, <emily.chennewton@ops.org>, <scott@omahadailyrecord.com>, Leia Baez (DC Commissioners) <leia.baez@douglascounty-ne.gov>, Kipper, Jon <Jon.Kipper@3newsnow.com>

CSO STATION AND MONITORING DEVICE PROCEDURES AND LOCATIONS

ALL CSO LOCATIONS ARE CHECKED EVERY OTHER WEEK ON PAYDAYS AND WITHIN 24 HOURS OF ANY WET WEATHER EVENT. ALL STATIONS WITH MANUALLY CLEANED BARSCREENS ARE TO BE CHECKED PRIOR TO ANY RAIN EVENT AND IMMEDIATELY FOLLOWING THE RETURN TO NORMAL OPERATION OF THE NORTH INTERCEPTOR, GRACE, BURT-IZARD AND LEAVENWORTH STATIONS.

EQUIPMENT AND STATIONS ARE CHECKED AT LEAST ONCE DURING THE WORK WEEK, MONDAY THROUGH FRIDAY.

Equipment and Stations			CSO Device Check (routine)	CSO Device Check (WW)
BRIDGE ST	CSO 103	Levee Crew	Sewer Tech	Sewer Tech
MORMON ST (DEACTIVATED)	CSO 104	na	na	na
MINNE LUSA	CSO 105	Levee Crew	Sewer Tech	Sewer Tech
NORTH INT DIV	CSO 106	Levee Crew	Sewer Tech	Sewer Tech
GRACE DIVERSION	CSO 107	Levee Crew	Sewer Tech	Sewer Tech
BURT IZARD	CSO 108	Levee Crew	Sewer Tech	Sewer Tech
6TH LEAVENWORTH	CSO 109	Converting to grit stucture only, not currently online		
NEW LEAVENWORTH	CSO 109 (1)	Levee Crew	Sewer Tech-ND	Sewer Tech-ND
PIERCE	CSO 110	Levee Crew	Sewer Tech	Sewer Tech
HICKORY	CSO 111	Levee Crew	Sewer Tech	Sewer Tech
MARTHA ST	CSO 112	Levee Crew	Sewer Tech	Sewer Tech
SPRING ST (DEACTIVATED)	CSO 113	na	na	na
GROVER	CSO 114	Levee Crew	Sewer Tech	Sewer Tech
RIVERVIEW	CSO 115	Levee Crew	Sewer Tech	Sewer Tech
MO AVE	CSO 117	Levee Crew	Sewer Tech	Sewer Tech
SO OMAHA/OHERN	CSO 118	Levee Crew	Sewer Tech	Sewer Tech
MONROE ST LS (N)	CSO 119 (2)	Levee Crew	Sewer Tech	Sewer Tech
MONROE ST (S)	CSO 119 (2)	na	Sewer Tech	Sewer Tech
JONES ST	CSO 121	Levee Crew	Sewer Tech	Sewer Tech
72ND BEDFORD	CSO 202 (3)	Levee Crew	Sewer Tech	Sewer Tech
69TH EVANS	CSO 203 (3)	Levee Crew	Sewer Tech	Sewer Tech
61ST TAYLOR	CSO 204 (3)	Levee Crew	Sewer Tech	Sewer Tech
63RD PRATT	CSO 204 (3)	Levee Crew	Sewer Tech	Sewer Tech
66TH AMES (NEW)	CSO 204 (4)	na	Sewer Tech	Sewer Tech
64TH DUPONT	CSO 205 (7)	Levee Crew	Sewer Tech-ND	Sewer Tech-ND
43RD & R ST	CSO 207 (5)	na	Sewer Tech-ND	Sewer Tech-ND
45TH & V ST	CSO 208 (6)	na	Sewer Tech	Sewer Tech
44TH & HARRISON ST	CSO 209 (DEACTIVATED)	na	na	na
66TH & BLONDO	CSO 210	na	Sewer Tech	Sewer Tech
66TH & PACIFIC	CSO 211	na	Sewer Tech	Sewer Tech
64TH & WOOLWORTH	CSO 212	na	Sewer Tech	Sewer Tech

(1) ND=no device. Level sensor in Diversion Structure #1 reported to Sewer Tech by MRWRRF Operations
(2) Devices installed on 12/20/2018 at MH 0551001, 0551020, 0551021, 0571049, 0551030 and incorporated into CSO routine checks
(3) CSO SITES LOCATED IN THE BENSON AREA. Notify Levee crew if gates are still down and flow level below bubbler indicator.
(4) CSO block device was installed as a redundant QC measure due to questionable flow metering readings.
(5) ND Check MH 0644015 for overflow.
(6) Check of device in ditch (end of corrugated metal pipe sewer node #0645036F and MH 0645025)
(7) ND Level data from Mission flow meter using telemetry indicates "Peak Depth" reading and indicates if overflow occurred. Access to site to check device is limited due to construction.

DRY WEATHER CSOs PROHIBITED - INSTRUCTIONS TO PREVENT

ENSURE THE GATES ARE OPEN

CHECK FOR OBSTRUCTION BETWEEN GATE, DRY WEATHER SANITARY LINE, AND THE GRIT PIT

IF UNABLE TO CLEAR THE OBSTRUCTION, THEN CALL SEWER MAINTENANCE FRONT DESK 402-444-5332 IMMEDIATELY

THIS WILL INITATE A SERVICE REQUEST: NEED TO RECORD WHO MADE DISCOVERY, WHO WAS NOTIFIED, DATE, TIME, OBSERVATIONS

IF OVERFLOWING WITHIN 24HRS OF STORM EVENT, SUBMIT OBSERVATIONS TO COMPLIANCE DESIGNEE FOR REPORTABLE DETERMINATION

ALL DRY WEATHER CSOs REQUIRE IMMEDIATE REPORTING AND MITIGATION EFFORTS

NOTIFY DIVISION MANAGER, 402-444-5265 AND COMPLIANCE DESIGNEE, 402-444-7136

THESE RECORDS ARE SUBJECT TO AN SEMI-ANNUAL REVIEW FOR REVISIONS

REVISED 11/2019

CITY OF OMAHA
PUBLIC WORKS
ENVIRONMENTAL SERVICES
SEWER MAINTENANCE

STANDARD OPERATING PROCEDURE

For

VERIFICATION

Of

COMBINED SEWER OVERFLOWS

REVISION DATE: 11/27/19
LAST REVISION: 12/12/2018
ORIGINATION DATE: 2/23/2016

SAFETY

Hazards	Protection Measures
1. Biomechanical; Slips/Trips, Bending	1. Non-slip footwear, good housekeeping
2. Chemical; Untreated sewage	2. Latex gloves, eye protection
3. Gravity and Acceleration; Fall into water	3. Life vests, safety lanyard
4. Microbiological; Untreated sewage	4. Sanitizer

KSA'S and STAFFING

Knowledge of the locations of city streets.

Knowledge of Sewer Maintenance procedures with regard to handling wastewater.

Ability to learn the inspection procedures used in the enforcement of wastewater ordinances.

Ability to understand and carry out written or oral instructions.

Ability to communicate successfully with contractors, industrial representatives, other governmental officials, and members of the public.

Ability to sit, stand and walk and to climb, reach, balance, bend, stoop, squat, kneel, crouch, push, pull, and lift or move objects weighing over seventy-five (75) pounds up to 33% of the time, objects weighing from twenty (20) to fifty (50) pounds up to 66% of the time, and objects weighing up to twenty (20) pounds 100% of the time.

Ability to learn the safety precautions to be observed when working in manholes and lift stations.

Ability to work varying schedules, including weekends and overtime.

EQUIPMENT

Telephone
Copier
Sampling Equipment
Safety Equipment
Portable Light
Air Meter
Computer
Pick-up Truck or Van
Manhole Access Tool

TASK DESCRIPTION

Verify if a combined sewer overflow had occurred due to a wet weather event, snow melt event, or dry weather CSO by routine check occurring every other Friday on City's pay day.

PROCEDURE

The Sewer Maintenance Technical Service Field Crew will verify if a Combined Sewer Overflow (CSO) had occurred after a wet weather event, snow melt event, or routine check occurring every other Friday on City's pay day.

Notification

The Missouri River Water Resource Recovery Facility (Mo.River WRRF Operations) is able to verify if an overflow is occurring with their SCADA system that is connected to various lift stations and gate controls. Refer to Attachment 3 for details. They will provide notification by email to the following email addresses:

ronald.bartlett@cityofomaha.org,
Erik.Dickes@cityofomaha.org,
brandon.frolio@cityofomaha.org,
jeremiah.birdsall@cityofomaha.org,
Evan.Wickham@cityofomaha.org,
dylan.fagerquist@cityofomaha.org,
curtis.wieland@cityofomaha.org,
Jacob.Nusser@cityofomaha.org

EXAMPLE NOTIFICATION

--------- Forwarded message ---------
From: **Mo.River WWTP Operations** <cwieland@ci.omaha.ne.us>
Date: Sun, Oct 14, 2018 at 1:30 PM
Subject: Levee By-Pass Notification
To: <ronald.bartlett@cityofomaha.org>, <Erik.Dickes@cityofomaha.org>, <Steve.Sitzman@ci.omaha.ne.us>, <jeremiah.birdsall@cityofomaha.org>, <ECWickham@ci.omaha.ne.us>, <Tim.O'brien@cityofomaha.org>, <cwieland@ci.omaha.ne.us>, <Jacob.Nusser@ci.omaha.ne.us>, <dylan.fagerquist@cityofomaha.org>

This is to inform you that a levee station by-pass was initiated at 12:30 PM on Sunday, October 14, 2018.

jryan

Rain Event
After a wet weather event has occurred, Sewer Maintenance verifies rainfall amounts using various rain gauges located throughout the city. Sewer Maintenance maintains records of CSO locations that have a history of overflowing with minimal gutter flow.

Locations
Sewer Maintenance monitors and tracks overflows for 24 CSO outfalls. Verification of overflows requires monitoring of 30 diversion structures upstream of the CSO outfalls. 28 of these structures are monitored by a floatable device that triggers when an overflow occurs. 2 of these sites (109 & 205) are monitored for overflows with the use of level sensors.

The CSO diversions are noted in two groups, North and South are as follows:

South CSO's:

1. 108-Burt Izard
2. 109-Leavenworth (level sensor at LS monitors overflows)
3. 110-Pierce
4. 111-Hickory
5. 112-Martha St
6. 114-Grover
7. 115-Riverview
8. 117-Mo Ave
9. 118-Ohern (two locations)
10. 119-17th & Monroe (five locations)
11. 121-Jones St
12. 207-43rd & R (CSO diversion removed, checks for MH overflow)
13. 208-45th & V (two locations)

North CSO's:

14. 103-Bridge St
15. 105-Minne Lusa
16. 106-North
17. 107-Grace St
18. 202-72nd & Bedford
19. 203-69th & Evans
20. 204-63rd & Ames (three locations)
21. 205-64th & Dupont (level sensor is monitoring flows during SCRTB construction)
22. 210-66th Blondo
23. 211-66th & Pacific
24. 212-64th & Woolworth

****These locations are tabulated in Attachment 2***

Inspection Requirements
The field crews will check all locations within 24 hours of notification that a CSO occurred.

During a routine payday check, the Field Crew will verify all locations. If crew has previously checked all locations due to a wet weather event the day before, it is not necessary to do routine payday check.

If an overflow is still occurring after 24 hours of notification while checking the CSO devices, the crew that discovered the overflow is responsible to notify John Diederich at Sewer Maintenance if the cause of the continuous overflow is related to grit or debris and Don Smith at the MRWRRF if the continuous overflow is caused by a technical issue with a levee station or gate structure. If the overflow is occurring within 24 hours of a wet weather event, no sample is taken. If the overflow is occurring after 24 hours of a wet weather event, reference ***WOER Plan Overflow Sampling Directions & Procedure***.

Additional instructions for

- **CSO 109:**

No device installed. Level sensor in diversion structure #1 reported to staff at Sewer Maintenance by MRWRRF operations via email notification from Curtis Wieland (***see attachment 3)***

- **CSO 119**:

Overflows field verified at five locations: MH's 0551001, 0551020, 0551021, 0571049, 0551030.

- **CSO 202, 203, 204**

CSO sites located in the Benson area. Notify Levee crew if gates are still down.

CSO 204: 69th Ames
The procedure is to open MH 0225353 in line segment 0225353-0225354. Verification at this location should be made to note if there is standing water in the manhole. This will help determine if the check valve is functioning properly. This device, as with the other locations, should be checked during wet weather and pay day checks. An area-velocity sensor is installed along with a floatable device in the overflow pipe at MH 0225354 which leads to CSO 204. The flow data is reviewed by Planning group staff weekly, along with all other City flow meters after each wet weather event.

- **CSO 205:**

No device installed. Level data from Mission flow meter using telemetry indicates "Peak Depth" reading and indicates if overflow has occurred. Access to the site to check device is limited due to construction of the SCRTB.

- **CSO 207**:

Check MH 0644015 for overflow due to upstream manhole inflow sources still contributing… Diversion no longer exists and has no device.

- **CSO 208:**

2 locations are required to be checked (floatable device in end of corrugated metal pipe, FID #0645036F and diversion structure at MH 0645025.

After verification of CSO checks are completed, the crew will enter their findings into the Bypass Tracking Database. Actual inspection times should be entered for each CSO check entry in the Bypass Tracking DB.

Also note that after a by-pass notification is generated, it can take several hours after a rain event for North, Grace, Burt/Izard and Leavenworth stations to be back to normal operation.

References

CSO Control Policy (Federal Register Vol 59, No. 75, 1994)

Some relevant points summarized here:

- The permittee should adequately characterize CSOs through monitoring the response of its sewers to wet weather events including the number location and frequency.
- Rainfall records-permittee should examine the complete rainfall records for the geographical area of the CSS using sound statistical procedures and best available data.
- The permittee should develop a comprehensive representative monitoring program that measures frequency, duration, flow rate, volume and pollutant concentration of CSO discharge
    - This program was submitted to NDEQ under the LTCP and the CSO annual report. City committed to monitoring the CSO devices for occurrence only. Duration and water sampling are not required at this time.

Nine Minimum Report Requirements:

- Dry weather discharges at CSO points are prohibited.
    - Procedures to reset device after rain or snow melt event is imperative to assuring the dry-weather checks are accurate.

CSO Annual Report Requirements:

E. Performance Report

Report the number of times each CSO outfall has an overflow and an evaluation as to whether the controls are achieving their design intent.

Provide documentation in the Annual Report that demonstrates that each CSO overflow occurrence was the result of a wet weather event.

Attachment 1

Listing of Incumbent City Staff

Sewer Maintenance:

City Maintenance – John Diederich, Supervisor-O&M
Phone – 402-444-4717
Cell – 402-660-3993

Designee of PWKS Asst. Director, Environmental – Jennifer Morales, Civil Engineer III
Phone – 402-444-7136
Cell – 402-661-0053

Sewer Technicians Field Crew Supervisor – Erik Dickes, CMF II
Phone – 402-444-5332
Cell – 402-676-1673

City Sewer Technicians
Dylan Fagerquist (402-490-8063)
Jeremiah Birdsall (402-740-9150)
Brandon Frolio (531-389-0290)
Terrance Mata (469-404-6384)

Other City Support Staff
Evan Wickham (402-546-0700)
Jacob Nusser (402-619-6815)

Flood Levee Control and Lift Stations – Don Smith, City Maintenance Superintendent
Phone - 402-444-3915 ext. 1180
Cell - 402-505-0664

Quality Control:

MRWWTP Laboratory - John (Jack) Hynes, WWTP Laboratory Supervisor
Phone - 402-444-3915 Ext 1136

Attachment 2

CSO Number	Point Name & Address	Device MH#	Upstream MH	Device Location	Exact Outfall Location Description	Outfall Location GIS Node	2ND MH	Downstream MH in the direction of normal flow NOT overflowing	Downstream MH in the direction of WW overflow event	Receiving Water Body	Comments
102	Missouri WWTF Primary Clarifier					No	No				
103	Bridge Street Lift Station (9308 No 28th Ave)	0063067	0063006-N 0063007-W 0063074D-E	Bridge St & Dick Collins Rd	Missouri River	0063018F	No	0063085	0063019	Missouri River	
105	Minne Lusa Avenue (7198 JJ Pershing Dr)	0037034	0057004	JJ Pershing Dr & Read St	JJ Pershing Dr & Read St	0037032F	No	0037040	N/A	Missouri River	
106	North Interceptor (1506 Abbott Dr well)	3004000	3005001	Abbott Dr & Riverfront Dr	Abbott Dr & Riverfront Dr	3004004F	No	3004002	3004036	Missouri River	Goes thru bar screen before getting to the
107	Grace Street (1506 Abbott Dr well)	3004033	3004002-N 0005086-NW	Abbott Dr & Riverfront D	Abbott Dr & Riverfront Dr	3004001F	No	3004034	3004036	Missouri River	Goes thru bar screen before getting to the
108	Burt Izard Street Lift Station	3001001	3001048-SW 3001047-NW	Riverfront Dr	Missouri River	3001029F	No	3001004	3001022	Missouri River	
109	1st and Leavenworth Lift Station	0517510	0516368	6th St & Leavenworth St	1st St & Leavenworth St	0517017F	No	0516030	0517037	Missouri River	Refer to Attachment 3
110	Pierce Street Lift Station (302 Pierce St)	0518063	0518016-NW 0518015-SW	Levee	Missouri River	0518019F	No	0518113	0518018	Missouri River	
111	Hickory Street Lift Station (115 Hickory St)	0508003	0508004B-W 0508026-NW 0508015-SW	Levee	Missouri River	0508002F	No	0508018-N 0508016-S	0508029	Missouri River	
112	Martha Street (105 Dorcas St)	0509017	0509005	Levee	Missouri River	0509006F	No	0510006	0510023	Missouri River	
114	Grover Street (3303 Gibson Road)	0513003	0513001	Levee	Missouri River	0513004F	No	0513002	0513008	Missouri River	
115	Riverview Lift Station (3909 Gibson Road)	0525025	0525024	Levee	Missouri River	0525018F	No	0525015	0525063	Missouri River	
117	Missouri Avenue Lift Station	0527002	0546112B	Levee	Missouri River	0527004F	No	0527005	0527003	Missouri River	
118	South Omaha (Olson Street)	0548042	0548023	MRWWTP	Missouri River	0548035F	Yes	0548043	0548029I	Missouri River	
118	South Omaha (Olson Street)	0548041	0548017	MRWWTP	Missouri River	0548035F	No	0548028G	0548027G	Missouri River	
119	Monroe South Barrel (17th & Monroe)	0551001	0571033	1545 Monroe	Missouri River	0551036F		0551020	0551022G	Missouri River	
119	Monroe South Barrel (17th & Monroe)	0551020	0571040 & 0551021Z	1705 Monroe St	Missouri River	0551036F		0571050	0551051G	Missouri River	
119	Monroe South Barrel (17th & Monroe)	0551021	0571020	1705 Monroe St	Missouri River	0551036F		0571020	0532016Y	Missouri River	
119	Monroe South Barrel (17th & Monroe)	0571049	0571007 & 0571019	1705 Madison St	Missouri River	0551036F		0571050	0571043Z	Missouri River	
119	Monroe South Barrel (Missouri River Outfall)	0551036F	0551121	6315 1/2 S 13 st	Missouri River	0551036F		N/A	N/A	Missouri River	
119	Monroe North Barrel	0551031	0552012	No Device - Monitored by LS SCADA - refer to comments	Missouri River	0551037F		Monroe Lift Station	Missouri River Outfall	Missouri River	The Monroe wetwell level sensor currently read up to 12.5'
121	Jones Street (107 Conagra Dr)	0516013	0516020	7th St & Jones St	7th St & Jones St	0516016F	No	0517003G	0516013	Missouri River	Diversion structure is 0516033
202	72nd & Bedford (7215 Bedford Ave)	0247075	0247016	72nd & Bedford	72nd & Bedford	0247066F	No	0247076	N/A	Cole Creek	
203	69th & Evans (6794 Evans St)	0223027	0223083	69th St & Evans St	70th Ave & Pratt St	0223075F	No	0223025	0223026	Cole Creek	
204	63rd & Ames (4160 No 61st St)	0200083	0200060	61st St & Taylor St	69th & Ames Ave	0225028F	Yes	0200071	0200054	Cole Creek	
204	63rd & Ames (6133 Pratt)	0198057	0198155B	63rd St & Pratt	69th & Ames Ave	0225028F	No	0198056	0198146	Cole Creek	
204	63rd & Ames (6900 Ames Ave)	0225353	0225354	6900 Ames Ave	69th & Ames Ave	0225028F		0225013	0225353	Cole Creek	Level sensor is in MH0225354
205	64th & Dupont (2615 So 64th Ave)	0632078	0632063-SE 0632062-NE	64th & Dupont	64th & Dupont	0632079F	No	0632081	N/A	Little Papillion Creek	Mission level Sensor installed
207	44th & Y Street (4320 S St)	0644008	0644018-E 0644010-NE	43rd & R, Southeast corner of Parking Lot	44th St & T St	0644054F	No	0644082	0644044	Blood Creek	
208	45th & T Street (5621 So 45th St)	0645036F	0645018	45th St & V St, in Ditch	45th St & V St	0645036F	No	0645014	N/A	Blood Creek	Diversion structure is 0645025
210	72nd and Mayberry (6606 Blondo St)	0195023	0220055-N 0220033B-W 0195068B-E	66th St & Blondo	72nd St & Mayberry St	0726061F	No	0195067	0220056	Little Papillion Creek	
211	69th & Pierce (6549 Pacific St)	0708026	0689003-E 0708060-S	66th St & Pacific St	69th & Pierce	0708070F	No	0708059	0708052G	Little Papillion Creek	
212	69th & Woolworth (6408 Woolworth Ave)	0689056	0689057-E 0689051-N	6408 Woolworth Ave	69th & Pine St	0703048F	No	0689055	0708001	Little Papillion Creek	

Attachment 3

LEAVENWORTH LIFT STATION (NEW)

Lift Station Location: 400 PIERCE ST
Diversion Location: 599 Marcy St

Alternate CSO Occurrence Checks Procedure

1. METERED LEVEL DATA AT DIVERSION No. 1 WILL BE REPORTED TO CSO GROUP IF ELEVATION REACHES HEIGHT OF OVERFLOW (IE=967.06)

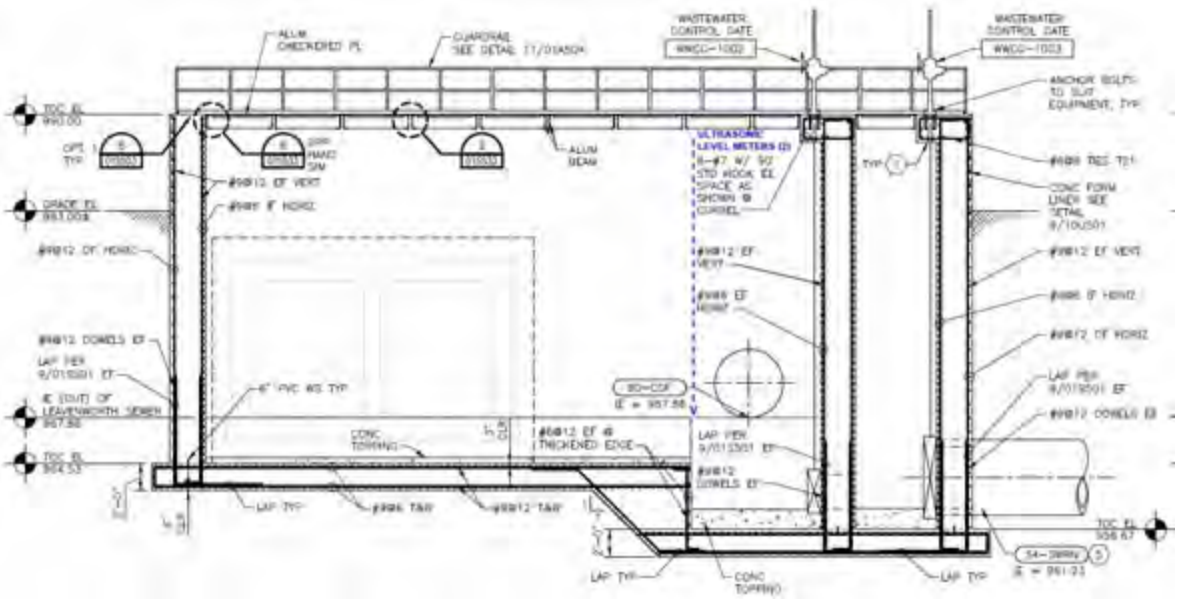
(IE=967.86)

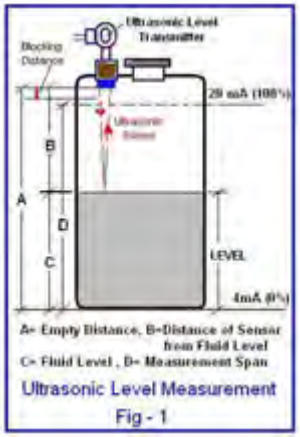
A. BY: H. Curtis Wieland OR appointee
Superintendent
Missouri River Wastewater Treatment Plant
402-444-3915 ext. 1000
curtis.wieland@cityofomaha.org

B. TO:Erik Dickes OR appointee
City Maintenance Foreman II
402-676-1673
erik.dickes@cityofomaha.org

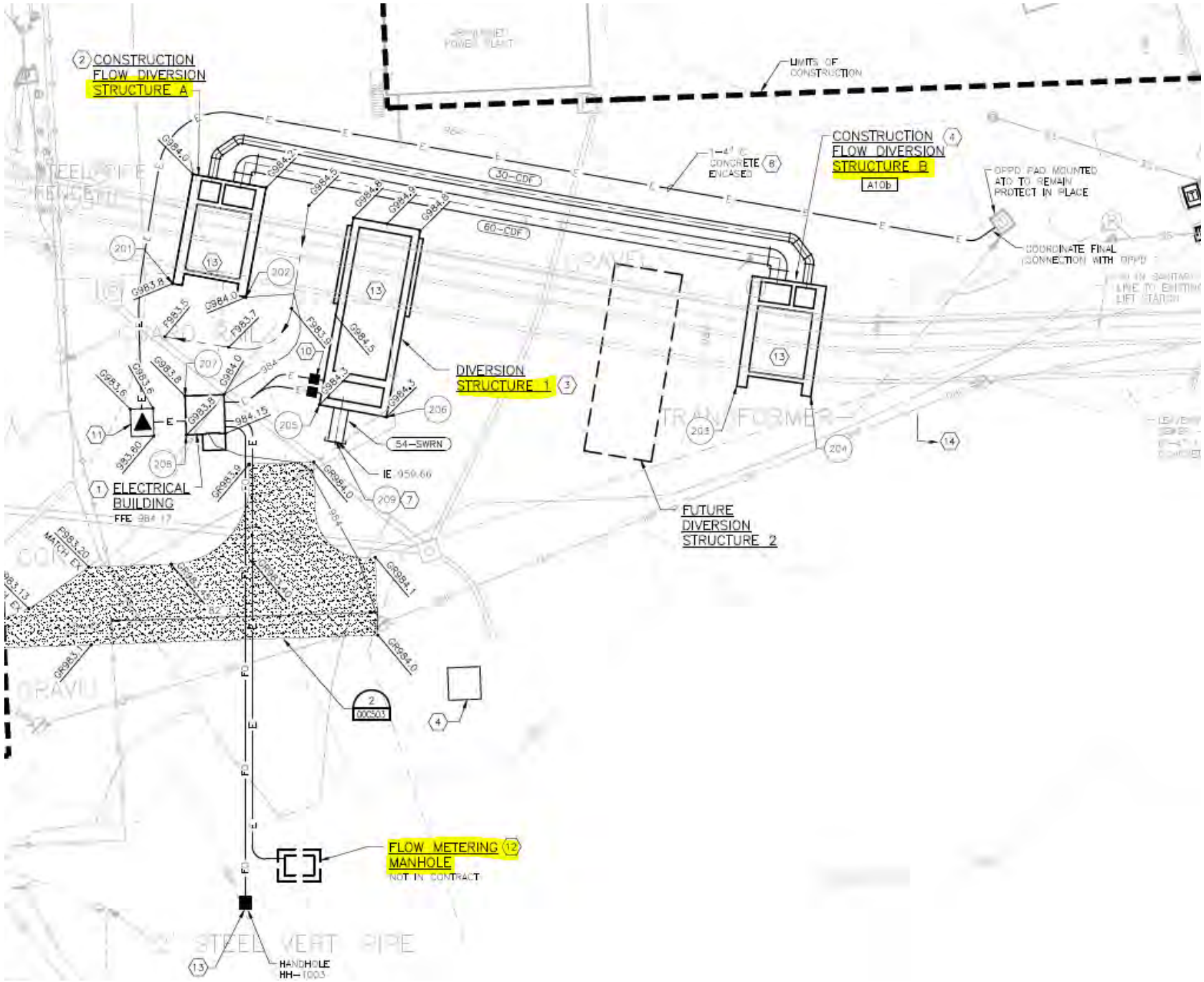
2. OCCURRENCE RECORD WILL BE ENTERED INTO DATABASE AT SEWER MAINTENENANCE. ANY RECORD OF DRY WEATHER OVERFLOW SHALL BE REPORTED PER ***NOTIFICATION OF BYPASS S.O.P.***

Curtis Weiland, MRWWTP Superintendent: "Inside Diversion Structure 1 at the south end of the main portion of the box. They are positioned downstream of the drop in the box floor but upstream of the gates to the lift station. Normally, the level in this end of the box is several feet below the invert of the barrels going to the river. When the level reading reaches the invert, we consider a bypass to have occurred."





Ultrasonic Level Measurement
Fig - 1


2 CONSTRUCTION FLOW DIVERSION STRUCTURE A
LIMITS OF CONSTRUCTION
CONSTRUCTION FLOW DIVERSION STRUCTURE B
A10b
4' Ø CONCRETE ENCASED
OPPD PAD MOUNTED ATO TO REMAIN PROTECT IN PLACE
COORDINATE FINAL CONNECTION WITH OPPD
30-CDF
60-CDF
DIVERSION STRUCTURE 1
54-SWRN
IE 959.66
1 ELECTRICAL BUILDING
FFE 984.17
FUTURE DIVERSION STRUCTURE 2
FLOW METERING MANHOLE
NOT IN CONTRACT
HANDHOLE HH-T003
STEEL VERT PIPE

Attachment 4

Example News Release:

Unscheduled Bypass news release - UPDATE

June 20, 2017

City of Omaha, Nebraska
News Release for Wastewater Discharge to Papillion Creek - UPDATE

Contact - Jim Theiler, OPW, Assistant Director, Environmental
402-444-5225 (o), 531-222-7901 (c)

Power to the Papillion Creek Wastewater Treatment Facility has been restored, the discharge of untreated sewage has ended, and Omaha Public Works Department has lifted our earlier advisory.

Missouri River recreational users should continue to use appropriate precaution. There is no additional risk due to untreated sewage.

COMBINED SEWER OVERFLOW STATION PROCEDURE MANUAL

FOR

SEWER MAINTENANCE DIVISION

CITY OF OMAHA, NEBRASKA

REVISED SEPTEMBER 2019:
DIVISION RESPONSIBLE CHANGED

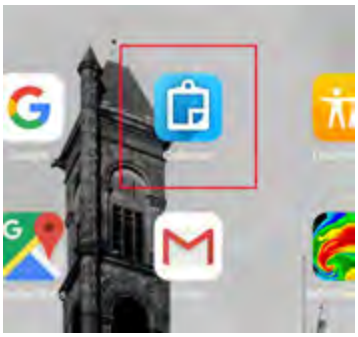
JANUARY 2018

Simple Manhole Inspection COLLECTOR SOP 9/21/2018

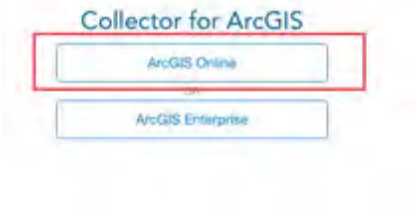
The simple manhole inspection is a tool to record basic attributes and condition of a manhole. The application is viewed using the ESRI Collector Ipad app.

To perform an inspection:

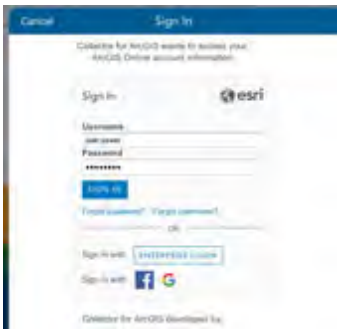
1. Open the Collector app on your Ipad



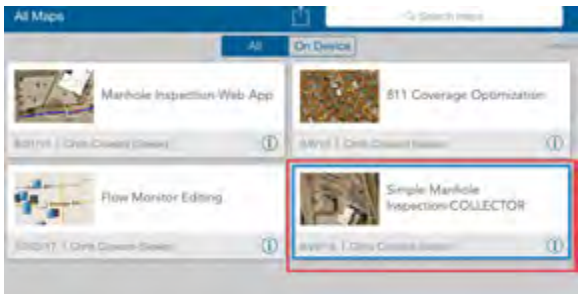
2. To login to the app, select the ArcGIS Online Option



3.Sign in using these credentials:
Username: user.sewer Password: M@nhole1



4.Select the Simple Manhole Inspection-COLLECTOR map.



5. Once the map is open, follow these steps to perform an inspection:
    1. Click on the GPS icon to zoom the map to your location.
    2. Click on the manhole to bring up its attributes.
    3. Click on the edit icon to begin editing the inspection.

6. Edit the inspection. Only change the fields that are blank for each manhole. Click the update icon to save the inspection.

City of Omaha
Sewer Maintenance O&M Group
Simple Pre-Survey MH Inspection Rating Levels

0—No visible issues

1—Small Cracks in material (1cm or < 3/8”)

Light I&I (staining and or weeping)

Debris Light (<1 gallon)

2—Medium Cracks (3/8” to 3/4”)

Mortar or Joint Material Missing

Light I&I (trickle and or dripping)

≤1” offset of any part of the manhole

Debris Moderate (1-3 gallons)

3—Large Cracks (3/4” to 1”)

Missing/Deteriorating Brick or Riser material

Medium I&I (Streaming or running)

> 1” but less than 3” offset of any part of the manhole

Debris Heavy (3-5 gallons)

Any un-removable invert obstruction less than 50% obstructing flow

Bench is missing material

4—Large Voids Visible due to Manhole Material Loss and or Cracks >1” with material loss

Heavy I&I (>10 gallons per minute—Gusher)

More than 3” offset of any part of the manhole

Debris Extremely Heavy (>5 gallons)

Any un-removable obstruction greater than 50% obstructing the flow

Bench or invert is mostly missing

Log reason for selecting 0-4 in the comments field

No Manhole should be left in a condition requiring immediate maintenance attention. If a jet crew exhausts all options to remedy a severe condition, they must call the maintenance supervisor for help.

Attachment 2 – LTCP Annual Project Progress Reports (APPR)

This section is ordered by Work Breakdown Structure (WBS)

Work Breakdown Structure (WBS)	Annual Project Progress Report Title
CSOP.01.01.1D	Missouri River Wastewater Treatment Plant (MRWWTP) Improvements Schedule A, B1, B2
CSOP.01.02.2C	Saddle Creek Retention Treatment Basin (CSO 205)
CSOP.02.04.4B CSOP.02.05.6F	Nicholas Street Phase 3 18th & Seward
CSOP.02.04.4G	Forest Lawn Sewer Separation
CSOP.02.04.4M	Lake James to Fontenelle Park
CSOP.02.04.4N	Missouri Avenue Sewer Separation Projects Phase 2 (CSO 117 - Spring Lake Park)
CSOP.02.04.4P	42 Street & Q Street Sewer Separation
CSOP.02.04.4Q	Cole Creek CSO 204 Phase 2
CSOP.02.05.5B	Cole Creek CSO 204 Phase 3
CSOP.02.05.5D,	Cole Creek (CSO 202) Phase 1 &
CSOP.02.05.5E00	Cole Creek (CSO 202) Phase 2
CSOP.02.05.5C	CSO 203 Sewer Separation (Cole Creek)
CSOP.02.05.5G	Papillion Creek North 210 Separation
CSOP.02.05.6c CSOP.02.05.6D	CSO 119 South Barrel Conversion Phase 5A CSO 119 South Barrel Conversion Phase 5B

-ANNUAL PROJECT PROGRESS REPORT-
OCTOBER 1, 2018 THROUGH SEPTEMBER 30, 2019

Missouri River Water Resource Recovery Facility (MRWRRF) Improvements

CSOP.01.01.1D00 1D - MRWRRF Improvements

Project Description as stated in the LTCP:

Missouri River Water Resource Recovery Facility (MRWRRF) Improvements were identified in the 2009 LTCP to treat an increase in combined sewage flow during wet weather of up to approximately 150 million gallons per day (MGD) through preliminary and primary treatment, and to provide a firm capacity for secondary treatment of 64 MGD for both dry and wet weather flows. Flow in excess of the secondary treatment system capacity will be discharged through CSO 102 after chlorination and dechlorination.

Key components of the MRWRRF Improvements described in the 2009 LTCP include a new headworks facility, primary clarifier splitter structure improvements, odor control facilities, chlorine contact basin, chemical building, industrial waste treatment system, and an upgraded Transfer Lift Station.

LTCP Phase: Phase 1 Major CSO Control Projects

CSO Permit Requirement:
A chlorine contact basin shall be constructed to disinfect that portion of the effluent from the primary clarifiers that is discharged through CSO Outfall 102 rather than being treated by MRWRRF's secondary treatment system. The system shall also include the capability to chlorinate the effluent from CSO 102 followed by dechlorination. The project shall be operationally complete by December 31, 2019.

LTCP Schedule[1]
All projects operationally complete by December 31, 2019.

Compliance Report

The Phase 1 Major Projects LTCP Milestone to be operationally complete by December 31, 2019, was not met at the end of the report period; however, all projects are substantially complete. The following table lists the project specific LTCP schedule dates.

Activity		LTCP Schedule Date	Actual or Anticipated Date[a]
Substantial Completion		9/13/2019	8/30/2019
Operational Completion		12/31/2019	*12/31/2019 (Anticipated)*

[a] Anticipated dates are italicized.

[1] For Major Projects there are three milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence final design, having one of the projects in a phase commence construction, and having all projects in the phase complete construction by the end date of the phase.

-ANNUAL PROJECT PROGRESS REPORT-
OCTOBER 1, 2018 THROUGH SEPTEMBER 30, 2019

Project Activities and Progress as of September 30, 2019

The table below lists the actual dates or anticipated dates for completion of the activities listed.

City Project #	LTCP Project Name	Activity	Actual Date[a]
OPW 52200, 51875, 52648	Missouri River WWTP Improvements	Began Preliminary Design	9/10/2009
		Began Final Design	11/24/2010
		Bidding	11/3/2011
		Began Construction	3/21/2012
		Substantial Completion	8/30/2019
		Operational Completion	*12/31/2019 (Anticipated)*

[a] Anticipated dates are italicized.

The following is a brief synopsis of project activities and progress during the Annual Report period.

- High river elevations on the Missouri River impacted construction progress again in 2019 with three separate high water events starting on March 14, May 28, and again on September 16. These three events are three of the six highest recorded historic crests on record for the Missouri River (34.40 feet on March 27, 2019; 31.96 feet on June 5, 2019; and 30.58 feet on September 24, 2019). The high river elevations were a result of rainfall and rapid snowmelt in early 2019 followed by significant rainfalls through the Missouri River basin. Construction was impacted with flooding affecting the chlorine contact basin, site process piping, site electrical, grading, and other project elements. The total delay durations and costs impacting construction are still being negotiated between the City and the General Contractor. While this will impact the final completion of the project, the MRWRRF Improvement project will be operationally complete before the end of the 2019 as required in the CSO Permit.
- The MRWRRF Improvement project was constructed in four construction contracts: Schedule A - primary industrial treatment system, Schedule B1 - new Municipal Headworks, Bank Stabilization, and Schedule B2 – Chlorine Contact Basin. The Schedule B2 project (the final project) achieved substantial completion, including the chlorine contact basin, chemical building, connection to the outfall tunnel with the 84-inch chlorine contact basin effluent line, and other facilities. Portions of the final grading, storm drain outfalls, site restoration, and other elements of the project were impacted by the high river elevations and thus not yet completed but are currently anticipated to be completed as site and river conditions allow over the next year. Operational Completion will be met no later than December 31, 2019.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

- Achieve Operational Completion of the Schedule B2 construction project, and therefore the completion of the Missouri River WWTP Improvements Project and Phase 1 Major Projects by December 31, 2019.

Costs

LTCP Update Estimated Construction Cost (December 2013[2]): $132,318,000 with contingency

Current Estimated Construction Cost: $132,518,868[3] (actual construction costs)

Changes from the LTCP

There were no changes since the last report. Schedule is on target with the LTCP Update.

Other Items of Interest

Bank Stabilization was constructed in 2016 and 2017. The cost for Bank Stabilization of $7,055,316 was not part of the MRWRRF Improvements project; however, it was paid for with CSO funds.

Design of the MRWRRF Transfer Lift Station Pump Replacement project commenced in late 2018 and extended through 2019. The project includes replacement of the pumps installed under Schedule A. Although the current pumps can deliver the 64 MGD as designed, replacement is needed for long-term reliability. The project was advertised for bids on September 11, 2019, and a pre-bid meeting was held on September 26, 2019. Bid opening is scheduled for October 23, 2019. Construction of the MRWRRF Transfer Lift Station Pump Replacement project is anticipated to commence in 2020.

2 ENRCCI 9668

3 Comprising: Schedule A final payment of $19,606,842; Schedule B1 final payment of $61,650,375.61 (not counting $1,014,828.36 in costs not related to the CSO Program); Schedule B2 current contract is $51,261,651.01 (not counting $1,454,694.75 in costs not related to the CSO Program). This cost does not include the Missouri River Bank Stabilization Project construction costs nor the Transfer Lift Station Pump Replacement Costs. Missouri River Bank Stabilization actual construction cost was $7,055,316. The Transfer Lift Station Pump Replacement Costs has a construction budget of $5,700,000.

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Construction of the Chlorine Contact Basin at the MRWRRF site, looking southeast (July 2019). Taken in-between flood events. HESCO baskets are shown on the right.

Construction of the Chlorine Contact Basin at the MRWRRF site, looking northeast (July 2019). Note the HESCO flood protection barrier located on the east side of the plant access road to protect treatment facilities from the 2019 Missouri River flooding.

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Saddle Creek CSO 205 64th and Dupont Retention Treatment Basin (RTB)

CSOP.01.02.2C00 2C - Saddle Creek Retention Treatment Basin

Project Description as stated in the LTCP:

The Saddle Creek CSO 205 64th and Dupont Retention Treatment Basin (RTB) will be located at 64th Avenue and Dupont Street, and will provide treatment and disinfection of combined sewage prior to discharge to Little Papillion Creek. The RTB will provide an underground basin where combined sewage is stored during wet weather events and treated (grit and screenings removal, settling, chlorination, and dechlorination) before discharge.

LTCP Phase: Phase 2 Major CSO Control Projects

CSO Permit Requirement:

CSO Permit reflects Operationally Complete by December 31, 2023.

LTCP Schedule[1]:

All projects operationally complete by December 31, 2023.

Compliance Report

CSO Permit requires all projects in the Phase to be Operationally Complete by December 31, 2023, to meet the Phase 2 Complete Construction milestone. The table below lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or *Anticipated* Date[a]
Start Final Design	7/1/2018	12/7/2016
End Construction	12/31/2023	*6/30/2023 (Anticipated)*

[a] Anticipated dates are italicized.

[1] For Major Projects there are three milestone dates in both the permit and LTCP must be met. This includes having one of the projects in a phase commence final design, having one of the projects in a phase commence construction, and having all projects in the phase complete construction by the end date of the phase.

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Project Activities and Progress as of September 30, 2019

The table below lists project-specific dates.

City Project #	LTCP Project Name	Activity	Date
OPW 520498	Saddle Creek CSO 205 64th and Dupont RTB	Began Preliminary Design	4/7/2011
		Began Final Design	8/3/2013
		Restarted Final Design	6/29/2017
		Bidding	8/5/2015
		Re-Bidding	10/10/2018
		Began Construction	4/30/2019
		Substantial Completion	*6/30/2023 (Anticipated)*
		Operationally Complete	*12/31/2023 (Anticipated)*

[a] Anticipated dates are italicized.

The following is a brief synopsis of project activities and progress that have taken place during this period:

- The project was advertised for bid on October 10, 2018, with bids received December 19, 2018. The pre-bid meeting occurred on October 24, 2018.
- Six addendums were issued for the project, and bids were opened on December 19. Three bids were received, and after review of the bidders' qualifications, the project was awarded to Hawkins Construction on February 6, 2019.
- A pre-construction conference was held on April 8, 2019, and construction notice-to-proceed was issued on April 30, 2019. As of September 30, 2019, the project is approximately 8 percent complete.
- A public meeting for construction was held on May 7, 2019.
- The Davis-Bacon Policy/Procedures that will be utilized to confirm certified payrolls were submitted to the U.S. Environmental Protection Agency (EPA) on July 15, 2019.
- The Soils Removal Plan for the project was submitted to the Nebraska Department of Environment and Energy for their information on July 30, 2019.
- Mass excavation of soils, installation of the temporary earth retention system, and groundwater dewatering began in summer 2019.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020):

- Channel improvements for the CSO 205 outfall and improvements to the CSO 205 diversion structure will be constructed.
- Deep foundation H-piles and anchor installation work will commence in November 2019.
- Base slab and mass concrete installation will commence in summer 2020.

Costs

LTCP Update Estimated Construction Cost (December 2013[2]): $99,100,000 with contingency

Current Estimated Construction Cost: $89,611,631 based on construction contract

Changes from the LTCP

Changes to the original project occurred after a high, single bid received in 2015. The chosen alternative to be implemented is an RTB with a 160-MGD capacity Additional detail is included in the 2017 to 2018 Annual Report.

Other Items of Interest

On June 20, 2018, EPA and the City closed on the Water Infrastructure Finance and Innovation Act (WIFIA) loan agreement, which allows the City to borrow up to $69.7 million for the Saddle Creek RTB project.

The RTB is being designed to accept a peak-hour flow rate of 160 MGD to provide equivalent-to-primary treatment, with provisions to allow up to 320 MGD of peak wet weather flows for disinfection. The completion of this facility will result in a significant reduction in the volume of untreated CSO, total suspended solids (TSS), and E. coli bacteria entering Little Papillion Creek. Flows in excess of the facility capacity will be routed around the RTB and discharged into Little Papillion Creek.

[2] ENRCCI 9668

Saddle Creek RTB Mass Excavation and Temporary Earth Retention System Activities, October 2019

Saddle Creek RTB Temporary Earth Retention System and Tieback Installation Activities, October 2019

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Nicholas Street Phase 3/18th & Seward Sewer Separation

CSOP.02.04.4B00 4B-BI Basin 108-3 Nicholas Street Phase 3

CSOP.02.05.6F00 6F-BI Basin 108-8 18th & Seward

Project Description as stated in the 2009 LTCP:[1]

Nicholas Phase 3 - The conceptual plan for this project includes an alignment extending north from 16th and Nicholas Street and west to 24th Street and provides conveyance capacity for both sanitary and storm flows for other sewer separation projects within the northerly portion of the Burt-Izard Basin. This project will reduce the combined sewer flows downstream of the project and thereby reduce CSOs to the Missouri River. It is a predecessor to sewer separation Burt-Izard-108-3 and additional City RNC sewer separation projects.

18th and Seward - This project is located in the easterly portion of the Burt-Izard Basin and provides separation to an area east of the east side of 20th Street from the north side of Locust Street south to Grace Street. South of Grace Street, the area extends east to include 16th Street. The southerly limit is Nicholas Street at 16th Street and Charles Street at 20th Street. The concept for this project includes construction of both sanitary and storm, re-utilizing the existing combined sewer for either storm flows or sanitary as appropriate. This area receives flows from 107-6 and discharge to 108-3.

This project would result in reduced flows in the downstream combined sewer system, reducing flows to the diversion structures and ultimately to the Missouri River. This project could potentially convert Sewer #2 to a storm sewer only in this project area. It is a predecessor to sewer separation Burt-Izard-108-3 and additional City RNC sewer separation projects.

Project Description as stated in the LTCP Update:

Nicholas Street Sewer Separation Phase 3 – Construction of both sanitary and storm sewer to provide capacity for flows from other sewer separation projects upstream of the area.

18th Street and Seward Street Sewer Separation – Construction of both sanitary and storm sewer. This project will reduce flows to the downstream CSS.

LTCP Phase:

Phase 4 Sewer Separation Projects – Nicholas Street Phase 3

Phase 6 Sewer Separation Projects – 18th & Seward

[1] As noted in the Annual Report for 2017-2018, the revised design for Nicholas Phase 3 area eliminates the need for the 18th and Seward Project. Both are being listed here for completeness as the 18th and Seward Project will remain part of the LTCP until the LTCP Update is submitted in 2021.

CSO Permit Requirement:

Nicholas Phase 3 - On or before December 31, 2016, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 4.

18th & Seward - On or before June 30, 2020, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 6.

LTCP Schedule[2]

Sewer Separation Phase 3

Bid Year – Commence bidding of one project by December 31, 2016
Complete Construction of all projects by June 30, 2022

Sewer Separation Phase 6

Bid Year – Commence bidding of one project by June 30, 2020
Complete Construction of all projects by December 31, 2023

Compliance Report

The LTCP Milestone for Phase 4 Sewer Separation Projects for one project to commence bidding was met by Lake James to Fontenelle Lagoon Improvements Project (OPW 52658) on October 5, 2016.

The remaining Phase 4 Sewer Separation milestone in the LTCP is to complete all projects by June 30, 2022. The Nicholas Phase 3 project will not meet the project dates in the LTCP Update, nor the milestones. The project dates will be re-evaluated as part of the development of the LTCP Update due to the NDEE in 2021. The dates below reflect a Change Notification and Request (CNR).

The following table lists the project-specific LTCP schedule dates.

Activity	Phase 4 LTCP Schedule Date	Phase 9 LTCP Schedule Date	Date[a]
Bidding	8/7/2019	7/1/2021	8/28/2019 (Met by Nicholas Phase 3A)
End Construction	6/30/2024	12/31/2024	*6/30/2024 (Met by Nicholas Phase 3B)*[b]

[a] Anticipated dates are italicized.

[b] This date is outside of the milestone date for Phase 4 Sewer Separation for completion of construction by June 30, 2022.

2 For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding, and having all projects in the phase complete construction by the end date of the phase.

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Project Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place during this reporting period. The LTCP projects Nicholas Phase 3 and 18th and Seward were combined, and then split into the Nicholas Phase 3A and Phase 3B projects. The basis for the splitting of the projects is discussed in the APPR for Annual Report for 2017 to 2018.

The Nicholas Phase 3A final design was completed, and the project was advertised for construction bids. The Metropolitan Utility District (M.U.D.) completed water and gas utility relocations in the Phase 3A project area. The Phase 3A sewer separation construction contract was awarded, and construction is anticipated to start in spring 2020. The Nicholas Phase 3B project was designed through 30 percent. The City continued to coordinate other utilities in anticipation of the Phase 3B final design and construction.

The table below lists project-specific dates.

City Project #	City Project Name	Activity	Actual Date[a]
OPW 52721	Nicholas Phase 3A	Began Preliminary Design	7/1/2016
		Began Final Design	2/26/2018
		Advertised	8/7/2019
		Bid Opening	8/28/2019
		Begin Construction	*3/1/2020 (anticipated)*
		Substantial Completion	*November 1, 2020 (anticipated)*
OPW 52721a	Nicholas Phase 3B and 18th & Seward Sewer Separation	Began Preliminary Design	7/1/2016
		Began Final Design	10/21/2019
		Advertise	*9/18/2020 (anticipated)*
		Bid Opening	*10/28/2020 (anticipated)*
		Begin Construction	*3/2/2021 (anticipated)*
		Substantial Completion	*4/10/2023 (anticipated)*

[a] Anticipated dates are italicized.

The schedule for both Phase 3A and 3B is impacted by significant utility relocation in the project area. Anticipated dates for advertising, bidding, and the beginning and end of construction are dependent on utility relocation.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020):

- Construction of Nicholas Phase 3A.
- Final design of Nicholas Phase 3B. Evaluation of Phase 3B construction sequencing and continued utility coordination.

Costs

LTCP Update Estimated Construction Costs (December 2013[3]): $14,950,000 (Nicholas Phase 3); $21,800,000 (18th & Seward) with contingency

Current Estimated Construction Cost: $17,266,841; costs are based on the bid price for the Phase 3A project of $1,877,555 and the 30% OPCC for the Phase 3B project of $15,389,286

Changes from the LTCP

A project schedule update is planned for submittal in the next LTCP Update.

Other Items of Interest

No other items to report.

[3] ENRCCI 9668

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Lake James to Fontenelle Park

CSOP.02.04.4M Lake James to Fontenelle Park

Project Description as stated in the 2009 LTCP:

50th & Sigwart - This project is located in the westerly portion of the Minne Lusa Basin and provides separation to an area bounded on the north by Boyd Street, on the east by 45th Street, on the south by NW Radial Highway Street, and on the west by 52nd Street. The conceptual plan for this project includes construction of both sanitary and storm sewer to allow for conversion of the existing combined sewer to either storm or sanitary sewer, as appropriate, and provides sewer separation in the entire sub-basin. This project discharges flows into the 105-13A Paxton Conveyance Sewer and would result in reduced flows in the downstream combined sewer system, which results in a reduction in size of downstream controls at CSO 105.

49th & Fowler - This project is located in the westerly portion of the Minne Lusa Basin and provides separation to an area bounded on the north by Fort Street, on the east by 48th Street, on the south by Sprague Street, and on the west by 50th Street. The conceptual plan for this project includes construction of both sanitary and storm sewer to allow for conversion of the existing combined sewer to either storm or sanitary sewer, as appropriate, and provides sewer separation in the entire sub-basin. This project discharges flows into the 105-13A Paxton Conveyance Sewer, and would result in reduced flows in the downstream combined sewer system, which results in a reduction in size of downstream controls at CSO 105.

46th & Grand - This project is located in the westerly portion of the Minne Lusa Basin and provides separation to an area bounded on the north by Camden Avenue, on the east by 42nd Street, on the south by Fontenelle Park, and on the west by 49th Street. The conceptual plan for this project includes construction of storm sewer to allow for conversion of the existing combined sewer to sanitary sewer and provides sewer separation in the entire sub-basin. This project discharges flows into the 105-13A Paxton Conveyance Sewer and would result in reduced flows in the downstream combined sewer system, which results in a reduction in size of downstream controls at CSO 105.

Project Description as stated in the LTCP Update:

Change the sewer separation concept for the Paxton Area to an 'inflow reduction' approach for the CSS that will fully use the downstream Minne Lusa Conveyance Sewer in a cost effective manner. Priority will be given to separation of large areas with a minimal stormwater pipe system. For example, there may be areas where a single stormwater collector/main can be located along the basin valley and side stormwater connections can be eliminated. Flow slipping will be used where feasible to eliminate side connections and reduce pipe construction. Where storm sewers have already been constructed, it may not be cost effective to construct additional stormwater infrastructure to reach the upper reaches of the basin.

Sewer separation projects: 46th & Grand Street (ML 105-5); 49th Street & Fowler Street (ML 105-4); and 50th Street & Sigwart Street (ML 105-3). As part of the latter project, a project to make improvements to the Fontenelle Park/Lagoon has been identified and will be under construction. The sewer separation projects are located upstream of Fontenelle Park.
LTCP Phase: Phase 4 Sewer Separation Projects
CSO Permit Requirement: On or before December 31, 2016, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 4.
LTCP Schedule[1]: Bid Year – Commence bidding of one project by December 31, 2016 Complete Construction of all projects by June 30, 2022

Compliance Report

This LTCP Milestone for Phase 4 Sewer Separation Projects was met by the bidding of the Lake James to Fontenelle Park - Fontenelle Park Lagoon Improvements project (OPW-52658) on October 5, 2016. The table below lists the project LTCP Schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date[a]
Bidding	1/1/2017	10/5/2016
End Construction	12/31/2019	*11/25/2019 (Anticipated)*

[a] Anticipated dates are italicized.

Project Activities and Progress as of September 30, 2019

The Lake James to Fontenelle Park project included expansion of an existing stormwater detention lagoon in the Fontenelle Park and sewer separation in the surrounding neighborhoods that drain toward the park. The project design reduced the area of sewer separation and minimized the stormwater piping to cost effectively and strategically reduce inflow to the combined sewer system while making full use of the downstream stormwater conveyance sewer. This was accomplished by incorporating improvements to the Fontenelle Park/Lagoon to attenuate stormwater flows prior to discharging into the existing downstream combined sewer system, which results in reduced flows in the downstream combined sewer system, which reduces the size of the downstream controls at CSO 105.

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase.

This project was broken into two construction contracts. The Lake James to Fontenelle Park: Lagoon Improvements Contract provided for the construction of the expanded and deepened lagoon as well as all improvements within Fontenelle Park. The second construction package, the Lake James to Fontenelle Park: Sewer Separation, includes the sewer separation in the three separate areas south, west, and north (49th & Fowler, 50th & Sigwart, and 46th & Grand West) of the park to direct separated stormwater to the improved lagoon.

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period.

- Sewer Separation was initiated in April 2018 and continued throughout this reporting period.
- Construction of this project is anticipated to be completed in fall 2019.

The table below lists project-specific dates.

City Project #	LTCP Project Name	Activity	Date[a]
OPW 52658	Lake James to Fontenelle Park – Fontenelle Park Lagoon Improvements	Began Preliminary Design	8/29/2014
		Began Final Design	12/21/2015
		Advertised	10/5/2016
		Bid Opening	11/30/2016
		Began Construction	2/13/2017
		Substantial Completion	7/28/2018
OPW 52659	Lake James to Fontenelle Park –Sewer Separation	Began Preliminary Design	8/29/2014
		Began Final Design	12/21/2015
		Advertised	11/1/2017
		Bid Opening	12/13/2017
		Began Construction	4/16/2018
		Substantial Completion	*11/25/2019 (Anticipated)*

[a] Anticipated dates are italicized.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

OPW-52659 – The Lake James to Fontenelle Park: Sewer Separation package had bid opening on December 13, 2017; construction Notice to Proceed on April 16, 2018; and anticipated substantial completion in November 2019 (additional days were required for change order work).

Costs

LTCP Update Estimated Construction Cost (December 2013[2]): $21,473,000 with contingency

Current Estimated Construction Cost: $13,470,920 (OPW-52658 current construction amount is $7,728,430; OPW-52659 current construction amount is $5,742,490)

Changes from the LTCP

Following the approval of the 2014 LTCP Update on January 23, 2015, a request was made to the Nebraska Department of Environment and Energy to modify the LTCP Update to reflect several changes, including combining the "Minne Lusa-105-4, 49th & Fowler," "Minne Lusa-105-3, 50th & Sigwart" and "Minne Lusa-105-5, 46th & Grand West" projects into a single project called "Lake James to Fontenelle Park." The requested schedule was to start the bidding process on January 1, 2017, with the completion of construction on December 31, 2019 (corresponding to the last project, "Minne Lusa-105-3, 50th & Sigwart" in the LTCP Update). This new project is included in Phase 4, which calls for all projects to be complete by June 30, 2022.

Other Items of Interest

No other items to report.

[2] ENRCCI 9668

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CSO 117 Missouri Avenue Sewer Separation Projects Phase 2 (Spring Lake Park)

CSOP.02.04.4N00 – 4N - Basin CSO 117-1 Missouri Avenue Ph 2

Project Description as stated in the 2009 LTCP:

This project is located in the southern part of the South Interceptor Basin and provides separation to an area bounded on the north by Interstate 80, on the east by the Missouri River levee, on the south by Missouri Avenue, and on the west by 24th Street. The conceptual plan for this project includes construction of both sanitary sewer and storm sewer to allow for conversion of the existing combined sewer to either storm sewer or sanitary sewer, as appropriate, and to provide sewer separation to this 416-acre sub-basin.

This project would also include construction of the Spring Lake Park Green Solutions project to remove creek flow from CSS, which allows for the reduction in size of the downstream separated system to be constructed.

Project Description as stated in the LTCP Update:

The Separation Phase 1 project (OPW 51997) is also known by its City project name of Missouri Avenue/Spring Lake Sewer Separation. This overall Phase 1 and Phase 2 project will provide sewer separation to the entire 416-acre Missouri Avenue sub-basin through a combination of new storm and new sanitary sewers. Sanitary flows will be directed to the existing Missouri Avenue Lift Station while storm flows will be conveyed to the Missouri River through the existing combined sewer, which will eventually be converted to a storm-only sewer following completion of the Missouri Avenue Phase 2 Sewer Separation project.

LTCP Phase:

Phase 4 Sewer Separation Projects

CSO Permit Requirement:

One of the Phase 4 Sewer Separation Projects shall commence bidding by December 31, 2016.

LTCP Schedule[1]:

Bid Year – Commence bidding of one project by December 31, 2016

Complete Construction of all projects by June 30, 2022

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase

Compliance Report

The LTCP Milestone for commencing bids on one project by December 31, 2016, was met by the bidding of Lake James to Fontanelle Park – Fontenelle Lagoon on October 5, 2016.

The table below lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date[a]
Bidding	06/30/2017	01/18/2017 (Actual)
End Construction	12/31/2019	*11/8/2019 (Anticipated)*

[a] Anticipated dates are italicized.

Project Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period. Construction continued throughout this period. Substantial completion is anticipated by the end of 2019.

The table below lists project-specific dates.

City Project #	LTCP Project Name	Activity	Date[a]
OPW 51997b	Missouri Avenue Sewer Separation Phase 2	Began Final Design	09/28/2015
		Advertised	01/18/2017
		Bid Opening	03/01/2017
		Began Construction	11/01/2017
		Substantial Completion	*11/8/2019 (Anticipated)*[b]

a Anticipated dates are italicized

[b] As of September 30, 2019 it was believed that this project would be complete by November 8, 2019. In November 2019 it was determined that additional separation was needed. Therefore, the project will not be complete until the spring 2020.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

The project will be completed early in the next period.

Costs

LTCP Estimated Construction Cost (December 2013[2]): $4,778,000 with contingency

Current Estimated Construction Cost: Phase 2: $6,649,521 based on current completion of 98 percent plus estimated change orders. An anticipated additional change order for the Phase 2 plantings will add $67,748 to the construction contract cost.

2 ENRCCI 9668

Changes from the LTCP

There were no notable changes. Schedule is on target with the LTCP Update.

Other Items of Interest

The Spring Lake Golf Course Green Infrastructure work will be finished with the Phase 2 sewer separation construction project during the next period.

Overlooking Spring Lake Golf Course Sewer Separation Work from Garfield Street

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Storm Sewer Outfall into Constructed Wetland in Spring Lake Park, looking up toward 18th and G Streets

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42nd Street & Q Street Sewer Separation

CSOP.02.04.4P00 4P-PCS 42 & Q (CSO 207/208)

Project Description as stated in the 2009 LTCP:

This project will provide sewer separation to the area bounded by Orchard Avenue on the north, 39th Street on the east, R Street on the south, and 44th Street on the west. The conceptual plan for this project includes construction of both new sanitary sewer and storm sewer. New storm sewers will be constructed along 42nd Street, Q Street, and R Street. Sanitary sewer will be constructed to convey newly separated sanitary sewer flow into an existing combined sewer that will be converted to a sanitary sewer. Green Infrastructure will be constructed in Hitchcock Park on the west side of 42nd Street as part of the overall sewer separation project. This sewer separation project has been coordinated with the design and construction of a City transportation project to replace a railroad bridge and provide intersection improvements at 42nd and Q Streets. Construction of a portion of the storm sewer as part of the roadway/bridge project was completed in 2017. The project will separate storm flows from sanitary flows and allow for the deactivation of CSO 207 and CSO 208.

LTCP Phase: Phase 4 Sewer Separation Projects

CSO Permit Requirement:

On or before December 31, 2016, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 4.

LTCP Schedule[1]:

Bid Year: commenced bidding on one or more projects by December 31, 2016

Complete Construction of all projects by June 30, 2020.

Compliance Report

The Phase 4 Sewer Separation LTCP Milestone for commencing bids on one project by December 31, 2016, was met by the bidding of Lake James to Fontanelle Park – Fontenelle Lagoon (OPW 52658) on October 5, 2016.

The table below lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date
Bidding	7/1/2018	11/2/2016 (Actual)
End Construction	6/30/2020	7/16/2019 (Actual)

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase.

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Project Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period.

The project was broken into two phases. The first phase, Hitchcock Park Green Infrastructure construction, was initiated in summer 2017 and substantially completed in 2017. The second phase, construction of 42nd and Q Street Area Sewer Separation, began in 2018 and was completed during the Annual Report period. As part of this project, CSO 207 was reconstructed. Wet weather is now conveyed to CSO 208, which is still active.

The table below lists the project-specific LTCP schedule dates.

City Project #	City Project Name	Activity	Date
OPW 52881	Hitchcock Park Green Infrastructure	Began Preliminary Design	9/11/2012
		Began Final Design	10/27/2014
		Advertised	11/2/2016
		Bid Opening	12/7/2016
		Began Construction	5/1/2017
		Substantial Completion	10/6/2017
OPW 52257	42nd and Q Street Area Sewer Separation (CSO 207/208)	Began Preliminary Design	9/11/2012
		Began Final Design	10/27/2014
		Advertised	5/31/2017
		Bid Opening	6/28/2017
		Began Construction	5/1/2018
		Substantial Completion	7/16/2019

Anticipated Project Activity for Next Period

None; project is complete.

Costs

LTCP Estimated Construction Cost (December 2013)[2]: $3,450,000 with contingency

Current Estimated Construction Cost: Actual Construction costs for both projects: $3,268,390 ($2,891,774 for 42nd & Q Street Sewer Separation plus $376,616 for Hitchcock Park Green Infrastructure).

Changes from the LTCP

There were no notable changes.

Other Items of Interest

OPW 52881 Hitchcock Park Green Infrastructure planting was completed in fall 2017. The 2-year warranty began upon approval of final planting.

While the project is complete, there are still wet weather influences.

[2] ENRCCI 9668

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42nd & Q Street Sewer Separation – View of Paving Activities along 41st Street

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OCTOBER 1, 2018 THROUGH SEPTEMBER 30, 2019

Cole Creek CSO 204 Sewer Separation Phase 2

CSOP.02.04.4Q00 4Q – CC CSO 204 Ph 2

Project Description as stated in the 2009 LTCP:

This project is located in the Cole Creek Basin and provides separation to an area bounded on the north by Browne Street, on the east by 52nd Street, on the south by Northwest Radial Highway, and on the west by Cole Creek. The conceptual plan for this project includes construction of both sanitary sewer and storm sewer to allow for conversion of the existing combined sewer to either storm sewer or sanitary sewer, as appropriate, to provide sewer separation to this 522-acre sub-basin. This project will reduce flows in the collection system and will reduce the size of the storage tank at CSO 204, or eliminate the need for the storage tank. This project will be constructed in multiple phases.

Project Description as stated in the LTCP Update:

The City determined early in the preliminary design that an increase in the peak discharge of stormwater to Cole Creek would not be allowed by the City. The design of the CSO 204 area was modified from the conceptual plan in the 2009 LTCP, which called for new storm sewers sized for the 10-year design storm, to a design that would address sewer backups and localized street flooding without increasing the peak runoff from the area. This new concept relies more on a reuse of existing combined sewers converted to storm sewers.

LTCP Phase: Phase 4 Sewer Separation Projects

CSO Permit Requirement:

On or before December 31, 2016, the City of Omaha shall commence bidding on one of the Sewer Separation Projects Phase 4.

LTCP Schedule[1]:

Bid Year: Commenced bidding of one project by December 31, 2016.[a]

Complete Construction of all projects by December 31, 2023.[a]

[a] The project has been placed on hold pending evaluation of feasible alternatives. A new schedule will be provided in the updated LTCP, which is due to NDEE in 2021.

Compliance Report

The Sewer Separation Phase 4 milestone was met by the bidding of Lake James to Fontenelle Park - Fontenelle Park Lagoon Improvements project (OPW-52658) on October 5, 2016.

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase

The Cole Creek Phase 2 area covers a 143-acre area and comprises sub-areas 3a and 3b. The project includes construction of a new sanitary sewer within the Cole Creek CSO 204 Basin, which is currently on hold. As a result of the higher-than-anticipated construction costs and the construction risks associated with the deep sewers included in the design. The City is evaluating alternative concepts for the CSO 204 Phase 2 service area that would reduce construction costs and risk associated with the construction of the project and have less of an impact to the neighborhood.

The following table lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date
Bidding	6/30/2020	-[a]
End Construction	6/30/2022	-[a]

[a] The project is currently on hold pending evaluation of feasible alternatives. A new schedule will be developed at the conclusion of the evaluation and included in the updated LTCP.

Activities and Progress as of September 30, 2019

Because this facility is on hold, no activities have taken place.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

Determine the scope of redesign and schedule for the Phase 2 project path forward as part of the LTCP update.

Costs

LTCP Estimated Construction Cost (December 2013[2]): $12,000,000 with contingency

Current Estimated Construction Cost: $16,780,000, as of 60% submittal

Changes from the LTCP

No other items to report.

2 ENRCCI 9668

-ANNUAL PROJECT PROGRESS REPORT-
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Cole Creek CSO 204 Sewer Separation Phase 3

CSOP.02.05.5B00 5C – CC CSO 204 Ph 3

Project Description, as stated in the 2009 LTCP:

This project is located in the Cole Creek Basin and provides separation to an area bounded on the north by Browne Street, on the east by 52nd Street, on the south by Northwest Radial Highway, and on the west by Cole Creek. The conceptual plan for this project includes construction of both sanitary sewer and storm sewer to allow for conversion of the existing combined sewer to either storm sewer or sanitary sewer, as appropriate, to provide sewer separation to this 522-acre sub-basin. This project will reduce flows in the collection system and will reduce the size of the storage tank at CSO 204 or eliminate the need for the storage tank.

This project will be constructed in multiple phases.

Project Description, as stated in the LTCP Update:

It was determined early in the preliminary design that an increase in the peak discharge of stormwater to Cole Creek would not be allowed by the City. The design of the CSO 204 area was modified from the conceptual plan in the 2009 LTCP, which called for new storm sewers sized for the 10-year design storm, to a design that would address sewer backups and localized street flooding without increasing the peak runoff from the area. This new concept relies more on a reuse of existing combined sewers converted to storm sewers. This change in concept, along with a determination that a portion of the area contributing to CSO 204 was already separated, allowed for the work schedule to be modified to be accomplished in six phases of work instead of the nine phases included in the 2009 LTCP.

LTCP Phase: Phase 5 Sewer Separation Projects

CSO Permit Requirement:

On or before December 31, 2019, the City of Omaha shall commence bidding on one of the Sewer Separation Projects Phase 5.

LTCP Schedule[1]:

Bid Year: Commence bidding of one project by December 31, 2019

Complete Construction of all projects by December 31, 2023

[1] For Sewer Separation Projects, there are two milestone dates in both the permit and the LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in a phase complete construction by the end date of the phase.

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Compliance Report

The Sewer Separation Phase 5 milestone was met by the bidding of Cole Creek CSO 202 Phase 1 Sewer Separation on November 28, 2018.

The table below lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date[a]
Bidding	7/1/2020	*7/1/2020 (Anticipated)*
End Construction	6/30/2022	*6/30/2022 (Anticipated)*

[a] Anticipated dates are italicized.

Activities and Progress as of September 30, 2019

The Cole Creek CSO 204 Phase 3 area covers approximately a 14-acre area and is bounded by Sahler Street on the north, 56th Street on the east, Sprague Street on the south, and 60th Street on the west. Phase 3 consists of constructing a replacement sanitary sewer along Sahler Street between Sprague Street (about 56th Street) and 60th Avenue (west of 60th Street) and on 56th Street from Sprague Street to and including Ruggles Street. Sanitary flows are conveyed from the southeast from Ruggles Street to Sprague Street. The sanitary sewer will connect to a separated downstream sanitary sewer. The Phase 3 project includes design and construction of new storm and sanitary sewers between the area bounded by Sahler Street on the north, North 56th Street on the east, Sprague Street on the south, and North 60th Street on the west.

The following is a brief synopsis of project activities and progress prior to and during this reporting period:

- 60% plans and specifications were submitted in October 2018.
- 90% plans and specifications were submitted on March 22, 2019.
- Completed the 95% plans and specifications were submitted on September 13, 2019, which is currently under review.
- Plans and specifications were submitted to NDEE on November 22, 2019.

The table below lists the project-specific LTCP schedule dates.

City Project #	City Project Name	Activity	Date[a]
OPW 53206	Cole Creek CSO 204 Phase 3	Began Preliminary Design	1/18/2012
		Began Final Design	10/10/2017
		Advertise	*07/01/2020 (Anticipated)*
		Bid Opening	*09/01/2020 (Anticipated)*
		Begin Construction	*03/01/2021 (Anticipated)*
		Substantial Completion	*06/30/2022 (Anticipated)*

[a] Anticipated dates are italicized.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020):

Continue the design for the CSO 204 Phase 3 project, progressing toward the bidding of the project for construction. The final design will be completed, and the project will be advertised for bids during the next reporting period. The project is ahead of the schedule above, and construction may start as early as March 2020.

Costs

LTCP Estimated Construction Costs (December 2013)[2]: $2,400,000 with contingency

Current Estimated Construction Cost: $4,511,365 as of 95% OPCC submittal (ENR CCI 11311)

Changes from the LTCP

The project area was revised from the LTCP Update. In the Conceptual Basis of Design TM, a storm sewer project was proposed along Northwest Drive as part of the Phase 3 project. As a result of limitation arising from conflicts with existing utilities, pipe size restrictions, downstream capacity restrictions, and the inability to make significant improvements to the storm water drainage concerns along Northwest Drive, this portion of the project has been eliminated. Phase 3 is anticipated to include sanitary relief sewer required for the existing sanitary sewer, storm sewer, and additional storm sewer construction to reroute inlets along the sanitary sewer alignment.

[2] ENRCCI 9668

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Cole Creek CSO 202 Sewer Separation Phase 1

CSOP.02.05.5D00 5D – CC CSO 202 Ph 1 (Cole Creek)

Project Description as stated in the 2009 LTCP:

This project is located in the Cole Creek Basin and provides separation to an area bounded on the north by Bedford Avenue, on the east by 67th Avenue, on the south by Binney Street, and on the west by Cole Creek. The conceptual plan for this project includes construction of both sanitary and storm sewer to allow for conversion of the existing combined sewer to either storm sewer or sanitary sewer, as appropriate, to provide sewer separation to this 101-acre sub-basin. This project will reduce the flows in the collection system and allow for the future deactivation of CSO 202. This project will be constructed in multiple phases.

LTCP Phase: Phase 5 Sewer Separation Projects

CSO Permit Requirement:

On or before December 31, 2019, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 5.

LTCP Schedule[1]:

Bid Year: Commenced bidding of one project by December 31, 2019

Complete Construction of all projects by December 31, 2023

Compliance Report

The LTCP Phase 5 Milestone of commencement of bidding for one project by December 31, 2019, was met by the bidding of Cole Creek CSO 202 Phase 1 Sewer Separation on November 28, 2018.

The table below lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date[a]
Bidding	7/1/2020	11/28/2018
End Construction	6/30/2022	*1/30/2020 (Anticipated)*

[a] Anticipated dates are italicized.

[1] For Sewer Separation Projects, there are two milestone dates in both the permit and the LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in a phase complete construction by the end date of the phase

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Project Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period.

The bid advertisement for CSO 202 Phase 1 occurred on November 28, 2018, with bid opening completed on January 16, 2019. The contract was awarded to Roloff Construction, and construction began on September 3, 2019. Construction has progressed through the fall and winter 2019, with substantial completion scheduled for January 30, 2020.

The table below lists the project-specific LTCP schedule dates.

City Project #	LTCP Project Name	Activity	Date[a]
OPW 53417	Cole Creek CSO 202 Phase 1	Began Preliminary Design	3/20/2017
		Began Final Design	7/10/2018
		Advertised	11/28/2018
		Bid Opening	1/16/2019
		Began Construction	9/3/2019
		Substantial Completion	*1/30/2020 (Anticipated)*

[a] Anticipated dates are italicized.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

The construction of CSO 202 Phase 1 project will continue with completion of the project in early 2020.

Costs

LTCP Estimated Construction Costs (December 2013)[2]: $5,423,000 with contingency

Current Estimated Construction Cost (July 2019 ENR CCI 11293): $1,279,365 (construction contract amount). Note that because of the modification to the scope of CSO 202 Phase 1 and 2 projects, the current budgeted amount for Phase 1 is $1,407,302, with contingency (July 2019 ENR CCI 11293).

Changes from the LTCP

The scope and schedules of the CSO 202 Phase 1 and 2 projects were modified to address the coordination with the City's 72nd & Maple Intersection Transportation project schedule. However, the full CSO 202 (both phases) project remains unchanged.

[2] ENRCCI 9668

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Cole Creek CSO 202 Sewer Separation Phase 2

CSOP.02.05.5E00 5E – CC CSO 202 Ph 2 (Cole Creek)

Project Description as stated in the 2009 LTCP:

This project is located in the Cole Creek Basin and provides separation to an area bounded on the north by Bedford Avenue, on the east by 67th Avenue, on the south by Binney Street, and on the west by Cole Creek. The conceptual plan for this project includes construction of both sanitary and storm sewer to allow for conversion of the existing combined sewer to either storm sewer or sanitary sewer, as appropriate, to provide sewer separation to this 101-acre sub-basin. This project will reduce the flows in the collection system and allow for the future deactivation of CSO 202. This project will be constructed in multiple phases.

LTCP Phase: Phase 5 Sewer Separation Projects

CSO Permit Requirement:

On or before December 31, 2019, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 5.

LTCP Schedule[1]:

Bid Year: Commence bidding of one project by December 31, 2019

Complete Construction of all projects by December 31, 2023

Compliance Report

The LTCP Phase 5 Milestone was met by the bidding of Cole Creek CSO 202 Phase 1 Sewer Separation on November 28, 2018.

The table below lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date[a]
Bidding	1/6/2023	*9/7/2022 (Anticipated)*
End Construction	9/30/2025	*3/3/2025 (Anticipated)*

[a] Anticipated dates are italicized.

Project Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period:

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase.

A preliminary design (30%) was developed.

The table below lists the project-specific LTCP schedule dates.

City Project #	LTCP Project Name	Activity	Date[a]
OPW 53417a	Cole Creek CSO 202 Phase 2	Begin Preliminary Design	3/20/2017
		Begin Final Design	*7/1/2020 (Anticipated)*
		Advertise	*1/6/2023 (Anticipated)*
		Bid Opening	*3/8/2023 (Anticipated)*
		Begin Construction	*11/3/2023 (Anticipated)*
		Substantial Completion	*9/30/2025 (Anticipated)*

[a] Anticipated dates are italicized.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

Begin final design for CSO 202 Phase 2.

Costs

LTCP Estimated Construction Costs (December 2013)[2]: $5,162,000 with contingency

Current Estimated Construction Cost (July 2019 ENR CCI 11293): $7,567,000 (source: 30% design for full CSO 202 project, subtracting CSO 202 Phase 1 bid). Note that because of the modification to the scope of CSO 202 Phase 1 and 2 projects, the current budgeted amount is $9,825,600, with contingency (July 2019 ENR CCI 11293).

Changes from the LTCP

The scope and schedules of the CSO 202 Phase 1 and 2 projects were modified to address the coordination with the City's 72nd & Maple Intersection Transportation project schedule. However, the full CSO 202 (both phases) project remains unchanged.

Other Items of Interest

The sequence of construction of the two CSO 202 projects was modified to coordinate with the design and construction of the City transportation project.

2 ENRCCI 9668

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OCTOBER 1, 2018 THROUGH SEPTEMBER 30, 2019

Cole Creek CSO 203 Sewer Separation

CSOP.02.05.5C00 5C – CC CSO 203-1 Sewer Separation (Cole Creek)

Project Description, as stated in the 2009 LTCP:

This project is located in the Cole Creek Basin and provides separation to an area bounded on the north by Pratt Street, on the east by Military Avenue, on the south by Maple Street, and on the west by Cole Creek. This project includes construction of both sanitary sewer and storm sewer to allow for conversion of the existing combined sewer to either storm sewer or sanitary sewer, as appropriate, to provide sewer separation to this 125-acre sub-basin. This project will reduce the flows in the collection system and allow for the future deactivation of CSO 203. This project will be constructed in multiple phases.

LTCP Phase: Phase 5 Sewer Separation Projects

CSO Permit Requirement:

On or before December 31, 2019, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 5.

LTCP Schedule[1]:

Bid Year: Commence bidding of one project by December 31, 2019

Complete Construction of all projects by December 31, 2023

Compliance Report

The LTCP Phase 5 Milestone was met with the bidding of CSO 202 Phase 1 Sewer Separation on November 28, 2018.

The table below lists the project-specific LTCP schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date[a]
Bidding	7/1/2020	*4/1/2020 (Anticipated)*
End Construction	6/30/2022	*1/1/2022 (Anticipated)*

[a] Anticipated dates are italicized.

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase.

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Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period:

- A preliminary design (30%) was completed in April 2018, however, final design did not move forward until CSO 202 Phase 1 design was completed.
- Final started in February 2019 and was completed in August 2019.
- Final 60% design was received in June 2019.
- Final design (90%) was received in October 2019.

The table below lists the project-specific LTCP schedule dates.

City Project #	LTCP Project Name	Activity	Date[a]
OPW 53059	Cole Creek CSO 203	Began Preliminary Design	3/20/2017
		Began Final Design	2/12/2019
		Advertise	*3/4/2020 (Anticipated)*
		Bid Opening	*4/1/2020 (Anticipated)*
		Begin Construction	*7/1/2020 (Anticipated)*
		Substantial Completion	*1/1/2022 (Anticipated)*

[a] Anticipated dates are italicized

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

Continue final design for CSO 203, with bidding occurring spring 2020. Project expected to start construction in summer 2020.

Costs

LTCP Estimated Construction Costs (December 2013)[2]: $4,539,000 with contingency.

Current Estimated Construction Cost: $6,960,000 as of the 60% submittal. Note that as a result of the conceptual design, the budgeted Construction Cost (July 2019 ENR CCI 11293) is $8,432,000 with contingency.

2 ENRCCI 9668

Changes from the LTCP

The increase in costs from the original LTCP Update Costs was the result of 6 years of inflation, addition of rehabilitation costs that were not quantified in the LTCP, the number of manholes and inlets to be installed to achieve sewer separation were not in the LTCP, and the amount of pavement removal and replacement assumed between the LTCP Update and the current OPC. Between 60% design and 90% design, the decision was made to pursue full width replacement rather than partial width, as originally assumed. This has had a larger influence recently as concrete prices have outpaced inflation in the Omaha market in the last year. Also, the addition of sewer separation work on Manderson Street was not originally anticipated.

Other Items of Interest

No other items to report.

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Papillion Creek North 210-1 Separation

CSOP.02.05B.5G.01.01 PCN 210

Project Description as stated in the 2009 LTCP:

This project is located in the Papillion Creek North Basin and provides separation to an area bounded on the north by Maple Street, on the east by North 60th Street, on the south by Blondo Street, and on the west by North 66th Street. In conjunction with the PCN 210-2 Interceptor project, this project includes construction of both sanitary sewer and storm sewer to allow for conversion of the existing combined sewer to either storm sewer or sanitary sewer, as appropriate, to provide sewer separation to this sub-basin. The project will reduce flows in the collection system and allow for the abandonment of CSO 210.

Project Description as stated in the LTCP Update:

This sewer separation project includes construction of both sanitary and storm sewer to allow for conversion of the existing combined sewer to either storm or sanitary sewer. This project will reduce flows in the collection system and may allow for the abandonment of CSO 210. Deactivation of this CSO outfall is a goal pending monitoring results.

LTCP Phase: Phase 5 Sewer Separation Projects

CSO Permit Requirement:

On or before December 31, 2019, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 5.

LTCP Schedule[1]:

Bid Year: Commence bidding of one project by December 31, 2019

Complete Construction of all projects by December 31, 2023

Compliance Report

The LTCP Phase 5 Milestone was met with the bidding of CSO 202 Phase 1 Sewer Separation on November 28, 2018. The PCN 210 Sewer Separation is on target to meet the LTCP Schedule and the LTCP Phase 5 Milestone for all projects to be complete by December 31, 2023.

The table below lists the project-specific LTCP schedule dates.

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase.

Activity	LTCP Schedule Date	Actual or Anticipated Date[a]
Bidding	01/01/2022	*10/28/2020 (Anticipated)*
End Construction	06/30/2023	*12/31/2022 (Anticipated)*

[a] Anticipated dates are italicized

Project Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period. Development of the preliminary (30%) design was completed in June. The project team is in the process of developing 60% plans.

The table below lists the project specific dates.

City Project #	LTCP Project Name	Activity	Date[a]
OPW 53320	PCN 210 Sewer Separation	Began Preliminary Design	7/5/2018
		Began Final Design	9/6/2019
		Advertise	*8/31/2020 (anticipated)*
		Bid Opening	*10/28/2020 (anticipated)*
		Begin Construction	*4/1/2021 (anticipated)*
		Substantial Completion	*12/31/2022 (anticipated)*

[a] Anticipated dates are italicized

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

The project will continue with final design and is anticipated to be advertised for bid in spring 2020.

Costs

LTCP Estimated Construction Cost (December 2013[2]): $1,799,000, with contingency.

Current Estimated Construction Cost: $2,889,000 as of 30% submittal.

Changes from the LTCP

None at this time.

[2] ENRCC 9668

Other Items of Interest

An additional area of combined sewers was identified by the City in South 63rd Street between Blondo Street and Parker Street that flows into the CSO 210 service area. This area will be included in the design.

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OM CSO 119 5A/5B South Barrel Conversion

CSOP.02.05.6C00 OM CSO 119 5A South Barrel Conversion

CSOP.02.05.6D00 OM CSO 119 5B South Barrel Conversion

Project Description as stated in the 2009 LTCP:

OM 119-5A: South Barrel Diversion - This project is located in the southeast portion of the Ohern Monroe Basin and provides separation to an area bounded on the north by Madison Street, on the east by 13th Street, on the south by Harrison Street, and on the west by the railroad. In conjunction with OM-119-5B, the conceptual plan for this project includes construction of both sanitary sewer and storm sewer to allow for conversion of the existing combined sewer to storm sewer or sanitary sewer, as appropriate, in this 108-acre area sub-basin. This project would result in reduced flows in the downstream combined sewer system, which results in a reduction in size of downstream controls.

OM 119-5B; South Barrel Diversion - This project is located in the southeast portion of the Ohern Monroe Basin and provides separation to an area bounded on the north by Y Street, on the east by 15th Street, on the south by Monroe Street, and on the west by 17th Street. In conjunction with OM-119-5A, the conceptual plan for this project includes construction of both sanitary sewer and storm sewer to allow for conversion of the existing combined sewer to storm sewer or sanitary sewer, as appropriate, in this 108-acre area sub-basin. This project would result in reduced flows in the downstream combined sewer system, which results in a reduction in size of downstream controls.

Project Description as stated in the LTCP Update:

South Barrel Diversion - Isolate the North and South Barrels to convert the South Barrel to a storm sewer while leaving the North Barrel in place. Abandon three existing diversion structures that currently allow overflows to the South Barrel. Abandon the two sets of "windows" that currently exist to allow flows to pass from one barrel to the other. Stormwater flows to the South Barrel will be maximized through other projects.

LTCP Phase: Phase 6 Sewer Separation Projects

CSO Permit Requirement:

On or before June 30, 2020, the City of Omaha shall commence bidding on one of the Sewer Separation Projects in Phase 6.

LTCP Schedule[1] [2]:

Bid Year – Commence bidding of one project by: June 30, 2020
Complete Construction of all projects by December 31, 2023

Compliance Report

The LTCP Milestones for Phase 6 are anticipated to be met by the Ohern/Monroe CSO 119 5A/5B South Barrel Conversions. These have been modified in a new CNR in Attachment 3.

The table below lists project specific LTCP Schedule dates.

Activity	LTCP Schedule Date	Actual or Anticipated Date[c]
Bidding	6/30/2020[a]	*11/1/2021 (anticipated)*
End Construction	6/30/2023[b]	*12/31/2023 (anticipated)*

[a] On November 1, 2019, a permit modification was issued changing the date to 12/31/2021.

[b] A CNR was issued changing this date to 12/31/2023. This will be reviewed and may be changed in the LTCP Update due to NDEE in 2021.

[c] Anticipated dates are italicized.

Project Activities and Progress as of September 30, 2019

The following is a brief synopsis of project activities and progress that have taken place prior to and during this reporting period. The project team gathered additional field data about sewer connectivity, performed flow monitoring in the North and South Barrels, performed hydraulic modeling, and continued to work through project alternatives as part of the Conceptual Design.

The table below lists project specific dates

City Project #	LTCP Project Name	Activity	Date[a]
OPW 53149	CSO 119 South Barrel Conversion 5A and 5B	Began Preliminary Design	6/12/2018
		Begin Final Design	*10/1/ 2020 (anticipated)*
		Advertise	*11/1/ 2021 (anticipated)*
		Bid Opening	*12/1/2021 (anticipated)*
		Begin Construction	*4/1/2022 (anticipated)*
		Substantial Completion	*12/31/2023 (anticipated)*

[a] Anticipated dates are italicized.

[1] For Sewer Separation Projects there are two milestone dates in both the permit and LTCP that must be met. This includes having one of the projects in a phase commence bidding and having all projects in the phase complete construction by the end date of the phase

[2] This date was changed to December 31, 2021, through a permit modification issued on November 1, 2019.

Anticipated Project Activity for Next Period

The following is a brief synopsis of project activities for the next Annual Report period (2019-2020).

The project team will finish preliminary design and start final design during the next reporting period.

Costs

LTCP Estimated Construction Costs: (December 2013[3]): 5A = $7,470,000, 5B = $5,254,000 for a total of $12,724,000, with contingency.

Current Estimated Construction Cost: Currently being evaluated.

Changes from the LTCP

On November 1, 2019, a permit modification was issued changing the LTCP construction advertisement date to December 31, 2021. A CNR modified the construction completion date to December 31, 2023. The reason for the CNR was that the completion of the Conceptual Design (10%) was delayed to perform additional modeling evaluations to better understand the potential impacts of several sewer separation alternative scenarios. The intent of the project is to separate the Monroe South Barrel to be stormwater only, and the North Barrel will remain a combined sewer. However, the initially proposed sewer separation projects resulted in some increases to the hydraulic grade line (HGL) in the North Barrel that were unacceptable to the City because they were too high. Therefore, the Project Team took some additional time to incorporate more detail into the hydraulic model based on the results of recent flowmetering data in the North Barrel, and then developed and refined additional alternatives to mitigate the potential increases to HGLs until they met the City's design criteria.

Other Items of Interest

None at this time.

[3] ENRCCI 9668

Attachment 3 –CSO Program: Change Notification and Request (CNR)

CSO!
Clean Solutions for Omaha

Change Documentation Tracking Form

REQUEST TITLE:	Cole Creek CSO 202 Sewer Separation Phase II	DISCOVERY DATE:	1/9/2019
INITIATED BY:	PMT	REQUEST DATE:	3/7/2019
PREPARED BY:	Ben Fisher and Vince Genco	DECISION DATE DUE:	
WBS NUMBER:	202 Phase II: CSOP.02.05B.5E		

Change Effects: (Check all that apply)

Scope ☐ Schedule ☒ Cost ☐

Change Description and Justification TM

SCHEDULE CHANGE:

The Long Term Control Plan (LTCP) lists final design of CSO 202 Phase II to be completed by 7/1/2020 and construction to be completed by 6/30/2022. It is anticipated that final design and construction of CSO 203 would be completed prior to the construction of CSO 202 Phase II; and given the schedule of CSO 203, the schedule for CSO 202 Phase II will not meet the LTCP dates.

In December 2018, the Change Notification Request (CNR) was approved for Scope, Schedule, and Cost changes for CSO 202 Phase I and Phase II. The boundaries and schedules of Phase I and Phase II projects were adjusted to coordinate with construction of an adjacent City Transportation Project at 72nd Street and Maple Street intersection. The boundary of Phase I was reduced to the area overlapping with the Transportation Project and the schedule moved up to allow for completed construction prior to construction of the Transportation Project. Subsequently, the boundary of Phase II was increased and schedule was delayed to after design of CSO 203. However, the CNR was approved with the anticipated schedule still under review. The anticipated schedule was not determined at the time of the CNR because the schedule for CSO 203 was not finalized and it would ultimately have an impact on the schedule for CSO 202 Phase II. The final design for CSO 203 has commenced and the design team has provided a schedule for CSO 203 and the subsequent final design of CSO 202 Phase II.

The LTCP schedule identified for the Final Design, Bidding and Construction of the Cole Creek CSO 202 Sewer Separation Phase II Project are shown in the table below. The anticipated revised schedules are shown for comparison.

	202 Phase II LTCP Schedule	New 202 Phase II LTCP Schedule
Completion of Final Design	7/1/2020	*Anticipated 1/5/2023*
Advertisement for Bid	7/1/2020	*Anticipated 1/6/2023*

Start of Construction	12/29/2020	*Anticipated 11/3/2023*
Substantial Completion	6/30/2022	*Anticipated 9/30/2025*

PMT Review/Recommendation:

Team	Name	Recommended	Comments /Attachments	Date and Initial
COMPLIANCE	Pat Nelson	Y		8/19/2019 PAN
PROJECT DELIVERY	Scott Aurit	Y		8/15/19 SAA
SEWER SEPARATION	Roger Coffey	Y		8/19/19 RLC
PROGRAM CONTROLS	Jack Woo	Y		8/9/19 JYW
CONSTRUCTION	Ron Sova	Y		8/15/2019 RS
ASSURANCE	Kent Bienlien	Y	See above.	7/29/2019 kdb

Program Managers Approval/Disapproval:

Title	Name	Approved	Comments	Date and Initial
CSO PROGRAM MANAGER	Tom Heinemann	Y		8/30/19 TJH
CITY PROGRAM COORDINATOR	Jim Theiler	Yes		9/11/2019 JEJ

The Approval Date is the date of the last signature by the Program Managers.

Change Description and Justification TM

OPW 53417a – Cole Creek CSO 202 Phase II Sewer Separation

Introduction:

The purpose of this Technical Memorandum (TM) is to summarize a request for change to the schedule for the Cole Creek CSO 202 Phase II Project. The change description and justification was prepared by the Program Management Team (PMT) to document changes to the schedule.

In December 2018 there was a CNR approved for scope, cost, and schedule changes to CSO 202 Phase I and Phase II. The change description did not include a detailed schedule, but was still under review based on the schedule for CSO 203 since it would precede the CSO 202 Phase II Project. The project team has started final design of CSO 203 and has established a delivery schedule for construction of CSO 203 and the final design and construction of CSO 202 Phase II. The schedule changes for CSO 202 Phase II project delivery are detailed below.

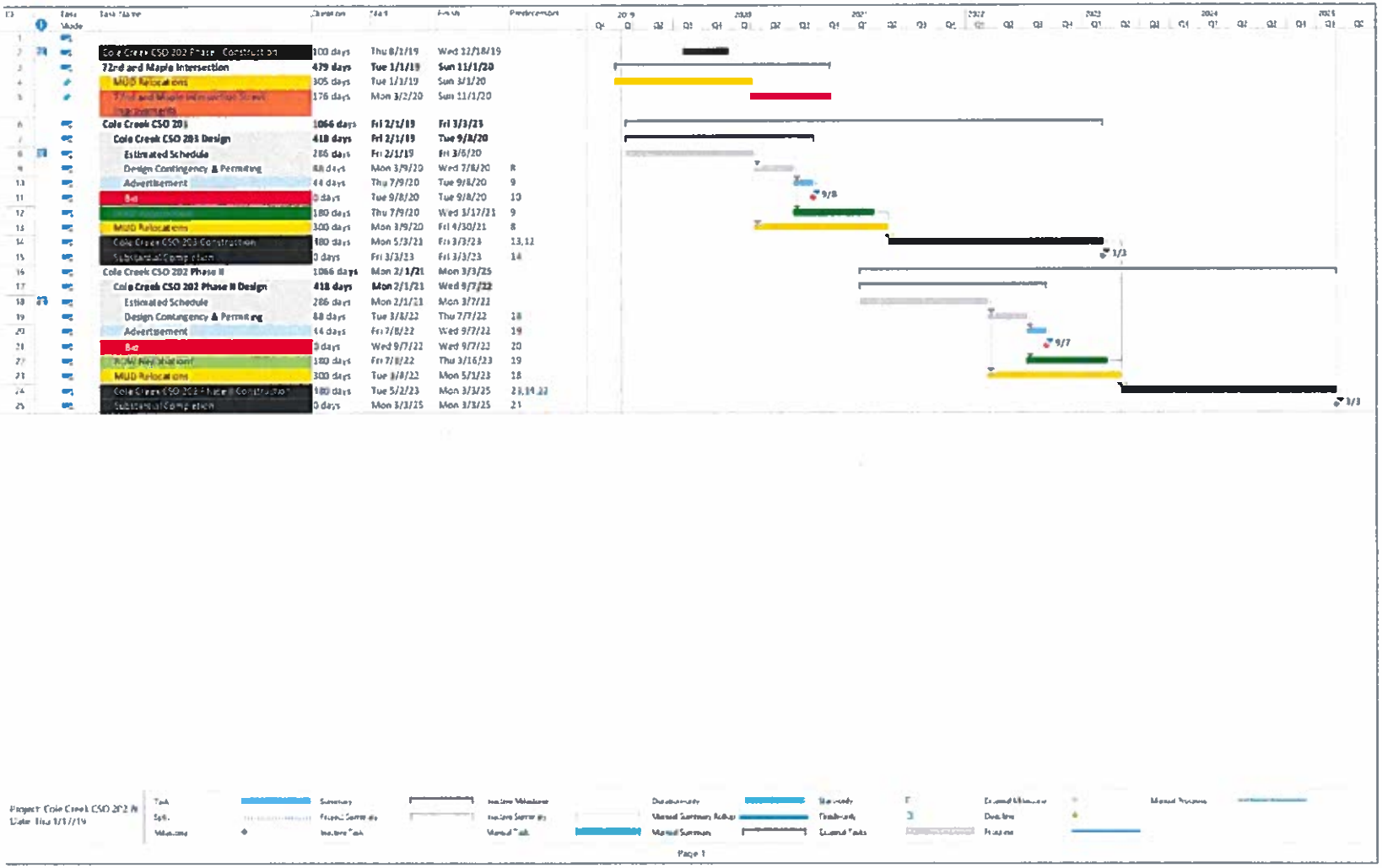
Description of Changes

Schedule Changes

The proposed schedule changes for CSO 202 Phase II will accommodate the design and construction of CSO 202 Phase I and CSO 203. Due to the need for construction of CSO 202 Phase I prior to the adjacent roadway project (72nd & Maple Street Intersection Improvements Project), the Phase I Project was bid and it is anticipated that construction will begin in September 2019. The expedited schedule of Phase I will comply with the LTCP schedule. CSO 202 Phase II is planned for construction after sewer separation of the adjacent drainage area (CSO 203). The LTCP schedule for 202 Phase II lists construction completion by 6/30/2022, but due to the schedule for CSO 203, it is anticipated that the 202 Phase II project delivery schedule will not meet the LTCP date for completion of construction. Final design of CSO 203 is scheduled to be completed in September 2020 with the start of construction planned for May 2021. The proposed project delivery schedule for Final Design of CSO 202 Phase II includes a start date of February 2021 and construction planned for 2023-2025.

Because the attached schedule is a project delivery schedule, the LTCP deadlines for this project reflect some additional time for a contingency in case dates slip. In addition, as part of the development of the schedule in the upcoming LTCP update, the dates may change.

Project Delivery Schedule



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Change Documentation Tracking Form

REQUEST TITLE:	BI 108-3 Nicholas Street Sewer Extension Phase 3 (Phases 3A and 3B)	DISCOVERY DATE:	1/14/2019
INITIATED BY:	PMT	REQUEST DATE:	7/25/19
PREPARED BY:	Emily Holtzclaw	DECISION DATE DUE:	
WBS NUMBER:	CSOP.02.04.4B		

Change Effects: (Check all that apply)

Scope ☒ Schedule ☒ Cost ☐

Rehabilitation project ☐ Other ☐

Brief Summary from Change Description and Justification TM

SCOPE CHANGE:

A previous Change Notification Request (CNR) documented that the BI 108-3 Nicholas Street Sewer Extension Phase 3 Project was combined with the 18th and Seward Project, which was part of LTCP Phase 6. Combining these two projects provided a more efficient design and construction process for this area of the City of Omaha and reduced the overall cost. This CNR documents that this project will be constructed in two construction contracts; Phase 3A (OPW 52721) and Phase 3B. The overall project will be considered complete when the Phase 3B construction is complete, anticipated in the spring of 2024.

SCHEDULE CHANGE:

A previous CNR documented changes to the design schedule due to combining the Nicholas Street Phase 3 and the 18th and Seward Project LTCP projects into the Nicholas Street Sewer Extension Phase 3 project. By splitting this Phase 3 combined project into Phase 3A and Phase 3B the Final Design and Construction schedules have changed, as documented in this CNR. The reason for a two-phase project is to expedite the Phase 3A sewer construction in an area that experiences localized flooding while allowing enough time for relocation of gas facilities by Metropolitan Utilities District in the Phase 3B area.

The current LTCP schedule indicates that construction completion is anticipated by December 31, 2021 which will be met by the Phase 3A project. However, the LTCP Nicholas Street Sewer Separation Phase 3 project's LTCP Sewer Separation Phase 4 Milestone date for Completion of Construction of June 30, 2022 will likely not be met by the Phase 3B project. The LTCP 18th Street and Seward Street Sewer Separation project's Sewer Separation Phase 6 Milestone dates for Commence Bidding (July 1, 2021) should be met, but the Completion of Construction date (12/31/2023) will likely not be met for the Phase 3B project. To address these dates and if further schedule adjustments are needed, these Milestone dates can be updated as part of the next

update to the LTCP. The schedule dates for the referenced project phase are being modified as follows:

	Current LTCP Schedule	Phase 3A Actual Completion or *Scheduled Completion*	Phase 3B Actual Completion or *Scheduled Completion*
Design			
Study	12/31/2015	12/31/2015	12/31/2015
Preliminary Design Completion	12/4/2017	2/26/2018	2/26/2018
Final Design Completion	6/30/2019	8/12/2019	*Spring 2021*
Bidding	7/6/2019	8/7/2019	*Summer 2021*
Construction			
Construction Start Date	2/7/2020	*Spring 2020*	*Spring 2022*
Construction Completion Date	12/31/2021	*Fall 2020*	*Spring of 2024*

PMT Review/Recommendation:

Team	Name	Recommended	Comments /Attachments	Date and Initial
COMPLIANCE	Pat Nelson	Yes		10/4/2019 PAN
SEWER SEPARATION	Roger Coffey	YES	See above comments	9/23/2019 RLC
PROJECT DELIVERY	Scott Aurit	Yes		10/01/2019 SAA
PROGRAM CONTROLS	Jack Woo	Yes		9/26/2019 JYW
CONSTRUCTION	Ron Sova	Yes		9/30/2019 RS
ASSURANCE	Kent Bienlien	Yes		20190927 - kdb

Program Managers Approval/Disapproval:

	Approved	Comments	Date and Initial
CSO PROGRAM MANAGER	Tom Heinemann		10/14/19 tjh
CITY PROGRAM COORDINATOR	Jim Theiler		10/15/19 JET

Approval Date is date of the last signature by the Program Manager.

Change Description and Justification TM

OPW 52721 – Nicholas Street Sewer Extension Phase 3 (Phases 3A & 3B)

Introduction:

The purpose of this Technical Memorandum (TM) is to summarize a request for change to the scope and schedule for the Nicholas Street Sewer Extension Phase 3 Project due to splitting the project into two Final Design and Construction contracts (Phases 3A and 3B). The change description and justification was prepared by the Program Management Team (PMT) to document the scope change and schedule delay.

Description of Changes

Scope Changes

A previous Change Notification Request (CNR) documented that the BI 108-3 Nicholas Street Sewer Extension Phase 3 Project was combined with the 18th and Seward Project (which was part of LTCP Phase 6.). Combining these two projects provided a more efficient design and construction process for this area of the City of Omaha and reduced the overall cost. This CNR documents that this project will be constructed in two construction contracts; Phase 3A and Phase 3B. The overall project will be considered complete when the Phase 3B construction is complete, anticipated in the spring of 2024.

Schedule Changes

The Nicholas Street Sewer Extension Phase 3 (Nicholas Phase 3) project is located in the area of and accomplishes the goals of two projects identified in the Long-Term Control Plan (LTCP) for Combined Sewer Overflows (CSOs): Nicholas Street Sewer Separation Phase 3 and the 18th Street and Seward Street Sewer Separation. A previous CNR documented changes to the design schedule due to combining the Nicholas Street Phase 3 and the 18th and Seward LTCP projects into the Nicholas Street Sewer Extension Phase 3 project.

The Nicholas Phase 3 project will be constructed in two phases; Phase 3A and 3B. By splitting this combined Phase 3 project into two phases the Final Design and Construction schedules have changed, as documented in this CNR. The reason for a two-phase project is to expedite the Phase 3A sewer construction in an area that experiences localized flooding while allowing enough time for relocation of gas facilities by Metropolitan Utilities District.

The Nicholas Phase 3A project includes the construction of 15-inch to 36-inch diameter storm sewers along Clark Street from 16th Street to 18th Street and along 17th Street from Clark Street to the Kellom Greenbelt. Although no sanitary sewer is being constructed in Phase 3A, stormwater will be diverted from the existing combined sewer system and re-directed to the Nicholas Street storm sewer system. The Nicholas Phase 3A project was bid in August 2019 with an expected construction start date in spring 2020 with substantial completion in the fall of 2020.

A second phase of the project, Nicholas Phase 3B, will involve the construction of storm sewers ranging in size from 84-inch to 15-inch in diameter along 16th Street from Charles Street to Lothrop Street. Additional storm sewers will be constructed in Corby Street, Lake Street, Grace Street, 18th Street, and Florence Boulevard. A new 12-inch sanitary sewer in 16th Street will replace an existing 8-inch sanitary sewer constructed in the 1880s. Additional sanitary sewers will be constructed in Willis Avenue and Corby Street. All sewers will be constructed by open cut methods of construction. The Phase 3B project is under design and is anticipated to bid in summer of 2021 with an expected construction start date in spring 2022 and completion of construction in the spring of 2024.

The current LTCP schedule indicates that construction completion is anticipated by December 31, 2021 which will be met by the Phase 3A project. The LTCP Nicholas Street Sewer Separation Phase 3 project's LTCP Sewer Separation Phase 4 Milestone date for Completion of Construction of June 30, 2022 will likely not be met for the Phase 3B project. The LTCP 18th Street and Seward Street Sewer Separation project's Sewer Separation Phase 6 Milestone dates for Commence Bidding (July 1, 2021) should be met, but the Completion of Construction date (12/31/2023) will likely not be met for the Phase 3B project. To address these dates and if further schedule adjustments are needed, these Milestone dates can be updated as part of the next update to the LTCP.

Cost Changes

None at this time.

Change Documentation Tracking Form

REQUEST TITLE:	Ohern-Monroe CSO 119 South Barrel Sewer Separation 5A and 5B Project, OPW 53149. Final Design Completion	**DISCOVERY DATE:**	3/1/2019
INITIATED BY:	PMT	**REQUEST DATE:**	4/1/2019
PREPARED BY:	Emily Holtzclaw	**DECISION DATE DUE:**	
WBS NUMBER:	5A: CSOP.02.05.6C00 5B: CSOP.02.05.6D00		

Change Effects: (Check all that apply)

Scope ☐ Schedule ☒ Cost ☐

Change Description and Justification TM

SCHEDULE CHANGE:

As described in the LTCP, the Ohern-Monroe CSO 119 South Barrel Sewer Separation 5A and 5B Projects were to have Final Design started by 5/30/2019. This date will not be met due to delays during the development of the Conceptual (10%) Design Basis of Design Report (BODR). The 10% Design Notice to Proceed (NTP) was 6/12/2018, which met the LTCP start data for Task 2 Preliminary Design of 9/3/2018.

The 10% BODR was due in November 2018, however the Project Team performed additional modeling evaluations, which delayed the 10% deliverables to January 2019. In addition, new alternatives for additional sewer separation were evaluated in February 2019 and multiple revisions to the Conceptual Design report have continued through September 2019.

The Final Design is estimated to be complete sometime in mid to late 2021. This will delay the Bidding Date to the fall or winter of 2021. This project is the only project in LTCP Phase 6, therefore, it needed to achieve the milestone date of June 30, 2020 for Advertisement for Bidding. However, a permit modification request was submitted to NDEE to modify this date to December 31, 2021 in the draft permit. At this time, construction start and completion dates are not expected to meet the LTCP schedule. The LTCP schedule identified for the Final Design, Bidding and Construction of this Project is shown in the table below. The anticipated revised schedules may be updated in the next LTCP update.

	Phase 5A LTCP Schedule	Phase 5A Anticipated Schedule	Phase 5B LTCP Schedule	Phase 5B Anticipated Schedule	
Completion of Preliminary Design (Start of Final Design)	5/30/2019	*Anticipated Fall 2020*	5/30/2019	*Anticipated Fall 2020*	
Advertisement for Bid (Completion of Final Design)	12/31/2021	*Anticipated 11/1/2021*	12/31/2021	*Anticipated 11/1/2021*	
Start of Construction	1/31/2022	*Anticipated Spring 2022*	1/31/2022	*Anticipated Spring 2022*	
Substantial Completion	6/30/2023	*Anticipated 12/31/2023*	6/30/2023	*Anticipated 12/31/2023*	

PMT Review/Recommendation:

Team	Name	Recommended	Comments/Attachments	Date and Initial
COMPLIANCE	Pat Nelson	Yes		10/25/2019 pan
PROJECT DELIVERY	Scott Aurit	Yes		10/14/2019 SAA
SEWER SEPARATION	Roger Coffey	Yes		10/4/2019 RLC
PROGRAM CONTROLS	Jack Woo	Yes		10/15/19 JYW
CONSTRUCTION	Ron Sova	Yes		9/30/2019 - RS
ASSURANCE	Kent Bienlien	Yes		10/14/19-kdb

Program Managers Approval/Disapproval:

Title	Name	Approved	Comments	Date and Initial
CSO PROGRAM MANAGER	Tom Heinemann	Yes		11/5/19 TJH
CITY Public Works - Assistant Director Environmental Services	Jim Theiler	Yes		11/5/19 JFT

The Approval Date is the date of the last signature by the Program Managers.

Change Description and Justification TM

OPW 53149 –Ohern-Monroe CSO 119 South Barrel Sewer Separation 5A and 5B Project

Introduction:

The purpose of this Technical Memorandum (TM) is to summarize a request for change to the schedule of the Ohern-Monroe CSO 119 South Barrel Sewer Separation 5A and 5B Project. The change description and justification was prepared by the Program Management Team (PMT) to document changes to the schedule for Final Design completion.

Description of Changes

As described in the LTCP, the Ohern-Monroe CSO 119 South Barrel Sewer Separation 5A and 5B Projects were to have Final Design started by 5/30/2019. This date will not be met due to delays during the development of the Conceptual (10%) Basis of Design Report (BODR). The 10% Design Notice to Proceed (NTP) was 6/12/2018, which met the LTCP start data for Task 2 Preliminary Design of 9/3/2018.

The 10% BODR was due in November 2018, however the Project Team performed additional modeling evaluations, which delayed the 10% deliverables to January 2019. In addition, new alternatives for additional sewer separation were evaluated in February 2019 and multiple revisions to the Conceptual Design report have continued through September 2019.

The Final Design is estimated to be complete sometime in mid to late 2021. This will delay the Bidding Date to the fall or winter of 2021. This project is the only project in LTCP Phase 6, therefore, it needed to achieve the milestone date of June 30, 2020 for Advertisement for Bidding. However, a permit modification request was submitted to NDEE to modify this date to December 31, 2021 in the draft permit. At this time, construction start and completion dates are not expected to meet the LTCP schedule. The LTCP schedule identified for the Final Design, Bidding and Construction of this Project is shown in the table above. The anticipated revised schedules are shown for comparison. These anticipated schedule updates will be addressed in the next LTCP update.

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Change Documentation Tracking Form

REQUEST TITLE:	Forest Lawn Inflow Removal and Outfall Storm Sewer	DISCOVERY DATE:	3/31/2019
INITIATED BY:	PMT	REQUEST DATE:	11/4/2019
PREPARED BY:	Pat Nelson/PMT Rachel Saunders/PMT	DECISION DATE DUE:	
WBS NUMBER:	CSOP.02.04.4G00		

Change Effects: (Check all that apply)

Scope ☒ Schedule ☒ Cost ☒

Rehabilitation project ☐ Other ☐

Brief Summary from Change Description and Justification TM

SCOPE: The project scope will change as a result of the difference in project cost.

SCHEDULE: This project will be put on hold until the direction of the Optimization Evaluation is known or at a minimum the direction of the control at CSOs 106 and 107 has been finalized. The schedule will be modified as follows:

	Previous LTCP Schedule	New LTCP Schedule (actual)
Start Preliminary Design	9/1/2015	6/12/2014
Complete Preliminary Design	7/21/2015 *	10/29/2015
Start Final Design	6/28/2016	10/1/2021
Completion of Final Design	8/1/2018	10/31/2022
Advertisement for Bid	10/31/2018	10/31/2022
Bid Opening	3/31/2019	12/31/2022
Start of Construction	9/1/2019	3/1/2023
Complete Construction	12/30/2021	12/31/2024

* Date was updated when actual start date was earlier than scheduled.

COST: Cost changes are proposed at this time to ensure the project is cost-effective. Based on the Value Engineering review, it is anticipated the cost is likely in the $20,000,000 to $23,000,000 range which significantly exceeds the Final Opinion of Probable Construction Cost of $17,500,000

OTHER: No other changes proposed.

PMT Review/Recommendation:

Team	Name	Recommended	Comments /Attachments	Date and Initial
COMPLIANCE	Pat Nelson	Yes		12/17/2019
PROJECT DELIVERY	Scott Aurit	Yes		12/09/2019 SAA
SEWER SEPARATION	Roger Coffey	Yes		12/09/2019 RLC
PROGRAM CONTROLS	Jack Woo	Yes		12/11/19 JYW
CONSTRUCTION	Ron Sova	Yes		12/09/2019 RJS
ASSURANCE	Kent Bienlien	Yes		20191217 kdb

Program Managers Approval/Disapproval:

Title	Name	Approved	Comments	Date and Initial
PROGRAM MANAGER	Tom Heinemann	Yes		12/17/19 TJH
CITY PROGRAM COORDINATOR	Jim Theiler	YES		12/17/2019 JST

The Approval Date is the date of the last signature by the Program Manager.

Change Description and Justification TM

CSOP.02.04.4G00 – Forest Lawn Inflow Removal and Outfall Storm Sewer Project

Introduction:

The purpose of the Forest Lawn Inflow Removal and Outfall Sewer Project is to remove the perennial stream flow from the combined sewer system and direct this stream to the combined sewer overflow (CSO) 105 Outfall Channel and subsequently to the Missouri River. Under the current LTCP, completion of the Project is a key element of the CSO Program, as proposed downstream CSO facilities are sized dependent on the removal of the stream flow from the combined system. The Project was designed and advertised for bids on October 31, 2018. The bid opening was held but there was only one bid received, which was $4.1 million over the Engineers Opinion of Probable Construction Cost (OPCC).

The City has taken a two-pronged approach to evaluate the project and identify the optimal path forward. The first step includes performing a Value Engineering (VE) Review, to gain an understanding of the factors contributing to the unexpected higher cost and assess if there are actions that can be taken that could reduce the cost of the Project through rebidding while still meeting its primary objective. This review is summarized in the *Forest Lawn Review Value Engineering Memorandum*. In addition, a review was completed to determine the impact of not constructing the project or construction of a modified project on the downstream controls. The results of this suggest that there may be more cost-effective ways of achieving the desired results but are dependent on the final controls for CSO 106 and CSO 107. The results are summarized in the *Forest Lawn Creek Inflow Removal and Outfall Storm Sewer Project – Combined Sewer Overflow Impact Evaluation Memorandum.*

Description of Changes

The Forest Lawn Sewer Separation project will be put "on hold" until a determination is made on the alternative that the City will be pursuing in the LTCP Update. A revised schedule has been developed based on the likelihood that the project, as designed, has a higher cost than the OPCC developed by the engineer and that the cost effectiveness of the project is tied closely to the results of the Optimization Evaluation. Specifically, the type of control at CSOs 106 and 107 directly influences the cost effectiveness of the sewer separation project as designed. However, it is possible that even if the current project is not cost-effective, there may be portions of the project or a different project that may prove to be cost-effective.

Because of the uncertainty, the current sewer separation project will be put on hold until the direction of the Optimization Evaluation is known or at a minimum the direction of the control at CSOs 106 and 107 has been finalized. The following is the path forward for Forest Lawn. This is subject to revision during the LTCP Update development. The approach is as follows:

1. It is anticipated that a determination will be made by mid-2020. For the purpose of this schedule it is assumed to be July 1, 2020.
2. The two TMs noted above will be finalized, with comments addressed by the end of 2019.
3. Depending on the outcome of the Optimization Evaluation, the process will proceed in one of the following ways:
    a. Move forward with the project as originally designed with some minor changes. If it is determined that the Forest Lawn Sewer Separation project as currently designed is cost-effective, then Burns and McDonnell will be asked to revise the current design to address issues noted in the Value Engineering TM. It is anticipated that it will take approximately 6 months to get them under a revised contract, and another 6 - 9 months to get the project ready for bidding. It is assumed that the Project would be bid in the fall 2021 and construction would start in 2022. The schedule assumed at this point would be:
        i. Begin Design – January 1, 2021
        ii. Bid Advertisement – October 1, 2021
        iii. NTP construction – March 1, 2022.
        iv. Complete construction – December 31, 2024
    b. Redesign the project to provide some of the benefits of the current project but at a lower cost. If it is determined that the current design is not cost-effective, but there are cost-effective modifications that could be done in the basin as part of a substantially different project than the current design, then the City will move forward with a new project and will go out with an RFP for a firm to develop the design. In this case it is assumed that the design may not start until the fall of 2021, and the design would take approximately one year. The schedule assumed would be:
        i. RFP for the project – January 1, 2021
        ii. Begin Design – October 1, 2021
        iii. Bid Advertise – October 31, 2022

iv. Bid Opening- December 31, 2022
v. NTP – March 1, 2023
vi. Complete Construction – December 31, 2024

c. Eliminate the Forest Lawn Project. If it is determined that a project in the area is not needed, then the project will be eliminated from the LTCP.

Scope Changes

If it is determined that the current design is not cost-effective, but there are cost-effective modifications that could be done in the basin as part of a substantially different project than the current design, then the City will move forward with a new project and will go out with an RFP for a firm to develop the design.

Schedule Changes

The current sewer separation project will be put on hold until the direction of the Optimization Evaluation is known or at a minimum the direction of the control at CSOs 106 and 107 has been finalized. It is anticipated that a determination will be made by mid-2020. For the purpose of this schedule it is assumed to be July 1, 2020 and that a redesign of the project is necessary.

	Previous LTCP Schedule	New LTCP Schedule (actual)
Start Preliminary Design	9/1/2015	6/12/2014
Complete Preliminary Design	7/21/2015*	10/29/2015
Start Final Design	6/28/2016	10/1/2021
Completion of Final Design	8/1/2018	12/31/2022
Advertisement for Bid	3/31/2019	12/31/2022
Start of Construction	9/1/2019	3/1/2023
Complete Construction	12/30/2021	12/31/2024

* Date was updated when actual start date was earlier than scheduled.

This schedule will be revised as part of the development of the LTCP Update due in 2021

Cost Changes

Based on the Value Engineering review, it is anticipated the cost of the project is likely in the $20,000,000 to $23,000,000 which is significantly in excess of the Final Opinion of Probable cost of $17,500,000.

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Change Documentation Tracking Form

REQUEST TITLE:	4A - CSO Deep Tunnel and Drop Shafts 4B - CSO Deep Tunnel Lift Station & Force Main 4C - Conveyance to Tunnel Drop Shafts 4G - LV Jones Street to Leavenworth Diversion 4H - Deep Tunnel Grit Basin Facilities	DISCOVERY DATE:	12/19/2018
INITIATED BY:	PMT	REQUEST DATE:	9/13/19
PREPARED BY:	Kay Dry	DECISION DATE DUE:	
WBS NUMBER:	CSOP.01.04.4A00 CSOP.01.04.4B00 CSOP.01.04.4C00 CSOP.01.04.H00		

Change Effects: (Check all that apply)

Scope ☐ Schedule ☒ Cost ☐

Rehabilitation project ☐ Other ☐

Brief Summary from Change Description and Justification TM

SCHEDULE CHANGE:

The current LTCP schedule indicates that final design completion for the CSO Deep Tunnel and Drop Shafts will be completed by January 1, 2021 and associated components to follow. However, the City of Omaha is in the process of completing an optimization evaluation to determine if a deep tunnel and its associated components are as cost-effective as other alternatives to achieve the required volume control for the Missouri River Watershed. To address these dates, the schedule dates for the referenced project phase are being modified as identified in the following table. If further schedule adjustments are needed, these Milestone dates can be modified as part of the next LTCP Update.

	4A - CSO Deep Tunnel and Drop Shafts Current LTCP Schedule	4B - CSO Deep Tunnel Lift Station & Force Main Current LTCP Schedule	4C - Conveyance to Tunnel Drop Shafts Current LTCP Schedule	4H - Deep Tunnel Grit Basin Facilities Current LTCP Schedule	Actual Completion or *Scheduled Completion for 4A, 4B, 4C, and 4H*
Design					
Preliminary Design Start	12/31/2018	12/31/2018	1/1/2020	1/1/2019	*1/1/2022*
Final Design Start	1/1/2021	1/1/2021	1/1/2022	11/1/2021	*12/31/2023*
Commence Bidding	11/21/2022	1/31/2023	12/22/2023	12/20/2022	*7/1/2024*
Construction					
Construction Start Date	5/18/2023	7/26/2023	6/19/2024	6/19/2023	*1/1/2025*
Construction Completion Date	8/31/2026	8/31/2026	7/1/2027	10/1/2026	*12/31/2035*

PMT Review/Recommendation:

Team	Name	Recommended	Comments /Attachments	Date and Initial
COMPLIANCE	Pat Nelson	Yes		Pan 12/17/2019
SEWER SEPARATION	Roger Coffey	Yes		RLC 12/10/2019
PROJECT DELIVERY	Scott Aurit	Yes		SAA 12/09/2019
PROGRAM CONTROLS	Jack Woo	Yes		JYW 12/11/19
CONSTRUCTION	Ron Sova	Yes		RJS 12/12/2019
ASSURANCE	Kent Bienlien	Yes		20191217 - kdb

Program Managers Approval/Disapproval:

	Approved	Comments	Date and Initial
CSO PROGRAM MANAGER	Tom Heinemann YES		TJH 12/17/2019
CITY PROGRAM COORDINATOR	Jim Theiler YES		JBT 12/17/2019

Approval Date is date of the last signature by the Program Manager.

Change Description and Justification TM

OPW 52244 – CSO Deep Tunnel and Drop Shafts

Introduction:

The purpose of this Technical Memorandum (TM) is to summarize a request for change to the schedule for the CSO Deep Tunnel and Drop Shafts Project and the associated projects after the tunnel is completed. The change description and justification was prepared by the Program Management Team (PMT) to document the schedule delay.

Description of Changes

Scope Changes

None at this time.

Schedule Changes

The City is in the process of performing an optimization evaluation of the Omaha CSO Program projects to evaluate alternatives to adapt LTCP controls to meet regulatory requirements, the City's goals, and community expectations, while continuing to target an overall Program cost reduction. Additionally, the City is also identifying the most cost-effective and beneficial combination of projects and other system improvements in the Missouri River Watershed to advance to LTCP completion by conducting an optimization analysis of several alternatives to reach the level of control target of primarily 85% volume capture. This level of volume control is included in the City's Amended Consent Order with NDEE.

Thus, the concept of the Deep Tunnel System and its associated projects is being evaluated as part of the optimization evaluation. Once this evaluation is complete, the validity of the tunnel option will be determined and a schedule with milestone dates will be set. To address these dates and if further schedule adjustments are needed, the Program Management Team is also currently performing Conceptual Development of the Deep Tunnel System, which includes updates to the construction packaging, cost, and schedule for implementation of the project. Based on the results of the Conceptual Development, these Milestone dates may be further adjusted as part of the next update to the LTCP. The completion date of December 31, 2023 was changed in a prior permit modification, and the other dates shown in Table 1 are estimates.

Table 1 – CSO Deep Tunnel and Drop Shaft Schedule Modifications

	4A - CSO Deep Tunnel and Drop Shafts Current LTCP Schedule	4B - CSO Deep Tunnel Lift Station & Force Main	4C - Conveyance to Tunnel Drop Shafts Current LTCP Schedule	4H - Deep Tunnel Grit Basin Facilities Current LTCP Schedule	Actual Completion or *Scheduled Completion for 4A, 4B, 4C, and 4H*

		Current LTCP Schedule			
Design					
Preliminary Design Start	12/31/2018	12/31/2018	1/1/2020	1/1/2019	*1/1/2022*
Final Design Start	1/1/2021	1/1/2021	1/1/2022	11/1/2021	*12/31/2023*
Commence Bidding	11/21/2022	1/31/2023	12/22/2023	12/20/2022	*7/1/2024*
Construction					
Construction Start Date	5/18/2023	7/26/2023	6/19/2024	6/19/2023	*1/1/2025*
Construction Completion Date	8/31/2026	8/31/2026	7/1/2027	10/1/2026	*12/31/2035*

Cost Changes

None at this time.

Attachment 4 – Wet Weather CSO Occurrences Report

CSO Inspection Report

CSO Number 103 **Total Wet Weather Overflows:** 2

CSO Name Bridge Street Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
7/4/2019	8:04	Frolio, Brandon	Rain	Yes	No	7/3/2019	Localized 10 year rain event in this combined sewer basin	0.54
9/19/2019	15:37	Frolio, Brandon	Rain	Yes	No	9/19/2019	2-3 inches in 2 hours, 5 year rain event	2.05

CSO Inspection Report

CSO Number 105 **Total Wet Weather Overflows:** 11

CSO Name Minne Lusa Avenue

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:06	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
6/22/2019	13:55	Birdsall, Jeremiah	Rain	Yes	Yes	6/22/2019	Intentional bypass due to high river levels.	0.38
6/24/2019	12:05	Frolio, Brandon	Rain	Yes	Yes	6/23/2019	Intentional bypass due to high river levels.	0.19
7/9/2019	14:05	Frolio, Brandon	Rain	Yes	Yes	7/9/2019	Intentional bypass due to high river levels.	0.31
7/16/2019	11:15	Fagerquist, Dylan	Rain	Yes	Yes	7/16/2019	Intentional bypass due to high river levels.	0.55
8/16/2019	15:52	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26
8/18/2019	16:07	Frolio, Brandon	Rain	Yes	No	8/18/2019		0.32
8/21/2019	7:50	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:02	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/19/2019	15:37	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05

CSO Inspection Report

CSO Number 106 **Total Wet Weather Overflows:** 5

CSO Name North Interceptor

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:07	Birdsall, Jeremiah	Rain	Yes	Yes	12/26/2018	Tim O'brien was called to dispatch crew.	0.96
1/14/2019	12:34	Fagerquist, Dylan	Snow Melt	Yes	No	1/13/2019		0
2/3/2019	11:42	Birdsall, Jeremiah	Snow Melt	Yes	No	2/2/2019		0.004
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41

CSO Inspection Report

CSO Number 107 **Total Wet Weather Overflows:** 4

CSO Name Grace Street

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:08	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
1/14/2019	12:34	Fagerquist, Dylan	Snow Melt	Yes	No	1/13/2019		0
2/3/2019	11:42	Birdsall, Jeremiah	Snow Melt	Yes	No	2/2/2019		0.004
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54

CSO Inspection Report

CSO Number 108 **Total Wet Weather Overflows:** 4

CSO Name Burt Izard Street Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:08	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
1/14/2019	12:34	Fagerquist, Dylan	Snow Melt	Yes	No	1/13/2019		0
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41

CSO Inspection Report

CSO Number 109 **Total Wet Weather Overflows:** 28

CSO Name 1st and Leavenworth Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/6/2018	16:06	Birdsall, Jeremiah	Rain	Yes	No	10/6/2018	SCADA Email	0.12
10/15/2018	12:34	Frolio, Brandon	Snow Melt	Yes	No	10/14/2018	SCADA Email	0.25
12/28/2018	6:09	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018	SCADA Email	0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019	SCADA Email	0.54
3/25/2019	7:42	Frolio, Brandon	Rain	Yes	No	3/24/2019	SCADA Email	0.25
4/3/2019	7:48	Frolio, Brandon	Rain	Yes	No	4/2/2019	SCADA Email	0.08
4/11/2019	7:05	Frolio, Brandon	Rain	Yes	No	4/10/2019	SCADA Email	0.22
4/27/2019	15:28	Frolio, Brandon	Rain	Yes	No	4/27/2019	SCADA Email	0.54
5/1/2019	12:34	Noble, Austin	Rain	Yes	No	5/1/2019	SCADA Email	0.16
5/7/2019	16:01	Frolio, Brandon	Rain	Yes	No	5/6/2019	SCADA Email	0.27
5/12/2019	15:17	Frolio, Brandon	Rain	Yes	No	5/11/2019	SCADA Email	0.51
5/18/2019	12:34	Noble, Austin	Rain	Yes	No	5/18/2019	SCADA Email	0.09
5/19/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	5/18/2019	SCADA Email	0.09
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019	SCADA Email	0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019	SCADA Email	1.04
6/12/2019	15:52	Frolio, Brandon	Rain	Yes	No	6/11/2019	SCADA Email	0.47
6/19/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/18/2019	SCADA Email	0.31
6/22/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	6/22/2019	SCADA Email	0.38
6/24/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/23/2019	SCADA Email	0.19
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019	SCADA Email	0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019	SCADA Email	0.55
8/12/2019	16:11	Frolio, Brandon	Rain	Yes	No	8/11/2019	SCADA Email	3.19
9/1/2019	11:04	Frolio, Brandon	Rain	Yes	No	8/31/2019	SCADA EMAIL	0.07

CSO Inspection Report

CSO Number 109 **Total Wet Weather Overflows:** 28

CSO Name 1st and Leavenworth Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
9/10/2019	16:21	Frolio, Brandon	Rain	Yes	No	9/10/2019	SCADA EMAIL	0.44
9/11/2019	16:14	Frolio, Brandon	Rain	Yes	No	9/11/2019	SCADA EMAIL	0.16
9/19/2019	15:39	Frolio, Brandon	Rain	Yes	No	9/19/2019	SCADA EMAIL	2.05
9/22/2019	12:00	Wieland, H. Curtis	Rain	Yes	Yes	9/22/2019	Level data indicated overflow	0.81
9/30/2019	4:45	Wieland, H. Curtis	Rain	Yes	No	9/29/2019	Level data indicated overflow	0.29

CSO Inspection Report

CSO Number 110 **Total Wet Weather Overflows:** 5

CSO Name Pierce Street Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:32	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
12/28/2018	6:10	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
2/14/2019	12:34	Frolio, Brandon	Snow Melt	Yes	No	2/12/2019		0.004
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41

CSO Inspection Report

CSO Number 111 **Total Wet Weather Overflows:** 2

CSO Name Hickory Street Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:10	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41

CSO Inspection Report

CSO Number 112 **Total Wet Weather Overflows:** 22

CSO Name Martha Street

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:29	Birdsall, Jeremiah	Rain	Yes	Yes	10/1/2018	Tim O'Brien called to dispatch a levee crew	0.18
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
12/28/2018	6:09	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
5/19/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	5/18/2019		0.09
6/12/2019	15:52	Frolio, Brandon	Rain	Yes	No	6/11/2019		0.47
6/19/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/18/2019		0.31
6/22/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	6/22/2019		0.38
6/24/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/23/2019		0.19
7/3/2019	15:39	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
7/22/2019	15:45	Frolio, Brandon	Rain	Yes	No	7/21/2019		0.43
7/29/2019	15:59	Frolio, Brandon	Rain	Yes	No	7/28/2019		0.19
8/12/2019	16:11	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:54	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26
8/21/2019	7:54	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:04	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/10/2019	16:22	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/11/2019	16:14	Frolio, Brandon	Rain	Yes	No	9/11/2019		0.16
9/19/2019	15:40	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 114 **Total Wet Weather Overflows:** 3

CSO Name Grover Street

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:10	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41

CSO Inspection Report

CSO Number 115 **Total Wet Weather Overflows:** 5

CSO Name Riverview Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:34	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
12/28/2018	6:10	Birdsall, Jeremiah	Rain	Yes	Yes	12/26/2018	Tim O'brien was called to dispatch crew.	0.96
1/14/2019	12:34	Fagerquist, Dylan	Snow Melt	Yes	No	1/13/2019		0
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41

CSO Inspection Report

CSO Number 117 **Total Wet Weather Overflows:** 4

CSO Name Missouri Avenue Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:35	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
12/28/2018	6:11	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41

CSO Inspection Report

CSO Number 118 **Total Wet Weather Overflows:** 23

CSO Name South Omaha (Ohern Street)

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:36	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
10/6/2018	16:10	Birdsall, Jeremiah	Rain	Yes	No	10/6/2018		0.12
11/4/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/3/2018		0.55
12/28/2018	6:11	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41
4/4/2019	16:29	Frolio, Brandon	Rain	Yes	No	4/3/2019		0.13
4/11/2019	7:09	Frolio, Brandon	Rain	Yes	No	4/10/2019		0.22
5/18/2019	12:34	Noble, Austin	Rain	Yes	No	5/18/2019		0.09
5/19/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	5/18/2019		0.09
7/3/2019	15:42	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
7/29/2019	16:00	Frolio, Brandon	Rain	Yes	No	7/28/2019		0.19
8/12/2019	16:13	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:56	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26
8/21/2019	7:57	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:06	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/1/2019	11:08	Frolio, Brandon	Rain	Yes	No	8/31/2019		0.07
9/10/2019	16:24	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/19/2019	15:42	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/27/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	9/27/2019		0.04
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 119 **Total Wet Weather Overflows:** 31

CSO Name Monroe Street Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:12	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41
3/25/2019	7:45	Frolio, Brandon	Rain	Yes	No	3/24/2019		0.25
4/11/2019	7:10	Frolio, Brandon	Rain	Yes	No	4/10/2019		0.22
4/27/2019	15:31	Frolio, Brandon	Rain	Yes	No	4/27/2019		0.54
5/7/2019	16:04	Frolio, Brandon	Rain	Yes	No	5/6/2019		0.27
5/12/2019	15:20	Frolio, Brandon	Rain	Yes	No	5/11/2019		0.51
5/18/2019	12:34	Noble, Austin	Rain	Yes	No	5/18/2019		0.09
5/19/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	5/18/2019		0.09
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019		1.04
6/5/2019	16:23	Frolio, Brandon	Rain	Yes	No	6/3/2019		0.66
6/12/2019	15:54	Frolio, Brandon	Rain	Yes	No	6/11/2019		0.47
6/19/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/18/2019		0.31
6/22/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	6/22/2019		0.38
6/24/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/23/2019		0.19
7/3/2019	15:42	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/4/2019	8:18	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
7/22/2019	15:47	Frolio, Brandon	Rain	Yes	No	7/21/2019		0.43
8/12/2019	16:14	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:57	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26

CSO Inspection Report

CSO Number 119 **Total Wet Weather Overflows:** 31

CSO Name Monroe Street Lift Station

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
8/21/2019	7:57	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:06	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/10/2019	16:24	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/19/2019	15:43	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/22/2019	13:51	Frolio, Brandon	Rain	Yes	No	9/22/2019		0.81
9/25/2019	16:13	Frolio, Brandon	Rain	Yes	No	9/25/2019		0.12
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 121 **Total Wet Weather Overflows:** 21

CSO Name Jones Street

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
10/12/2018	16:19	Birdsall, Jeremiah	Rain	Yes	No	10/12/2018		0.12
12/28/2018	6:09	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41
4/27/2019	15:28	Frolio, Brandon	Rain	Yes	No	4/27/2019		0.54
5/12/2019	15:17	Frolio, Brandon	Rain	Yes	No	5/11/2019		0.51
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019		1.04
6/12/2019	15:51	Frolio, Brandon	Rain	Yes	No	6/11/2019		0.47
6/24/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/23/2019		0.19
7/3/2019	15:38	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/4/2019	8:08	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
7/22/2019	15:43	Frolio, Brandon	Rain	Yes	No	7/21/2019	WMB coincided with rain event.	0.43
8/12/2019	16:11	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:54	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26
8/21/2019	7:51	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
9/10/2019	16:21	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number **201** **Total Wet Weather Overflows: 2**

CSO Name Papillion Creek Water Resource Recovery Facility

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
3/14/2019	-	City of Omaha	Rain	Yes	Yes	3/13 - 3/14	Missouri River Level was at Moderate Flood Stage	1.21
3/29/2019	-	City of Omaha	Missouri River flooded	Yes	Yes	-	Papillion Creek Water Resource Recovery Facility flooded	-

CSO Inspection Report

CSO Number 202 **Total Wet Weather Overflows:** 33

CSO Name 72nd & Bedford

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:16	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
10/26/2018	16:11	Birdsall, Jeremiah	Rain	Yes	No	10/25/2018		0.17
12/28/2018	6:05	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41
3/25/2019	7:37	Frolio, Brandon	Rain	Yes	No	3/24/2019		0.25
4/11/2019	7:08	Birdsall, Jeremiah	Rain	Yes	No	4/10/2019		0.22
4/27/2019	15:25	Frolio, Brandon	Rain	Yes	No	4/27/2019		0.54
5/7/2019	15:57	Frolio, Brandon	Rain	Yes	No	5/6/2019		0.27
5/12/2019	15:14	Frolio, Brandon	Rain	Yes	No	5/11/2019		0.51
5/18/2019	12:34	Noble, Austin	Rain	Yes	No	5/18/2019		0.09
5/19/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	5/18/2019		0.09
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019		1.04
6/5/2019	16:16	Frolio, Brandon	Rain	Yes	No	6/3/2019		0.66
6/18/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	6/18/2019		0.31
7/3/2019	15:35	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/4/2019	8:03	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
7/29/2019	15:56	Frolio, Brandon	Rain	Yes	No	7/28/2019		0.19
8/12/2019	16:09	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:51	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26

CSO Inspection Report

CSO Number 202 **Total Wet Weather Overflows:** 33

CSO Name 72nd & Bedford

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
8/18/2019	16:05	Frolio, Brandon	Rain	Yes	No	8/18/2019		0.32
8/21/2019	7:48	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:00	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/8/2019	10:42	Frolio, Brandon	Rain	Yes	No	9/8/2019		0.11
9/10/2019	16:19	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/19/2019	15:36	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/22/2019	13:40	Frolio, Brandon	Rain	Yes	No	9/22/2019		0.81
9/25/2019	15:49	Frolio, Brandon	Rain	Yes	No	9/25/2019		0.12
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 203 **Total Wet Weather Overflows:** 32

CSO Name 69th & Evans

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:17	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
10/26/2018	16:11	Birdsall, Jeremiah	Rain	Yes	No	10/25/2018		0.17
11/4/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/3/2018		0.55
12/17/2018	7:36	Frolio, Brandon	Snow Melt	Yes	No	12/17/2018		0
12/28/2018	6:06	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
1/14/2019	12:34	Fagerquist, Dylan	Snow Melt	Yes	No	1/13/2019		0
2/8/2019	12:34	Frolio, Brandon	Snow Melt	Yes	No	2/7/2019		0.02
2/11/2019	12:34	Frolio, Brandon	Snow Melt	Yes	No	2/10/2019		0.27
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
4/3/2019	7:44	Frolio, Brandon	Rain	Yes	No	4/2/2019		0.08
4/11/2019	7:08	Birdsall, Jeremiah	Rain	Yes	No	4/10/2019		0.22
4/27/2019	15:26	Frolio, Brandon	Rain	Yes	No	4/27/2019		0.54
5/7/2019	15:57	Frolio, Brandon	Rain	Yes	No	5/6/2019		0.27
5/12/2019	15:15	Frolio, Brandon	Rain	Yes	No	5/11/2019		0.51
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019		1.04
6/5/2019	16:17	Frolio, Brandon	Rain	Yes	No	6/3/2019		0.66
6/12/2019	15:49	Frolio, Brandon	Rain	Yes	No	6/11/2019		0.47
7/3/2019	15:35	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/4/2019	8:03	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
8/12/2019	16:09	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19

CSO Inspection Report

CSO Number 203 **Total Wet Weather Overflows:** 32

CSO Name 69th & Evans

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
8/18/2019	16:06	Frolio, Brandon	Rain	Yes	No	8/18/2019		0.32
8/21/2019	7:48	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:01	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/8/2019	10:42	Frolio, Brandon	Rain	Yes	No	9/8/2019		0.11
9/19/2019	15:36	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/22/2019	13:41	Frolio, Brandon	Rain	Yes	No	9/22/2019		0.81
9/25/2019	15:49	Frolio, Brandon	Rain	Yes	No	9/25/2019		0.12
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 204 **Total Wet Weather Overflows:** 54

CSO Name 63rd & Ames

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:18	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
10/15/2018	12:34	Frolio, Brandon	Snow Melt	Yes	No	10/14/2018	snow event 10/14/2018	0.25
10/26/2018	16:12	Birdsall, Jeremiah	Rain	Yes	No	10/25/2018		0.17
11/4/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/3/2018		0.55
11/24/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/23/2018		0.06
11/25/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/24/2018		0.07
12/17/2018	7:37	Frolio, Brandon	Snow Melt	Yes	No	12/17/2018		0
12/28/2018	6:06	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
1/14/2019	12:34	Fagerquist, Dylan	Snow Melt	Yes	No	1/13/2019		0
2/3/2019	11:42	Birdsall, Jeremiah	Snow Melt	Yes	No	2/2/2019		0.004
2/11/2019	12:34	Frolio, Brandon	Snow Melt	Yes	No	2/10/2019		0.27
2/12/2019	12:34	Frolio, Brandon	Snow Melt	Yes	No	2/11/2019		0.19
2/13/2019	12:34	Frolio, Brandon	Snow Melt	Yes	No	2/12/2019		0.004
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019		0.41
3/25/2019	7:38	Frolio, Brandon	Rain	Yes	No	3/24/2019		0.25
3/30/2019	11:34	Frolio, Brandon	Rain	Yes	No	3/29/2019		0.15
4/3/2019	7:45	Frolio, Brandon	Rain	Yes	No	4/2/2019		0.08
4/4/2019	16:25	Frolio, Brandon	Rain	Yes	No	4/3/2019		0.13
4/11/2019	7:09	Birdsall, Jeremiah	Rain	Yes	No	4/10/2019		0.22
4/27/2019	15:26	Frolio, Brandon	Rain	Yes	No	4/27/2019		0.54
5/1/2019	12:34	Noble, Austin	Rain	Yes	No	5/1/2019		0.16

CSO Inspection Report

CSO Number 204 **Total Wet Weather Overflows:** 54

CSO Name 63rd & Ames

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
5/7/2019	15:58	Frolio, Brandon	Rain	Yes	No	5/6/2019		0.27
5/12/2019	15:15	Frolio, Brandon	Rain	Yes	No	5/11/2019		0.51
5/18/2019	12:34	Noble, Austin	Rain	Yes	No	5/18/2019		0.09
5/19/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	5/18/2019		0.09
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019		1.04
6/5/2019	16:17	Frolio, Brandon	Rain	Yes	No	6/3/2019		0.66
6/12/2019	15:49	Frolio, Brandon	Rain	Yes	No	6/11/2019		0.47
6/14/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	6/14/2019		0.04
6/18/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	6/18/2019		0.31
6/19/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/18/2019		0.31
6/22/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	6/22/2019		0.38
6/24/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/23/2019		0.19
7/3/2019	15:35	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/4/2019	8:03	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
7/22/2019	15:41	Frolio, Brandon	Rain	Yes	No	7/21/2019		0.43
7/29/2019	15:56	Frolio, Brandon	Rain	Yes	No	7/28/2019		0.19
8/12/2019	16:09	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:51	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26
8/18/2019	16:06	Frolio, Brandon	Rain	Yes	No	8/18/2019		0.32
8/21/2019	7:49	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:01	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25

CSO Inspection Report

CSO Number 204 **Total Wet Weather Overflows:** 54

CSO Name 63rd & Ames

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
9/1/2019	11:02	Frolio, Brandon	Rain	Yes	No	8/31/2019		0.07
9/8/2019	10:42	Frolio, Brandon	Rain	Yes	No	9/8/2019		0.11
9/10/2019	16:19	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/19/2019	15:37	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/22/2019	13:41	Frolio, Brandon	Rain	Yes	No	9/22/2019		0.81
9/25/2019	15:49	Frolio, Brandon	Rain	Yes	No	9/25/2019		0.12
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 205 **Total Wet Weather Overflows:** 51

CSO Name 64th & Dupont

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:07	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018	Peak depth recorded by Mission level sensor and verified manually	0.18
10/6/2018	15:57	Birdsall, Jeremiah	Rain	Yes	No	10/6/2018	Peak depth recorded by Mission level sensor and verified manually	0.12
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018	Peak depth recorded by Mission level sensor	0.76
10/12/2018	16:13	Birdsall, Jeremiah	Rain	Yes	No	10/12/2018	Peak depth recorded by Mission level sensor	0.12
10/15/2018	12:34	Frolio, Brandon	Snow Melt	Yes	No	10/14/2018	Peak depth recorded by Mission level sensor	0.25
11/4/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/3/2018	Peak depth recorded by Mission level sensor	0.55
11/6/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/5/2018	Peak depth recorded by Mission level sensor	0.15
11/24/2018	12:34	Frolio, Brandon	Rain	Yes	No	11/23/2018	Peak depth recorded by Mission level sensor	0.06
12/28/2018	5:59	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018	Peak depth recorded by Mission level sensor	0.96
2/3/2019	11:41	Birdsall, Jeremiah	Snow Melt	Yes	No	2/2/2019	Peak depth recorded by Mission level sensor	0.004
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019	Peak depth recorded by Mission level sensor	0.54
3/12/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/12/2019	Peak depth recorded by Mission level sensor	0.41
3/25/2019	7:33	Frolio, Brandon	Rain	Yes	No	3/24/2019	Peak depth recorded by Mission level sensor	0.25
3/30/2019	11:27	Frolio, Brandon	Rain	Yes	No	3/29/2019	Peak depth recorded by Mission level sensor	0.15
4/3/2019	7:41	Frolio, Brandon	Rain	Yes	No	4/2/2019	Peak depth recorded by Mission level sensor	0.08
4/4/2019	16:21	Frolio, Brandon	Rain	Yes	No	4/3/2019	Peak depth recorded by Mission level sensor	0.13
4/11/2019	6:38	Birdsall, Jeremiah	Rain	Yes	No	4/10/2019	Peak depth recorded by Mission level sensor	0.22
4/27/2019	15:23	Frolio, Brandon	Rain	Yes	No	4/27/2019	Peak depth recorded by Mission level sensor	0.54
5/1/2019	12:34	Noble, Austin	Rain	Yes	No	5/1/2019	Peak depth recorded by Mission level sensor	0.16
5/7/2019	15:55	Frolio, Brandon	Rain	Yes	No	5/6/2019	Peak depth recorded by Mission level sensor	0.27
5/12/2019	15:12	Frolio, Brandon	Rain	Yes	No	5/11/2019	Peak depth recorded by Mission level sensor	0.51
5/18/2019	12:34	Noble, Austin	Rain	Yes	No	5/18/2019	Peak depth recorded by Mission level sensor	0.09

CSO Inspection Report

CSO Number 205 **Total Wet Weather Overflows:** 51

CSO Name 64th & Dupont

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
5/19/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	5/18/2019	Peak depth recorded by Mission level sensor	0.09
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019	Peak depth recorded by Mission level sensor	0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019	Peak depth recorded by Mission level sensor	1.04
6/5/2019	16:14	Frolio, Brandon	Rain	Yes	No	6/3/2019	Peak depth recorded by Mission level sensor	0.66
6/12/2019	15:47	Frolio, Brandon	Rain	Yes	No	6/11/2019	Peak depth recorded by Mission level sensor	0.47
6/18/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	6/18/2019	Peak depth recorded by Mission level sensor	0.31
6/19/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/18/2019	Peak depth recorded by Mission level sensor	0.31
6/22/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	6/22/2019	Peak depth recorded by Mission level sensor	0.38
6/24/2019	12:34	Frolio, Brandon	Rain	Yes	No	6/23/2019	Peak depth recorded by Mission level sensor	0.19
7/2/2019	15:32	Frolio, Brandon	Rain	Yes	No	7/2/2019	Peak depth recorded by Mission level sensor	0.44
7/4/2019	7:59	Frolio, Brandon	Rain	Yes	No	7/3/2019	Peak depth recorded by Mission level sensor	0.54
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019	Peak depth recorded by Mission level sensor	0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019	Peak depth recorded by Mission level sensor	0.55
7/22/2019	15:50	Frolio, Brandon	Rain	Yes	No	7/21/2019	Peak depth recorded by Mission level sensor	0.43
7/29/2019	15:54	Frolio, Brandon	Rain	Yes	No	7/28/2019	Peak depth recorded by Mission level sensor	0.19
8/12/2019	16:05	Frolio, Brandon	Rain	Yes	No	8/11/2019	Peak depth recorded by Mission level sensor	3.19
8/16/2019	15:34	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019	Peak depth recorded by Mission level sensor	0.26
8/18/2019	16:01	Frolio, Brandon	Rain	Yes	No	8/18/2019	Peak depth recorded by Mission level sensor	0.32
8/21/2019	7:45	Frolio, Brandon	Rain	Yes	No	8/21/2019	Peak depth recorded by Mission level sensor	0.9
8/26/2019	15:59	Frolio, Brandon	Rain	Yes	No	8/26/2019	Peak depth recorded by Mission level sensor	0.25
9/1/2019	10:59	Frolio, Brandon	Rain	Yes	No	8/31/2019	Peak depth recorded by Mission level sensor	0.07
9/8/2019	10:31	Frolio, Brandon	Rain	Yes	No	9/8/2019	Peak depth recorded by Mission level sensor	0.11
9/10/2019	16:16	Frolio, Brandon	Rain	Yes	No	9/10/2019	Peak depth recorded by Mission level sensor	0.44

CSO Inspection Report

CSO Number 205 **Total Wet Weather Overflows:** 51

CSO Name 64th & Dupont

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
9/11/2019	16:07	Frolio, Brandon	Rain	Yes	No	9/11/2019	Peak depth recorded by Mission level sensor	0.16
9/19/2019	15:35	Frolio, Brandon	Rain	Yes	No	9/19/2019	Peak depth recorded by Mission level sensor	2.05
9/22/2019	13:37	Frolio, Brandon	Rain	Yes	No	9/22/2019	Peak depth recorded by Mission level sensor	0.81
9/25/2019	15:47	Frolio, Brandon	Rain	Yes	No	9/25/2019	Peak depth recorded by Mission level sensor	0.12
9/27/2019	12:34	Birdsall, Jeremiah	Rain	Yes	No	9/27/2019	Peak depth recorded by Mission level sensor	0.04
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019	Peak depth recorded by Mission level sensor	0.29

CSO Inspection Report

CSO Number 207 **Total Wet Weather Overflows:** 3

CSO Name 44th & Y Street

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
10/15/2018	12:34	Frolio, Brandon	Snow Melt	Yes	No	10/14/2018	snow event 10/14/2018	0.25
12/28/2018	6:11	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96

CSO Inspection Report

CSO Number 208 **Total Wet Weather Overflows:** 5

CSO Name 45th & T Street

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
12/28/2018	6:12	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019	Trekk's FM and camera indicated overflow occurred.	1.04
7/3/2019	15:43	Frolio, Brandon	Rain	Yes	No	7/2/2019	Trekk's FM and camera indicated overflow occurred.	0.44
7/4/2019	8:19	Frolio, Brandon	Rain	Yes	No	7/3/2019	Trekk's FM and camera indicated overflow occurred.	0.54
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 210 **Total Wet Weather Overflows:** 25

CSO Name 72nd and Mayberry

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/2/2018	6:12	Birdsall, Jeremiah	Rain	Yes	No	10/1/2018		0.18
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
12/28/2018	6:04	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/10/2019	12:34	Frolio, Brandon	Rain	Yes	No	3/9/2019		0.54
3/25/2019	7:36	Frolio, Brandon	Rain	Yes	No	3/24/2019		0.25
4/11/2019	7:07	Birdsall, Jeremiah	Rain	Yes	No	4/10/2019		0.22
4/27/2019	15:25	Frolio, Brandon	Rain	Yes	No	4/27/2019		0.54
5/12/2019	15:14	Frolio, Brandon	Rain	Yes	No	5/11/2019		0.51
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019		1.04
6/5/2019	16:16	Frolio, Brandon	Rain	Yes	No	6/3/2019		0.66
6/12/2019	15:48	Frolio, Brandon	Rain	Yes	No	6/11/2019		0.47
7/3/2019	15:34	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/4/2019	8:02	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
7/9/2019	12:34	Frolio, Brandon	Rain	Yes	No	7/9/2019		0.31
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
7/22/2019	15:40	Frolio, Brandon	Rain	Yes	No	7/21/2019		0.43
8/12/2019	16:08	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:50	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26
8/18/2019	16:05	Frolio, Brandon	Rain	Yes	No	8/18/2019		0.32
8/21/2019	7:47	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	16:00	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/22/2019	13:40	Frolio, Brandon	Rain	Yes	No	9/22/2019		0.81
9/25/2019	15:49	Frolio, Brandon	Rain	Yes	No	9/25/2019		0.12

CSO Inspection Report

CSO Number 210 **Total Wet Weather Overflows:** 25

CSO Name 72nd and Mayberry

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

CSO Inspection Report

CSO Number 211 **Total Wet Weather Overflows:** 10

CSO Name 69th & Pierce

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/26/2018	16:10	Birdsall, Jeremiah	Rain	Yes	No	10/25/2018		0.17
12/28/2018	6:03	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/25/2019	7:36	Frolio, Brandon	Rain	Yes	No	3/24/2019		0.25
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
7/4/2019	8:01	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
8/12/2019	16:08	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/21/2019	7:47	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
9/10/2019	16:18	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/19/2019	15:36	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/22/2019	13:39	Frolio, Brandon	Rain	Yes	No	9/22/2019		0.81

CSO Inspection Report

CSO Number 212 **Total Wet Weather Overflows:** 20

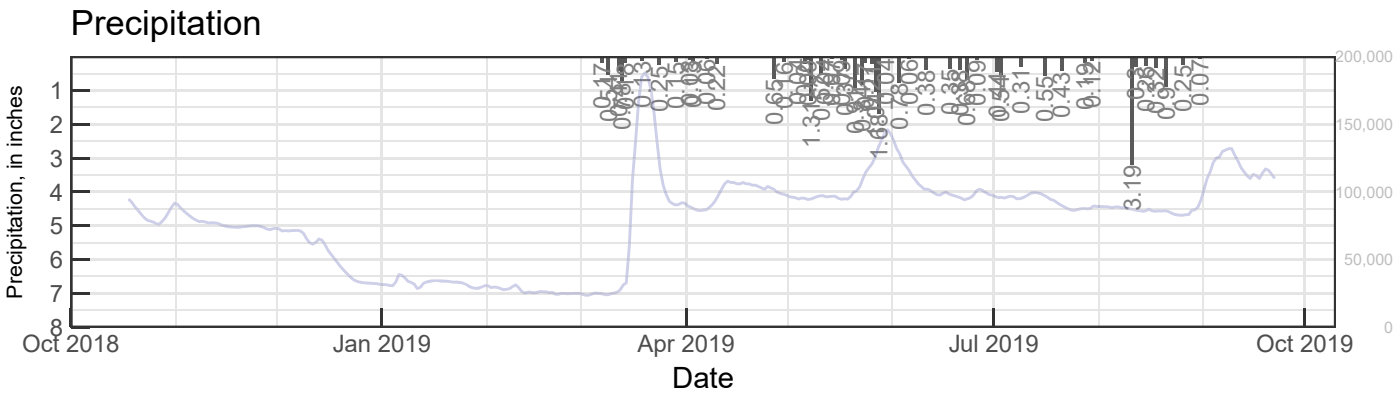
CSO Name 69th & Woolworth

Inspection Date	Time	Inspected by	Reason	Overflow	Overflow at inspection?	Date of Precipitation	Comments	Rain (in)
10/10/2018	12:34	Frolio, Brandon	Rain	Yes	No	10/9/2018		0.76
10/26/2018	16:10	Birdsall, Jeremiah	Rain	Yes	No	10/25/2018		0.17
12/28/2018	6:03	Birdsall, Jeremiah	Rain	Yes	No	12/26/2018		0.96
3/25/2019	7:35	Frolio, Brandon	Rain	Yes	No	3/24/2019		0.25
5/12/2019	15:13	Frolio, Brandon	Rain	Yes	No	5/11/2019		0.51
5/18/2019	12:34	Noble, Austin	Rain	Yes	No	5/18/2019		0.09
5/27/2019	12:34	Noble, Austin	Rain	Yes	No	5/27/2019		0.21
5/28/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	5/28/2019		1.04
7/3/2019	15:34	Frolio, Brandon	Rain	Yes	No	7/2/2019		0.44
7/4/2019	8:01	Frolio, Brandon	Rain	Yes	No	7/3/2019		0.54
7/16/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	7/16/2019		0.55
8/12/2019	16:08	Frolio, Brandon	Rain	Yes	No	8/11/2019		3.19
8/16/2019	15:49	Birdsall, Jeremiah	Rain	Yes	No	8/15/2019		0.26
8/21/2019	7:46	Frolio, Brandon	Rain	Yes	No	8/21/2019		0.9
8/26/2019	15:59	Frolio, Brandon	Rain	Yes	No	8/26/2019		0.25
9/10/2019	16:18	Frolio, Brandon	Rain	Yes	No	9/10/2019		0.44
9/19/2019	15:35	Frolio, Brandon	Rain	Yes	No	9/19/2019		2.05
9/22/2019	13:38	Frolio, Brandon	Rain	Yes	No	9/22/2019		0.81
9/25/2019	15:48	Frolio, Brandon	Rain	Yes	No	9/25/2019		0.12
9/30/2019	12:34	Fagerquist, Dylan	Rain	Yes	No	9/29/2019		0.29

Attachment 5 – USGS Missouri River Monitoring Provisional Data

Table 1. Recent precipitation in Omaha exceeding 0.1 inch

Date	Precipitation, inches
07/03/2019	0.54
07/09/2019	0.31
07/16/2019	0.55
07/21/2019	0.43
07/28/2019	0.19
07/30/2019	0.12
08/11/2019	3.19
08/12/2019	0.30
08/15/2019	0.26
08/18/2019	0.32
08/21/2019	0.90
08/26/2019	0.25



--PRELIMINARY DATA SUBJECT TO REVISION--

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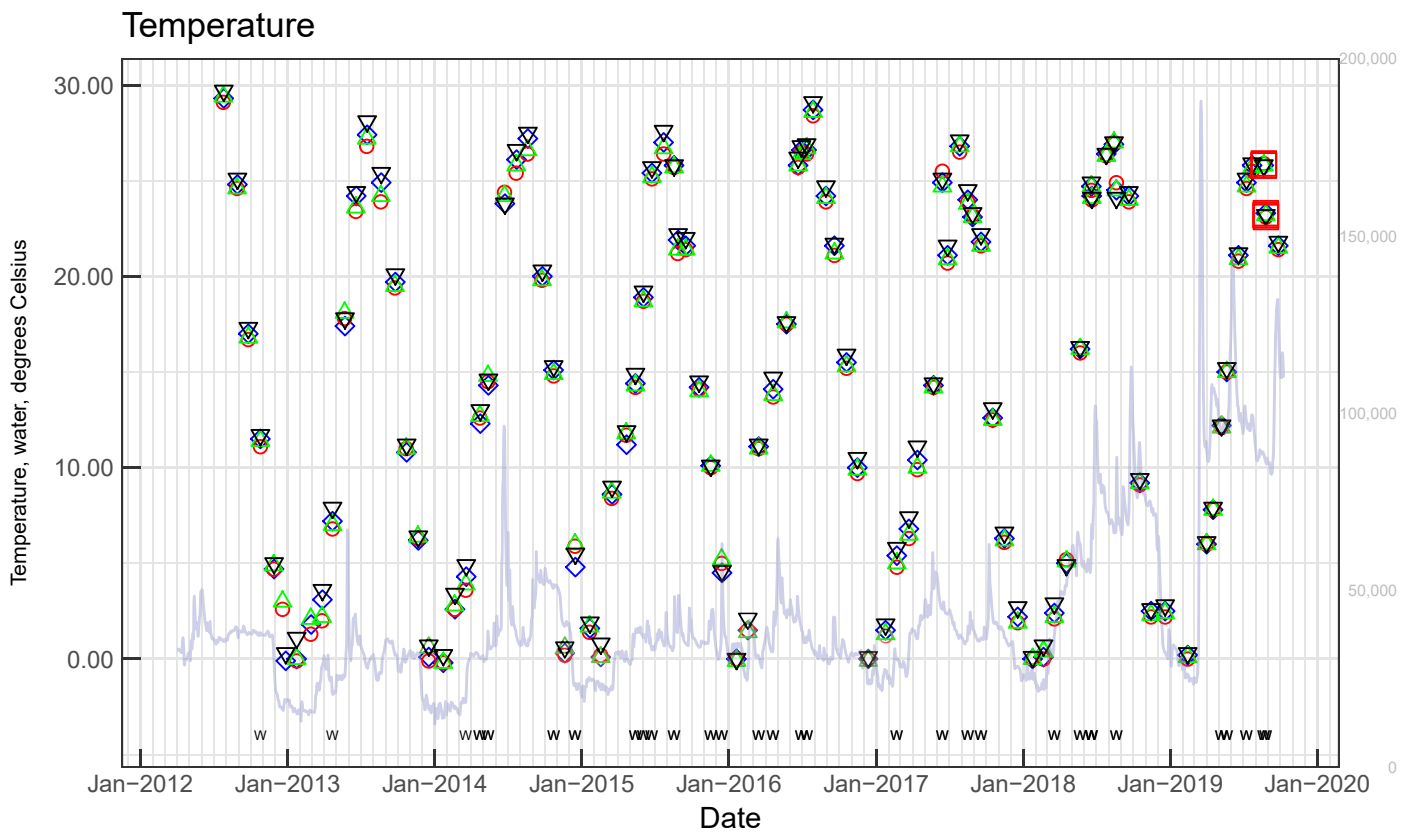

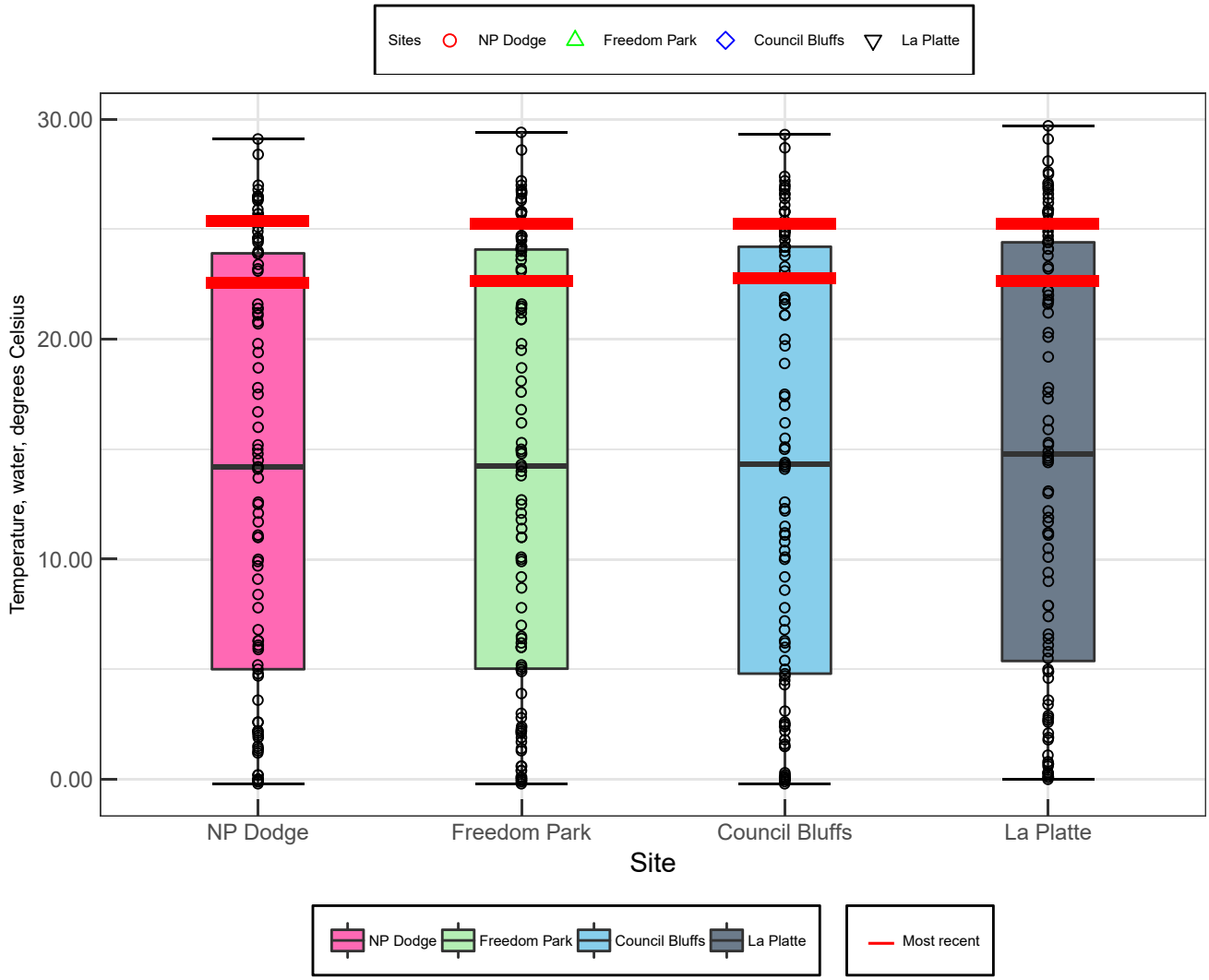

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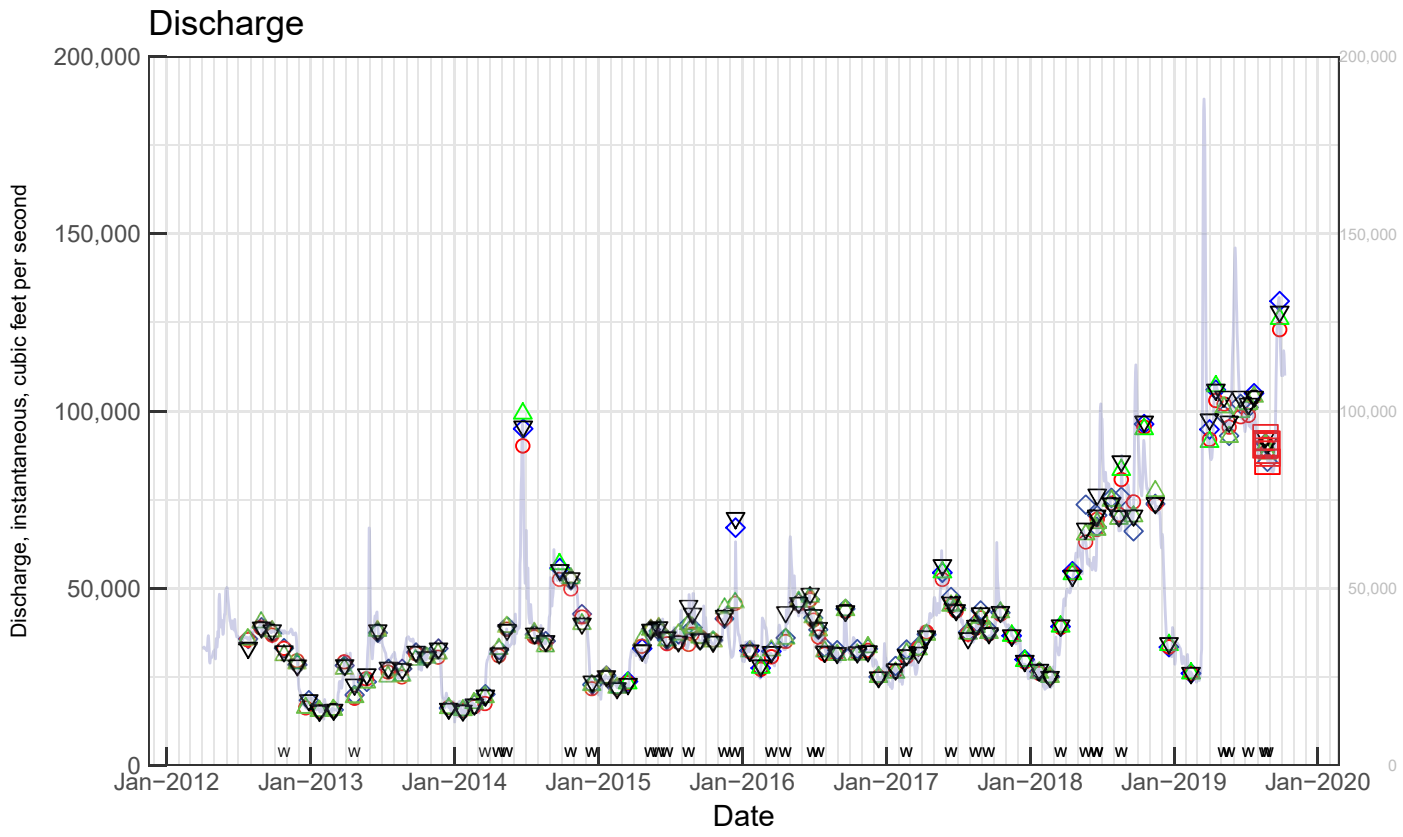

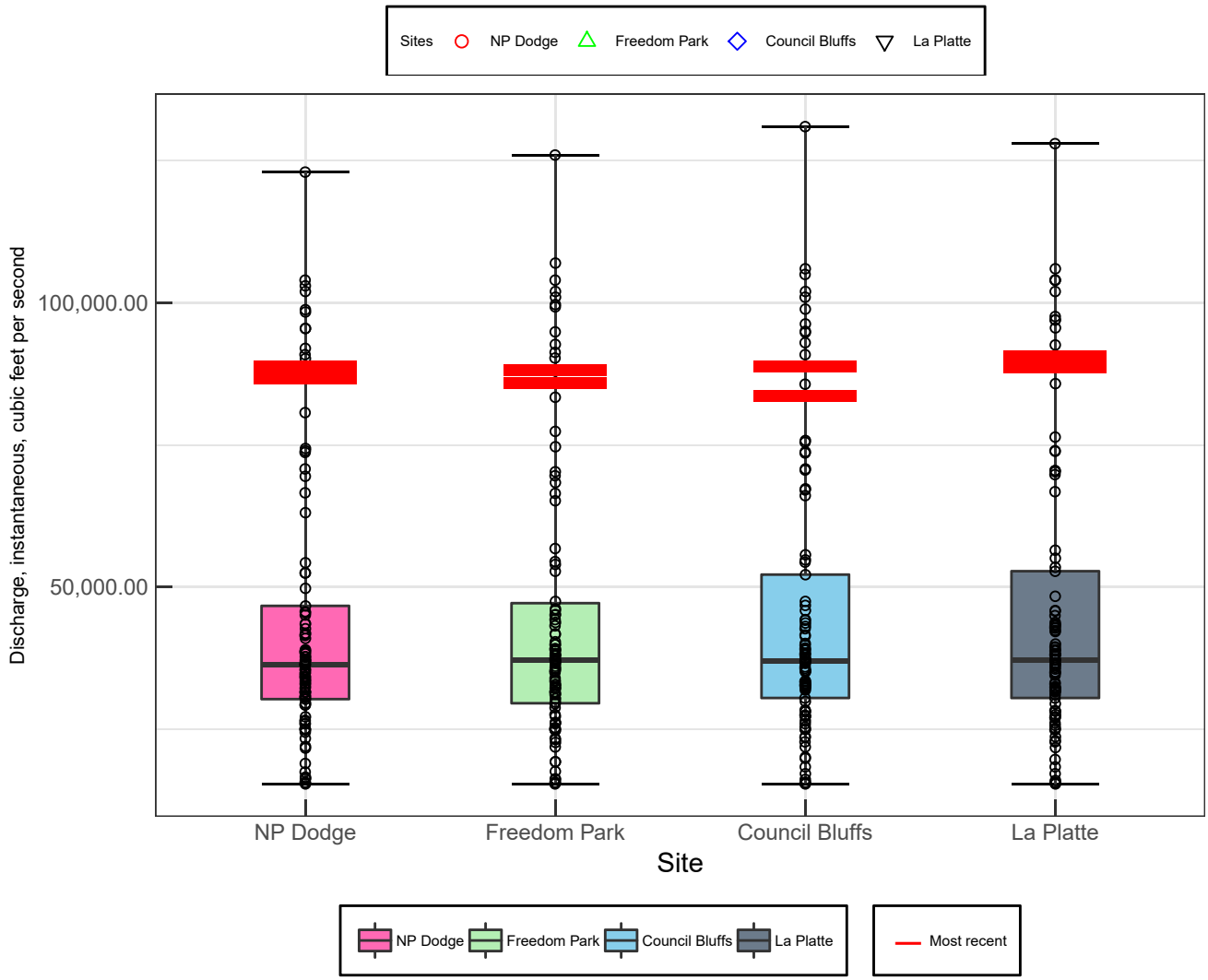

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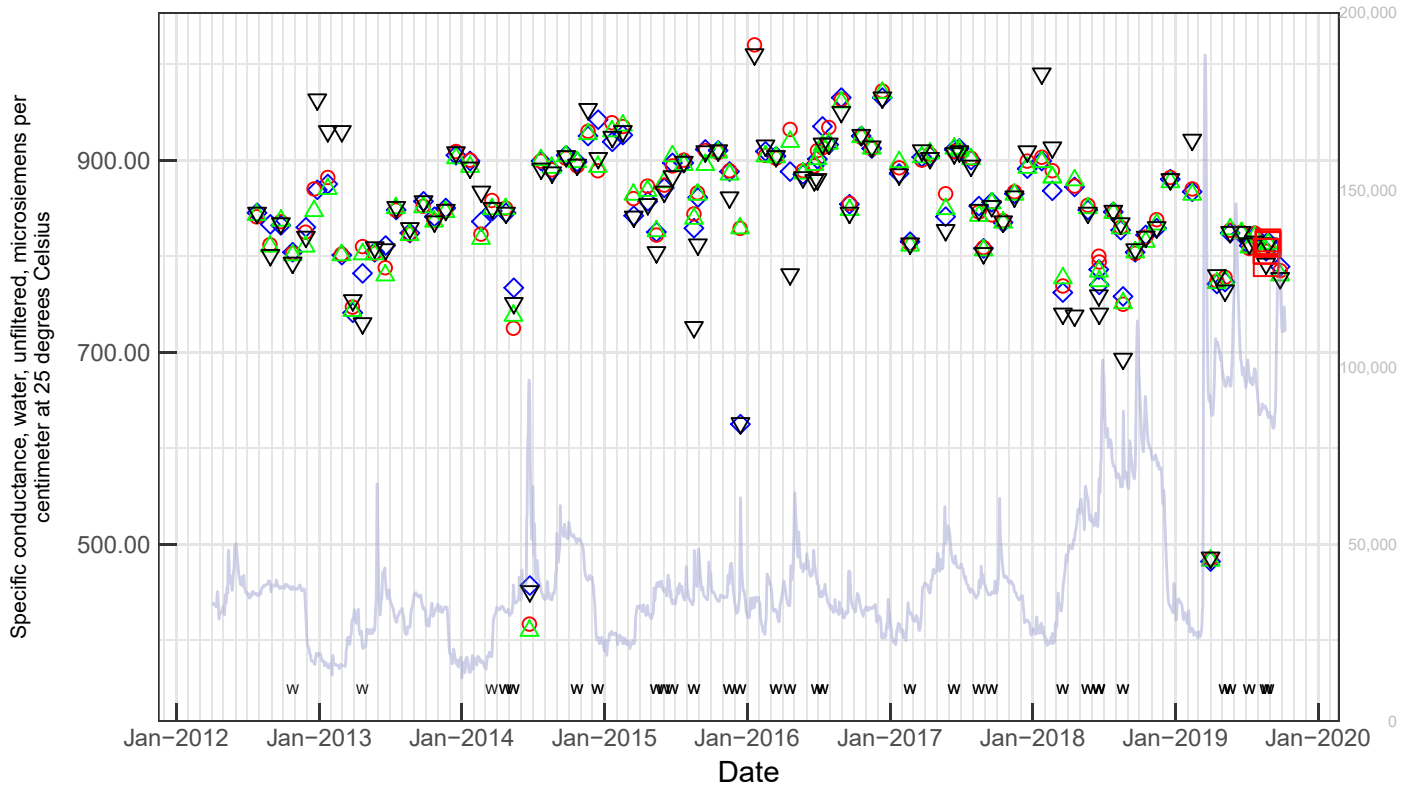
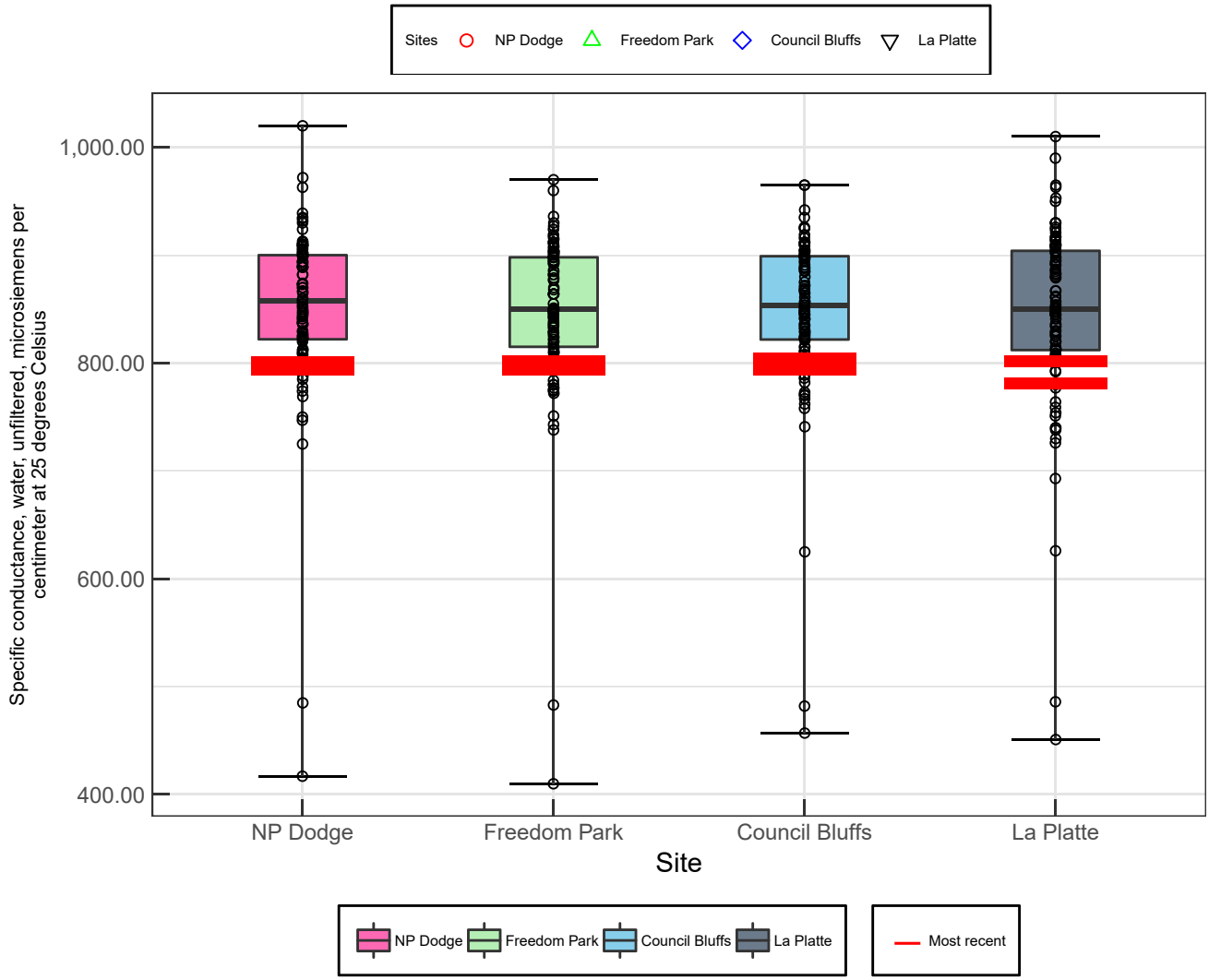
Specific conductance





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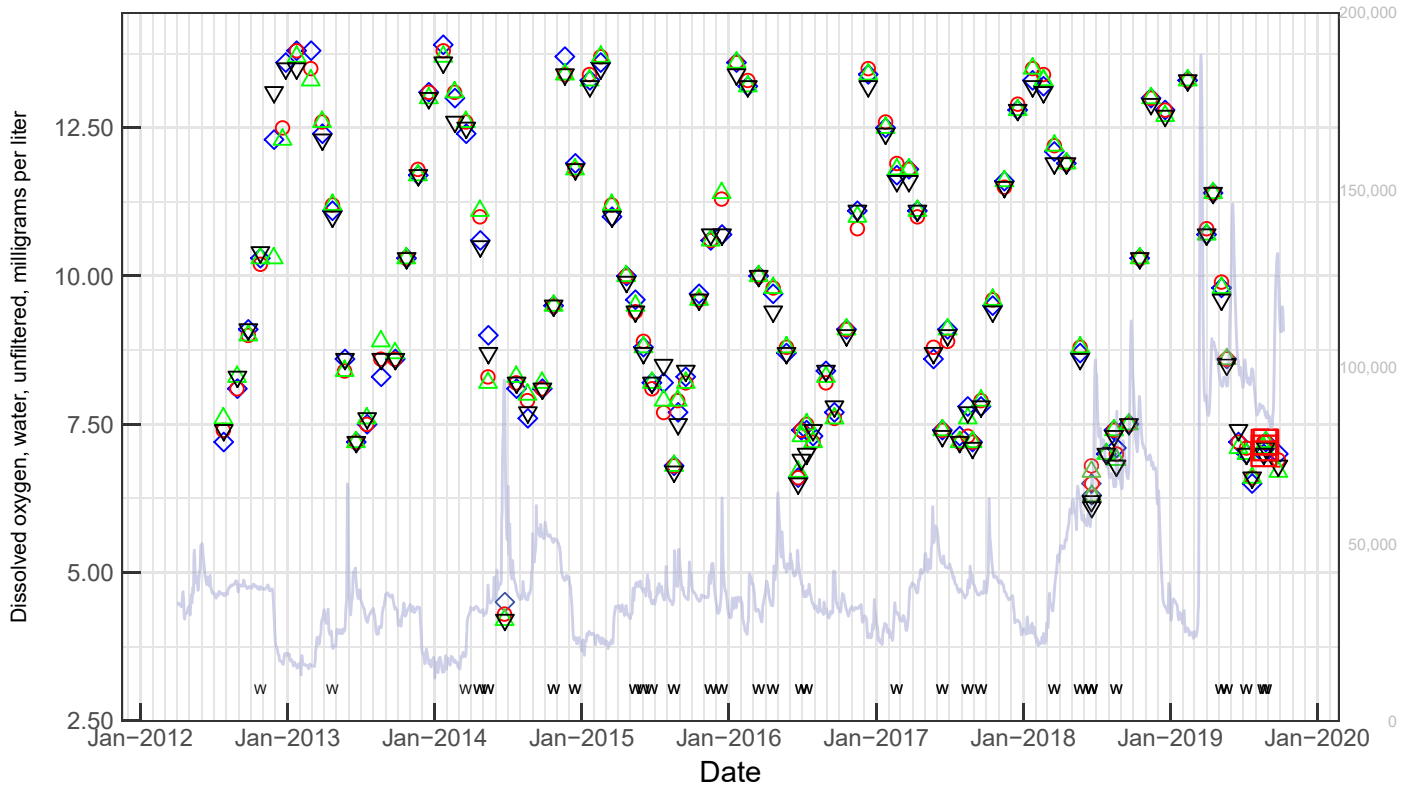
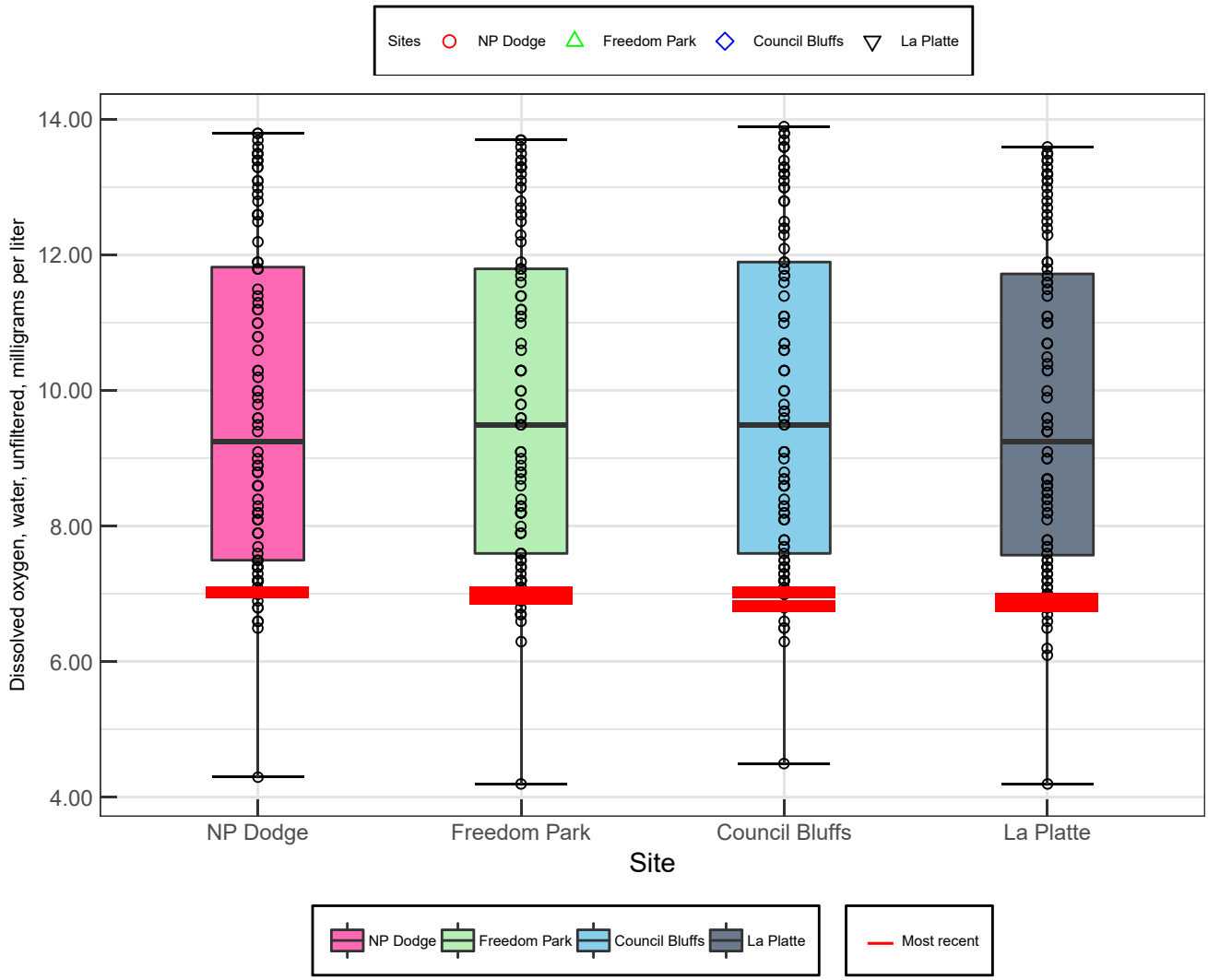
Dissolved oxygen





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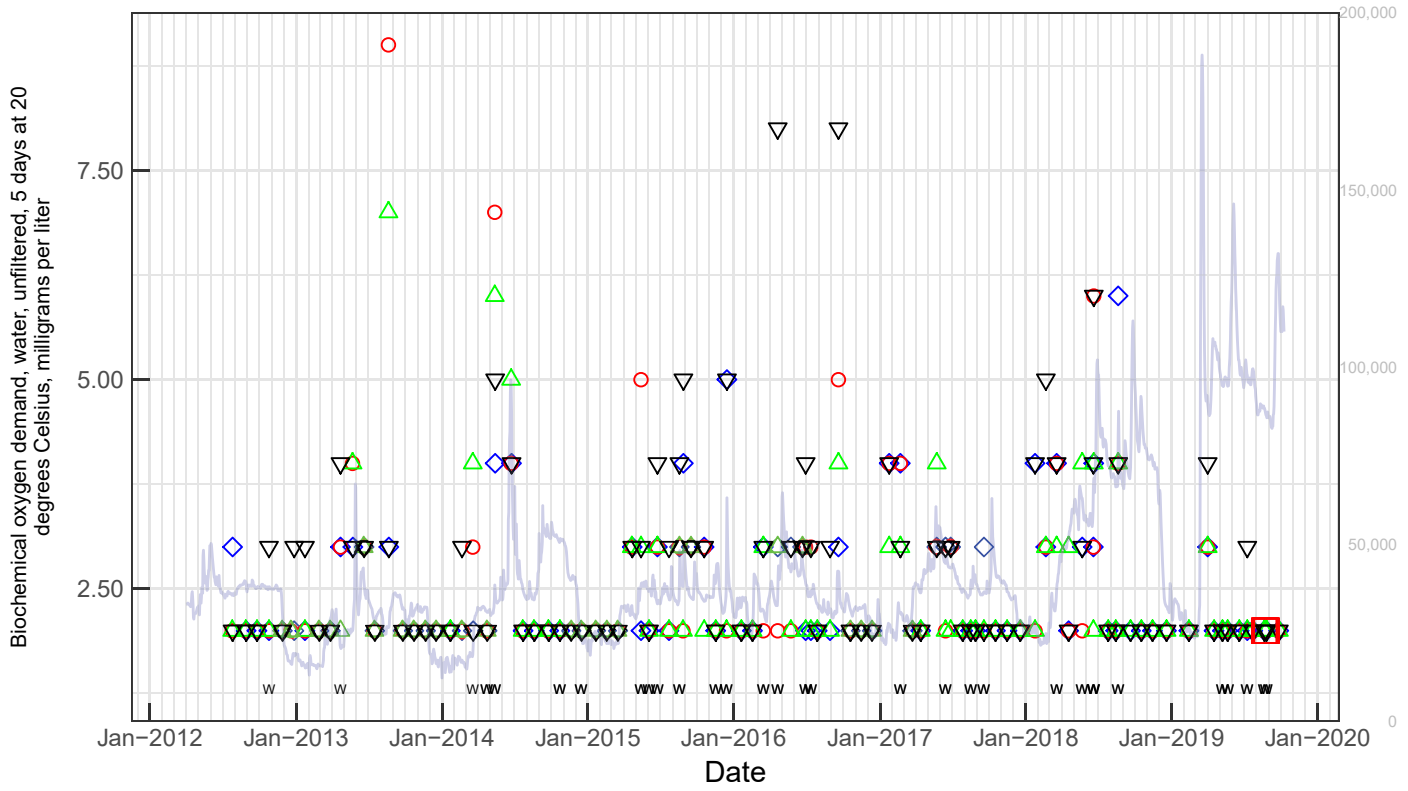
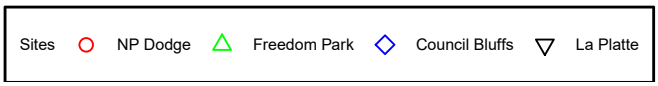
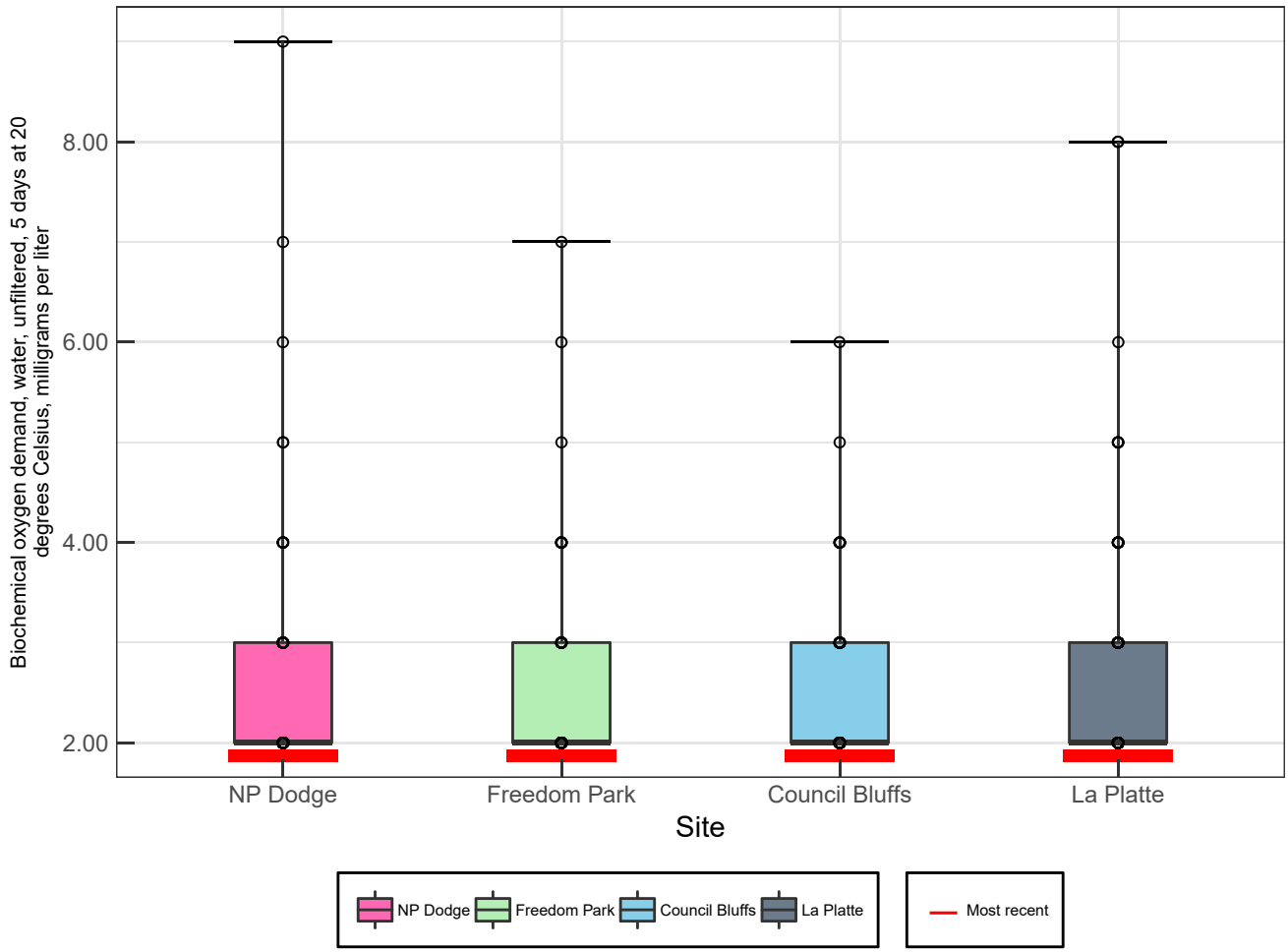
Biochemical oxygen demand







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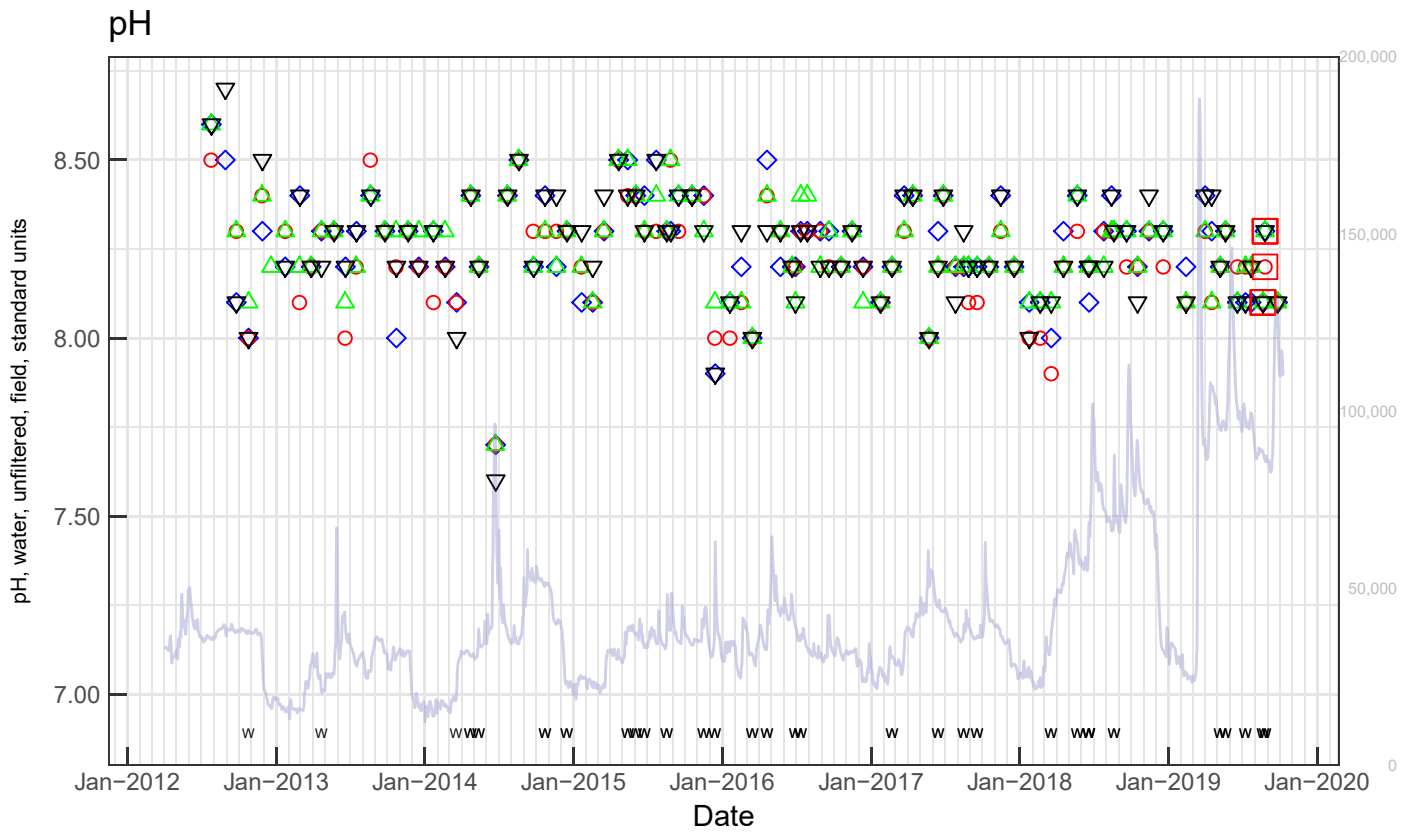

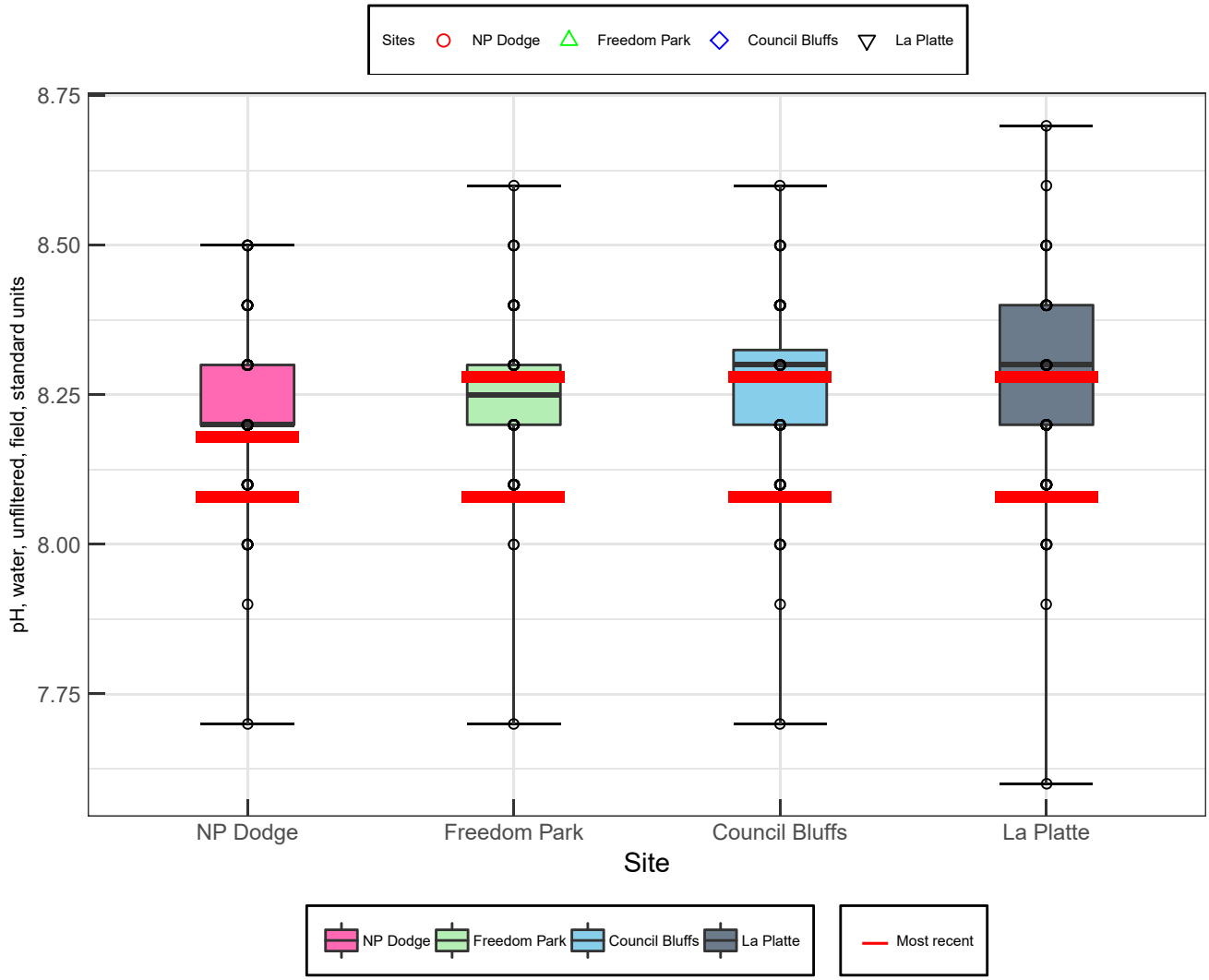

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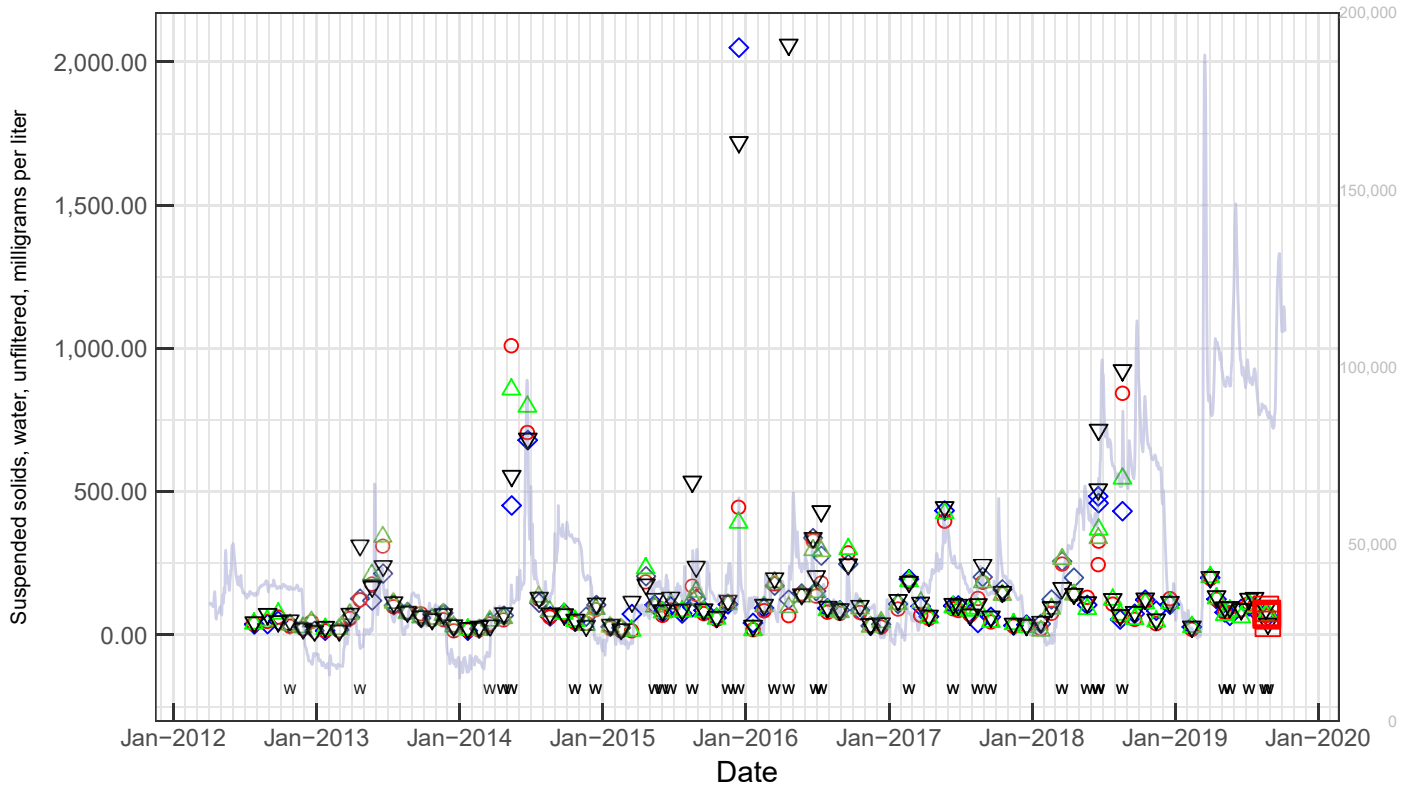
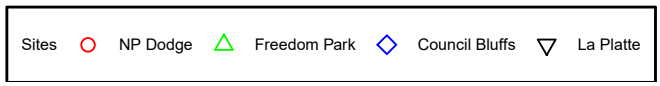
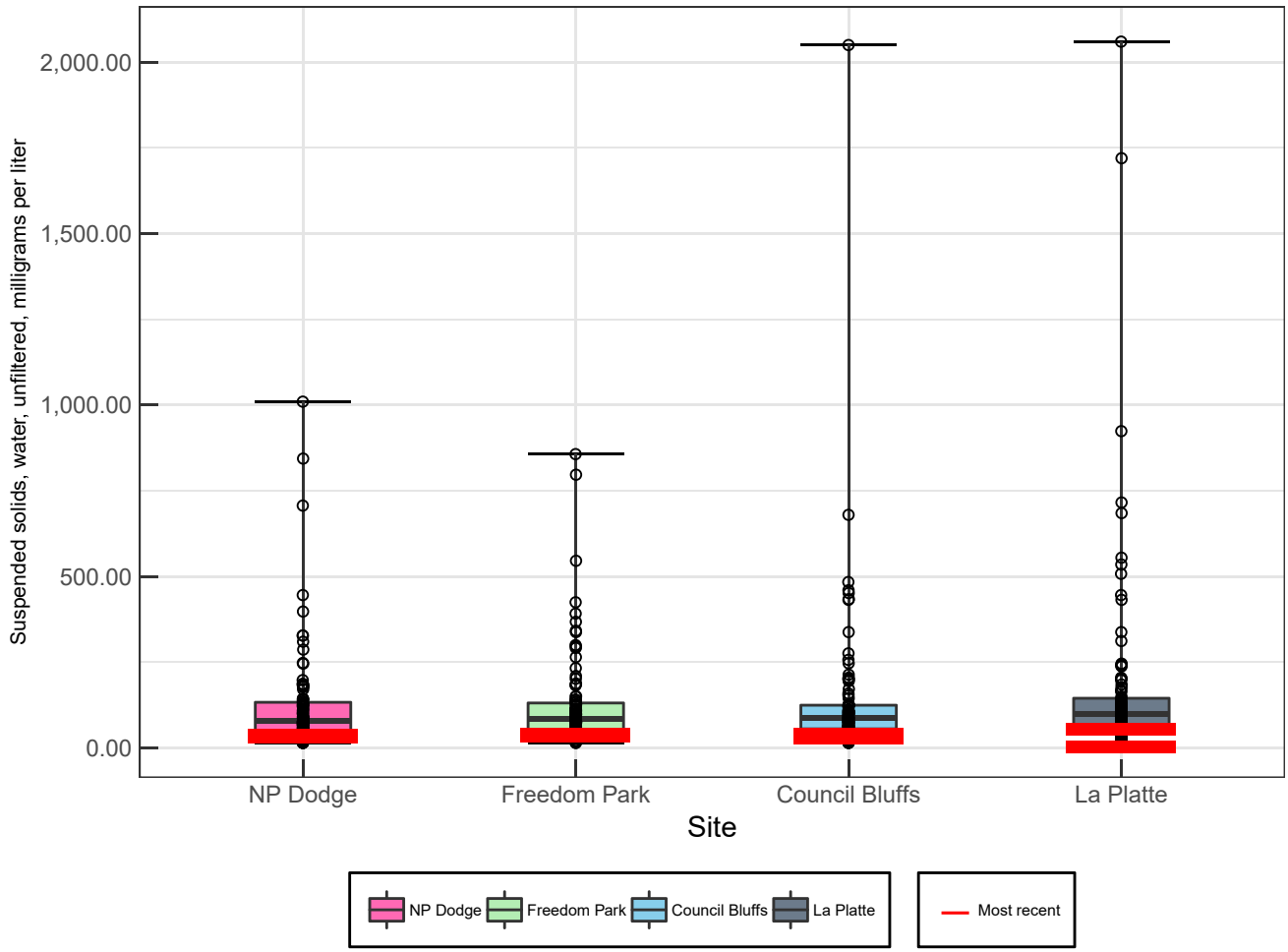
Suspended solids







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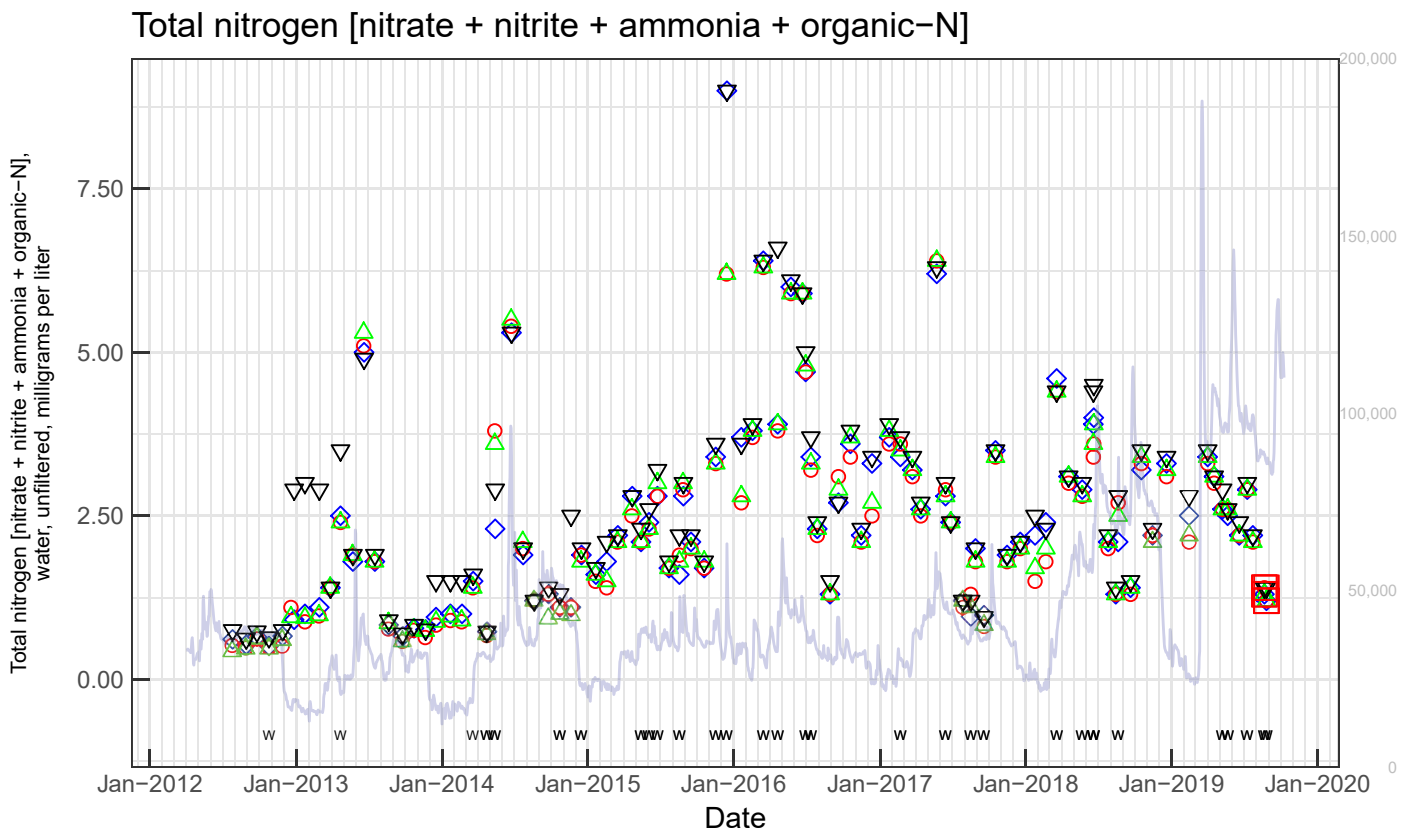

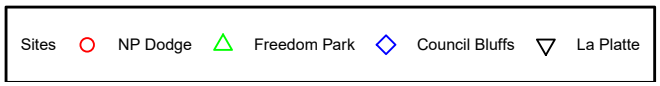

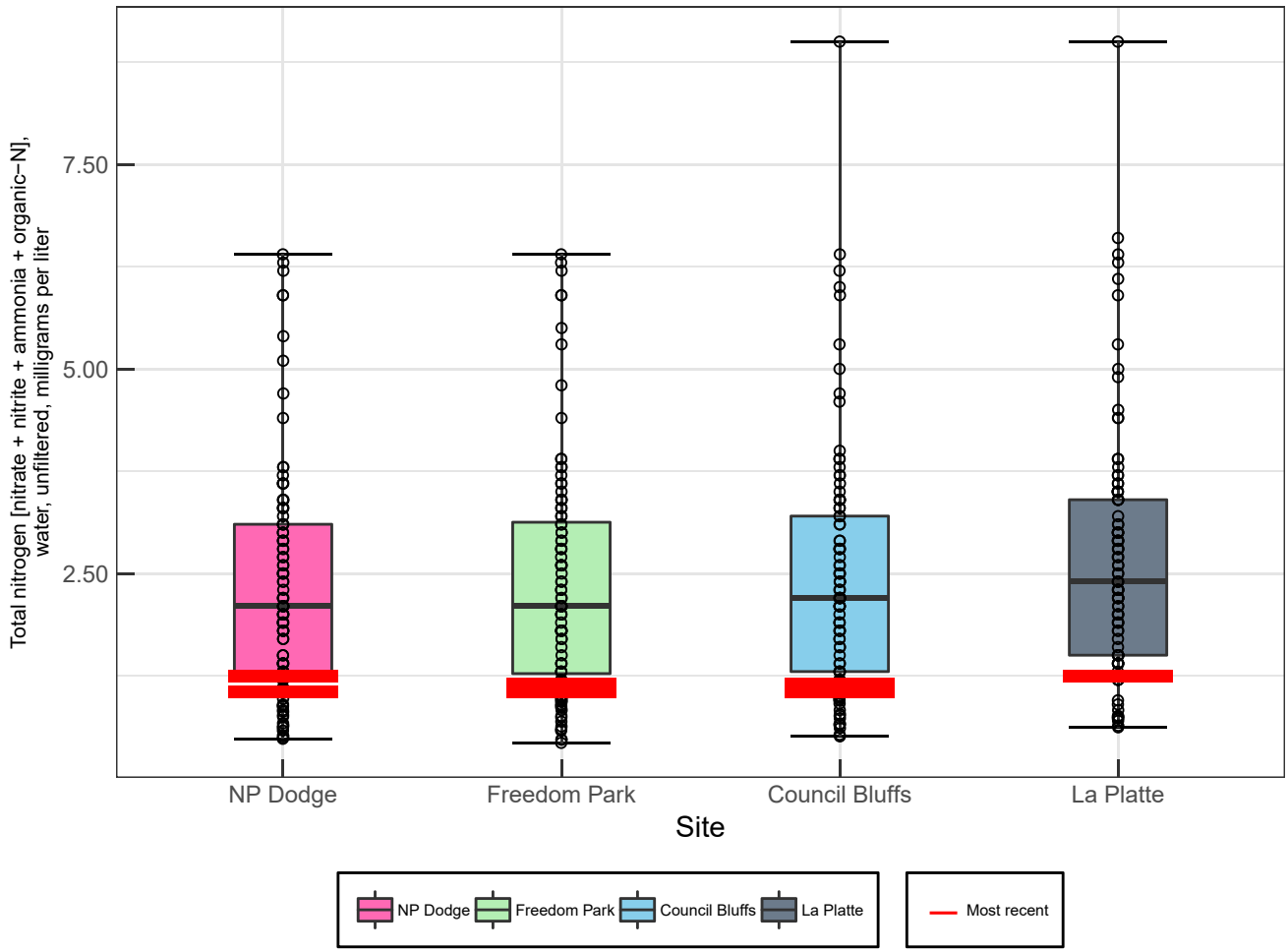

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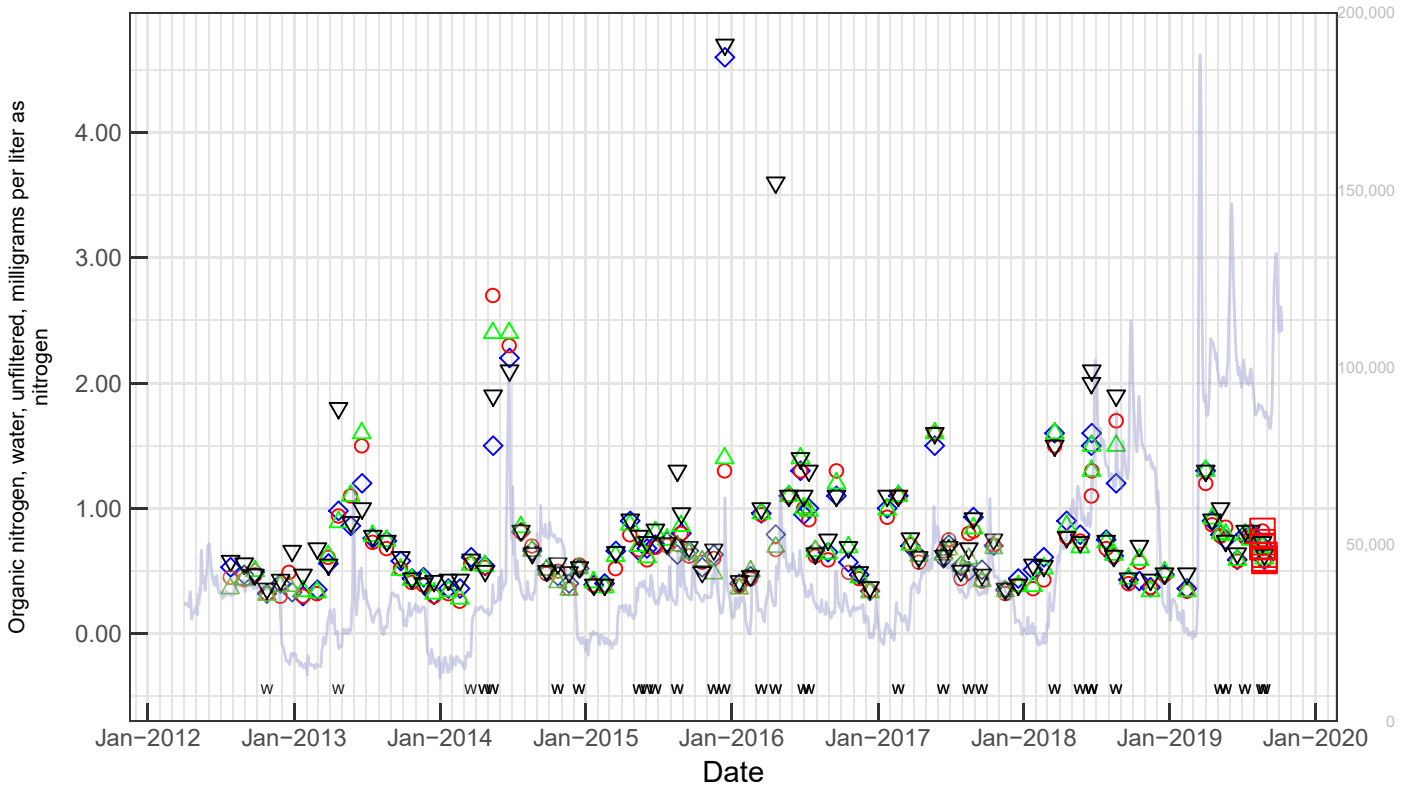
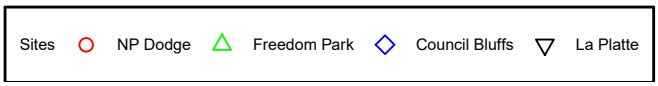
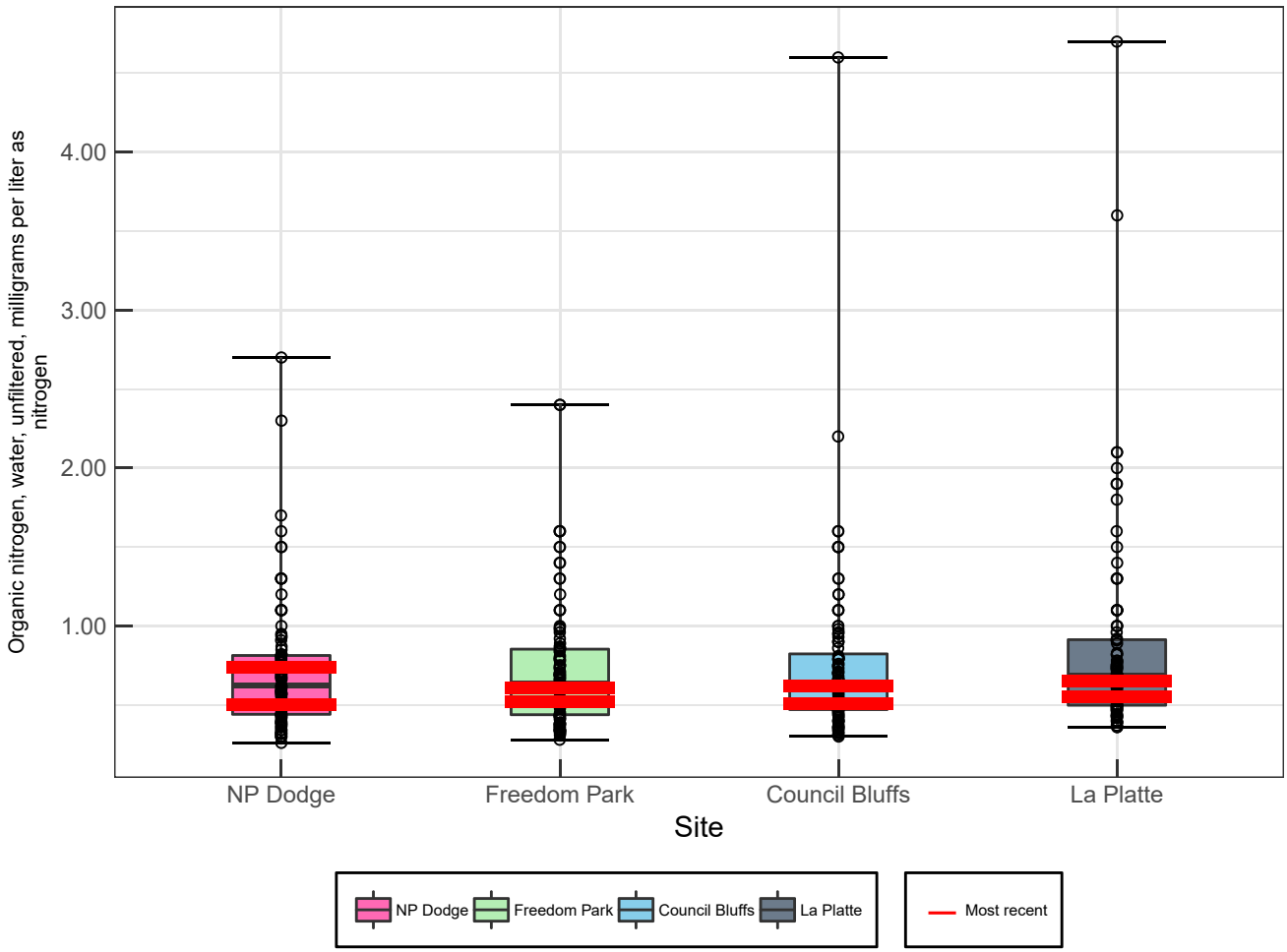
Organic nitrogen







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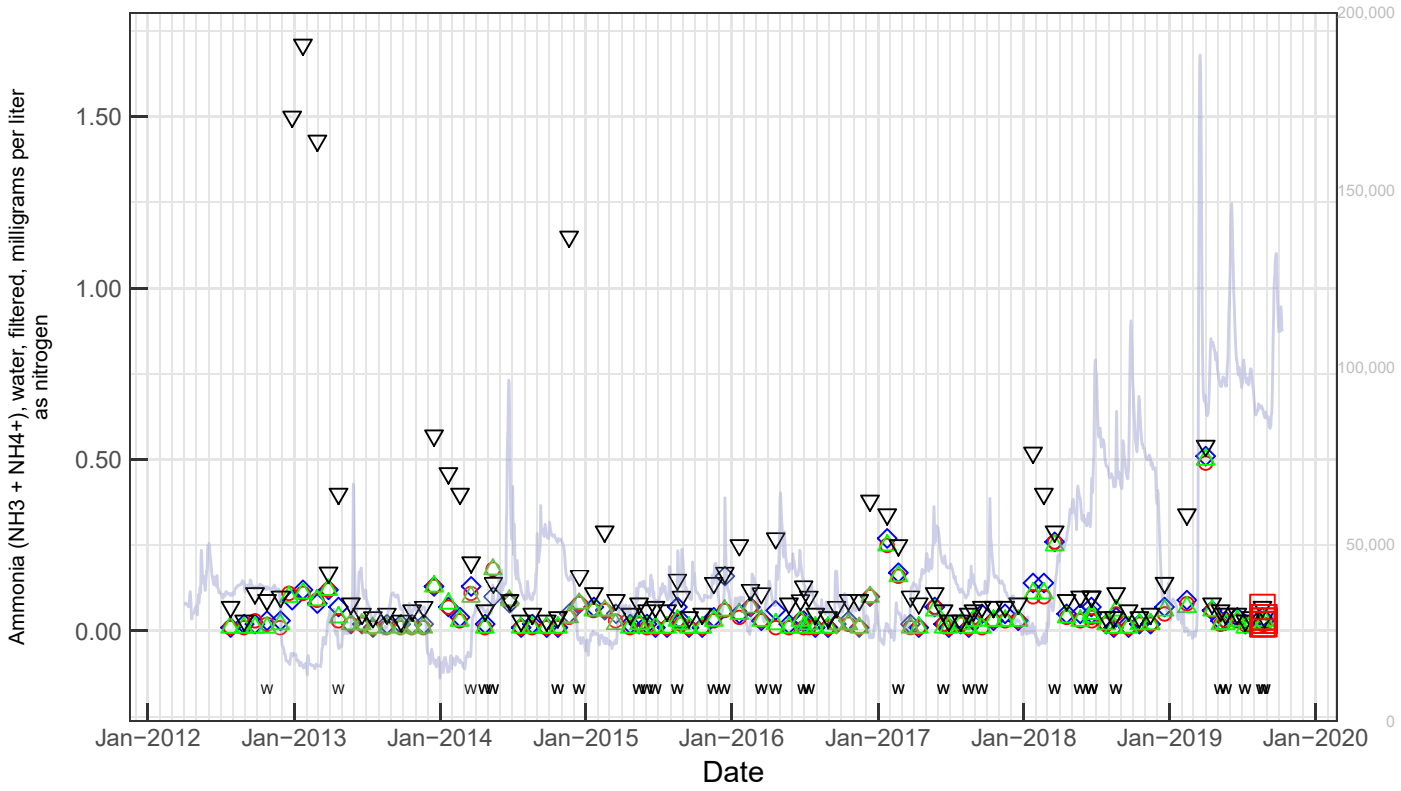
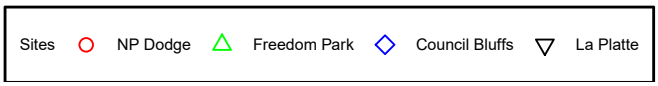
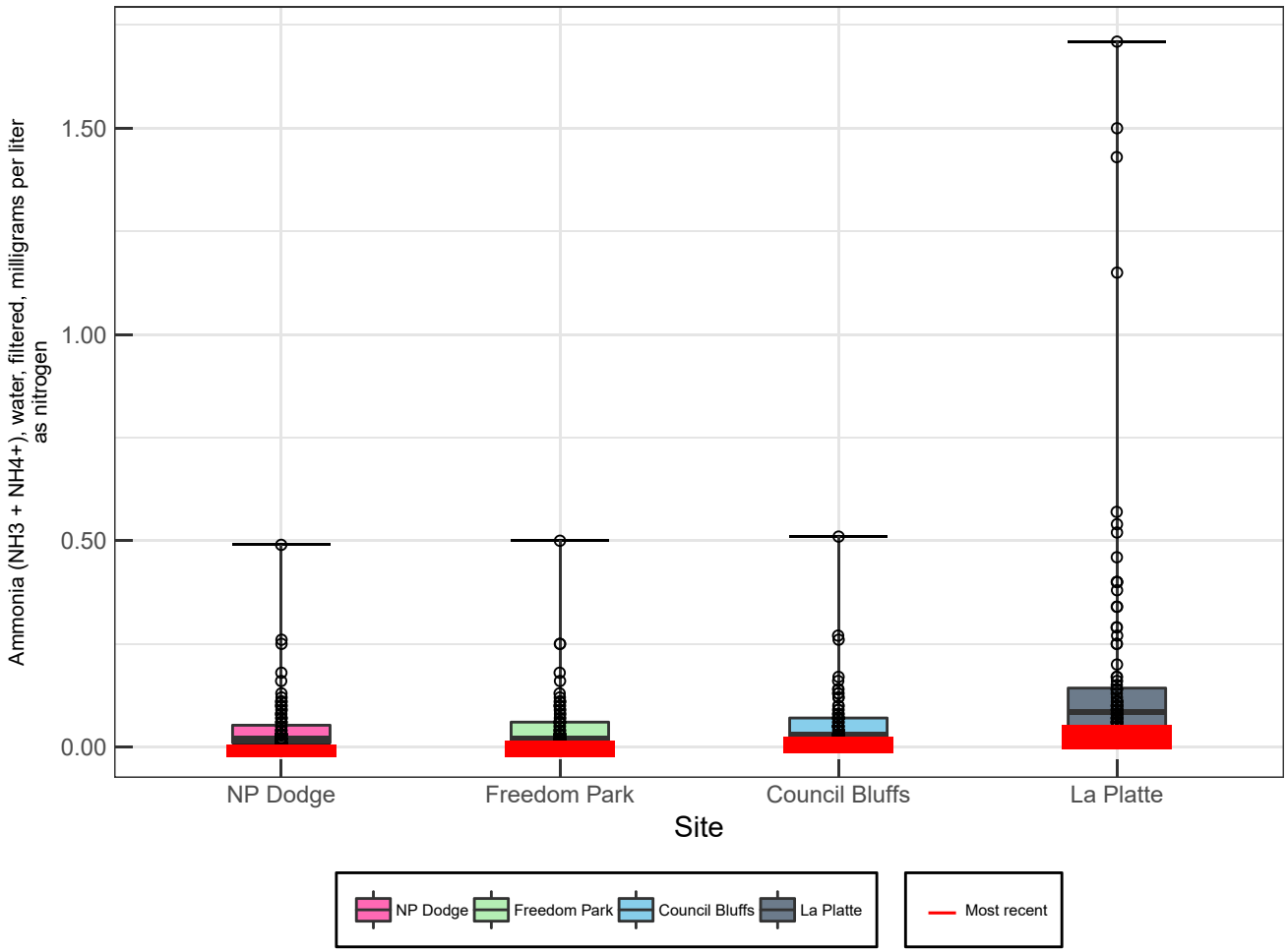
Ammonia (NH3 + NH4+)







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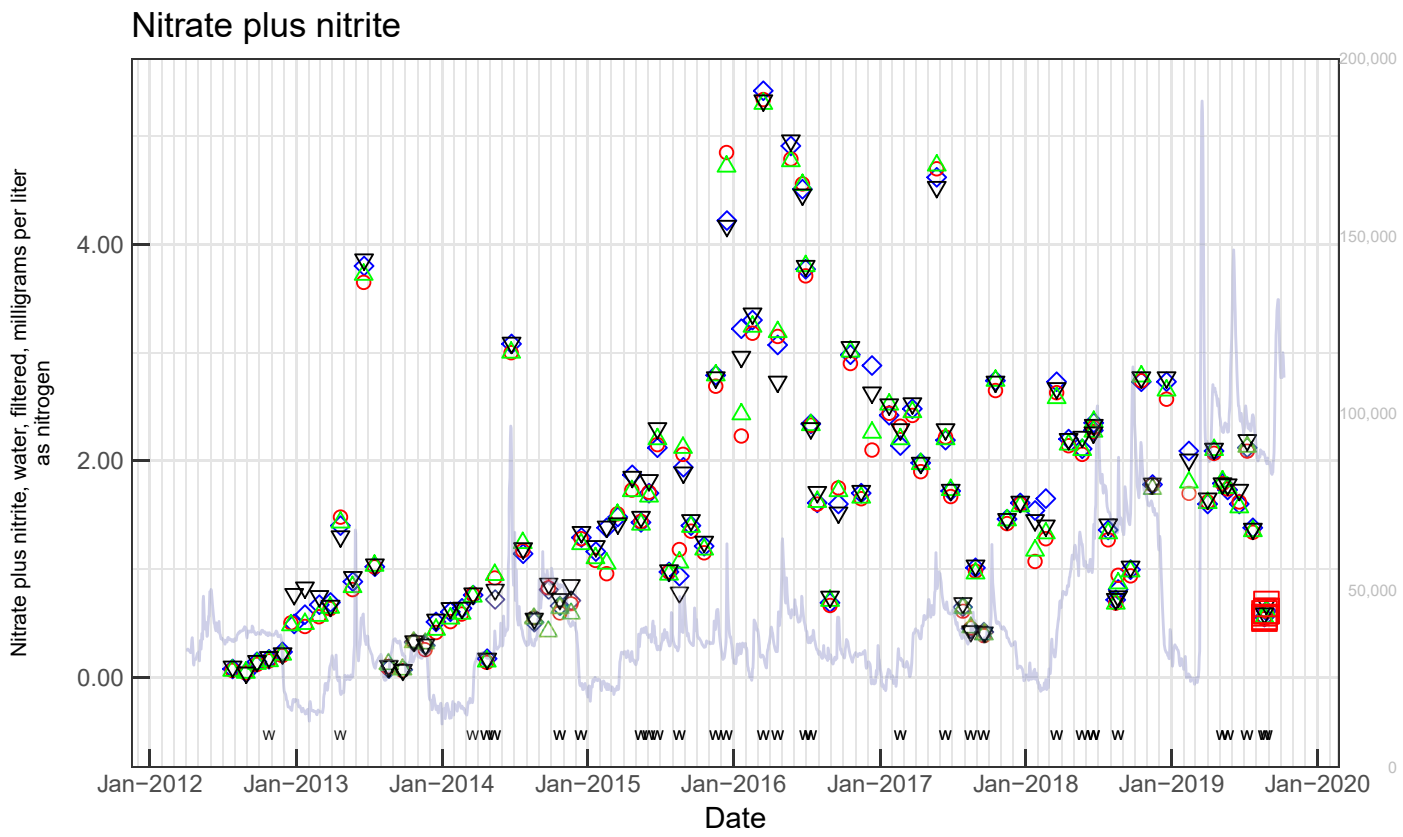

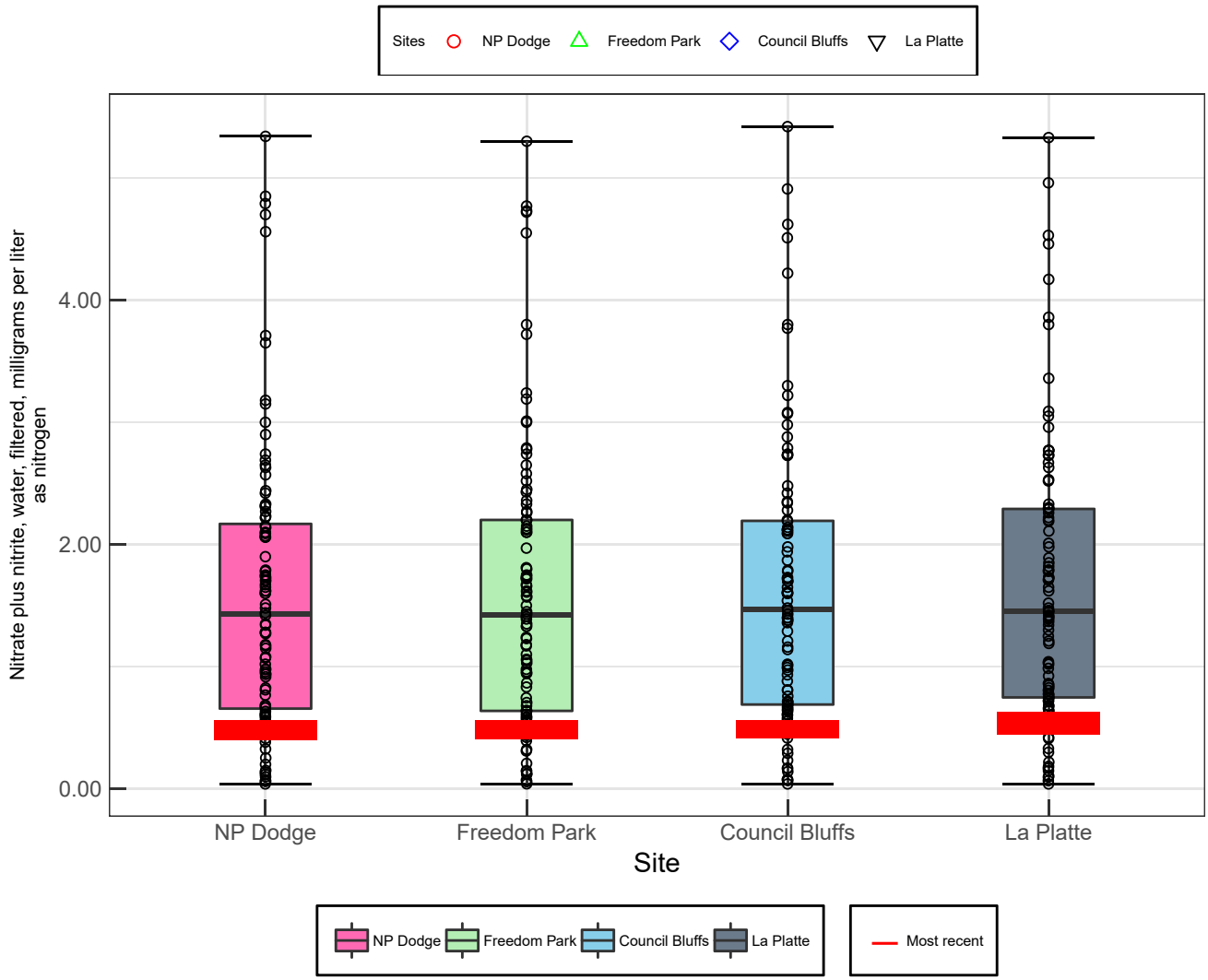

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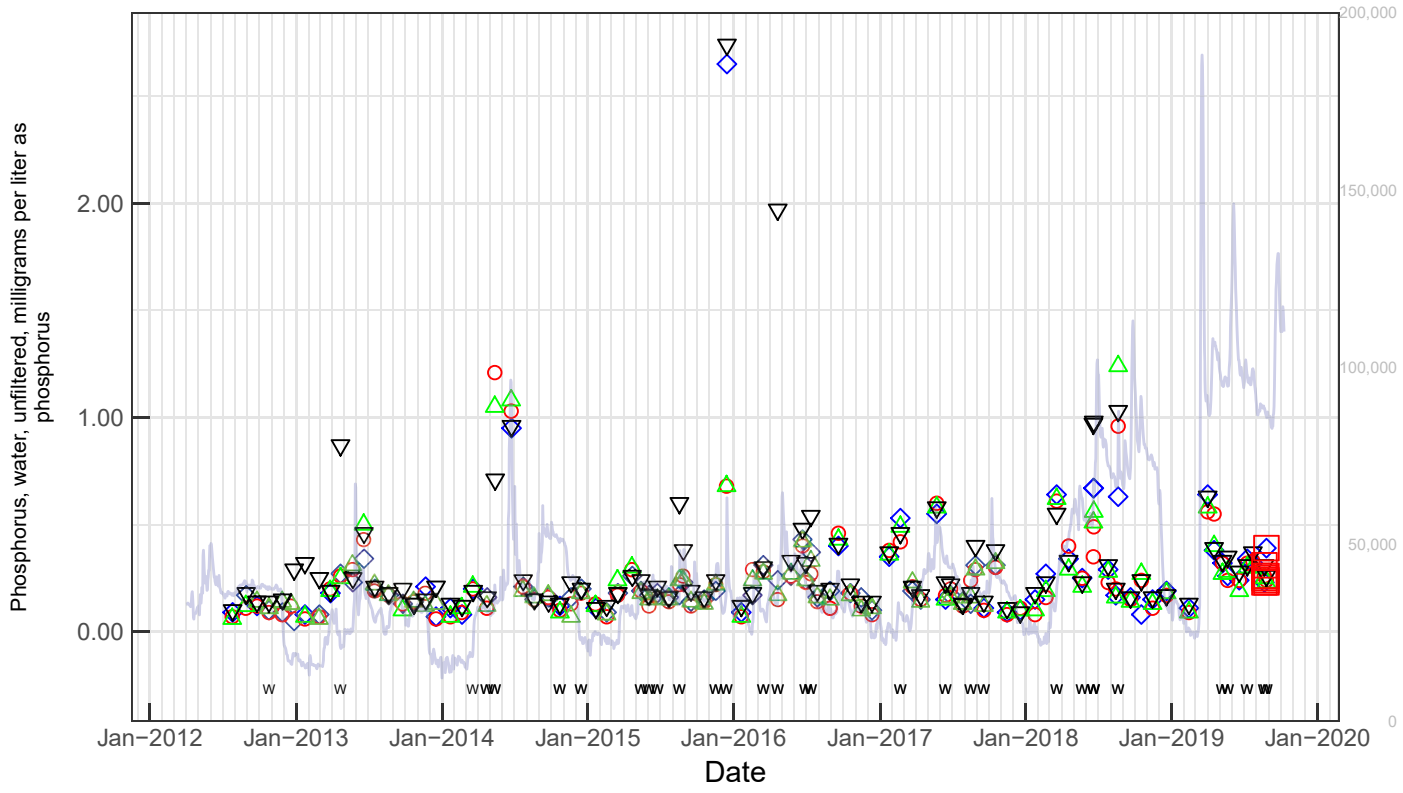
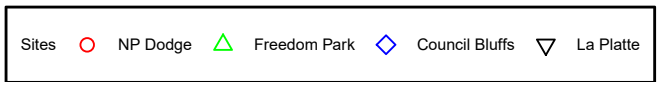
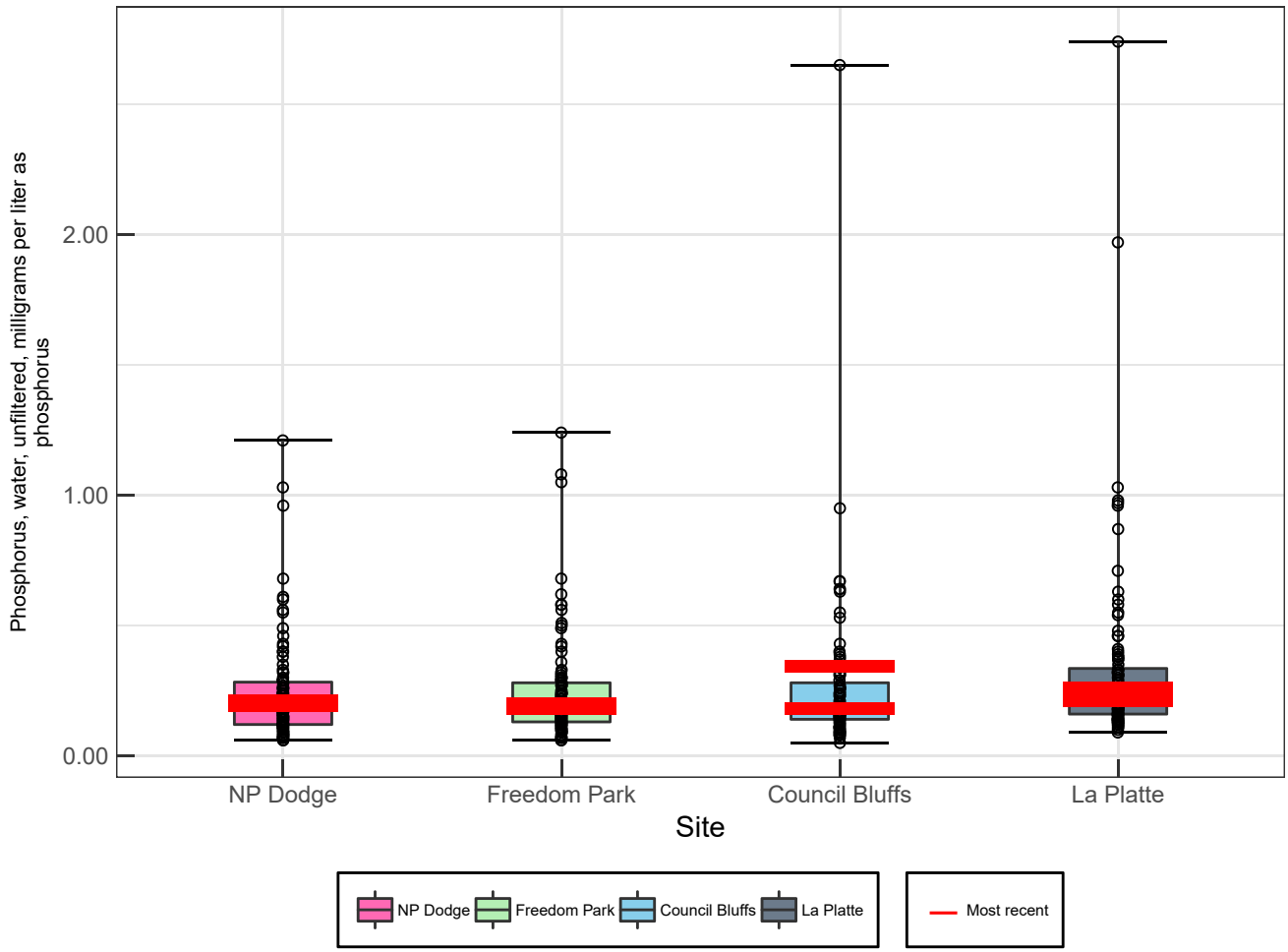
Phosphorus







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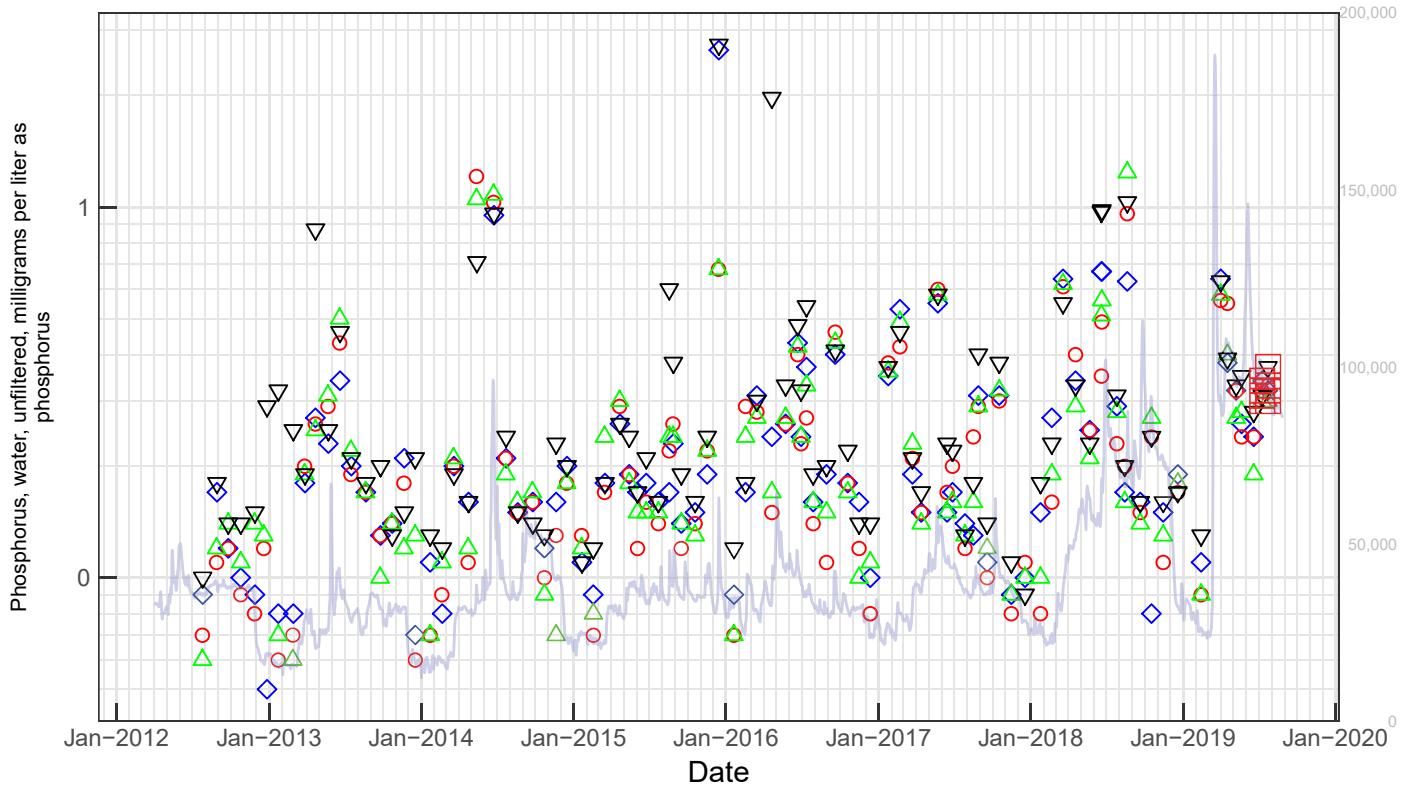

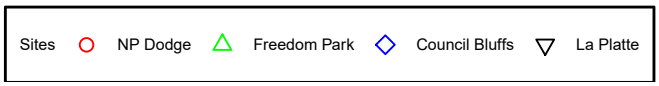

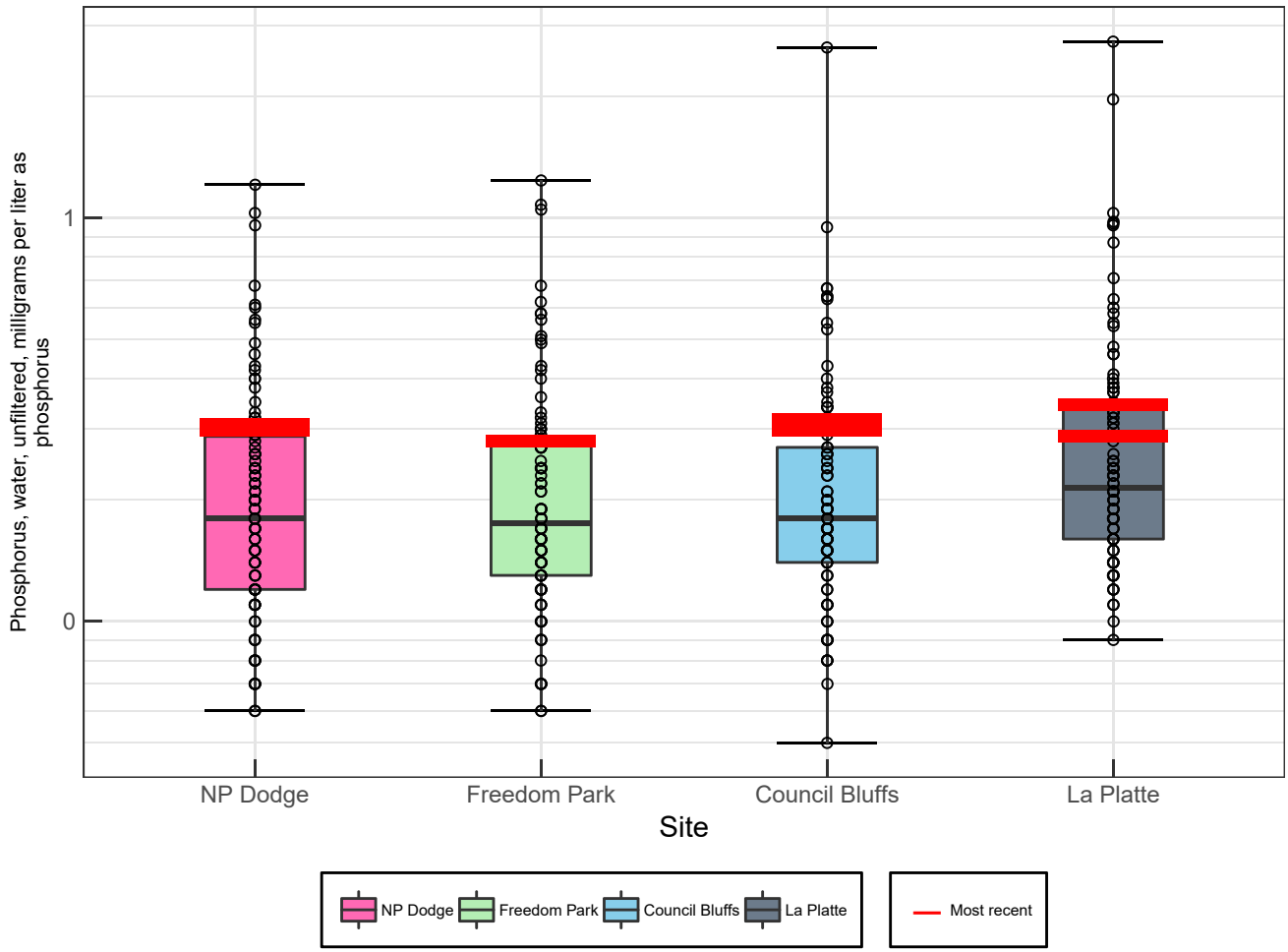

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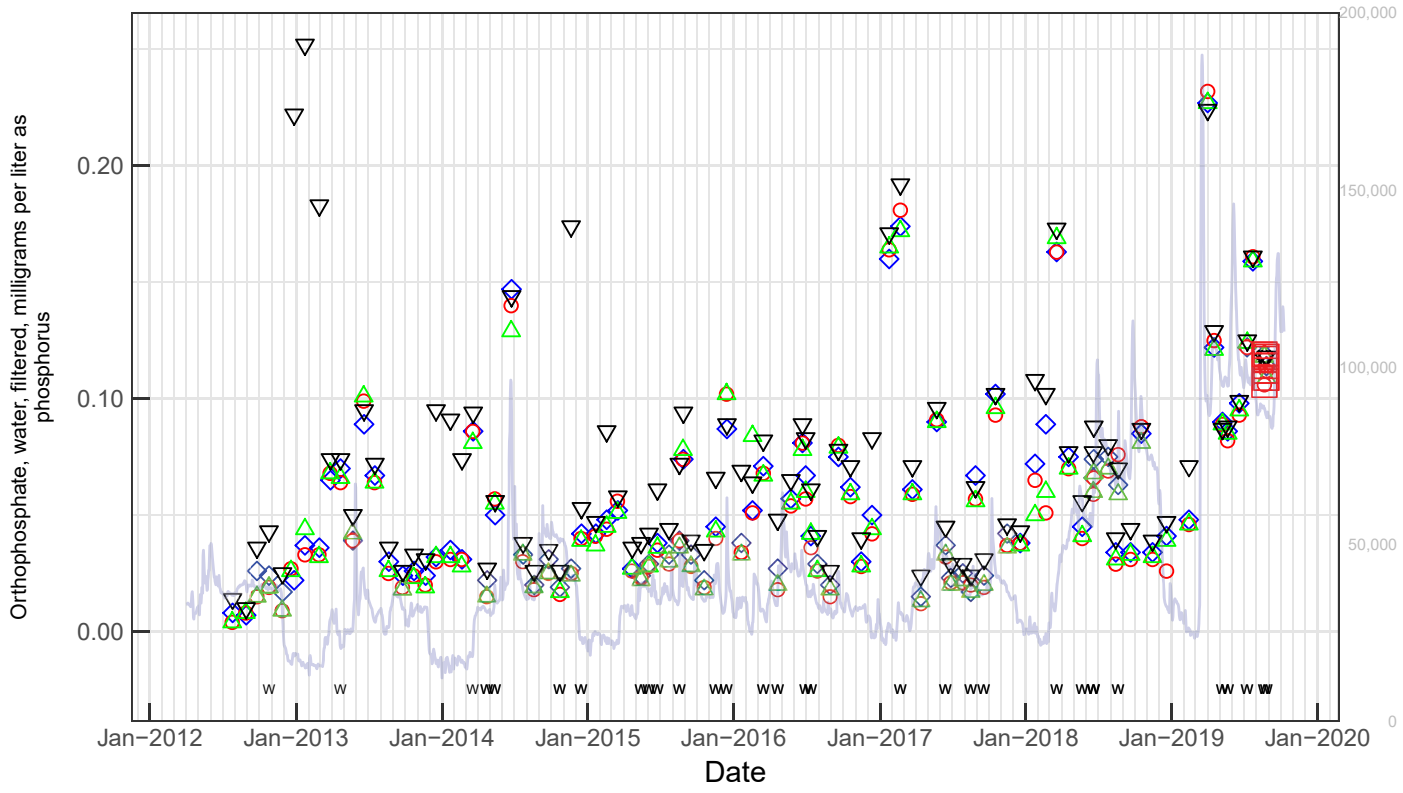
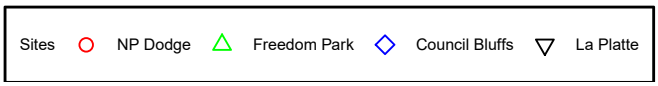
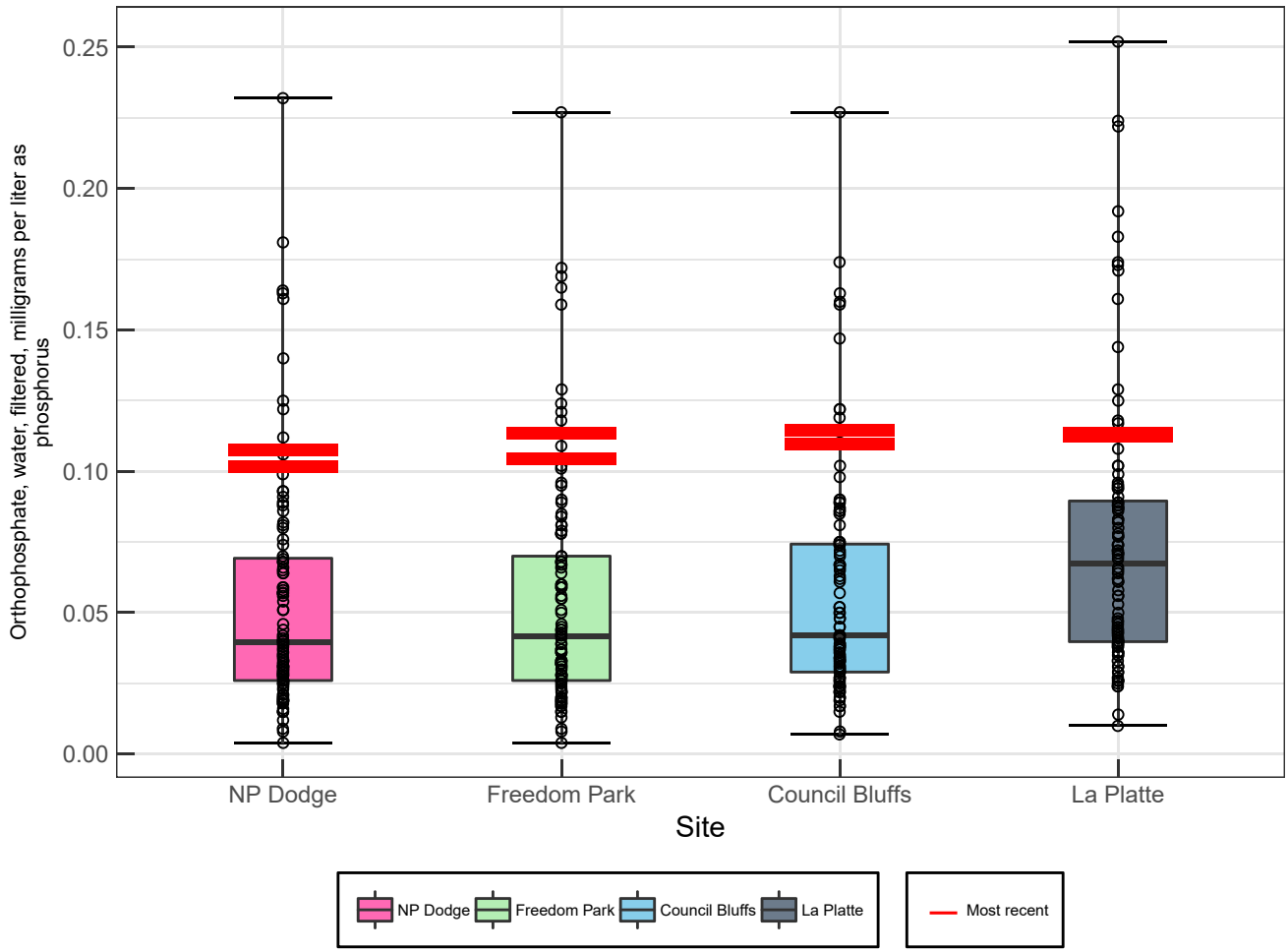
Orthophosphate







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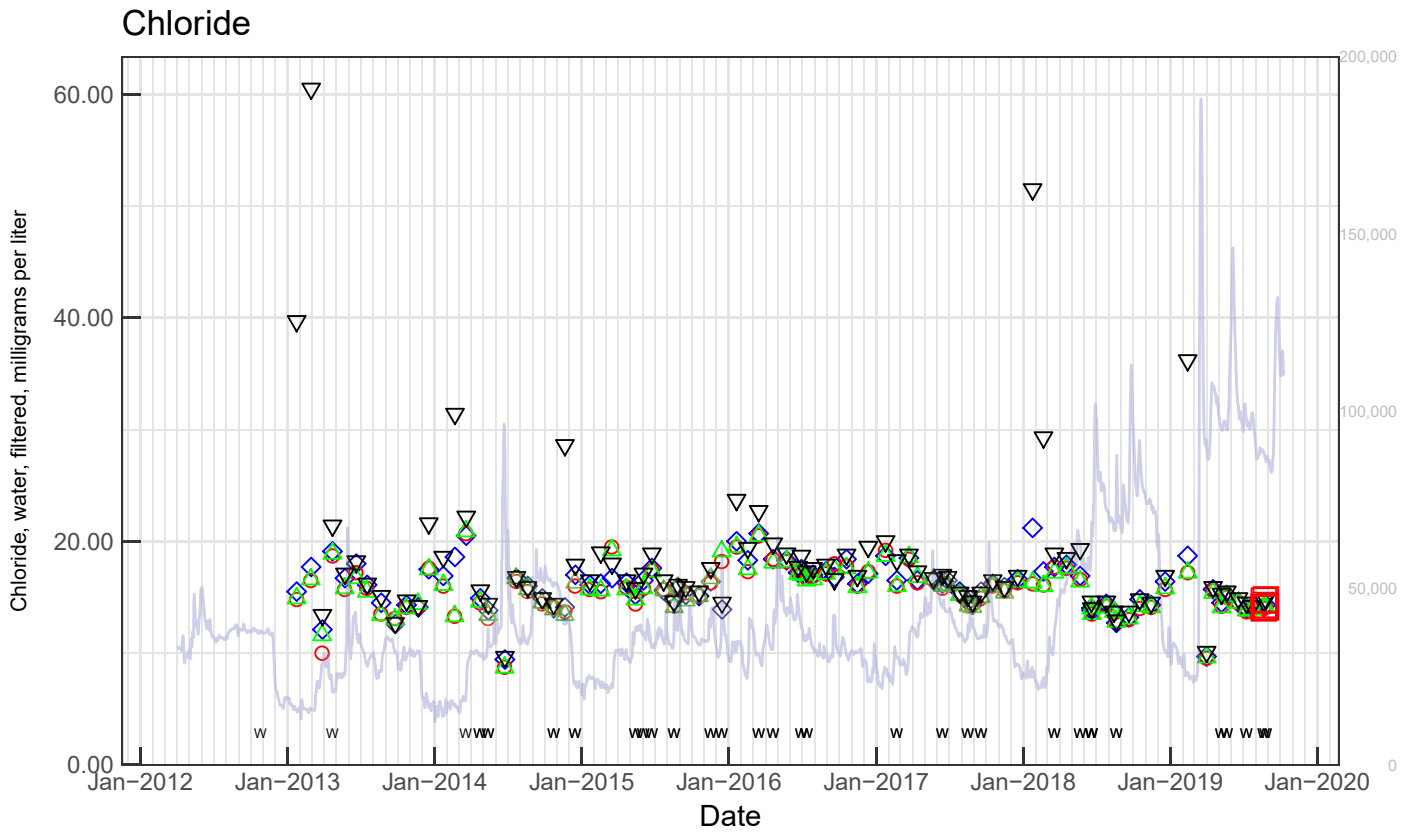

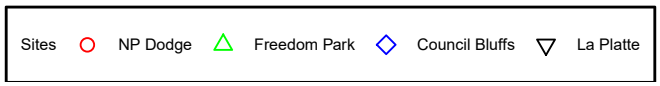

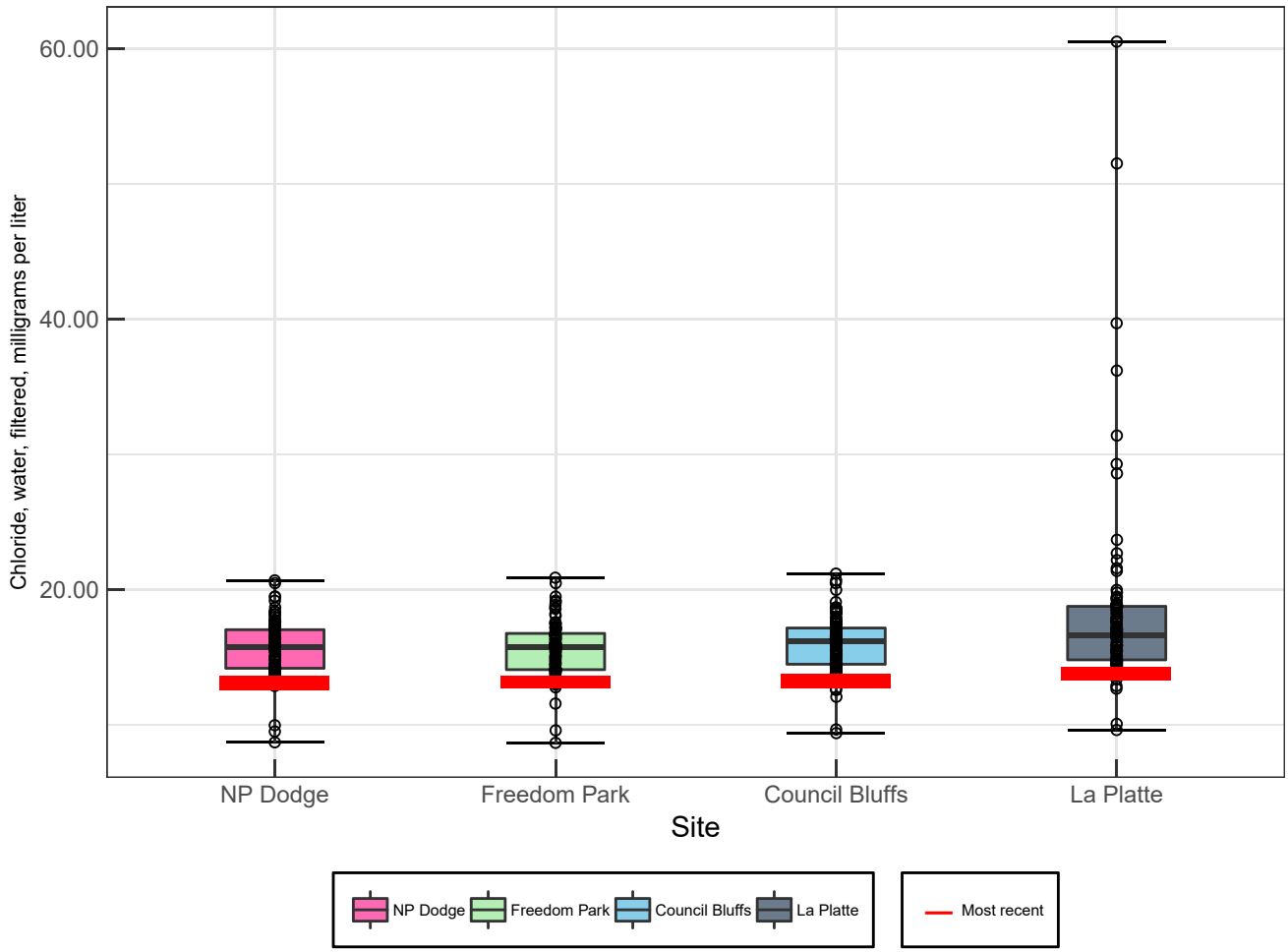

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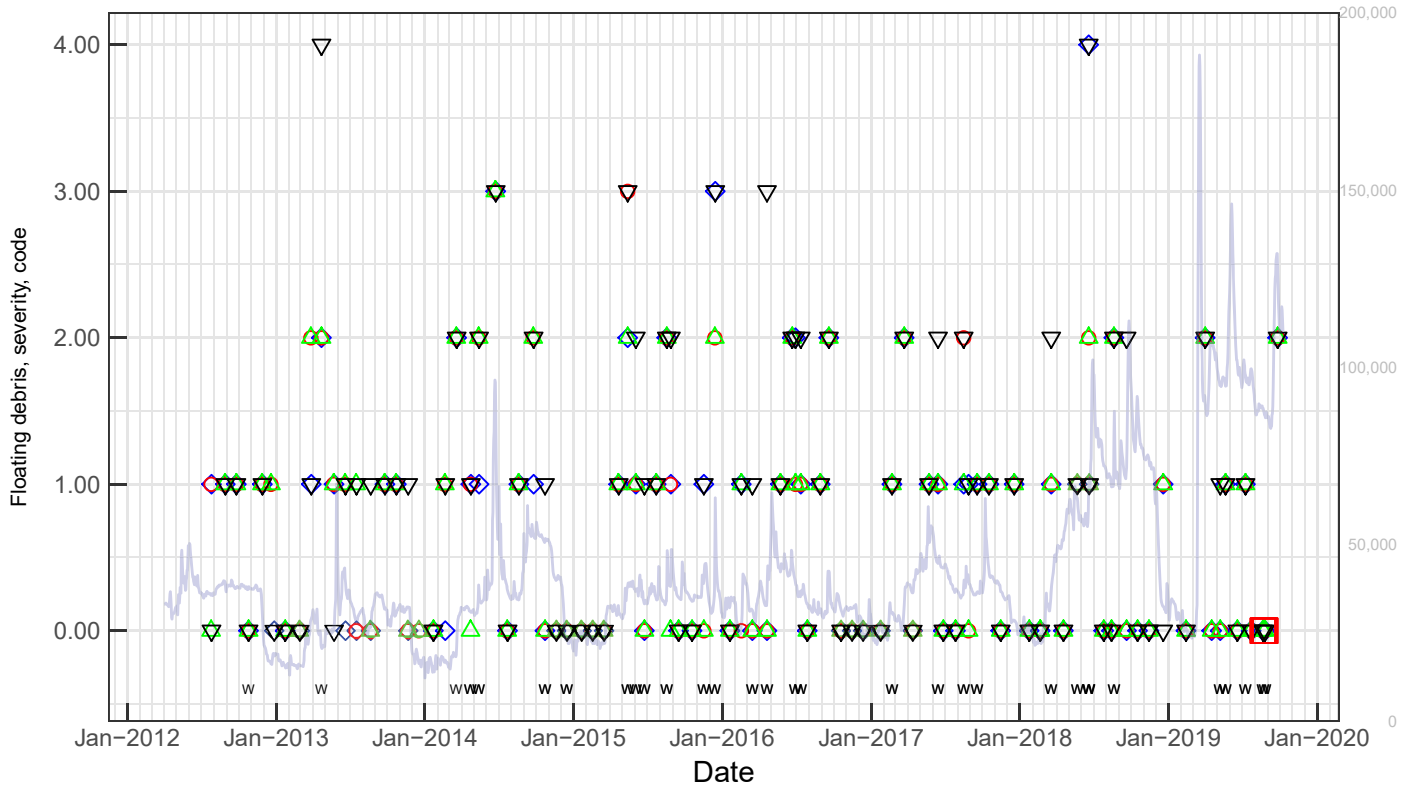
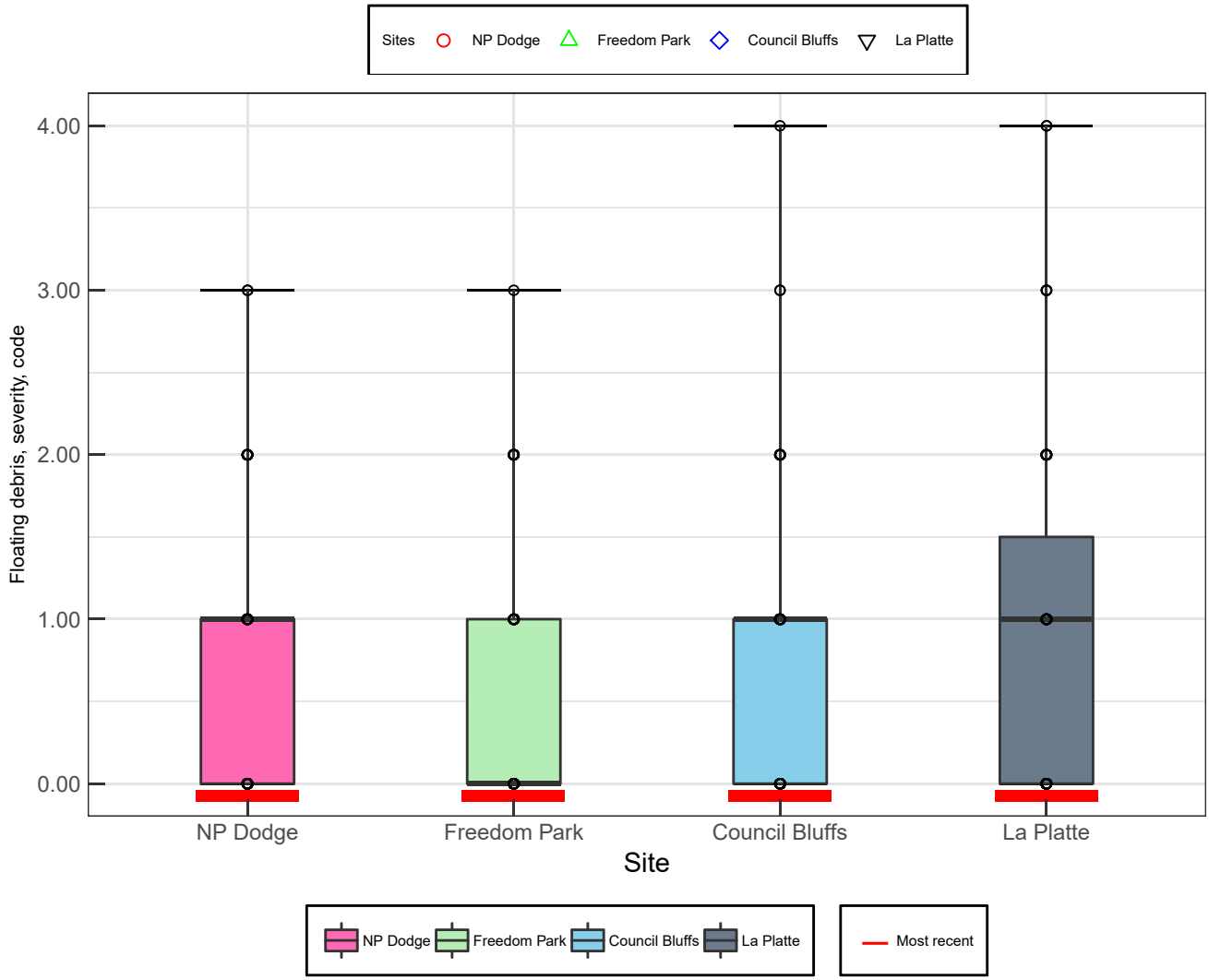
Floating debris





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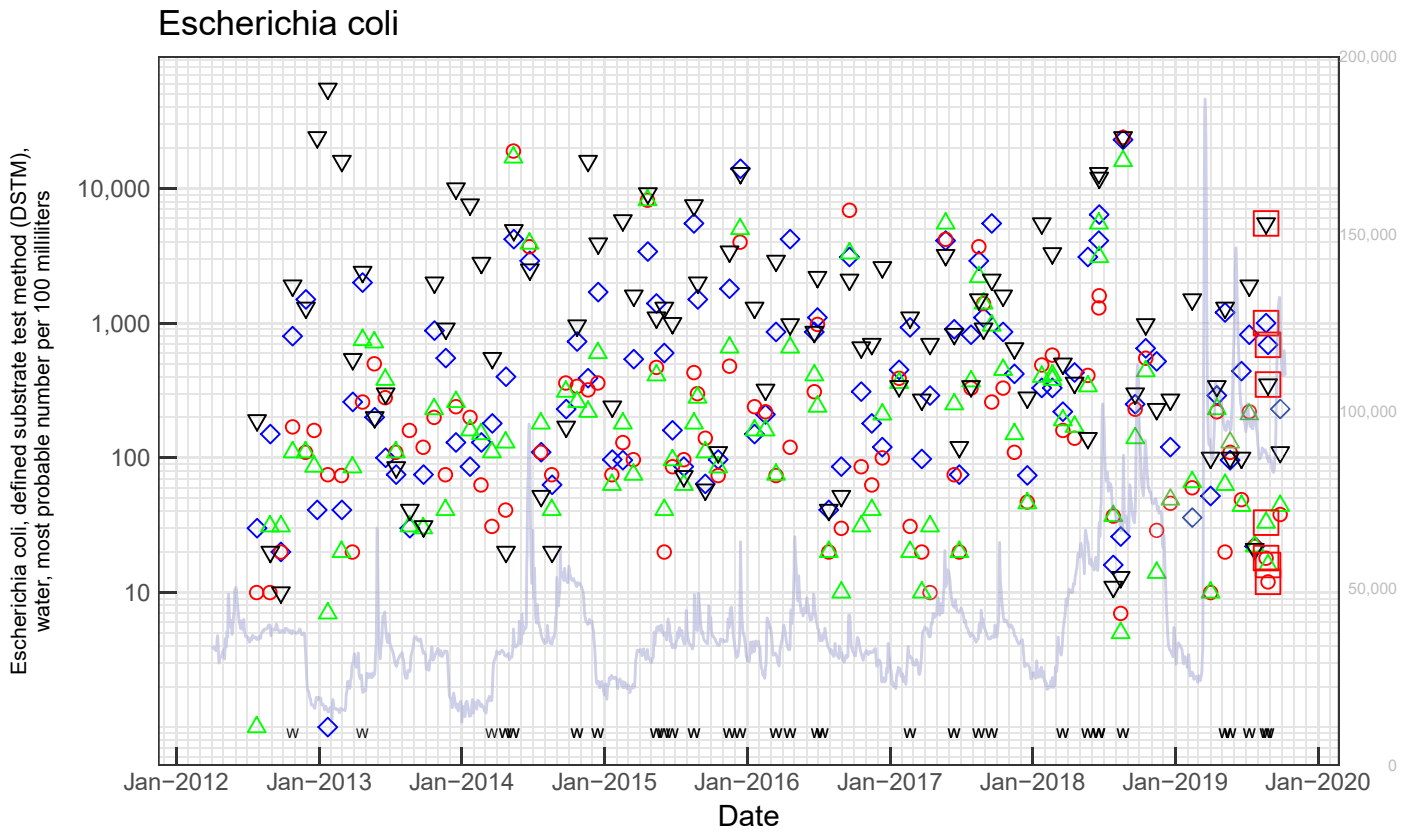

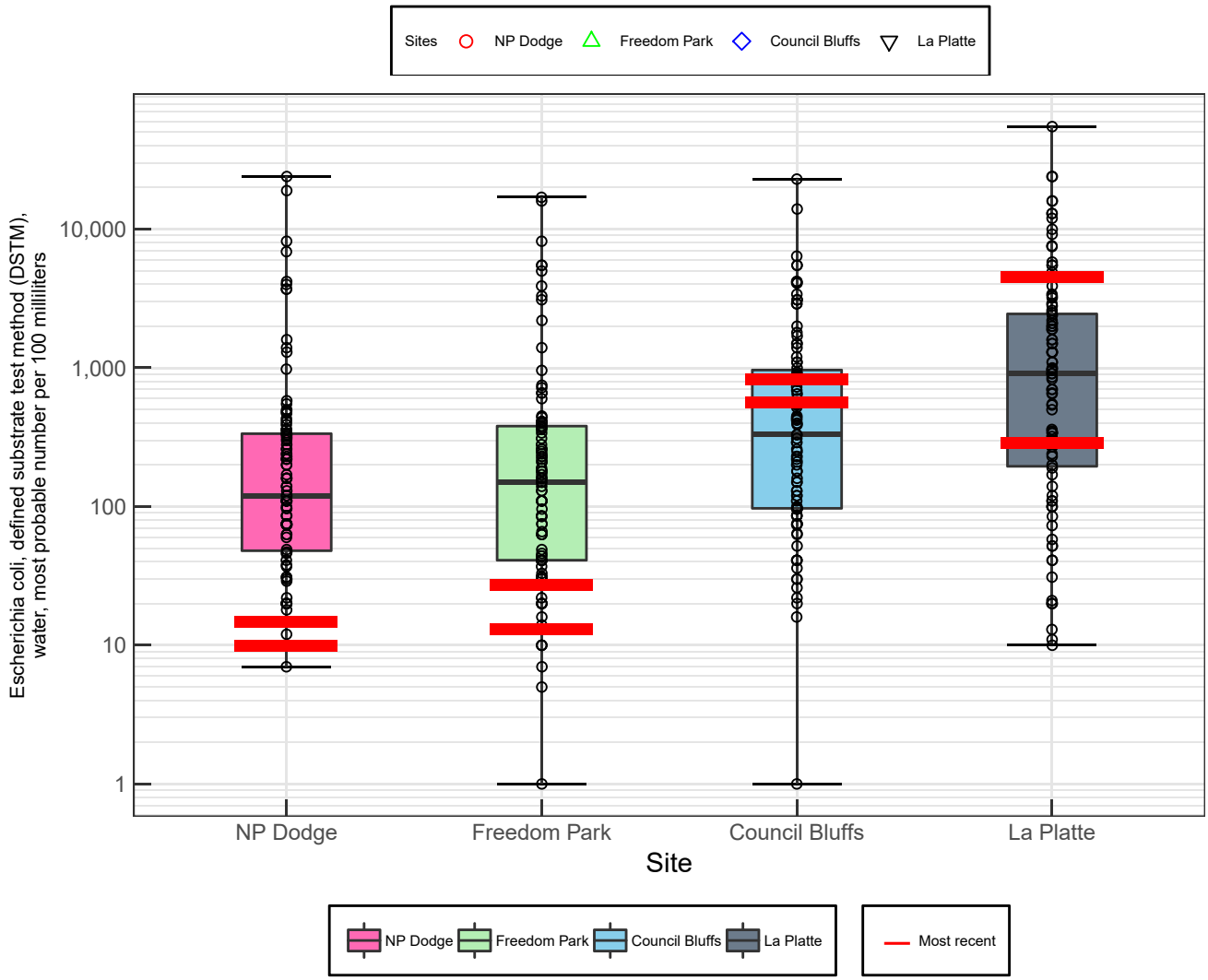

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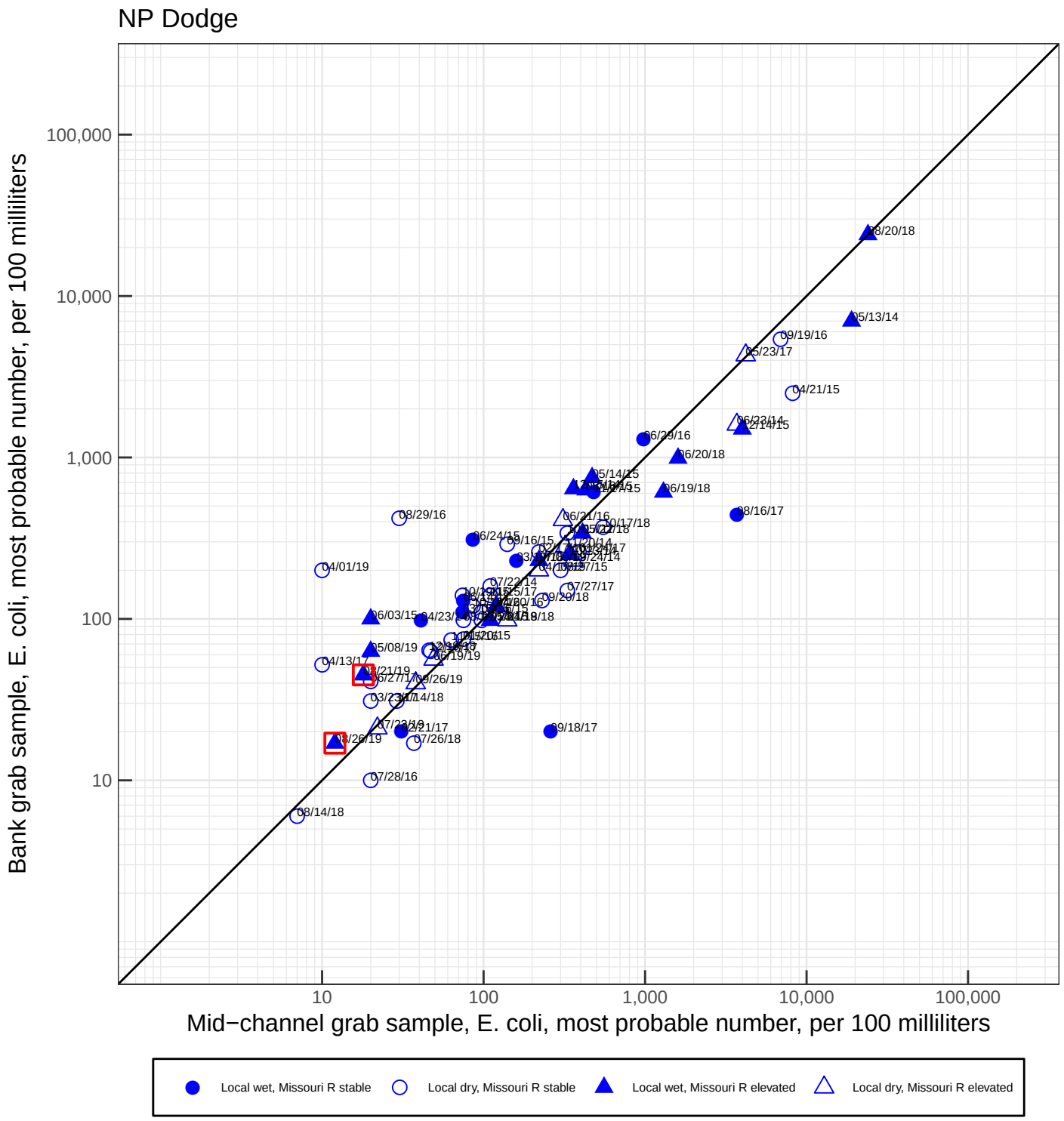

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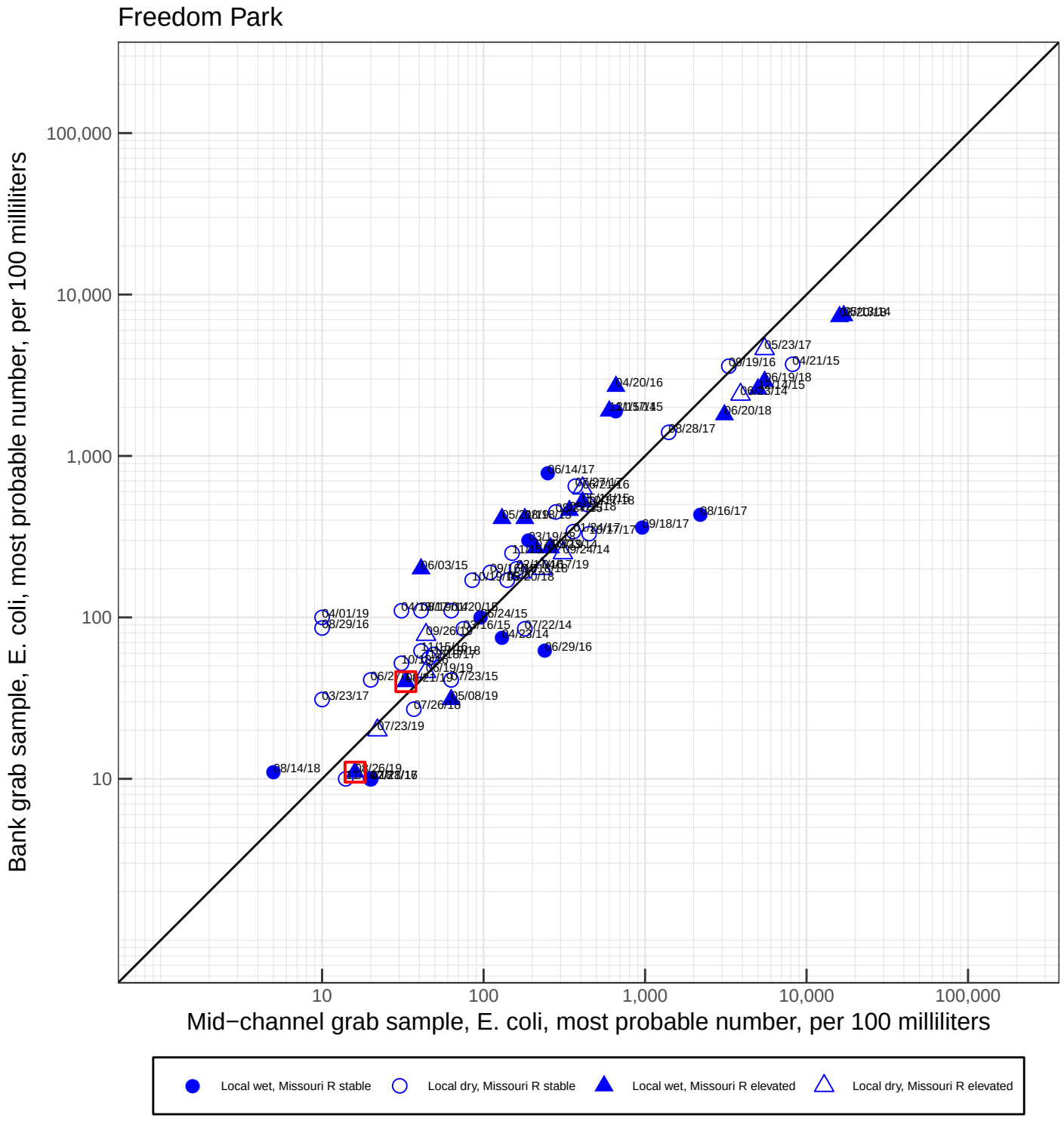

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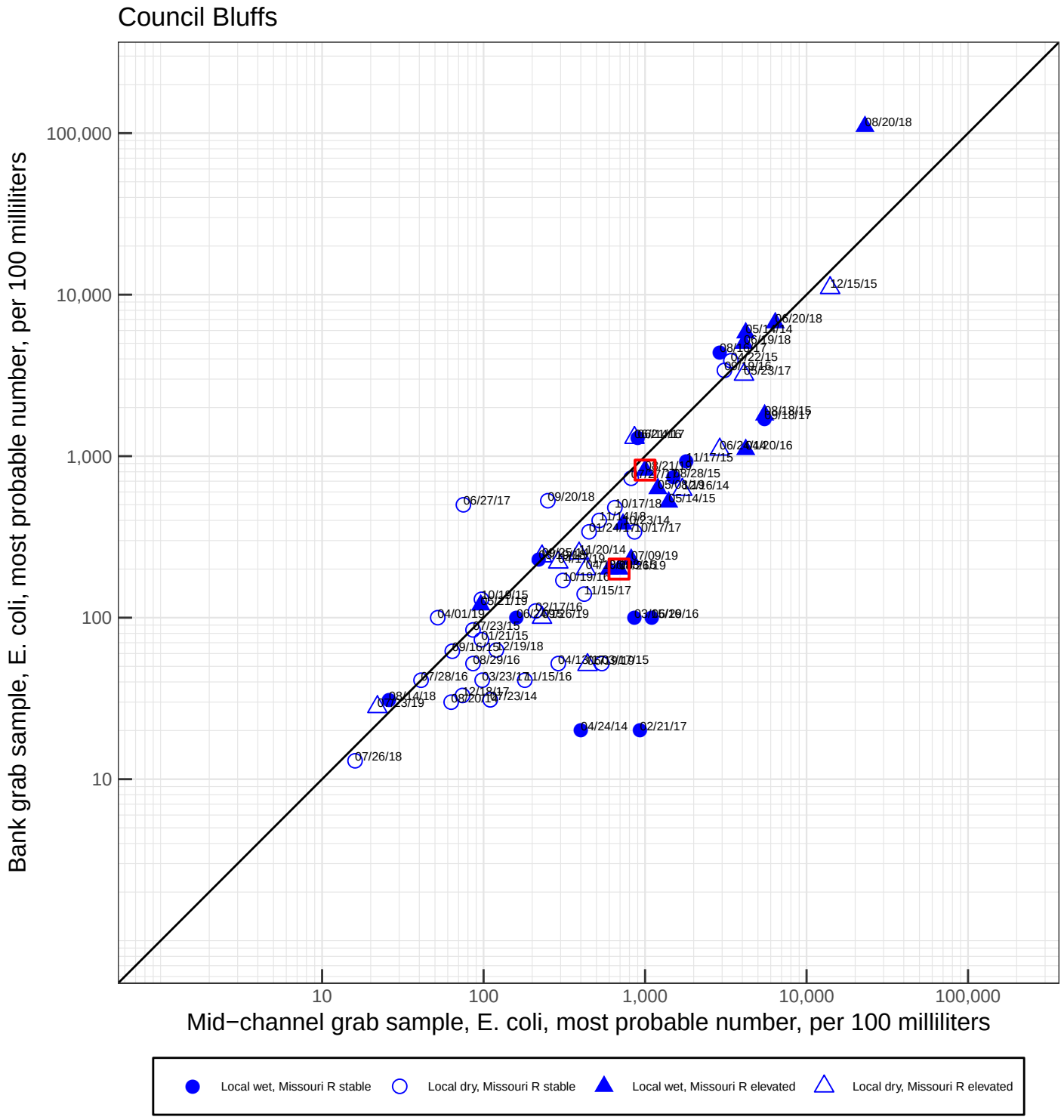

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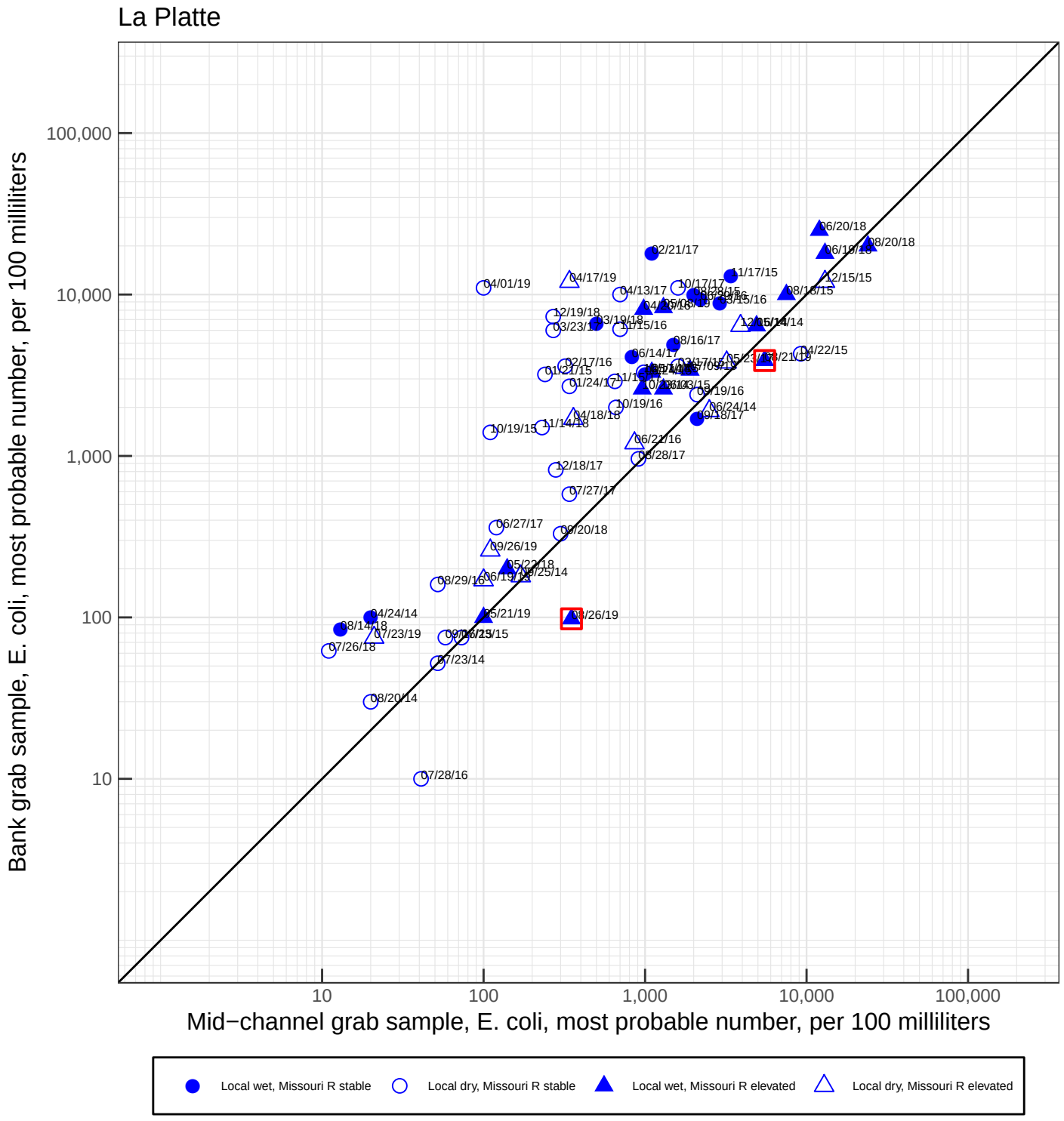

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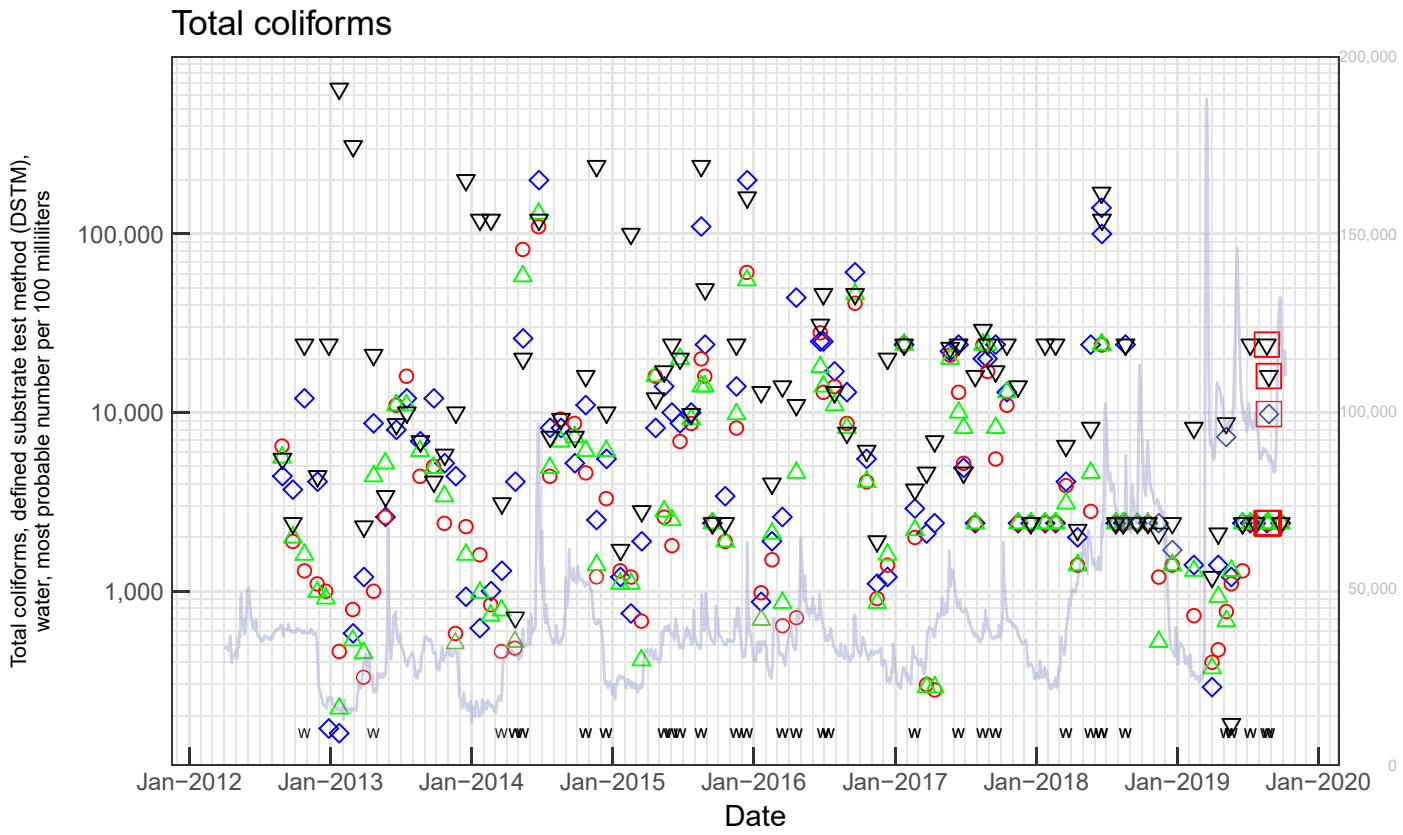

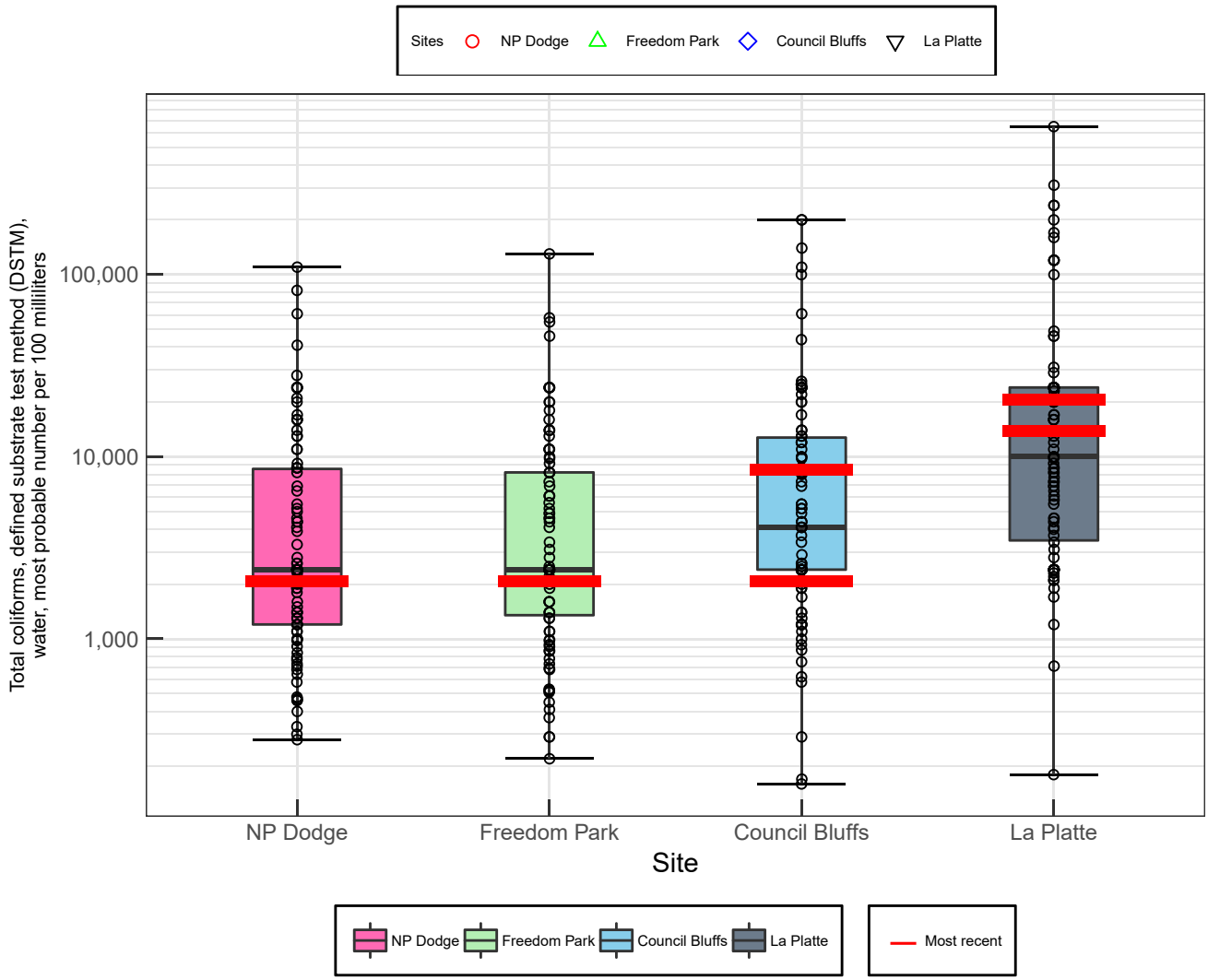

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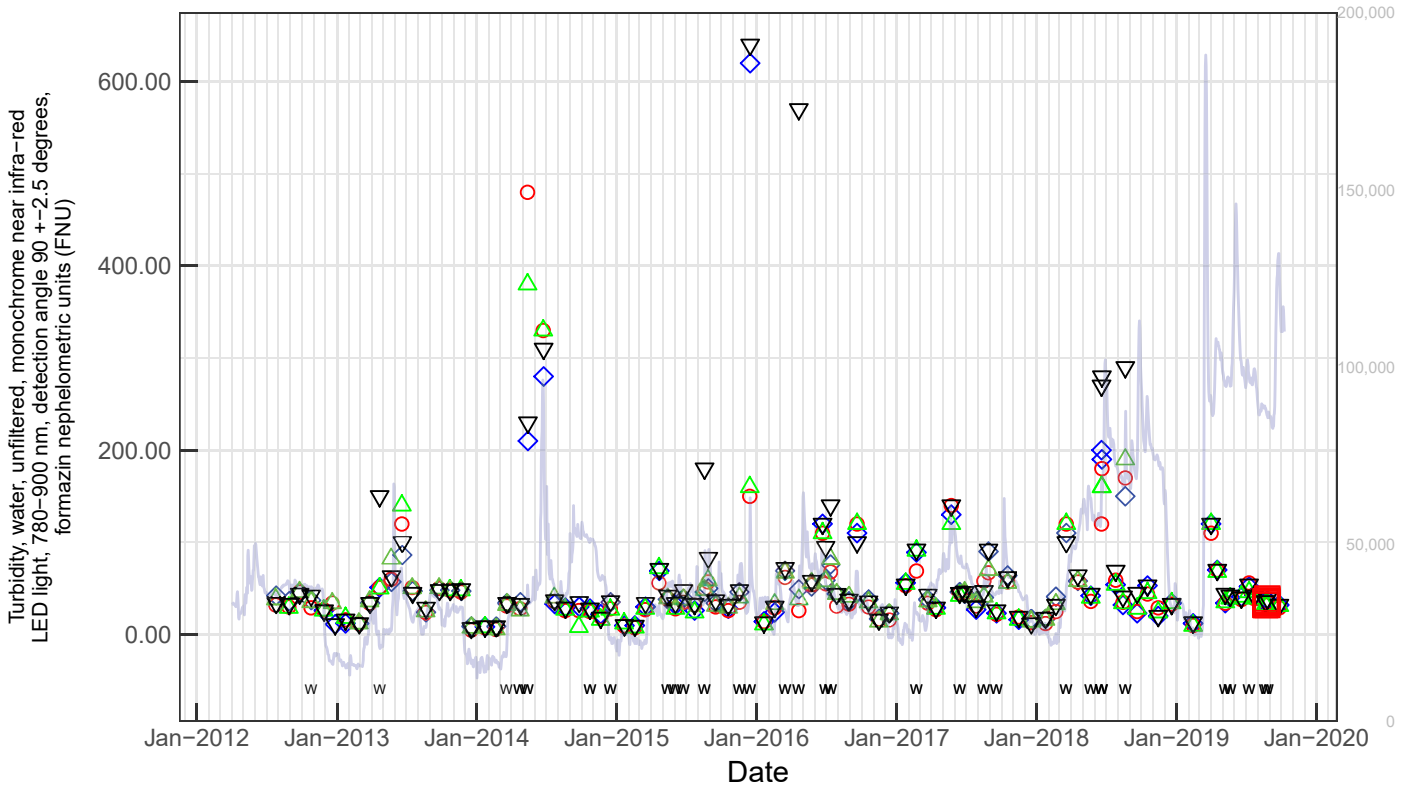

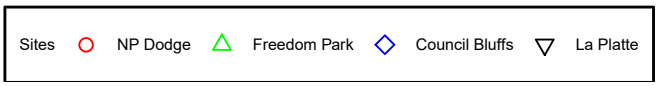

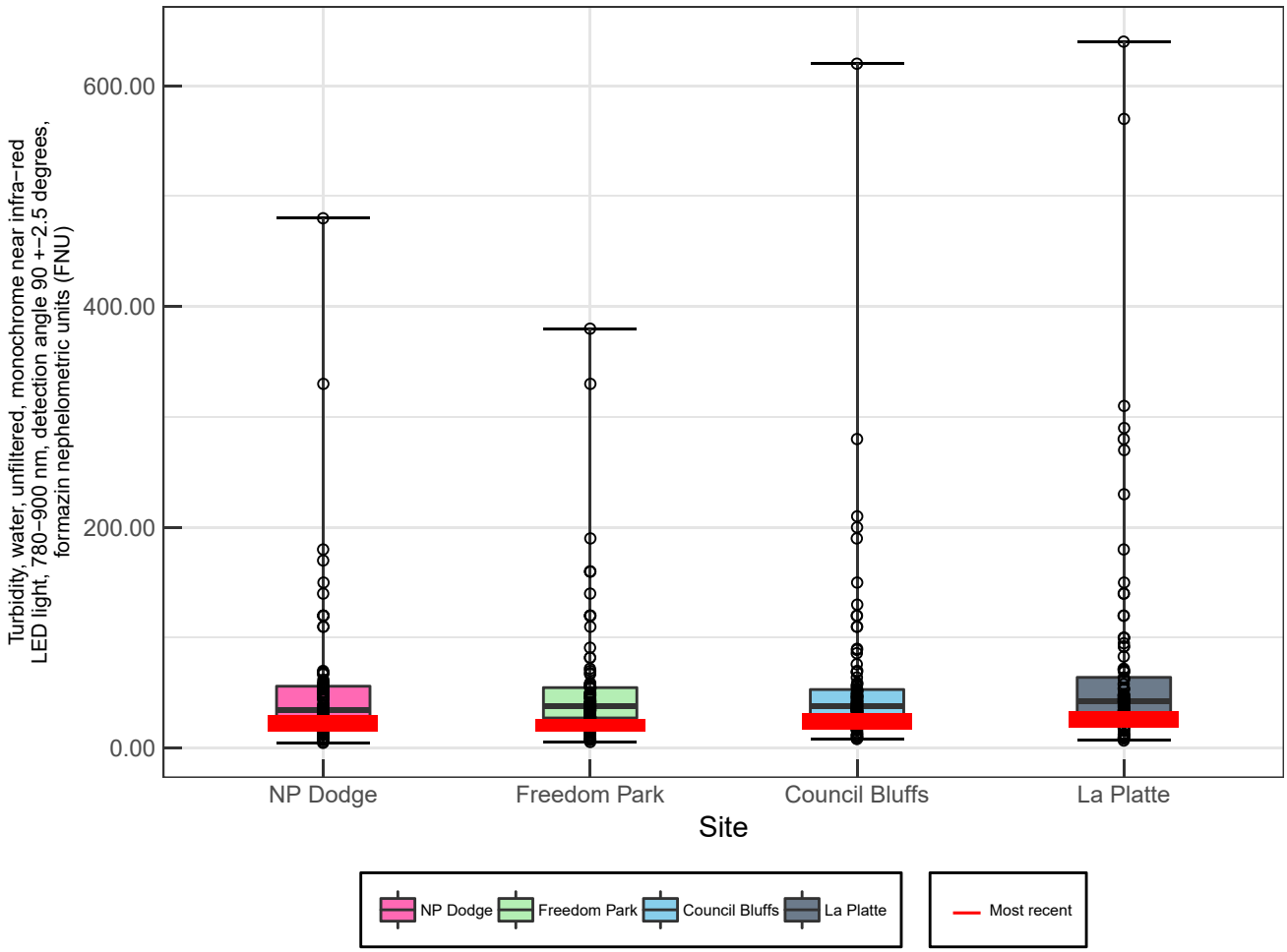

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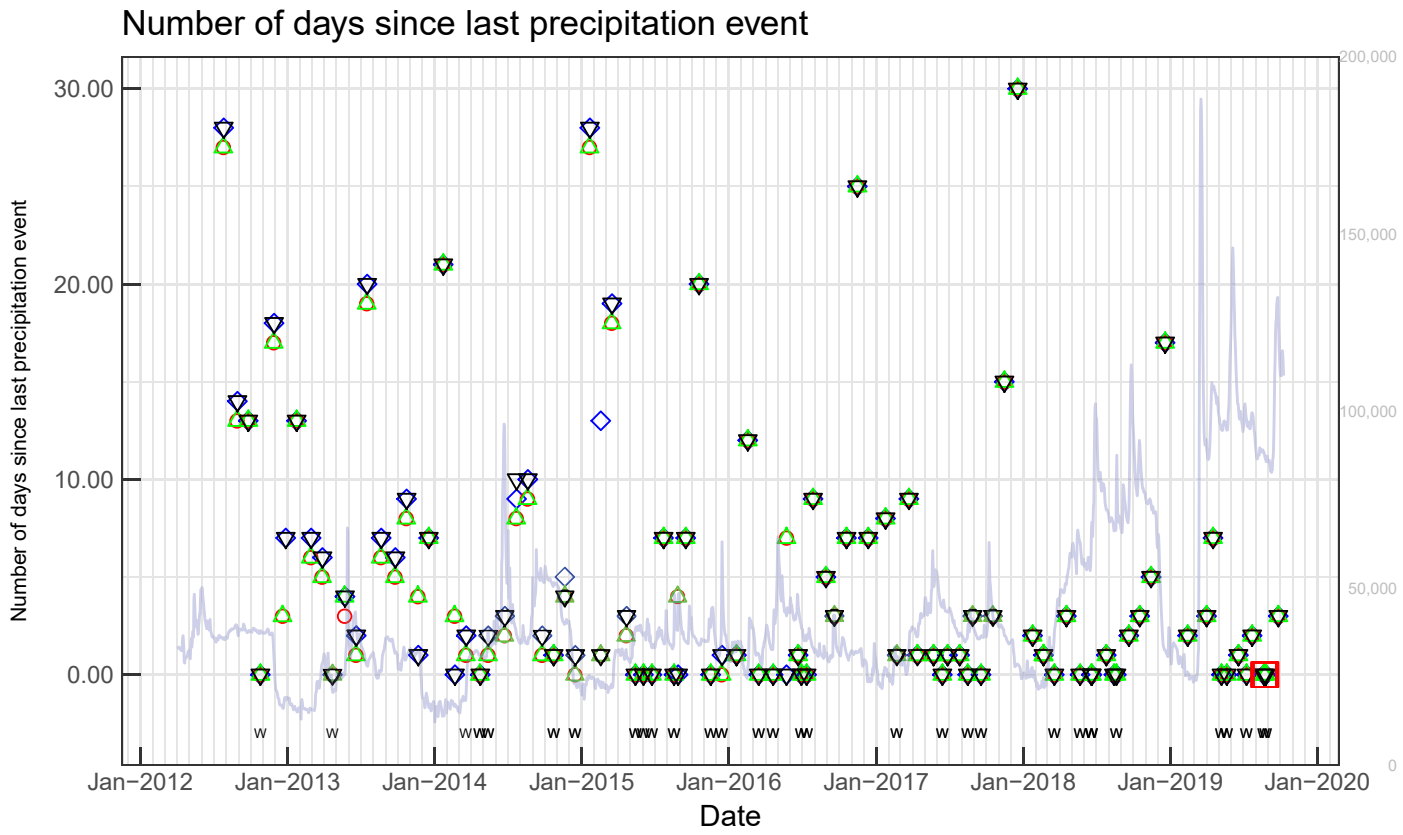

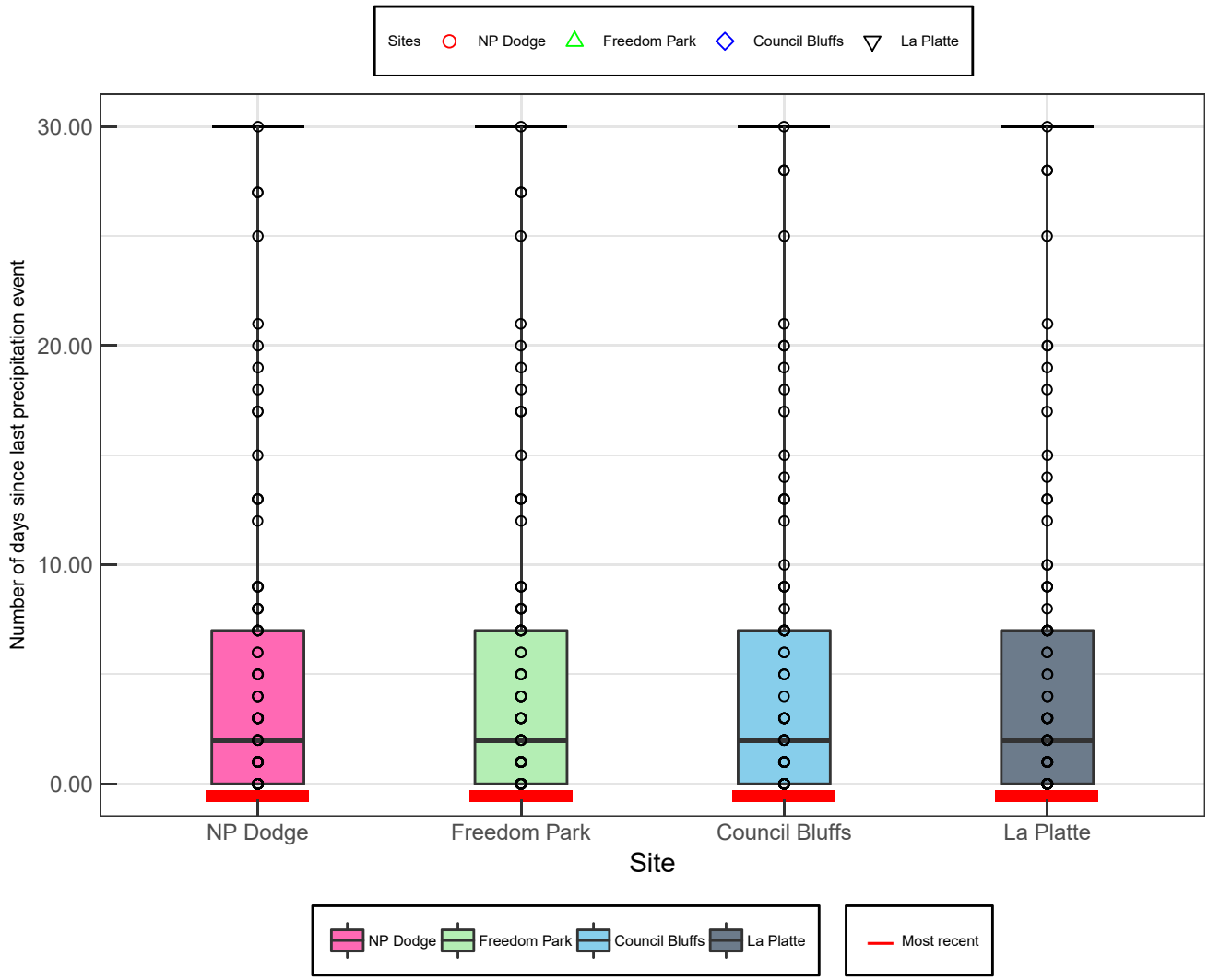

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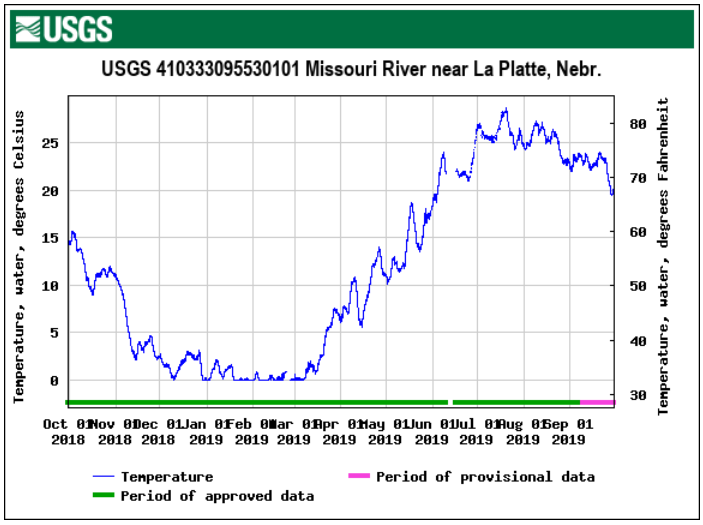
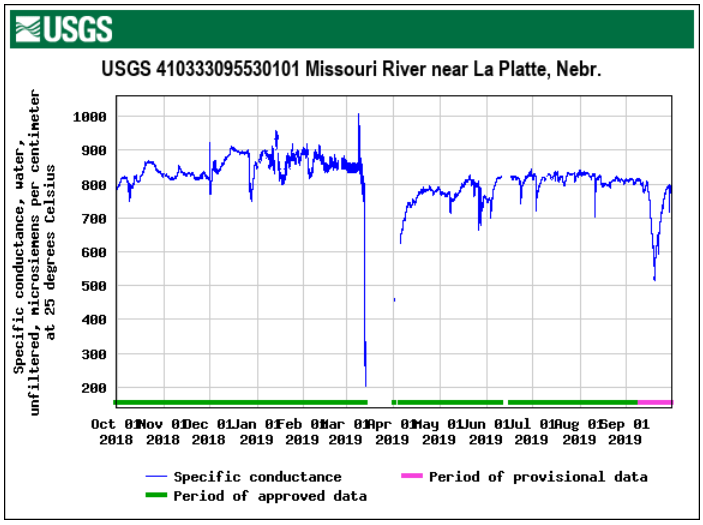
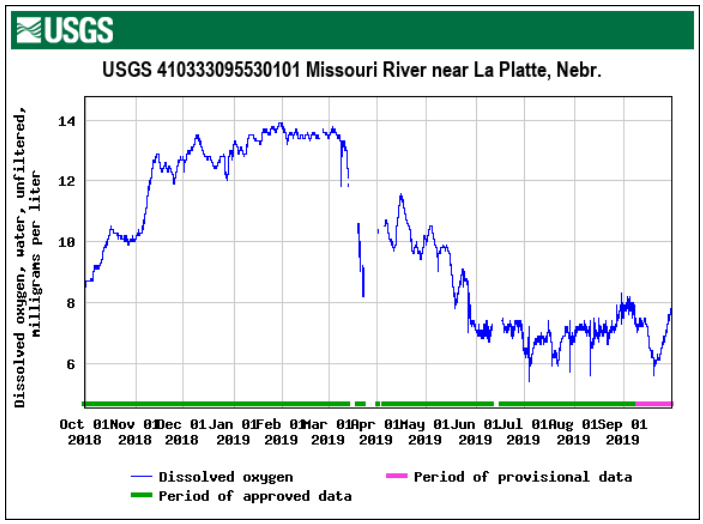
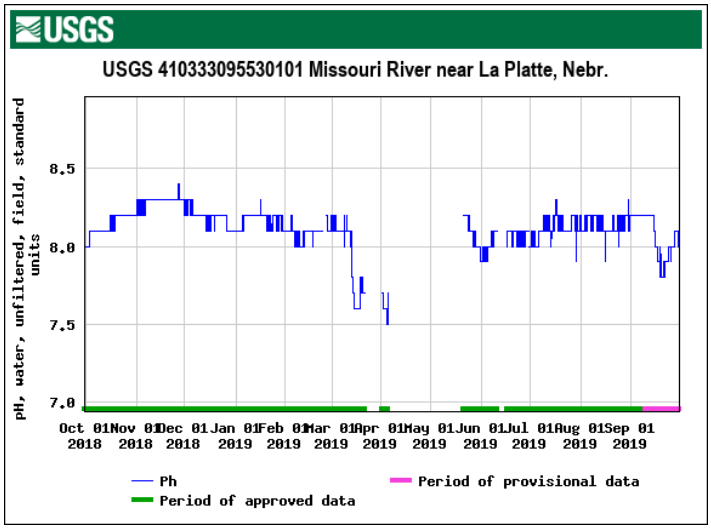
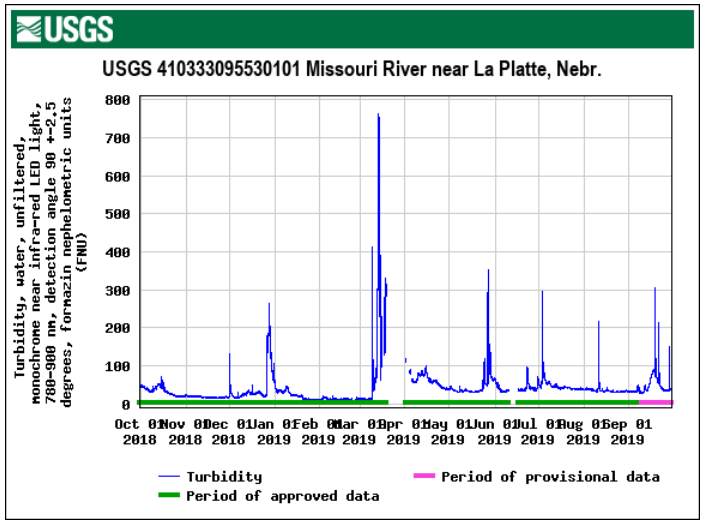
Continuous Water Quality Monitoring Graphs - Site MR-1



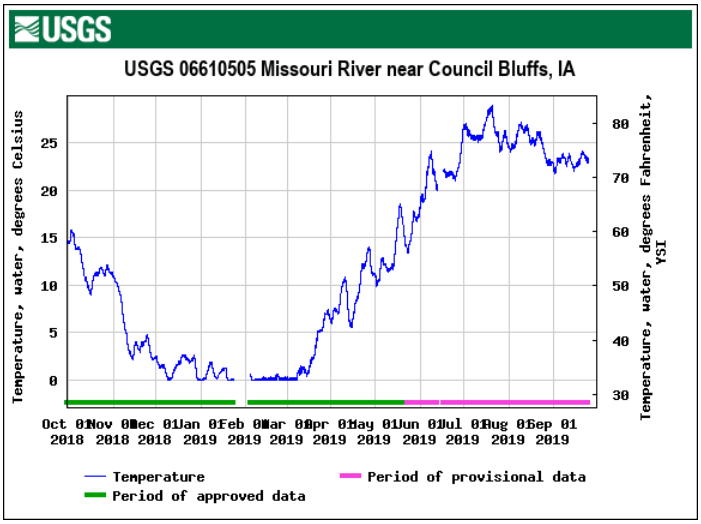


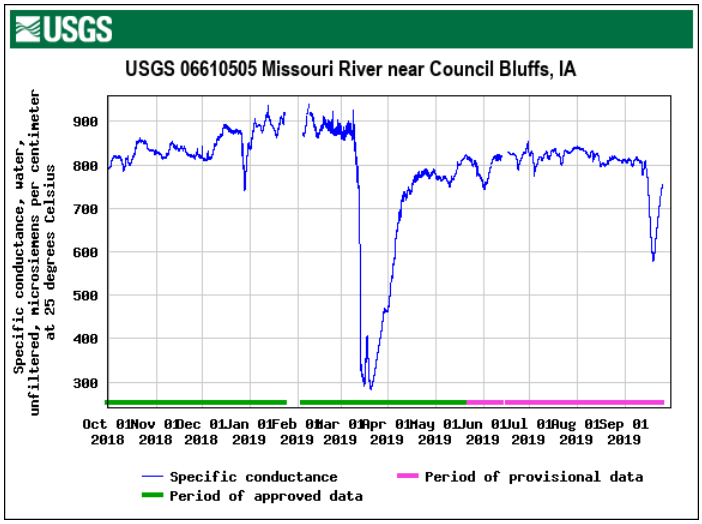


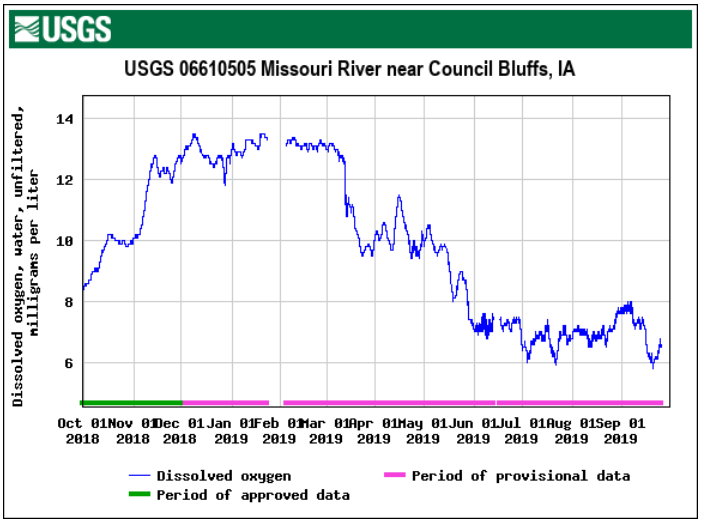


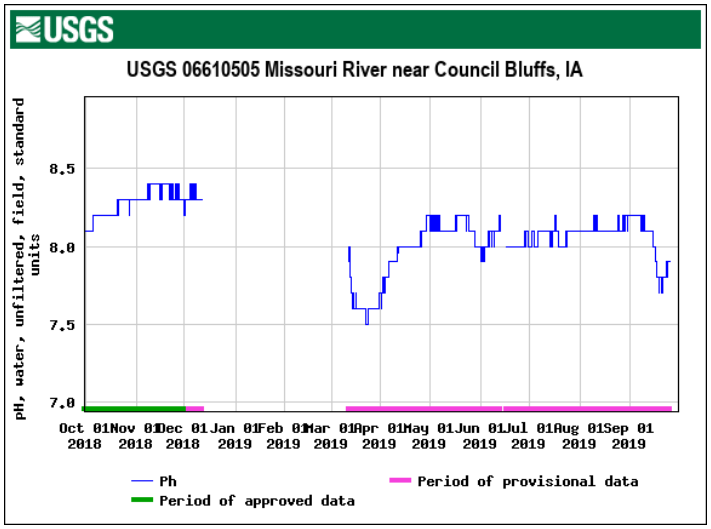


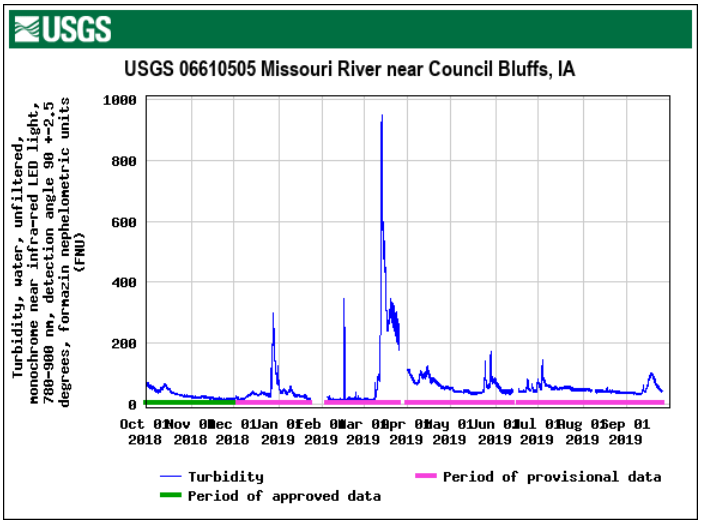
Continuous Water Quality Monitoring Graphs - Site MR-CB











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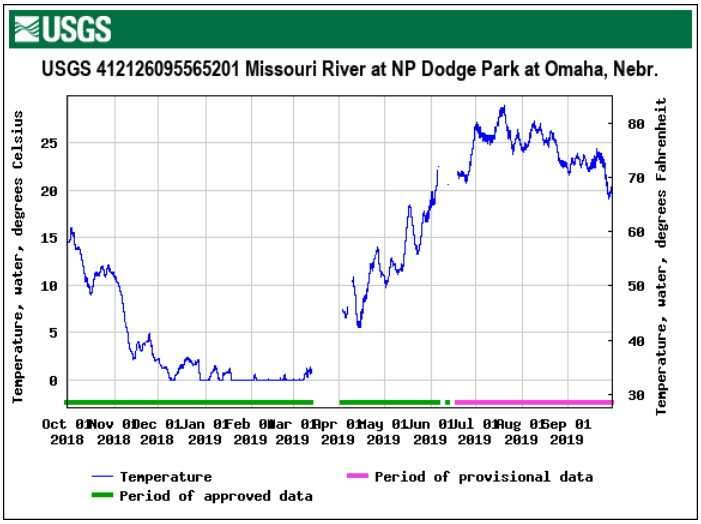

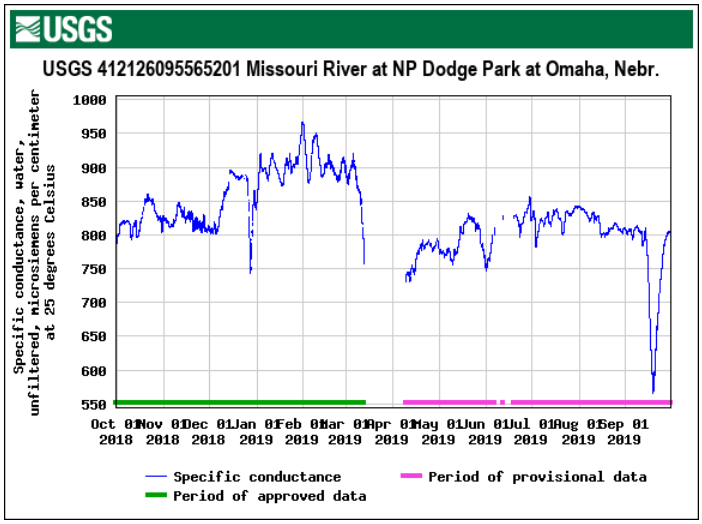

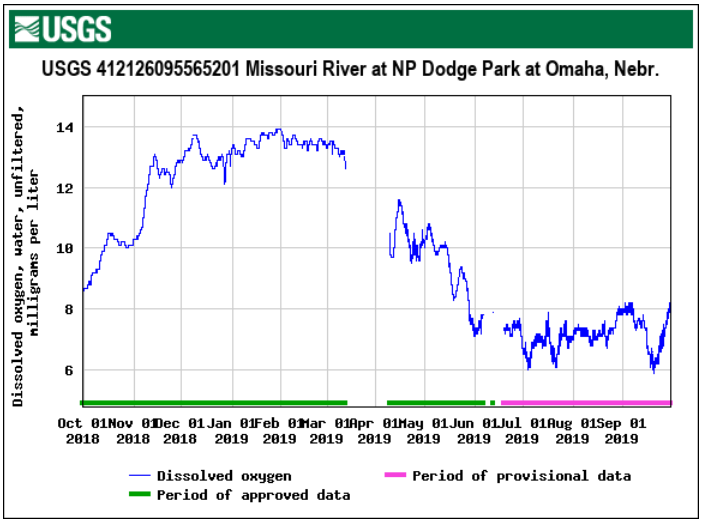

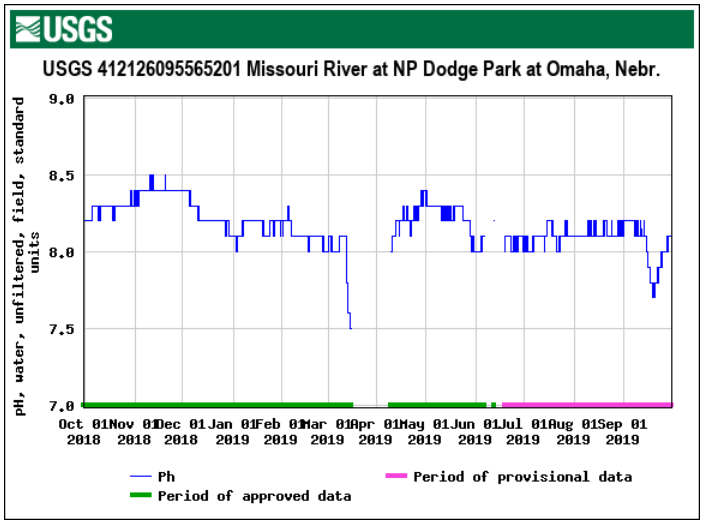

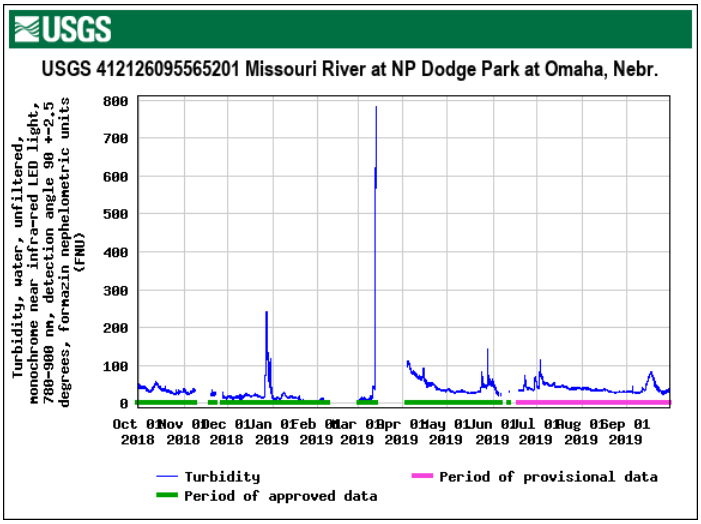

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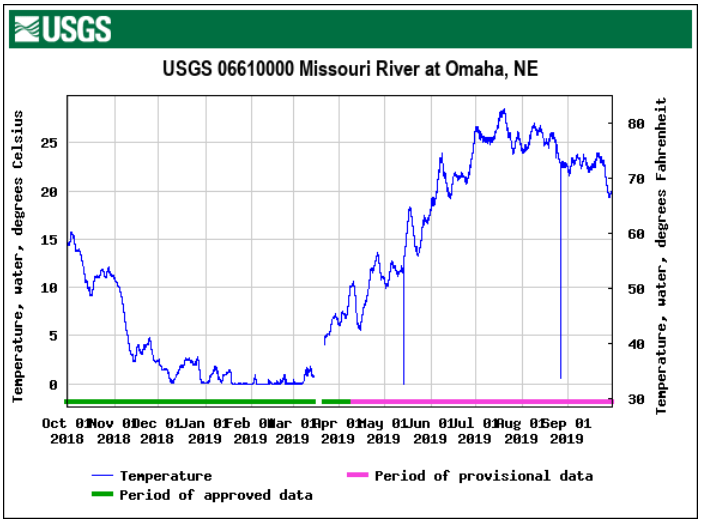
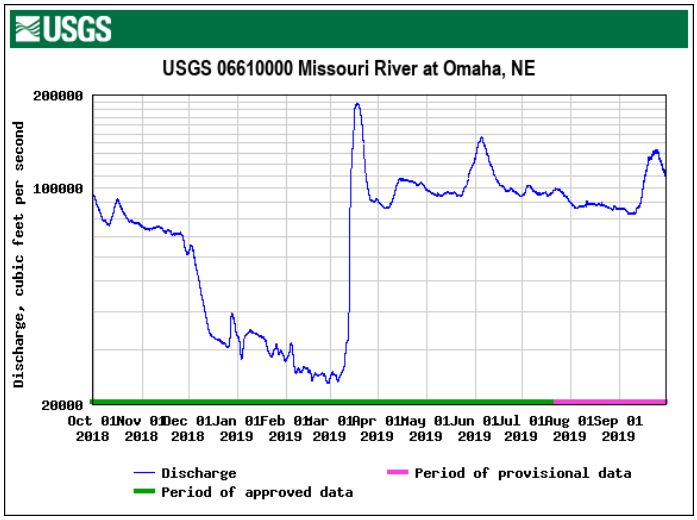
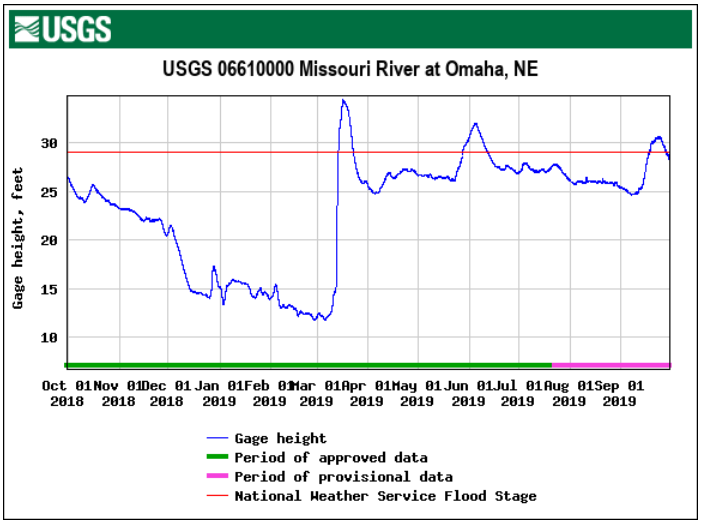






Attachment 6 – Public Information

Postcard Invitation Example from the Saddle Creek Retention Treatment Basin Project

CSO!
Clean Solutions for Omaha

Public Meeting to Discuss Construction Coming to Your Neighborhood

The Saddle Creek Retention Treatment Basin (RTB) is an important part of the Clean Solutions for Omaha program addressing combined sewer overflows. During a wet weather event, this facility will capture as much storm and sanitary water as possible for treatment before it is released into the Little Papillion Creek. This project began planning and design activities in April of 2011 and will be constructed just west of South 64th Avenue.

Map Legend

Project Boundaries and Location of Facility

This meeting will provide an overview of the project, the planned construction and schedule, and introduce the team who will be working at the site. Please join us on Tuesday, May 7 to learn more. Representatives from the City of Omaha, the engineering firm and contractor will be on hand to answer any questions.

Construction Update on the CSO
Saddle Creek Retention Treatment Basin

Tuesday, May 7, 2019

Peter Kiewit Institute
1110 S 67th St., Room 158
6:30 - 7:30 p.m.

Open (free) parking is available in Lot 2, Lot 4 or in the Pacific Street Garage on this date. However, please continue to observe all "Reserved" spaces.

For questions regarding the CSO Program, call the CSO hotline at:
402-341-0235

www.omahacso.com

CSO! Program Office
1819 Farnam St. Suite 707
Omaha, NE 68183

Project Sheet Example from the Saddle Creek Retention Treatment Basin Project

Saddle Creek RTB
Construction Update: May 2019

CSO!
Clean Solutions for Omaha

Rendering of Saddle Creek Retention Treatment Facility

The Saddle Creek Retention Treatment Basin (RTB) facility will provide improved water quality for the Little Papillion Creek.

The Saddle Creek RTB is an important project for Omaha's water quality program called Clean Solutions For Omaha. More than 65 times a year, untreated combined sewage overflows into the Little Papillion Creek from the sewer outfall at the project location. The purpose of the RTB facility is to capture this water and treat it during wet weather. This project began planning and design activities in April of 2011 and will be constructed at 64th and Dupont Streets in Omaha.

The facility will operate during rain events. If it is a small rain event, the combined sewage may be retained and sent to the Papillion Creek Water Resource Recovery Facility (PCWRRF) for treatment. When the rain event exceeds the capacity of the RTB, the combined sewage will be treated, disinfected and then discharged to the creek.

Combined sewage will be diverted from an existing outlet channel to the facility headworks where large materials like cans, rocks, tree branches and floatable solids are removed using a grit pit and mechanical screens. At this point in the process, a disinfectant is added. If the tank fills up, an overflow channel is provided for discharge of treated flow back to the creek.

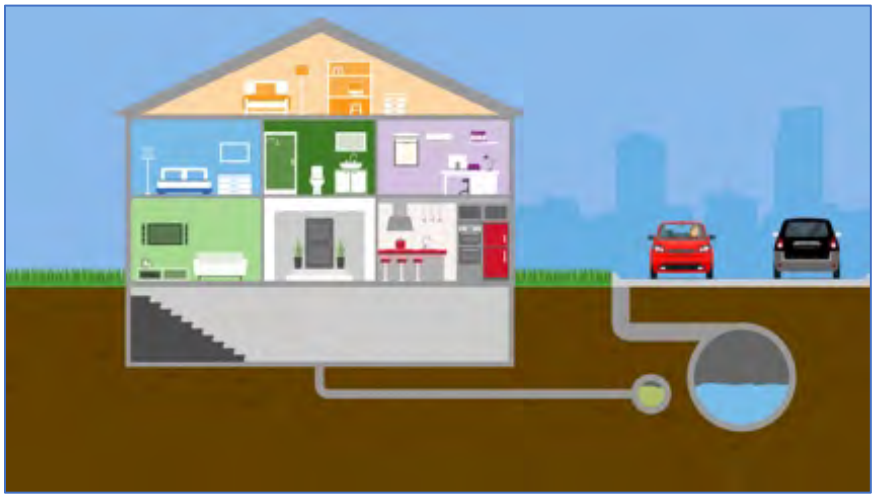
The RTB will use pumps to empty the facility after a rain event has ended. The dewatering pumps will convey captured combined sewage volume into the downstream Papillion Creek Interceptor sewer for additional treatment at the PCWRRF.

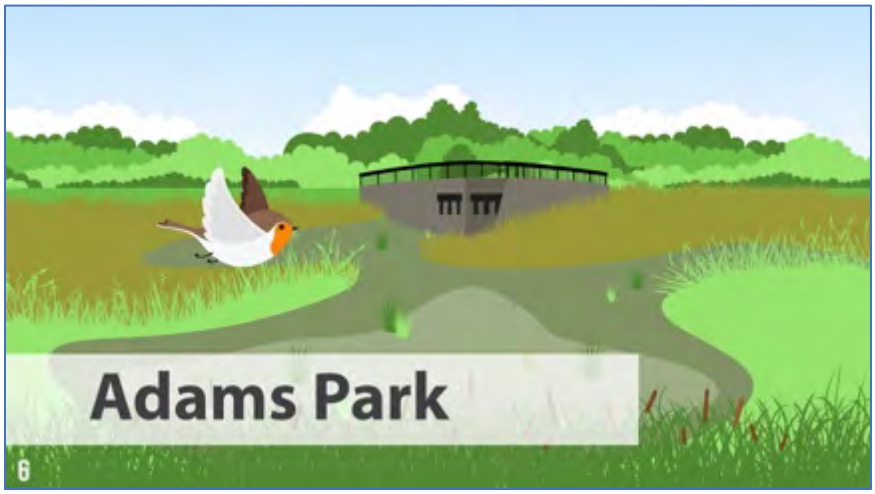
Above ground improvements include a building to house controls, grit and screening equipment, and chemicals. The building, illustrated above, will provide office space for full-time staff, some additional city offices and maintenance access to the facility.

An odor control system will be installed to address the risk of odors being released to the surrounding area. The site will include fencing and lighting for security purposes. Deliveries will occur regularly, but are not expected outside of typical business hours.

This project was originally bid in 2015, and the City elected not to proceed with construction of the facility at that time. To keep the project moving, a site preparation project was identified to remove buried construction and demolition (C&D) debris. This work was completed in June 2016 and reduces the amount of site preparation required for the larger facility project.

Animations Created for Public Meetings





CSO! Program Coloring Book Handouts

CSO! Shower Timers