SURFACE WATER PFAS EVALUATION

SUNCOR ENERGY USA INC.
COMMERCE CITY REFINERY, COMMERCE CITY, COLORADO

Prepared for

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EXECUTIVE SUMMARY

This report was prepared on behalf of Earthjustice, in response to comments from Suncor Energy USA Inc. (Suncor) on the Colorado Water Quality Control Division's draft discharge permit #CO0001147 for Suncor's Commerce City Refinery, Commerce City, Colorado (the refinery).

The South Platte River provides drinking water to a significant number of municipalities in the Colorado Front Range and also a majority of the irrigation water used by nine of Colorado's top ten agricultural producing counties. The Suncor refinery discharges per- and polyfluoroalkyl substances (PFAS) and has been monitoring its PFAS discharges from Outfall 020A since 2019. Outfall 020A discharges to Sand Creek, which in turn flows into the South Platte River approximately one-half mile downstream from the outfall. The Suncor refinery has multiple stormwater and process water outfalls draining from the facility that may contribute PFAS to Sand Creek during precipitation and snowmelt events (CDPHE 2021). These stormwater and process water outfalls have not yet been monitored for PFAS and are not considered in this evaluation.

PFAS are a class of synthetic compounds present in many industrial and consumer products, with a history of use in firefighting foams. These chemicals have been linked to adverse health effects in humans due to consumption of drinking water and food containing very low PFAS concentrations. PFAS compounds can travel long distances in surface water and groundwater and can accumulate in animal and plant tissue, thus providing an entry point to the human food supply.

PFAS compounds discharged through Outfall 020A were calculated to comprise a substantial portion of PFAS in the South Platte River. During Suncor's 2021 quarterly surface water monitoring events, the quantity of PFAS in the South Platte River attributable to Outfall 020A discharge averaged 6.6% and ranged from 2.9% to 10.5%. Using Suncor's highest total detected PFAS concentration from Outfall 020A from the March 2021 sampling event as a conservative measure, the refinery's PFAS contribution was calculated to be 18% of the total detected PFAS mass in the South Platte River. During 2021, the quantity of PFAS in Sand Creek attributable to Outfall 020A discharge averaged 27.1%, ranged from 20% to 36%, and was calculated at 47% during the March 2021 sampling event.

Due to the persistent nature of PFAS compounds, Suncor's contribution of these chemicals is additive to the PFAS that are already present in the South Platte River, increasing the water treatment burden of downstream communities. Suncor's PFAS discharge also contributes to PFAS in irrigation water diverted from the South Platte River downstream of Commerce City and is likely to be taken up by crops grown in the South Platte Valley, creating an entry point to the human food supply.

Report Citation

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ACRONYMS AND ABBREVIATIONS

AFFF	aqueous film-forming foam
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
DWR	Colorado Division of Water Resources
FTAoS	fluorotelomer thioether amido sulfonates
gpm	gallons per minute
ng/L	nanograms per liter
PFAS	per- and polyfluoroalkyl substances
PFBA	perfluorobutanoic acid
PFHxA	perfluorohexanoic acid
PFHxS	perfluorohexanesulfonic acid
PFOA	perfluorooctanoic acid
PFOS	perfluorooctanesulfonic acid
PFOSA	perfluorooctanesulfonamide
PFOSAmS	perfluorooctane sulfonamide quaternary ammonium salt
PFPeA	perfluoropentanoic acid
SACWSD	South Adams County Water and Sanitation District
Suncor	Suncor Energy USA Inc.
USGS	U.S. Geological Survey

1 INTRODUCTION

This report was prepared on behalf of Earthjustice, in response to comments from Suncor Energy USA Inc. (Suncor) on the Colorado Water Quality Control Division's draft discharge permit #CO0001147 for Suncor's Commerce City Refinery, Commerce City, Colorado (the refinery). The report documents evaluation of per- and polyfluoroalkyl substances (PFAS) discharged by the refinery into Sand Creek from Outfall 020A, approximately one-half mile upstream of the confluence with the South Platte River. This evaluation considers potential PFAS impacts to Sand Creek downstream of the refinery and the South Platte River from the North Metro Denver Area to the vicinity of Fort Lupton. PFAS entering these water bodies from other Suncor refinery process water and stormwater outfalls to Sand Creek are not considered due to a lack of PFAS sampling data from these locations.

The Suncor refinery is in the process of renewing Colorado Department of Public Health and Environment (CDPHE) Colorado Discharge Permit System (CDPS) discharge permit number CO0001147. The evaluation provided here is intended to quantify, to the extent practical, the contribution of PFAS compounds detected in the South Platte River downstream from the confluence with Sand Creek associated with discharges from the Suncor refinery. This evaluation is also intended to determine whether any Suncor refinery PFAS contamination of the South Platte River is likely to affect drinking water supplies of downstream communities or the irrigation water supply used by downstream agricultural water users.

1.1 SUNCOR REFINERY LOCATION AND DESCRIPTION

The Suncor refinery is located at 5801 Brighton Boulevard, Commerce City, CO 80022, in a mixed residential, commercial, and industrial portion of the city. The refinery is bordered by Sand Creek to the northeast, the Metro Water Reclamation District Hite Water Treatment Plant to the west, and various industrial and petroleum storage and distribution facilities to the south. The Burlington Ditch also flows directly through the refinery, between Plants 1 and 2.

The Suncor refinery is a major refinery in Colorado and has processed crude oil into gasoline, diesel fuel, and other petroleum products since the 1930s (TRC 2020). Throughout this time, fire suppression activities have been required due to the widespread presence of flammable liquids at the Suncor refinery, and Suncor is known to have used Class B firefighting foams during its history (CDPHE 2021). A Suncor spokesman has stated that "Suncor believes the presence of PFOS/PFOA at the Commerce City Refinery is due to the historical use of Class B firefighting foam…" and that PFAS are present at the refinery and "in treated groundwater that is discharged from our outfall" (Denver Post 2019). Suncor has used Class B aqueous film-forming foams (AFFF) for decades. The facility recently converted fire suppression systems to use AFFF manufactured with shorter-chain PFAS compounds, and continues to store older Class B foams with longer-chain PFAS. As of 2021,

Suncor reported to CDPHE that 28,055 gallons of Class B firefighting foam containing PFAS are currently stored at the refinery (CDPHE 2021). The abundance of longer-chain PFAS compounds such as PFOS and PFOA present in the effluent discharged from Outfall 020A (Marler 2022) and in Suncor refinery groundwater (Killough 2020) indicates that historic AFFF releases at the refinery continue to impact groundwater.

PFAS have been found extensively in groundwater at the Suncor refinery (Killough 2020; CDPHE 2021). Groundwater remediation systems extract petroleum-contaminated groundwater, which is conveyed to the refinery groundwater treatment plant where the groundwater is treated to remove petroleum contaminants. Water from the groundwater treatment plant is then routed to Outfall 020A, where it is discharged to Sand Creek (CDPHE 2021). Monthly PFAS sampling data provided by Suncor to CDPHE (Marler 2022) indicate total detected PFAS concentrations in the discharge to Sand Creek from Outfall 020A throughout 2021 have ranged from 231 to 1,378 nanograms per liter (ng/L), with an average of 537 ng/L. Suncor installed a temporary effluent treatment system for Outfall 020A intended to address PFAS contamination in late 2021. However, even after this installation, the total detected PFAS concentrations were 281 and 290 ng/L in November and December 2021.

1.2 SOUTH PLATTE RIVER WATER USE AND BACKGROUND PFAS

The South Platte River Basin of Colorado is home to 80% of Colorado's population, economy, and tax base (HDR/West Sage 2015). The population within the South Platte Basin is expected to double from approximately 3.5 million people to 6 million people by 2050, and supplies of clean drinking water will be critical to meeting the expected demands of a growing population. The South Platte River Basin includes nine of Colorado's top ten agricultural producing counties and has the highest agricultural production among Colorado's major river basins. Municipal water needs within the Basin have been supplemented by water transfers from the agricultural sector and are anticipated to continue (HDR/West Sage 2015).

As shown in Figure 1, the South Platte River downstream from the Suncor refinery is used as a source of municipal drinking water and for irrigation. There are also multiple municipal wellfields drawing water from the South Platte alluvial aquifer that are adjacent or close to the South Platte River (DWR 2022b) and that supply water to municipalities, including the cities of Aurora, Brighton, and Thornton; the South Adams County Water and Sanitation District (SACWSD); and other smaller municipal water providers. Between the refinery and the Fort Lupton area, five major irrigation diversions take water from the South Platte River (DWR 2022a).

PFAS compounds are associated with wastewater treatment effluent and urban stormwater runoff (ITRC 2020a). As the South Platte River passes through the Metro Denver Area, it is likely that PFAS from these and other industrial sources enters the South Platte River. During the 2021

quarterly sampling events evaluated for this analysis, the average total detected PFAS concentration immediately upstream of the Sand Creek confluence, at Suncor sampling location SPRSW-50, was 76 ng/L. PFAS is discharged into Sand Creek via Suncor Outfall 020A, and subsequently flows into the South Platte River contributing to the cumulative impacts of PFAS loading to the South Platte River as it flows through the North Denver Metro Area.

2 PFAS OVERVIEW

According to the US EPA (2022), PFAS are a class of more than 12,000 human-made synthetic compounds manufactured since the 1940s (NGWA 2021). The inventory of known PFAS compounds is growing and increasingly diverse (EPA 2022). PFAS compounds, which do not occur naturally, are formed from the carbon-fluorine bond—among the strongest molecular bonds known—and PFAS chemistry is very complex (NGWA 2021). In addition to a wide variety of consumer and industrial products (ITRC 2020b), PFAS compounds have been used extensively in AFFF since the 1960s (ITRC 2020c). Due to the length and complexity of their names, individual PFAS compounds are typically referred to by their acronyms. For example, two of the most highly studied PFAS compounds, perfluorooctane sulfonic acid and perfluorooctanoic acid, are typically referred to as PFOS and PFOA, respectively.

In basic terms, perfluoroalkyl substances consist of a carbon chain that is fully fluorinated and requires extreme temperatures or chemical conditions that are not typically found in the environment to be broken down (ITRC 2020b). Polyfluoroalkyl substances consist of a carbon chain that is only partially fluorinated. When carbon atoms in the polyfluoroalkyl chain bond to non-fluorine atoms, such as hydrogen, these bonds result in “weak links” at which the carbon chains can be broken into shorter pieces by oxidation or other mechanisms. This breakage can be caused by either biotic or abiotic oxidation or through hydrolysis. However, the overall mass of PFAS in the environment will remain the same as polyfluoroalkyl substances degrade (NGWA 2021), just as breaking a 5-pound brick into smaller pieces still results in 5 pounds of brick fragments. Some polyfluoroalkyl substances, such as the compound perfluorooctanesulfonamide (PFOSA) can be considered as “precursor compounds” because of their ability to be transformed under environmental conditions into perfluoroalkyl substances such as PFOS (Martin et al. 2010). Of the thousands of PFAS compounds known to exist, commercial laboratories are generally only capable of detecting fewer than 100 PFAS compounds. Due to the likely presence of a large number of undetected PFAS compounds in the effluent from Outfall 020A , Sand Creek, the South Platte River, and other waters for which PFAS concentration data are described in this report (Wang et al. 2017, Martin et al.), the term “total detected PFAS” will be used.

Historically, AFFF manufacturers created a wide variety of PFAS compounds, including polyfluoroalkyl substances (Mejia-Avendaño et al. 2016). Polyfluoroalkyl compounds present in the AFFF previously used at the Suncor refinery may not be detected by commercially available laboratory techniques or may not be on the list of compounds analyzed. For example, precursor compounds such as perfluorooctane sulfonamide quaternary ammonium salt (PFOSAmS) was found to transform via biotransformation to PFOS (Mejia-Avendaño et al. 2016). This and many other precursor compounds are not included in the Colorado Water Quality Control Commission Narrative Policy 20-1 (WQCC 2020). Using current analytical methods to characterize PFAS mass

released from the refinery is unlikely to account for the full suite of PFAS compounds present that can be oxidized under environmental conditions into perfluoroalkyl substances.

Following discharge to surface water, it can be assumed that, as polyfluoroalkyl precursor compounds travel downstream, oxidation will occur and these compounds will be transformed into PFOS, PFOA, and other compounds with known toxic properties. It should be noted that South Platte River water is oxidized through the use of engineered aeration structures in the South Platte River, such as those at 74th Avenue, 88th Avenue, the U.S. Geological Survey (USGS) Henderson streamflow gauge, and further downstream (Google Maps 2022). The presence of precursor compounds that are not detected by standard analytical methods provides a reservoir of unknown mass that will eventually transform to detectable compounds known to be toxic (Lesmeister et al. 2021).

PFAS can bioaccumulate in tissue and have a structural resemblance to fatty acids. PFAS have a high affinity to bind to proteins, thus becoming incorporated into bodily tissues, as well as blood serum. Longer-chain PFAS compounds tend to have longer elimination half-lives and thus remain in the body for longer periods. The health effects of only a portion of the thousands of known PFAS compounds have been extensively studied and PFAS have been linked to various health effects, including thyroid function, high cholesterol, ulcerative colitis, testicular cancer, kidney cancer, pregnancy-induced hypertension (preeclampsia), elevated liver enzymes, and high uric acid (Michigan PFAS Science Advisory Panel 2018).

2.1 PFAS ENVIRONMENTAL FATE AND TRANSPORT

The complexity of PFAS chemistry results in a variety of characteristics governing PFAS fate and transport in the environment. However, the following generalizations can be made:

- PFAS compounds are not considered biodegradable with the exception of polyfluoroalkyl precursor compounds transforming to perfluorinated compounds (NGWA 2021; ITRC 2020a).
- PFAS transport in groundwater can be retarded by organic materials and clays with longer-chain compounds being preferentially sorbed over short-chain compounds (NGWA 2021; ITRC 2020a).
- Due to the low volatility and low sorption coefficients of many PFAS compounds, PFAS in surface water tends to remain in solution and can contaminate groundwater (ITRC 2020a).
- PFAS compounds are generally highly soluble in water (NGWA 2021).
- In groundwater, PFAS are known to travel long distances; advection (flow-related transport) is the driver of PFAS transport (ITRC 2020a, c, NGWA 2021; Tokranov 2021).

- PFAS compounds can travel more than 100 miles in surface water from their source (Valsecchi 2015).

PFAS compounds have similar groundwater mobility and transport characteristics to chlorinated solvents (NGWA 2021) and can be expected to produce larger groundwater contaminant plumes than most contaminants (ITRC 2020a). Tokranov (2021) documented the presence of PFOS moving through a sand and gravel aquifer approximately 2.5 miles hydraulically downgradient from a fire-training area source. In Colorado, PFAS compounds originating at fire training areas on the north end of Peterson Air Force Base have traveled 5 to 10 miles through groundwater to municipal and domestic supply wells located along Fountain Creek (Denver Post 2019).

The movement of water between surface water and groundwater has been well characterized; the transfer of surface water to groundwater, and vice-versa, are well known and are generally controlled by the streambed permeability (Freeze and Cherry 1979). The South Platte River streambed generally consists of highly permeable medium to coarse sands (Poceta et al. 2006, Freeze and Cherry 1979). If a water supply well is adjacent to a stream that is in hydraulic communication with the aquifer (has a permeable streambed) the stream will act as a source of water to the well; over time and with steady pumping all of the water entering the well will have come from the stream (Freeze and Cherry 1979). Wells are frequently installed adjacent to the South Platte River as "riverbank filtration wells" (to minimize suspended sediment content) as a point of diversion from the river. A number of water users with decreed South Platte River water rights, such as the Cities of Thornton and Aurora (downstream from the refinery) use riverbank filtration wells as their points of diversion to withdraw water from the South Platte River (Acker 2022, Scaggiari 2022). Due to the high mobility of most PFAS compounds and the sandy nature and low organic carbon content of the South Platte River bed (Poceta 2006), surface water contaminated with PFAS can be expected to enter the alluvial aquifer and thus be captured by water supply wells with only minimal, if any, decrease in PFAS concentration (ITRC 2020a, NGWA 2021).

2.2 PFAS UPTAKE IN CROPS

When grain and vegetable food crops are grown with irrigation water contaminated with PFAS, they can accumulate the PFAS (Liu et al. 2019; Brown et al. 2015). In order of increasing bioaccumulation, PFAS tends to accumulate in grains, root vegetables, flower vegetables, fruit vegetables, shoot vegetables, and most in leafy vegetables (Liu et al. 2019). Lesmeister et al. (2021) and Scher et al. (2018) found that PFAS bioaccumulation tends to increase with decreasing carbon chain length. After crops were irrigated with PFAS-contaminated water at Venetucci Farms in the Fountain Valley of Colorado, PFAS compounds were detected in every food crop tested including spinach, garlic, and carrots, and also in eggs and meat-producing livestock raised at the property (Buzzfeed News 2019).

Blaine et al. (2014) found that shorter-chain PFAS compounds accumulated in strawberries and lettuce irrigated with contaminated water, with higher PFAS crop concentrations corresponding to higher PFAS concentrations in the water used for irrigation. Shorter-chain PFAS compounds such as perfluorobutanoic acid (PFBA) and perfluoropentanoic acid (PFPeA) tended to accumulate more than longer-chain PFAS compounds in lettuce shoots and strawberry fruits. Perfluorocarboxylic acids, such as PFOA and PFHxA, bioaccumulated to a greater degree than perfluorosulfonic acids such as PFOS and PFHxS (Blaine et al. 2014).

3 REFINERY CONTRIBUTION TO PFAS IN SAND CREEK AND THE SOUTH PLATTE RIVER

3.1 ANALYTICAL APPROACH

A mass-balance approach was used for the analysis provided here. A calculation brief and all supporting data used in the analysis are provided in Appendix A. The data used were the discharge flow and total detected PFAS concentrations from Suncor refinery Outfall 020A and stream flows and total detected PFAS concentrations in Sand Creek downstream from Outfall 020A (surface water sampling station SCSW-21) and the South Platte River immediately above Clear Creek (surface water sampling station SPRSW-04). The PFAS concentration and flow data were then used to calculate the total amount of detected PFAS passing each of these locations over a given time (PFAS flux) in nanograms per minute. Once a total detected PFAS flux for each of the three locations were determined, the total detected PFAS flux being discharged at Outfall 020A was divided by the PFAS flux from Sand Creek and the South Platte River to determine the percentage of PFAS attributable to Outfall 020A at surface water sampling stations SCSW-21 and SPRSW-04.

During 2021, the South Platte River was sampled during four quarterly surface water sampling events, in January, April, July, and October. Outfall 020A and Sand Creek were sampled monthly during 2021 (Killough 2021b-f). The PFAS flux was determined for each of the quarterly monitoring events for Outfall 020A, the Sand Creek surface water sampling station near the mouth of Sand Creek (SCSW-21), and the South Platte River surface water sampling station immediately upstream of Clear Creek (SPRSW-04). During March of 2021, Outfall 020A had the highest PFAS concentration observed in 2021. The data from the March 2021 sampling event were used to estimate South Platte PFAS attributable to the Suncor refinery when higher than normal levels of PFAS are discharged from Outfall 020A.

All PFAS concentration data were obtained from Suncor data provided to CDPHE. Outfall 020A PFAS concentration data (Marler 2022; Table 1) and flow data (Marler 2021) were obtained from the CDPHE Suncor Water Quality Permits webpage (CDPHE 2022). These data were used to determine the PFAS contribution to Sand Creek and subsequently to the South Platte River. Surface water sampling locations were obtained from a map and table provided to CDPHE by Suncor in 2021 (Killough 2021a) and are shown in Figure 2. PFAS concentrations in Sand Creek and the South Platte River were obtained from Suncor surface water sampling events from January, March, April, July, and October 2021 (Killough 2021b, 2021c, 2021d, 2021e, 2021f). The total detected PFAS concentration was obtained for each sampling location by adding all PFAS compounds detected at SCSW-21 and SPRSW-04 during Suncor surface water sampling events (Table 2). Sand Creek flow measurements were obtained from the Colorado Division of Water Resources Decision Support System website for the stream gauge for Sand Creek at Mouth near

Commerce City (DWR 2022a). South Platte River flow was obtained by adding flow measurements from the USGS South Platte River at 64th Avenue streamflow gauge (USGS 2022) with the Metro Water Reclamation District Hite Water Treatment Plant's North and South outfalls (Dopler 2022), the discharge for Sand Creek at Mouth near Commerce City stream gauge (DWR 2022a), and the discharge from the South Reservoir Complex into the South Platte River (DWR 2022b).

3.2 ASSUMPTIONS AND RATIONALE

Data from 2021 were used as these data are expected to provide the closest representation of recent Suncor refinery conditions at the time of this evaluation.

Two data elements used in the analysis were not found in the CDPHE Suncor permit document repository (CDPHE 2022) or were otherwise unavailable at the time of the analysis:

- Outfall 020A daily flow data from 2021 and
- South Platte River surface water sampling station SPRSW-04 data from March 25, 2021.

The following assumptions were made to overcome the lack of these data:

- Outfall 020A daily flow data from 2018 through 2020 (Marler 2021) were averaged by month, and then the average monthly flows were used as the flows for each of the periods evaluated during 2021.
- The March 2021 South Platte River total detected PFAS concentration was obtained by averaging the 2021 sampling data from the January, April, July, and October sampling events.

From 2018 through 2020, the three years for which Outfall 020A flow data were available, the average daily flow for all three years was 1,279 gallons per minute (gpm) and the average monthly flow was 1,283 gpm. The average monthly flow rates assumed for January, March, April, July, and October 2021 were 1,215, 1,317, 1,258, 1,283, and 1,305 gpm, respectively. These values are all within 10% of the average flow at Outfall 020A and are presumed to represent a reasonable estimate of the flows during the respective 2021 sampling events.

During 2021 the quarterly total detected PFAS concentrations at surface water sampling station SPRSW-04 during the January, April, July, and October quarterly sampling events were 61, 84, 83, and 91 ng/L, respectively. The resulting average value of 80 ng/L was used in the estimation of PFAS attributable to the Suncor refinery. The average value of 80 ng/L is also consistent with the PFAS concentration during April 2020 when CDPHE sampled the South Platte River above Clear Creek and detected 82 ng/L total detected PFAS (CDPHE 2020).

4 RESULTS

Results are summarized in Table 3 and presented in Figure 2. The analysis indicates that PFAS discharged at the Suncor refinery via Outfall 020A comprise 20% to 36% of the total detected PFAS in Sand Creek at the confluence with the South Platte River. The refinery's total detected PFAS contribution to the South Platte River was 10.5%, 6.3%, 2.9%, and 6.5% during each of the quarterly surface water monitoring events in January, April, July, and October, respectively (Table 3), resulting in an average PFAS flux of 6.6%.

Outfall 020A total detected PFAS concentrations fluctuated significantly during 2021, between 281 and 1,378 ng/L, with an average concentration of 537 ng/L. Results for an additional data point from March 2021, when the PFAS concentration at Outfall 020A was significantly higher than during other 2021 sampling events are also provided as a conservative calculation for PFAS attributable to the Suncor refinery. The extrapolated analysis indicates that during the March 2021 surface water sampling event, approximately 18% of South Platte River PFAS and 47% of the PFAS in Sand Creek (for which March 2021 surface water total detected PFAS data were available) were attributable to the Suncor refinery.

5 POTENTIAL SUNCOR REFINERY PFAS IMPACTS TO DOWNSTREAM WATER USERS

The ability of PFAS compounds to travel significant distances in surface water (Valsecchi 2015) and their high mobility in groundwater (NGWA 2021; ITRC 2020a) make it likely that a portion of the water treatment burden borne by downstream water users is attributable to Suncor refinery PFAS discharges from Outfall 020A. The South Platte main stem is generally underlain by a highly productive aquifer consisting of medium to coarse sand, with beds containing higher amounts of gravel, with locally interbedded silts and clays (Smith et al. 1964, Horn et al. 2005; Poceta et al. 2006). The absence of significant quantities of organic carbon in the South Platte riverbed and alluvial aquifer provides conditions highly conducive to PFAS transport in groundwater (NGWA 2021; ITRC 2020a).

Moving downstream along the South Platte River from the Sand Creek confluence, public water systems with riverbank wellfields include the City of Thornton, the SACWSD, the cities of Brighton and Aurora, the Todd Creek Village Metro District, and the Consolidated Mutual Water Company (Figure 1). Representatives for Aurora, Brighton, Thornton, and the SACWSD were contacted and interviewed.

The City of Thornton obtains drinking water from the South Platte River via the Burlington Ditch and a wellfield that includes approximately 26 wells along the South Platte River downstream from the Suncor refinery (DWR 2022b). The Burlington Ditch water is diverted from upstream of the refinery and flows adjacent to the facility in the ditch. PFAS concerns associated with the Burlington Ditch at the refinery are applicable to Thornton's drinking water. Thornton has various reservoirs and diversions downstream of the confluence with Sand Creek that are used to store water that is either comingled with Thornton's potable water supply or released as part of stream water augmentation for downstream users (Acker 2022). The CDPHE 2020 sampling program indicates Thornton's entry point water contains 37 ng/L total detected PFAS and 9 ng/L PFOS+PFOA (CDPHE 2020).

The SACWSD has approximately 39 wells throughout southeastern Adams County. Most of these wells draw water from the shallow alluvial aquifer; however, the majority of SACWSD alluvial wells are along US Highway 85 and located approximately one mile from the South Platte River (DWR (2022c)). Wells reported to have extremely high PFAS concentrations (Denver Post 2019) draw water from a shallow aquifer unit referred to as the "Quebec – I-70 Paleochannel" (Scott 2022) that extends north from the vicinity of I-70 and Quebec Street until joining the South Platte alluvial aquifer in the vicinity of 69th Avenue (Robson (1996). This aquifer unit is hydraulically upgradient (upstream) of the South Platte alluvial aquifer and is very unlikely to be impacted by Suncor PFAS discharged from Outfall 020A. SACWSD has at least one significant well adjacent to the South Platte River (Figure 2). SACWSD South Platte Alluvial Aquifer Collector Well HCW-119 is

a specialized type of high production well capable of producing up to 12,000 gpm from lateral pipes extending into the alluvial sediments underneath the South Platte River (DWR 2022c).

The City of Brighton is located approximately 12 miles downstream from the Suncor refinery and most of Brighton's active wellfield is about one-half mile east of the South Platte River. Brighton's wells are generally listed as being "not under the influence of surface water" (Mingo 2022); however, the significant pumping from Brighton's wells over time could capture PFAS-laden water flowing in the South Platte River. City of Brighton wells #11, #12, #13, and #17 contained total detected PFAS concentrations of 97.1, 111.9, 113.9, and 93 ng/L total detected PFAS, respectively, in April 2020 (CDPHE 2020). These concentrations are greater than April 2020 South Platte River total detected PFAS concentration at Henderson of 75 ng/L. The source of the PFAS in Brighton's wells cannot be definitively determined from the available data; however, given the ability of PFAS compounds to travel significant distances in groundwater, a substantial portion of the PFAS being pumped from Brighton's wells may be derived from the South Platte River.

The City of Aurora has a wellfield consisting of 44 wells on the western side of the South Platte River, approximately 18 miles downstream of the Suncor refinery, between Fort Lupton and Wattenberg. Many of the wells are located adjacent to or within 1 mile of the South Platte River, as shown by DWR (2022b), which indicates that 27 City of Aurora wells are located immediately adjacent to the South Platte River (Figure 1). The wells are considered "riverbank filtration wells" that divert South Platte River water from the aquifer adjacent to the river, rather than diverting raw water from a ditch, to minimize suspended sediment content and facilitate potable water treatment. The water is then treated and sent to Aurora's Prairie Waters Project where it is recharged to additional aquifer filtration before distribution (Scaggiari 2022). The CDPHE 2020 sampling program indicates Aurora's entry point water contains 21.4 ng/L total detected PFAS and 5.3 ng/L PFOS+PFOA (CDPHE 2020).

There are also three municipal water supply wells registered to the Todd Creek Village Metro District and three municipal wells registered to the Consolidated Mutual Water Company along the South Platte River downstream from the Suncor refinery (DWR 2022b). Due to the proximity of the wells to the South Platte River, it is highly likely that these wells draw water from the South Platte River. The CDPHE 2020 sampling program indicates Todd Creek Village Metro District entry point water contained 26.9 ng/L total detected PFAS and 9.5 ng/L PFOS+PFOA and the Consolidated Mutual Water Company contained 8.3 ng/L total detected PFAS and 2.6 ng/L PFOS+PFOA (CDPHE 2020).

Due to the ability of PFAS compounds to travel great distances in surface water, PFAS discharged from Suncor Outfall 020A is likely to travel long distances downstream. The sandy and gravelly nature of the South Platte River bed (Poceta 2006), combined with the relative absence of organic carbon in the river bed and underlying aquifer, provides conditions highly conducive to PFAS

transport through the riverbed and aquifer materials with minimal, if any, filtration (NGWA 2021; ITRC 2020a). Thus, South Platte River water bearing PFAS compounds is likely to be drawn from the river, through the sandy and gravelly river bed and aquifer, and into municipal water supply wells installed along the South Platte River such as those in the wellfields described above. This intake of PFAS compounds into the municipal water supplies adds to the treatment burden of downstream water providers.

The South Platte River also supplies irrigation water to thousands of acres of farmland downstream from the confluence with Sand Creek, providing the foundation of Northeastern Colorado's agricultural economy. Moving downstream along the South Platte River from the Sand Creek confluence, major irrigation diversions—including the Fulton, Brantner, Brighton, Lupton Bottom, and Platteville Ditches—draw water from the South Platte River for irrigation (Figure 1). As described above, PFAS from irrigation water can accumulate in food crops. Additionally, due to the nature of PFAS bioaccumulation in the food chain, as described above, it is possible that PFAS may accumulate in any meat raised on feed crops grown with irrigation water diverted from the South Platte River. The PFAS discharged from the Suncor refinery contribute to PFAS loading to water used in the South Platte Basin agricultural sector and thus adds to any threat from PFAS to the regional food supply.

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FIGURES

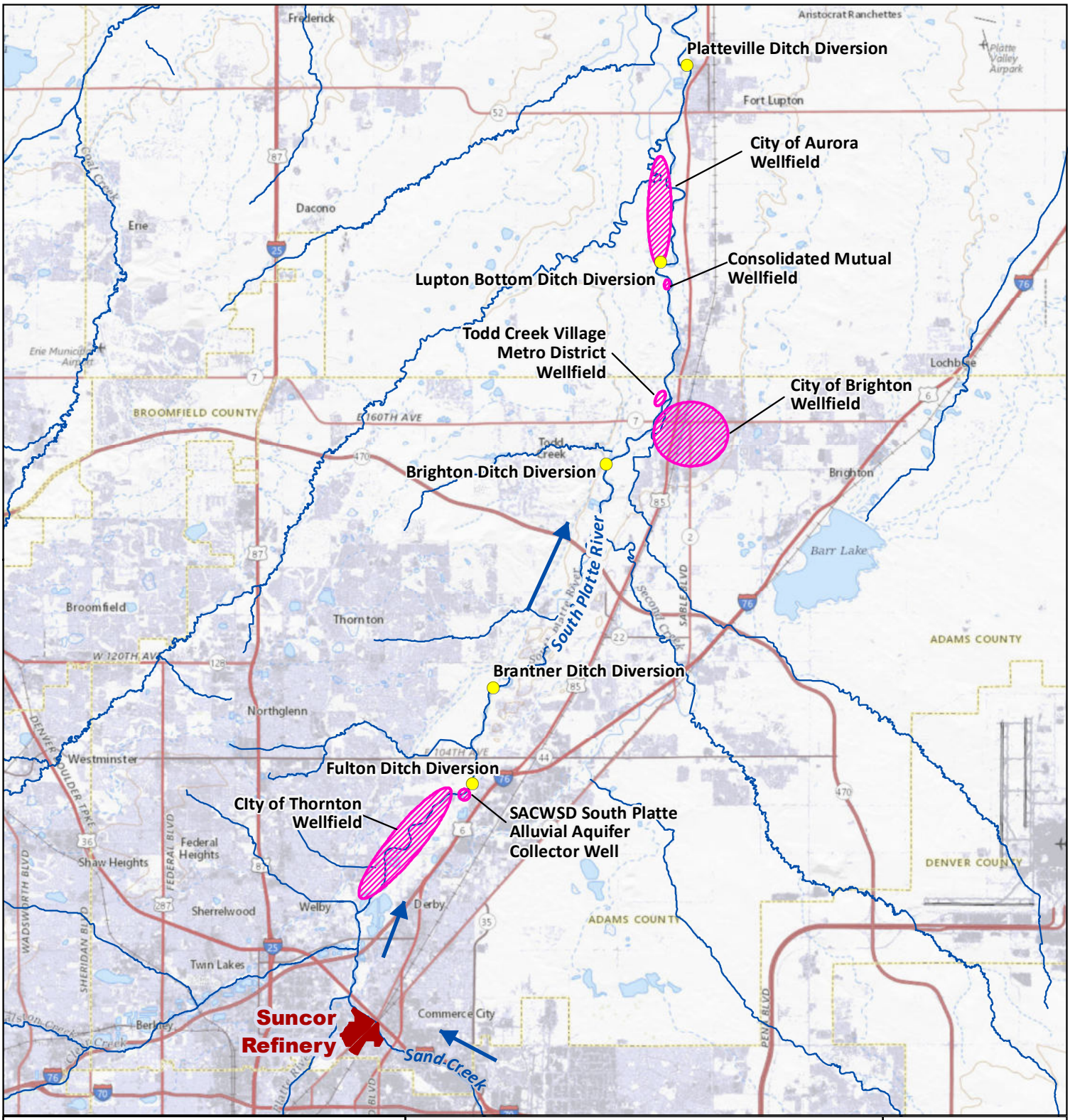

Figure 1

Downstream Water User Alluvial Aquifer Wellfields and Irrigation Canal Diversions

Surface Water PFAS Evaluation, Suncor Energy USA Inc., Commerce City Refinery, Commerce City, Colorado

Date: March 30, 2022
Datum/Projection: NAD83/Colorado State Plane North, ft

Sources: DWR Gage GIS Dataset; CDOT; EPA NPDES Permit Database; Adams County Assesor GIS Parcel dataset; USGS National Map

Map Legend

- Suncor Refinery
- Municipal Wellfield
- Major Ditch/Canal Diversion from South Platte River
- Streamflow Direction

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WESTWATER HYDROLOGY

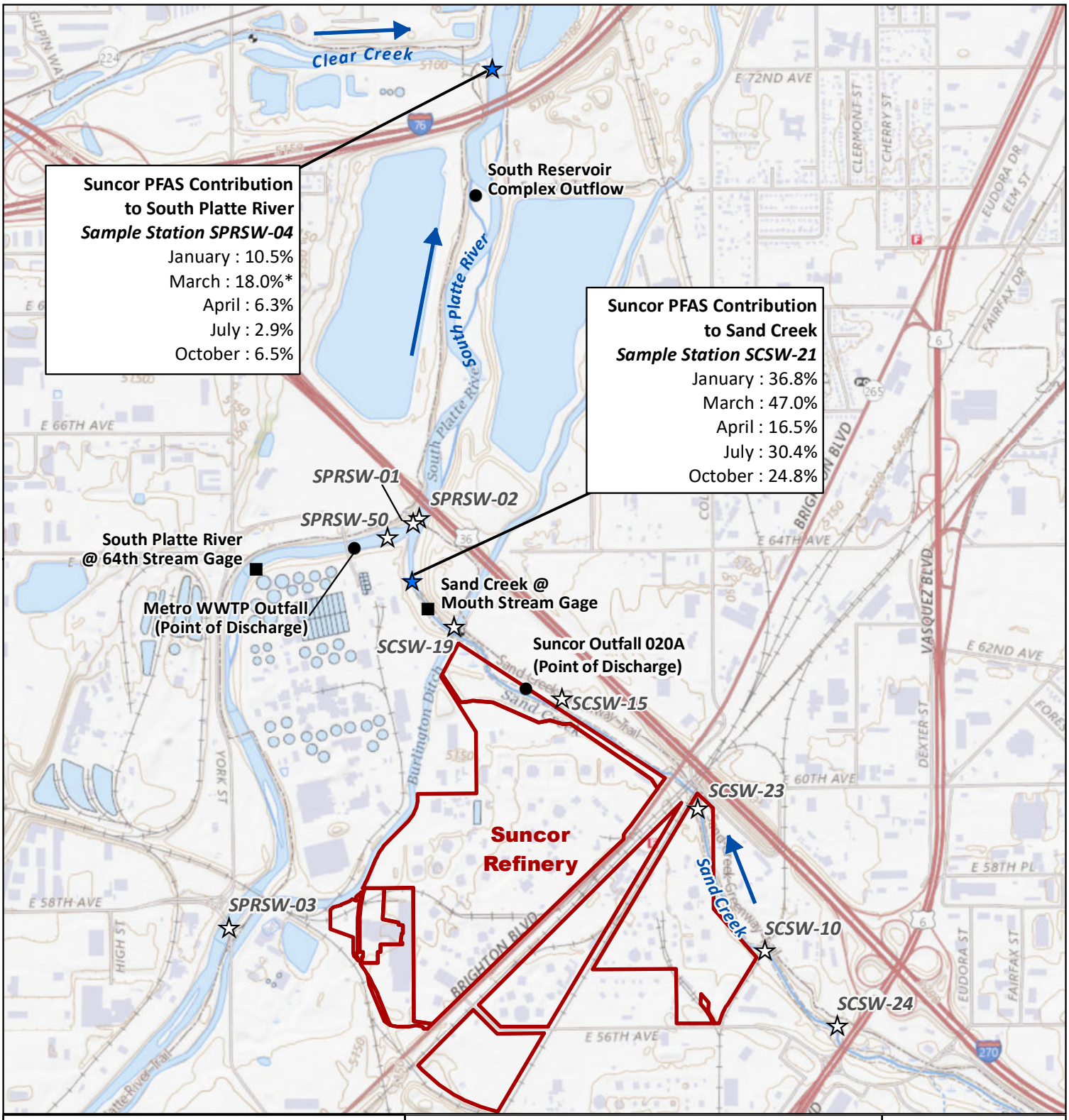

Figure 2

2021 Suncor Surface Water PFAS Contribution and Sample Locations

Surface Water PFAS Evaluation, Suncor Energy USA Inc., Commerce City Refinery, Commerce City, Colorado

Date: March 30, 2022
Datum/Projection: NAD83/Colorado State Plane North, ft

Sources: DWR Gage GIS Dataset; CDOT; EPA NPDES Permit Database; Adams County Assesor GIS Parcel dataset; USGS National Map

Map Legend

- Suncor Refinery
- Surface Water Sampling Network Location (not evaluated)
- Surface Water Sampling Location (evaluated)
- Streamflow Gage
- Outfall Location
- Streamflow Direction

*Estimated Value

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WESTWATER HYDROLOGY

TABLES

Table 1.
Suncor Outfall 020A 2021 Total Detected PFAS Concentration Data
Surface Water PFAS Evaluation, Suncor Energy USA Inc., Commerce City Refinery, Commerce City, Colorado

		Sampling Event											
Analyte (ng/L)	**Acronym**	**1/20/2021**	**2/26/2021**	**3/25/2021**	**4/21/2021**	**5/18/2021**	**6/22/2021**	**7/20/2021**	**8/24/2021**	**9/23/2021**	**10/19/2021**	**11/17/2021**	**12/14/2021**
Perfluorobutanoic acid	PFBA	ND	13	21	33	22	13	14	19	27	25	28	18
Perfluoropentanoic acid	PFPeA	26	38	26	51	52	35	40	34	29	32	25	21
Perfluorohexanoic acid	PFHxA	44	43	42	75	78	47	44	51	45	56	37	36
Perfluoroheptanoic acid	PFHpA	8.9	8.5	10	16	18	12	11	13	10	12	8.3	7.8
Perfluorooctanoic acid	PFOA	15	11	21	12	19	14	12	13	15	16	8.6	9.1
Perfluorononanoic acid	PFNA	15	10	18	3.5	12	7.9	6.5	6.5	22	8.3	6.4	4.9
Perfluorodecanoic acid	PFDA	ND	0.53	4.3	0.61	0.8	0.54	ND	0.57	2.6	ND	ND	ND
Perfluoroundecanoic acid	PFUnA	ND	ND	3.7	ND	ND	ND	ND	1.3	ND	ND	ND	ND
Perfluorododecanoic acid	PFDoA	ND	ND	0.79	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid	PFTtriA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid	PFTeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid	PFBS	31	37	27	43	41	33	33	36	34	39	21	20
Perfluoropentanesulfonic acid	PFPeS	21	35	16	33	33	23	21	29	27	20	15	18
Perfluorohexanesulfonic acid	PFHxS	120	110	140	130	180	130	110	140	120	120	80	100
Perfluoroheptanesulfonic acid	PFHpS	5.3	3	11	2.5	4.7	3.5	1.2	3.4	7.6	2.2	1.4	1.8
Perfluorooctanesulfonic acid	PFOS	190	140	990	99	140	100	52	72	490	65	50	53
Perfluorononanesulfonic acid	PFNS	ND	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid	PFDS	ND	ND	0.75	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide	FOSA	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid	NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotelomer sulphonic acid 4:2	4:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotelomer sulphonic acid 6:2	6:2 FTS	ND	4.9	22	16	7.1	ND	2.4	6.8	5.5	3.6	ND	ND
Fluorotelomer sulphonic acid 8:2	8:2 FTS	4.4	1.9	22	3	1.3	ND	ND	1.5	9.2	ND	ND	ND
Hexafluoropropylene oxide dimer acid	GenX	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Detected PFAS (ng/L)		481	456	1378	518	609	419	347	427	844	399	281	290

Notes:
ng/L - nanograms per liter
Source: Marler 2022

Table 2.

Surface Water Sampling Results Summary

Sand Creek Sample Station SCSW-21 and South Platte River above Clear Creek Sample Station SPRSW-04

Surface Water PFAS Evaluation, Suncor Energy USA Inc., Commerce City Refinery, Commerce City, Colorado

Sample Location		SCSW-21	SPRSW-04	SCSW-21	SCSW-21	SPRSW-04	SCSW-21	SPRSW-04	SCSW-21	SPRSW-04
Sample Date	Acronym	1/20/2021	1/20/2021	3/25/2021	4/21/2021	4/21/2021	7/20/2021	7/20/2021	10/19/2021	10/19/2021
Analyte (ng/L)										
Fluorotelomer sulfonic acid 4:2	4:2 FTS	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
Fluorotelomer sulphonic acid 6:2	6:2 FTS	4.8 J+	< 4.6	< 4.6	< 4.7	2.8 J	3.4 J	< 4.7	2.4 J	< 4.6
Fluorotelomer sulphonic acid 8:2	8:2 FTS	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
N-ethylperfluorooctane sulfonamidoacetic acid	NEtFOSAA	< 4.8	< 4.6	< 4.6	< 4.7	< 4.3	< 4.7	< 4.7	< 4.6	< 4.6
N-methylperfluorooctane sulfonamidoacetic acid	NMeFOSAA	< 4.8	< 4.6	< 4.6	< 4.7	< 4.3	< 4.7	< 4.7	< 4.6	< 4.6
Perfluorobutane sulfonic acid	PFBS	29	6.1	10	14	6.8	33	12	34	14 J
Perfluorobutanoic acid	PFBA	20	5.3	14	13	7.9	24	9.4	29	7.6
Perfluorodecane sulfonic acid	PFDS	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
Perfluorodecanoic acid	PFDA	0.63 J	0.85 J	1.2 J	1.7 J	1.2 J	1.4 J	1.3 J	0.86 J	1 J
Perfluorododecanoic acid	PFDoA	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
Perfluoroheptane sulfonic acid	PFHpS	1.9	0.2 J	0.6 J	0.43 J	< 1.7	2.3	< 1.9	1.8	< 1.8
Perfluoroheptanoic acid	PFHpA	11	2.6	6.2	6.3	4.1	14	4	13	2.8
Perfluorohexane sulfonic acid	PFHxS	91	7.7	31	36	10	110	7.5	110	9.3
Perfluorohexanoic acid	PFHxA	49	13	22	21	18	52	15	60	16
Perfluorononane sulfonic acid	PFNS	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
Perfluorononanoic acid	PFNA	13	1.4 J	6.1	6.1	1.8	11	1.3 J	11	1.4 J
Perfluorooctane sulfonic acid	PFOS	48	6.3	27	26	9.8	57	7.7	51	8.1
Perfluorooctanesulfonamide	PFOSA	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
Perfluorooctanoic acid	PFOA	24	6.3	13	14	11	28	9.9	25	8.4
Perfluoropentane sulfonic acid	PFPeS	14	1.2 J	3	4.9	1.9 J	18	1.3 J	22	1.8
Perfluoropentanoic acid	PFPeA	40	9.9	14	16	11	44	14	47	21
Perfluorotetradecanoic acid	PFTeA	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
Perfluorotridecanoic acid	PFTriA	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9	< 1.9	< 1.8	< 1.8
Perfluoroundecanoic acid	PFUnA	< 1.9	< 1.8	< 1.8	< 1.9	< 1.7	< 1.9 U	< 1.9 U	< 1.8	< 1.8
Total Detected PFAS (ng/L)		**346**	**61**	**148**	**159**	**84**	**398**	**83**	**407**	**91**

Notes:
ng/L - nanograms per liter
< - Less than, non detect
J - Compound detected at less that quantitation limit
Source: Killough 2021b-f

Table 3.
Suncor Total Detected PFAS Contribution to Sand Creek and South Platte River
Surface Water PFAS Evaluation, Suncor Energy USA Inc., Commerce City Refinery, Commerce City, Colorado

	Sampling Event Evaluated				
Parameter	**Jan. 2021**	**Mar. 2021**	**Apr. 2021**	**July 2021**	**Oct. 2021**
Outfall 020A Total PFAS Concetration (ng/L)	481	1,378	518	347	399
Sand Creek at Mouth Total PFAS (ng/L)	346	148	159	398	407
South Platte River Above Clear Creek Creek Total PFAS (ng/L)	61	80*	84	83	91
Outfall 020A PFAS Flow (gpm)	1,215	1,317	1,258	1,283	1,305
Outfall 020A PFAS Flux (ng/min)	2,212,802	6,876,968	2,468,264	1,687,770	1,973,571
Sand Creek PFAS Flux (ng/min)	6,011,403	14,617,349	14,921,699	5,548,322	7,966,028
South Platte River Flow at 64th Ave. (cfs)	6.6	7.3	9.5	157.0	11.4
Combined Metro WWTP North and South Outfalls (cfs)	187.2	215.8	208.9	198.5	172.1
Sand Creek at Mouth Flow (cfs)	10.2	58.0	55.0	8.2	11.5
South Platte Reservoir Complex (cfs)	0.3	0.5	1.1	42.4	0.4
Total South Platte River Flow Above Clear Creek Creek (cfs)	204.3	281.6	274.5	406.1	195.4
Total South Platte River Flow Above Clear Creek Creek (gpm)	91,727	126,429	123,229	182,324	87,738
South Plate River PFAS Flux at Above Clear Creek Creek at SPRSW-04 (ng/min)	21,154,191	38,231,577	38,997,720	57,630,161	30,392,958
Percent PFAS in Sand Creek at Mouth due to Suncor	**36.8%**	**47.0%**	**16.5%**	**30.4%**	**24.8%**
Percent PFAS in South Platte River due to Suncor	**10.5%**	**18.0%**	**6.3%**	**2.9%**	**6.5%**

Notes:

ng/L - nanograms per liter

gpm - gallons per minute

cfs - cubic feet per second

ng/min - nanograms per minute

Sand Creek total detected PFAS concentration from surface water sample location SCSW-21

South Plate River total detected PFAS concentration from surface water sample location SPRSW-04

***March 2021 SPRSW-04 PFAS data unavailable, South Platte River PFAS concentration estimated using average PFAS concentration from SPRSW-04 January, April, July, and October 2021 data.**

Outfall 020A 2021 flows not available, used monthly average discharge from 2018 - 2020

APPENDIX A

CALCULATION BRIEF AND SUPPORTING DATA

Appendix A Contents

Calculation Brief

1) Problem Statement: Determine Suncor Outfall 020A PFAS contribution to Sand Creek and South Platte River

Approach:

Calculate total detected PFAS flux at Outfall 020A, Sand Creek at Mouth, and South Platte River downstream of Sand Creek confluence for sampling event dates

Determine percentage of Suncor's PFAS flux from Outfall 020A in Sand Creek at Mouth, and South Platte River downstream of Sand Creek confluence

Procedure:

Outfall 020A flow data for 2021 were not available, using daily flow data from 2018 - 2020, calculated monthly averages for each of the 3 years and averaged monthly averages

Used monthly average flows and respective monthly PFAS data from Outfall 020A to calculate PFAS flux for Outfall 020A (Outfall 020A PFAS Flux (ng/min))

Used Sand Creek at Mouth and PFAS sample data from SCSW-21 to calculate PFAS flux in Sand Creek (Sand Creek PFAS Flux (ng/min))

Used sum of South Platte River at 64th, Sand Creek at Mouth, and Metro WWTP flows (in cfs) to calculate South Platte stream flow above Clear Creek, converted to gpm (Total SP Q Above Clear Creek Creek (gpm))

Used sample data from SPSW-04 with South Platte flow to calculate PFAS flux in South Platte River (SP PFAS Flux at SPRSW-04 (ng/min))

Determined Outfall 020A proportion in Sand Creek by Dividing Outfall 020A PFAS flux by Sand Creek PFAS flux, converted to percentage (Percent PFAS in Sand Creek due to Suncor))

Determined Outfall 020A proportion in South Platte River by Dividing Outfall 020A PFAS flux by Sand Creek PFAS flux, converted to percentage (Percent PFAS in South Platte River due to Suncor)

For March 2021 (Supplemental high concentration Data Point), South Platte River PFAS sample SPSW-04 data were not available, used average of 2021 Quarterly SPSW-04 data as a proxy. Sand Creek PFAS data (SCSW-21) were available for this event

Determine PFAS flux at Outfall 020A, Sand Creek, and South Platte River (ng/minute)

PFAS flux (ng/min) = Total PFAS Conc. (ng/L) X 3.79 L/gal X Flow (gal/min)

Divide Outfall 020A PFAS Flux by Sand Creek and South Platte River PFAS flux, convert to percent.

Data Used:

Suncor surface water PFAS sampling data from Sand Creek and South Platte River

Surface Water Sampling Locations - Killough 2021a

Quarterly Surface Water and Outfall 020A PFAS Concentration Data:

Jan. 2021 - Killough 2021b

March, 2021 - Killough 2021c (Supplemental High Concentration Discharge Data Point)

April, 2021 - Killough 2021d

July 2021 - Killough 2021e

October, 2021 - Killough 2021f

Outfall 020A Discharge Flow Data

Source: Marler 2021.

Streamflow Data

2021 Daily Average Stream Flow Data for

USGS 06714215 SOUTH PLATTE R AT 64TH AVE. COMMERCE CITY, CO., 2/27/22 Download

https://waterdata.usgs.gov/co/nwis/uv/?site_no=06714215&PARAmeter_cd=00065,00060

SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO), 2/27/22 Download

https://dwr.state.co.us/tools/Stations/SANCOMCO?params=DISCHRG

SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)

https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

2021 Metro Wastewater Treatment Average Daily Flows, Received 2/24/22

Source: Dopler 2022

Conversion Factors Used

3.79 L = 1 gallon

1 cfs = 449 gal/min

1 MGD = 1.55 cfs

cfs - cubic feet per second

MGD - Million gallons per day

gpm - gallons per minute

References:

Metro WWTP Outfall Flow Data
Source: Dopler 2022
Personal Correspondence from Dan Dopler, Metro Water Recovery, Senior RWHTF Operations Manager, to
Andy Horn, Westwater Hydrology LLC.
Subj: Metro WWTP Discharge Data Needed
Tables: Plant Flows Monthly Report AVG, MAX, MIN for North and South Outfalls

Outfall 020A Flow Data
Source: Marler 2021.
Email from Eric Marler, Suncor Energy to Christine Wehner, CDPHE
Subj: Data Request
Wed, Jan 6, 2021 at 1:44 PM

Outfall 020A PFAS Concentration Data
Source Marler 2022
Email from Eric Marler, Suncor Energy USA, Senior Environmental Advisor, to Kathlene Rosow, CDPHE
Subj: Request for Information, CDPS Permit CO0001147, May 13, 2021
Thu, Feb 10, 2022 at 2:47 PM

Surface Water Sample Location Map - Killough 2021a
Email from Brian Killough, Suncor Energy USA Inc. – Commerce City Refinery, Sr. Remediation Advisor, to Lindsay Archibald, CDPHE
Subj: Suncor figures - WQ CDPS permit stakeholder meeting
Tue, Jan 26, 2021 at 4:53 PM
Figure 1, Surface Water Sampling Locations

January 2021 - Killough 2021b
Email from Brian Killough, Suncor Energy USA Inc. – Commerce City Refinery, Sr. Remediation Advisor, to Lindsay Archibald, CDPHE
Subj: Additional Surface Water Sampling Results (January 2021)
Mon, Mar 22, 2021 at 5:11 PM
Table 1 - Sand Creek and South Platte River Surface Water Sampling Results Summary - January 2021, Suncor Commerce City Refinery

March 2021 - Killough 2021c
Email from Brian Killough, Suncor Energy USA Inc. – Commerce City Refinery, Sr. Remediation Advisor, to Lindsay Archibald, CDPHE
Subj: Additional Surface Water Sampling Results (March 2021)
Thu, Apr 22, 2021 at 5:41 PM
Table 1 - Sand Creek and South Platte River Surface Water Sampling Results Summary - March 2021, Suncor Commerce City Refinery

April 2021 - Killough 2021d
Email from Brian Killough, Suncor Energy USA Inc. – Commerce City Refinery, Sr. Remediation Advisor, to Lindsay Archibald, CDPHE
Subj: Additional Surface Water Sampling Results (April 2021)
Tue, Jun 15, 2021 at 6:47 AM
Table 1 - Sand Creek and South Platte River Surface Water Sampling Results Summary - April 2021, Suncor Commerce City Refinery

July 2021 - Killough 2021e
Email from Brian Killough, Suncor Energy USA Inc. – Commerce City Refinery, Sr. Remediation Advisor, to Lindsay Archibald, CDPHE
Subj: Additional Surface Water Sampling Results (July 2021)
Fri, Aug 20, 2021 at 7:37 AM
Table 1 - Sand Creek and South Platte River Surface Water Sampling Results Summary - July 2021, Suncor Commerce City Refinery

October 2021 - Killough 2021f
Email from Brian Killough, Suncor Energy USA Inc. – Commerce City Refinery, Sr. Remediation Advisor, to Lindsay Archibald, CDPHE
Subj: Additional Surface Water Sampling Results (October 2021)
Mon, Dec 6, 2021 at 1:33 PM
Table 1 - Sand Creek and South Platte River Surface Water PFAS Sampling Results Summary - October 2021, Suncor Commerce City Refinery

Suncor Surface Water Sampling Locations (from Killough 2021a)

File: I:\Projects\Remediation\Suncor\MAIN Suncor Commerce City Refinery\GIS\Projects\SurfaceWater\SurfaceWater_Locations_2019-2020.mxd

LEGEND

- SURFACE WATER SAMPLING LOCATION
- WASTEWATER (OUTFALL 020A) POINT OF COMPLIANCE
- WASTEWATER (OUTFALL 020A) POINT OF DISCHARGE
- SUNCOR PROPERTY BOUNDARY

NOTES:
SPRSW-01 and SPRSW-02 referred to being South Platte River sampling locations were previously determined to be more representative of conditions within Sand Creek

N

0 1,600 3,200
Feet

East bank
SPRSW-05

BURLINGTON DITCH

CLEAR CREEK

SPRSW-04
West bank
(East bank is steep and heavily vegetated)

SOUTH PLATTE RIVER

East bank
Bike trail access

East bank
Bike trail access

SPRSW-02
SPRSW-01

North bank
Bike trail access
(access to south bank available through Metro)

SPRSW-50

SCSW-21

East bank
Access through Metro

SCSW-19

WASTEWATER (OUTFALL 020A)
POINT OF DISCHARGE

South bank
Refinery access

SCSW-15

South bank
Refinery access

WASTEWATER (OUTFALL 020A)
POINT OF COMPLIANCE

SCSW-23

South bank
Refinery access

SUNCOR
COMMERCE CITY
REFINERY

SPRSW-03

South bank
Refinery access

SCSW-10

East bank
Bike trail access

SAND CREEK

SCSW-24

North bank
Bike trail access

TRC	SUNCOR COMMERCE CITY REFINERY COMMERCE CITY, COLORADO	SURFACE WATER SAMPLING LOCATIONS
	DATE: 2/18/2020 DRWN: AW/ftc	FIGURE 1

Suncor Surface Water Sampling Data for January, March April, July, and October 2021

(from Killough 2021b – f)

Table 1 - Sand Creek and South Platte River Surface Water Sampling Results Summary - January 2021
Suncor Commerce City Refinery

Chemical Name						4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamido acetic acid (NEtFOSAA)	N-Methyl perfluorooctane sulfonamido acetic acid (NMeFOSAA)	Perfluoro-2-methyl-3-oxahexanoic acid (HFPO-DA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononane sulfonic acid (PFNS)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	Combine PFOS+PFOA Concentration	Combined PFOS, PFOA, PFNA, and Parent Compounds*
Unit						ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
EPA Drinking Water Health Advisory						NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	70	NS
CDPHE WQCC Translation Level						NS	NS	70	70	70	NS	400,000	NS	NS	NS	NS	NS	NS	700	NS	NS	70	70	70	70	NS	NS	NS	NS	NS	NS	70
Location ID	**Sample Type**	**Sample Date**	**Stream**	**Flow Order**	**Laboratory**																										
SCSW-24		1/20/2021	Sand Creek	1	ETA	< 1.9	5.0	< 1.9	< 4.7	< 4.7	< 3.8	26	22	< 1.9	0.77 J	< 1.9	2.0	11	100	52	< 1.9	15	< 1.9	49	29	13	43	< 1.9	< 1.9	< 1.9	78	93
SCSW-10		1/20/2021	Sand Creek	2	ETA	< 1.8	4.6	< 1.8	< 4.4	< 4.4	< 3.5	27	20	< 1.8	0.68 J	< 1.8	2.1	11	96	54	< 1.8	15	< 1.8	47	27	13	44	< 1.8	< 1.8	< 1.8	74	89
SCSW-23		1/20/2021	Sand Creek	3	ETA	< 18	< 45	< 18	< 45	< 45	< 36	26	21 J	< 18	< 18	< 18	2.1 J	11 J	100	52	< 18	16 J	< 18	46	26	16 J	46	< 18	< 18	< 18	72	88 J
SCSW-15		1/20/2021	Sand Creek	4	ETA	< 1.9	4.4 J	< 1.9	< 4.7	< 4.7	< 3.8	26	20	< 1.9	0.73 J	< 1.9	2.0	11	97	53	< 1.9	15	< 1.9	47	27	13	44	< 1.9	< 1.9	< 1.9	74	89
SCSW-19	Duplicate	1/20/2021	Sand Creek	5	ETA	< 1.9	3.3 J	< 1.9	< 4.8	< 4.8	< 3.8	28	20	< 1.9	0.55 J	< 1.9	2.1	9.6	97	50	< 1.9	11	< 1.9 U	49	19	15	37	< 1.9	< 1.9	< 1.9	68	79
SCSW-19		1/20/2021	Sand Creek	5	ETA	< 1.9	3.5 J	< 1.9	< 4.7	< 4.7	< 3.7	30	20	< 1.9	0.52 J	< 1.9	1.8 J	10	94	48	< 1.9	11	< 1.9	47	20	14	38	< 1.9	< 1.9	< 1.9	67	78
SCSW-21		1/20/2021	Sand Creek	6	ETA	< 1.9	4.8 J+	< 1.9	< 4.8	< 4.8	< 3.8	29	20	< 1.9	0.63 J	< 1.9	1.9	11	91	49	< 1.9	13	< 1.9	48	24	14	40	< 1.9	< 1.9	< 1.9	72	85
SPRSW-03		1/20/2021	South Platte River	1	ETA	< 1.8	< 4.6	< 1.8	< 4.6	< 4.6	< 3.7	9.7	10	< 1.8	0.51 J	< 1.8	< 1.8	4.3	7.3	15	< 1.8	0.84 J	< 1.8	5.2	8.1	1.1 J	14	< 1.8	< 1.8	< 1.8	13.3	14.14 J
SPRSW-50		1/20/2021	South Platte River	2	ETA	< 1.8	< 4.5	0.47 J	< 4.5	1.1 J	< 3.6	5.5 J	4.3 J	< 1.8	1.8	< 1.8	< 1.8	2.4	4.7	12	< 1.8	1.3 J	< 1.8 U	9.6	7.5	< 1.8	8.0	< 1.8	< 1.8	< 1.8	17.1	19.73 J
SPRSW-01		1/20/2021	South Platte River	3	ETA	< 1.9	3.7 J	< 1.9	< 4.7	< 4.7	< 3.7	28	21	< 1.9	0.66 J	< 1.9	2.2	11	100	46	< 1.9	13	< 1.9	57	22	15	40	< 1.9	< 1.9	< 1.9	79	92
SPRSW-02		1/20/2021	South Platte River	4	ETA	< 1.8	3.6 J	< 1.8	< 4.5	< 4.5	< 3.6	28	20	< 1.8	1.0 J	< 1.8	2.1	11	97	49	< 1.8	12	< 1.8	55	21	15	37	< 1.8	< 1.8	< 1.8	76	88
SPRSW-04		1/20/2021	South Platte River	5	ETA	< 1.8	< 4.6	< 1.8	< 4.6	< 4.6	< 3.7	6.1	5.3	< 1.8	0.85 J	< 1.8	0.20 J	2.6	7.7	13	< 1.8	1.4 J	< 1.8	6.3	6.3	1.2 J	9.9	< 1.8	< 1.8	< 1.8	12.6	14.0 J
SPRSW-05		1/20/2021	South Platte River	6	ETA	< 1.9	< 4.8	< 1.9	< 4.8	< 4.8	< 3.8	7.2	6.6	< 1.9	0.88 J	< 1.9	0.23 J	2.8	10	15	< 1.9	1.8 J	< 1.9	9.4	7.4	1.4 J	11	< 1.9	< 1.9	< 1.9	16.8	18.6 J

Notes:
Green highlighting indicates a concentration above the EPA Drinking Water Health Advisory Level or CDPHE WQCC Translation Level
ng/L - nanograms per liter
NS - No standard.
ETA - Eurofins TestAmerica
J - detected result, evaluated as estimated
J+ - estimated result, biased high
U - result evaluated as not detected due to evidence of blank contamination
< - Result not detected above the listed reporting limit
CDPHE WQCC Translation Levels from Policy 20-1 enacted on 7/13/2020
* Parent compounds include 8:2 FTS, NEtFOSAA, NMeFOSAA, and PFOSA, adjusted per Policy 20-1
Non-detections treated as "zeros" in combined calcucation, per Policy 20-1

Table 1 - Sand Creek and South Platte River Surface Water Sampling Results Summary - March 2021
Suncor Commerce City Refinery

Chemical Name						4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamido acetic acid (NEtFOSAA)	N-Methyl perfluorooctane sulfonamido acetic acid (NMeFOSAA)	Perfluoro-2-methyl-3-oxahexanoic acid (HFPO-DA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononane sulfonic acid (PFNS)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	Combine PFOS+PFOA Concentration	Combined PFOS, PFOA, PFNA, and Parent Compounds*
Unit						ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
EPA Drinking Water Health Advisory						NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	70	NS
CDPHE WQCC Translation Level						NS	NS	70	70	70	NS	400000	NS	NS	NS	NS	NS	NS	700	NS	NS	70	70	70	70	NS	NS	NS	NS	NS	NS	70
Location ID	**Sample Type**	**Sample Date**	**Stream**	**Flow Order**	**Laboratory**																											
SCSW-24		3/25/2021	Sand Creek	1	ETA	< 1.9	< 4.7	< 1.9	< 4.7	< 4.7	< 3.8	12	14	< 1.9	0.92 J	< 1.9	0.59 J	6.1	25	22	< 1.9	4.3	< 1.9	17	11	3.2	12	< 1.9	< 1.9	< 1.9	28	32.3
SCSW-10		3/25/2021	Sand Creek	2	ETA	< 1.8	< 4.6	< 1.8	< 4.6	< 4.6	< 3.7	11	14	< 1.8	1.0 J	< 1.8	0.30 J	5.6	24	21	< 1.8	4.4	< 1.8	18	11	2.8	14	< 1.8	< 1.8	< 1.8	29	33.4
SCSW-23		3/25/2021	Sand Creek	3	ETA	< 1.8	< 4.5	< 1.8	< 4.5	< 4.5	< 3.6	12	12	< 1.8	0.93 J	< 1.8	0.49 J	5.4	23	19	< 1.8	4.0	< 1.8	17	9.7	3.1	13	< 1.8	< 1.8	< 1.8	26.7	30.7
SCSW-15		3/25/2021	Sand Creek	4	ETA	< 1.8	< 4.5	< 1.8	< 4.5	< 4.5	< 3.6	12	14	< 1.8	1.0 J	< 1.8	0.63 J	5.8	25	21	< 1.8	4.3	< 1.8	17	11	2.4	13	< 1.8	< 1.8	< 1.8	28	32.3
SCSW-19		3/25/2021	Sand Creek	5	ETA	< 1.7	< 4.2	< 1.7	< 4.2	< 4.2	< 3.3	12	13	< 1.7	0.88 J	< 1.7	0.54 J	6.9	33	20	< 1.7	3.9	< 1.7	24 J	10	3.4	14	< 1.7	< 1.7	< 1.7	34 J	37.9 J
SCSW-19	Duplicate	3/25/2021	Sand Creek	5	ETA	< 1.7	< 4.3	< 1.7	< 4.3	< 4.3	< 3.4	12 J+	15	< 1.7	0.96 J	< 1.7	0.61 J	6.7	37	23	< 1.7	4.6	< 1.7	42 J	11	4.9	15	< 1.7	< 1.7	< 1.7	53 J	57.6 J
SCSW-21		3/25/2021	Sand Creek	6	ETA	< 1.8	< 4.6	< 1.8	< 4.6	< 4.6	< 3.7	10	14	< 1.8	1.2 J	< 1.8	0.60 J	6.2	31	22	< 1.8	6.1	< 1.8	27	13	3.0	14	< 1.8	< 1.8	< 1.8	40	46.1

Notes:
Green highlighting indicates a combined PFOA+PFOS concentration above the EPA Drinking Water Health Advisory Level or a concentration above a CDPHE WQCC Policy 20-1 Translation Level
ng/L - nanograms per liter
NS - No standard.
ETA - Eurofins TestAmerica
J - detected result, evaluated as estimated
J+ - detected result, evaluated as estimated with a potential high bias
< - Result not detected above the listed reporting limit

Table 1 - Sand Creek and South Platte River Surface Water Sampling Results Summary - April 2021
Suncor Commerce City Refinery

Chemical Name						4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamido acetic acid (NEtFOSAA)	N-Methyl perfluorooctane sulfonamido acetic acid (NMeFOSAA)	Perfluoro-2-methyl-3-oxahexanoic acid (HFPO-DA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononane sulfonic acid (PFNS)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	Combine PFOS+PFOA Concentration	Combined PFOS, PFOA, PFNA, and Parent Compounds*
Unit						ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
EPA Drinking Water Health Advisory						NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	70	NS
CDPHE WQCC Translation Level						NS	NS	70	70	70	NS	400000	NS	NS	NS	NS	NS	NS	700	NS	NS	70	70	70	70	NS	NS	NS	NS	NS	NS	70
Location ID	**Sample Type**	**Sample Date**	**Stream**	**Flow Order**	**Laboratory**																										
SCSW-24		4/21/2021	Sand Creek	1	TASAC	< 1.7	< 4.2	< 1.7	< 4.2	< 4.2	< 3.4	14	13	< 1.7	1.2 J	< 1.7	0.31 J	5.4	31	20	< 1.7	5.6	< 1.7	18	12	4.2	15	< 1.7	< 1.7	< 1.7	30	35.6
SCSW-10		4/21/2021	Sand Creek	2	TASAC	< 1.7	2.1 J	< 1.7	< 4.3	< 4.3	< 3.4	14	13	< 1.7	1.3 J	< 1.7	0.67 J	5.4	32	21	< 1.7	5.4	< 1.7	20	13	5.1	15	< 1.7	< 1.7	< 1.7	33	38.4
SCSW-23		4/21/2021	Sand Creek	3	TASAC	< 20 UJ	< 50 UJ	< 20 UJ	< 50 UJ	< 50 UJ	< 40 UJ	13 J	< 50 UJ	< 20 UJ	4.4 J	< 20 UJ	< 20 UJ	5.7 J	32 J-	23 J-	< 20 UJ	7.0 J	< 20 UJ	21 J-	15 J	5.2 J	17 J	< 20 UJ	< 20 UJ	< 20 UJ	36 J-	43 J-
SCSW-15		4/21/2021	Sand Creek	4	TASAC	< 20 UJ	< 50 UJ	< 20 UJ	< 50 UJ	< 50 UJ	< 40 UJ	15 J	< 50 UJ	< 20 UJ	3.9 J	< 20 UJ	< 20 UJ	5.7 J	29 J-	23 J-	< 20 UJ	7.0 J	< 20 UJ	23 J-	14 J	5.3 J	15 J	< 20 UJ	< 20 UJ	< 20 UJ	37 J-	44 J-
SCSW-19	Duplicate	4/21/2021	Sand Creek	5	TASAC	< 1.9	4.6 J	0.82 J	< 4.7	< 4.7	< 3.7	16	14	< 1.9	1.7 J	< 1.9	1.2 J	6.9	47	25	< 1.9	6.4	< 1.9	45	13	8.2	20	< 1.9	< 1.9	< 1.9	58	65 J
SCSW-19		4/21/2021	Sand Creek	5	TASAC	< 1.9	< 47	0.83 J	< 4.7	< 4.7	< 3.7	17	14	< 1.9	1.7 J	< 1.9	0.96 J	7.6	45	26	< 1.9	5.9	< 1.9	40	12	7.6	21	< 1.9	< 1.9	< 1.9	52	58.5 J
SCSW-21		4/21/2021	Sand Creek	6	TASAC	< 1.9	< 4.7	< 1.9	< 4.7	< 4.7	< 3.8	14	13	< 1.9	1.7 J	< 1.9	0.43 J	6.3	36	21	< 1.9	6.1	< 1.9	26	14	4.9	16	< 1.9	< 1.9	< 1.9	40	46.1
SPRSW-03		4/21/2021	South Platte River	1	TASAC	< 1.7	< 4.3	< 1.7	< 4.3	< 4.3	< 3.4	12	13	< 1.7	1.1 J	< 1.7	< 1.7	5.5	< 8.5 U	16	< 1.7	1.0 J	< 1.7	6.0	9.5	1.2 J	15	< 1.7	< 1.7	< 1.7	15.5	16.5 J
SPRSW-50		4/21/2021	South Platte River	2	TASAC	< 1.7	3.2 J	0.42 J	< 4.4	< 4.4	< 3.5	6.6	6.4	< 1.7	1.7	< 1.7	< 1.7	3.8	< 5.4 U	17	< 1.7	1.1 J	< 1.7	7.9	12	0.71 J	9.9	< 1.7	< 1.7	< 1.7	19.9	21.3 J
SPRSW-01		4/21/2021	South Platte River	3	TASAC	< 1.8	2.7 J	0.44 J	< 4.5	< 4.5	< 3.6	17	13	< 1.8	1.3 J	< 1.8	0.73 J	6.7	43	25	< 1.8	6.3	< 1.8	33	13	7.9	19	< 1.8	< 1.8	< 1.8	46	52.6 J
SPRSW-02		4/21/2021	South Platte River	4	TASAC	< 1.7	2.9 J	0.43 J	< 4.2	< 4.2	< 3.3	16	14	< 1.7	1.5 J	< 1.7	0.62 J	6.7	39	26	< 1.7	6.4	< 1.7	26	12	6.6	19	< 1.7	< 1.7	< 1.7	38	44.7 J
SPRSW-04		4/21/2021	South Platte River	5	TASAC	< 1.7	2.8 J	< 1.7	< 4.3	< 4.3	< 3.4	6.8	7.9	< 1.7	1.2 J	< 1.7	< 1.7	4.1	10	18	< 1.7	1.8	< 1.7	9.8	11	1.9 J	11	< 1.7	< 1.7	< 1.7	20.8	22.6
SPRSW-05		4/22/2021	South Platte River	6	TASAC	< 9.6	< 24	< 9.6	< 24	< 24	< 19	8.2 J	< 24	< 9.6	< 9.6	< 9.6	< 9.6	5.2 J	16	19	< 9.6	2.9 J	< 9.6	14	10	2.0 J	13	< 9.6	< 9.6	< 9.6	24	26.9 J

Notes:
Green highlighting indicates a combined PFOA+PFOS concentration above the EPA Drinking Water Health Advisory Level or a concentration above a CDPHE WQCC Policy 20-1 Translation Lev
ng/L - nanograms per liter
NS - No standard.
ETA - Eurofins TestAmerica
J - detected result, evaluated as estimated
J- - detected result, estimated concentration with a potential low bias
U - evaluated to be not detected due to evidence of blank contamination
UJ - not detected result, estimated reporting limit
< - Result not detected above the listed reporting limit

Table 1 - Sand Creek and South Platte River Surface Water PFAS Sampling Results Summary - July 2021
Suncor Commerce City Refinery

Chemical Name						4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamido acetic acid (NEtFOSAA)	N-Methyl perfluorooctane sulfonamido acetic acid (NMeFOSAA)	Perfluoro-2-methyl-3-oxahexanoic acid (HFPO-DA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononane sulfonic acid (PFNS)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	Combine PFOS+PFOA Concentration	Combined PFOS, PFOA, PFNA, and Parent Compounds*
Unit						ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
EPA Drinking Water Health Advisory						NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	70	NS
CDPHE WQCC Translation Level						NS	NS	70	70	70	NS	4E+05	NS	NS	NS	NS	NS	NS	NS	700	NS	NS	70	70	70	70	NS	NS	NS	NS	NS	NS	70
Location ID	**Sample Type**	**Sample Date**	**Stream**	**Flow Order**	**Laboratory**																											
SCSW-24		7/20/2021	Sand Creek	1	ETA	< 1.9	4.7 J	< 1.9	< 4.9	< 4.9	< 3.9	35	29	< 1.9	2.0	< 1.9	2.5	15	110	57	< 1.9	17	< 1.9	67	36	17	45	< 1.9	< 1.9	< 1.9	103	120
SCSW-10		7/20/2021	Sand Creek	2	ETA	< 100	< 250	< 100	< 250	< 250	< 200	30 J	< 250	< 100	< 100	< 100	< 100	16 J	99 J	62 J	< 100	15 J	< 100	60 J	< 100	17 J	45 J	< 100	< 100	< 100	60 J	75 J
SCSW-23		7/20/2021	Sand Creek	3	ETA	< 1.9	4.0 J	< 1.9	< 4.7	< 4.7	< 3.8	35	29	< 1.9	1.7 J	< 1.9	2.4	15	110	56	< 1.9	13	< 1.9	59	32	17	47	< 1.9	< 1.9	< 1.9	91	104
SCSW-15		7/20/2021	Sand Creek	4	ETA	< 1.8	4.0 J	< 1.8	< 4.6	< 4.6	< 3.7	35	26	< 1.8	1.7 J	< 1.8	1.8	15	100	53	< 1.8	14	< 1.8	56	30	17	45	< 1.8	< 1.8	< 1.8	86	100
SCSW-19		7/20/2021	Sand Creek	5	ETA	< 1.9	3.9 J	< 1.9	< 4.8	< 4.8	< 3.8	34	26	< 1.9	1.4 J	< 1.9	2.2	15	120	55	< 1.9	12	< 1.9	59	27	19	44	< 1.9	< 1.9	< 1.9 UJ	86	98
SCSW-19	Duplicate	7/20/2021	Sand Creek	5	ETA	< 1.9	3.9 J	< 1.9	< 4.7	< 4.7	< 3.7	32	25	< 1.9	1.4 J	< 1.9	2.5	14	100	54	< 1.9	12	< 1.9	61	26	18	45	< 1.9	< 1.9	< 1.9 UJ	87	99
SCSW-21		7/20/2021	Sand Creek	6	ETA	< 1.9	3.4 J	< 1.9	< 4.7	< 4.7	< 3.8	33	24	< 1.9	1.4 J	< 1.9	2.3	14	110	52	< 1.9	11	< 1.9	57	28	18	44	< 1.9	< 1.9	< 1.9 UJ	85	96
SPRSW-03		7/20/2021	South Platte River	1	ETA	< 1.9	< 4.7	< 1.9	< 4.7	< 4.7	< 3.8	12	9.9	< 1.9	1.3 J	< 1.9	< 1.9	4.5	7.1	14	< 1.9	1.2 J	< 1.9	8.8	11	1.0 J	14	< 1.9	< 1.9	< 1.9 UJ	19.8	21 J
SPRSW-50		7/20/2021	South Platte River	2	ETA	< 1.8	< 4.6	< 1.8	< 4.6	< 4.6	< 3.7	18 J	7.5	< 1.8	1.5 J	< 1.8	0.18 J	3.5	5.4	15	< 1.8	0.97 J	< 1.8	6.3	9.9	0.74 J	16	< 1.8	< 1.8	< 1.8 UJ	16.2	17.2 J
SPRSW-01		7/20/2021	South Platte River	3	ETA	< 2.0	3.6 J	< 2.0	< 5.0	< 5.0	< 4.0	34	26	< 2.0	1.7 J	< 2.0	2.5	15	110	54	< 2.0	14	< 2.0	69	27	20	43	< 2.0	< 2.0	< 2.0 UJ	96	110
SPRSW-02		7/20/2021	South Platte River	4	ETA	< 1.9	3.5 J	< 1.9	< 4.8	< 4.8	< 3.8	34	26	< 1.9	1.5 J	< 1.9	2.4	14	110	53	< 1.9	12	< 1.9	67	26	18	43	< 1.9	< 1.9	< 1.9 UJ	93	105
SPRSW-04		7/20/2021	South Platte River	5	ETA	< 1.9	< 4.7	< 1.9	< 4.7	< 4.7	< 3.8	12	9.4	< 1.9	1.3 J	< 1.9	< 1.9	4.0	7.5	15	< 1.9	1.3 J	< 1.9	7.7	9.9	1.3 J	14	< 1.9	< 1.9	< 1.9 UJ	17.6	18.9 J
SPRSW-05		7/20/2021	South Platte River	6	ETA	< 1.9	< 4.8	< 1.9	< 4.8	< 4.8	< 3.8	14 J	9.9	< 1.9	1.6 J	< 1.9	0.27 J	4.5	9.1	16	< 1.9	1.5 J	< 1.9	8.5	11	1.4 J	16	< 1.9	< 1.9	< 1.9 UJ	19.5	21 J

Notes:
Green highlighting indicates a combined PFOA+PFOS concentration above the EPA Drinking Water Health Advisory Level or a concentration above a CDPHE WQCC Policy 20-1 Translation Level
ng/L - nanograms per liter
NS - No standard.
ETA - Eurofins TestAmerica
J - detected result, evaluated as estimated
UJ - nondetect result, estimated reporting limit
< - Result not detected above the listed reporting limit

Table 1 - Sand Creek and South Platte River Surface Water PFAS Sampling Results Summary - October 2021
Suncor Commerce City Refinery

Chemical Name						4:2 Fluorotelomer sulfonic acid (4:2 FTS)	6:2 Fluorotelomer sulfonic acid (6:2 FTS)	8:2 Fluorotelomer sulfonic acid (8:2 FTS)	N-Ethyl perfluorooctane sulfonamido acetic acid (NEtFOSAA)	N-Methyl perfluorooctane sulfonamido acetic acid (NMeFOSAA)	Perfluoro-2-methyl-3-oxahexanoic acid (HFPO-DA)	Perfluorobutane sulfonic acid (PFBS)	Perfluorobutanoic acid (PFBA)	Perfluorodecane sulfonic acid (PFDS)	Perfluorodecanoic acid (PFDA)	Perfluorododecanoic acid (PFDoA)	Perfluoroheptane sulfonic acid (PFHpS)	Perfluoroheptanoic acid (PFHpA)	Perfluorohexane sulfonic acid (PFHxS)	Perfluorohexanoic acid (PFHxA)	Perfluorononane sulfonic acid (PFNS)	Perfluorononanoic acid (PFNA)	Perfluorooctane sulfonamide (PFOSA)	Perfluorooctane sulfonic acid (PFOS)	Perfluorooctanoic acid (PFOA)	Perfluoropentane sulfonic acid (PFPeS)	Perfluoropentanoic acid (PFPeA)	Perfluorotetradecanoic acid (PFTA)	Perfluorotridecanoic acid (PFTrDA)	Perfluoroundecanoic acid (PFUnA)	Combine PFOS+PFOA Concentration	Combined PFOS, PFOA, PFNA, and Parent Compounds*
Unit						ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
EPA Drinking Water Health Advisory						NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	70	NS
CDPHE WQCC Translation Level						NS	NS	70	70	70	NS	4E+05	NS	NS	NS	NS	NS	NS	700	NS	NS	70	70	70	70	NS	NS	NS	NS	NS	NS	70
Location ID	**Type**	**Date**	**Stream**	**Flow Order**	**Laboratory**																											
SCSW-24		10/19/2021	Sand Creek	1	ETA	< 1.9	3.1 J	< 1.9	< 4.7	< 4.7	< 3.8	33	25	< 1.9	0.96 J	< 1.9	2.0	13	120	61	< 1.9	12	< 1.9	51	31	19	46	< 1.9	< 1.9	< 1.9	82	94
SCSW-10		10/19/2021	Sand Creek	2	ETA	< 1.8	2.9 J	< 1.8	< 4.6	< 4.6	< 3.7	33	24	< 1.8	0.90 J	< 1.8	1.7 J	14	110	62	< 1.8	10	< 1.8	46	31	19	47	< 1.8	< 1.8	< 1.8	77	87
SCSW-23		10/19/2021	Sand Creek	3	ETA	< 1.9	3.1 J	< 1.9	< 4.6	< 4.6	< 3.7	31	24	< 1.9	1.1 J	< 1.9	1.6 J	13	110	61	< 1.9	11	< 1.9	45	29	18	47	< 1.9	< 1.9	< 1.9	74	85
SCSW-15		10/19/2021	Sand Creek	4	ETA	< 1.9	2.8 J	< 1.9	< 4.8	< 4.8	< 3.9	33	25	< 1.9	1.1 J	< 1.9	1.8 J	13	100	64	< 1.9	11	< 1.9	51	30	18	47	< 1.9	< 1.9	< 1.9	81	92
SCSW-19		10/19/2021	Sand Creek	5	ETA	< 1.9	2.8 J	< 1.9	< 4.7	< 4.7	< 3.7	32	30	< 1.9	0.81 J	< 1.9	1.6 J	13	110	58	< 1.9	9.1	< 1.9	51	25	20	44	< 1.9	< 1.9	< 1.9	76	85.1
SCSW-19	Duplicate	10/19/2021	Sand Creek	5	ETA	< 1.8	2.9 J	< 1.8	< 4.6	< 4.6	< 3.7	32	28	< 1.8	0.82 J	< 1.8	1.7 J	13	100	59	< 1.8	9.4	< 1.8	47	24	20	46	< 1.8	< 1.8	< 1.8	71	80.4
SCSW-21		10/19/2021	Sand Creek	6	ETA	< 1.8	2.4 J	< 1.8	< 4.6	< 4.6	< 3.7	34	29	< 1.8	0.86 J	< 1.8	1.8	13	110	60	< 1.8	11	< 1.8	51	25	22	47	< 1.8	< 1.8	< 1.8	76	87
SPRSW-03		10/19/2021	South Platte River	1	ETA	< 1.9	< 4.8	< 1.9	< 4.8	< 4.8	< 3.8	12	10	< 1.9	0.63 J	< 1.9	< 1.9	4.2	7.2	14	< 1.9	0.82 J	< 1.9	5.7	8.8	1.0 J	15	< 1.9	< 1.9	< 1.9	14.5	15.3 J
SPRSW-50		10/19/2021	South Platte River	2	ETA	< 1.9	< 4.8	< 1.9	< 4.8	< 4.8	< 3.8	12 J	6.8	< 1.9	1.2 J	< 1.9	< 1.9	2.6	5.0	14	< 1.9	1.2 J	< 1.9	5.8	9.5	0.63 J	20	< 1.9	< 1.9	< 1.9	15.3	16.5 J
SPRSW-01		10/19/2021	South Platte River	3	ETA	< 1.8	2.6 J	< 1.8	< 4.5	< 4.5	< 3.6	35	26	< 1.8	0.85 J	< 1.8	1.7 J	13	110	61	< 1.8	10	< 1.8	50	25	21	42	< 1.8	< 1.8	< 1.8	75	85
SPRSW-02		10/19/2021	South Platte River	4	ETA	< 1.9	2.8 J	< 1.9	< 4.7	< 4.7	< 3.7	36	28	< 1.9	0.92 J	< 1.9	1.8 J	13	110	60	< 1.9	9.9	< 1.9	49	24	20	43	< 1.9	< 1.9	< 1.9	73	82.9
SPRSW-04		10/19/2021	South Platte River	5	ETA	< 1.8	< 4.6	< 1.8	< 4.6	< 4.6	< 3.7	14 J	7.6	< 1.8	1.0 J	< 1.8	< 1.8	2.8	9.3	16	< 1.8	1.4 J	< 1.8	8.1	8.4	1.8	21	< 1.8	< 1.8	< 1.8	16.5	17.9 J
SPRSW-05		10/19/2021	South Platte River	6	ETA	< 1.9	< 4.7	< 1.9	< 4.7	< 4.7	< 3.8	11 J	7.4	< 1.9	0.93 J	< 1.9	0.22 J	3.1	10	15	< 1.9	1.3 J	< 1.9	8.6	7.3	1.7 J	16	< 1.9	< 1.9	< 1.9	15.9	17.2 J

Notes:
Green highlighting indicates a combined PFOA+PFOS concentration above the EPA Drinking Water Health Advisory Level or a concentration above a CDPHE WQCC Policy 20-1 Translation Level
ng/L - nanograms per liter
NS - No standard.
ETA - Eurofins TestAmerica
J - detected result, evaluated as estimated
< - Result not detected above the listed reporting limit

Suncor Outfall 020A 2018 – 2020
Discharge Flow Data

(from Marler 2021)

Permit CO0001147 Discharge Flow (gpm)					
Date	**Outfall 001**	**Outfall 002A**	**Outfall 003A**	**Outfall 020A**	**Total Discharge**
12/31/2020				1303	1303
12/30/2020				1319	1319
12/29/2020				1287	1287
12/28/2020				1092	1092
12/27/2020				956	956
12/26/2020				987	987
12/25/2020				982	982
12/24/2020				1114	1114
12/23/2020				1327	1327
12/22/2020				1297	1297
12/21/2020				1301	1301
12/20/2020				1361	1361
12/19/2020				1162	1162
12/18/2020				992	992
12/17/2020				979	979
12/16/2020				1032	1032
12/15/2020				974	974
12/14/2020				995	995
12/13/2020				1016	1016
12/12/2020				1260	1260
12/11/2020				1124	1124
12/10/2020				939	939
12/9/2020				997	997
12/8/2020				1081	1081
12/7/2020				1226	1226
12/6/2020				1185	1185
12/5/2020				1260	1260
12/4/2020				1171	1171
12/3/2020				974	974
12/2/2020				1064	1064
12/1/2020				1221	1221
11/30/2020				1025	1025
11/29/2020				1169	1169
11/28/2020				1356	1356
11/27/2020				1281	1281
11/26/2020				1080	1080
11/25/2020				1057	1057
11/24/2020				1207	1207
11/23/2020				930	930
11/22/2020				930	930
11/21/2020				894	894
11/20/2020				1093	1093
11/19/2020				1097	1097
11/18/2020				1232	1232
11/17/2020				1315	1315

11/16/2020				1240	1240
11/15/2020				1052	1052
11/14/2020				1055	1055
11/13/2020				1103	1103
11/12/2020				1067	1067
11/11/2020				1084	1084
11/10/2020				1252	1252
11/9/2020				1120	1120
11/8/2020				1114	1114
11/7/2020				1279	1279
11/6/2020				1268	1268
11/5/2020				1137	1137
11/4/2020				1150	1150
11/3/2020				1098	1098
11/2/2020				1283	1283
11/1/2020				1396	1396
10/31/2020				1490	1490
10/30/2020				1594	1594
10/29/2020				1294	1294
10/28/2020				1188	1188
10/27/2020				1013	1013
10/26/2020				1011	1011
10/25/2020				1254	1254
10/24/2020				1276	1276
10/23/2020				1084	1084
10/22/2020				980	980
10/21/2020				1102	1102
10/20/2020				1096	1096
10/19/2020				1077	1077
10/18/2020				1095	1095
10/17/2020				1125	1125
10/16/2020				1083	1083
10/15/2020				1127	1127
10/14/2020				1137	1137
10/13/2020				1057	1057
10/12/2020				1147	1147
10/11/2020				1209	1209
10/10/2020				1245	1245
10/9/2020				1302	1302
10/8/2020				1310	1310
10/7/2020				1340	1340
10/6/2020				1279	1279
10/5/2020				1171	1171
10/4/2020				1259	1259
10/3/2020				1150	1150
10/2/2020				1039	1039
10/1/2020				1082	1082

9/30/2020				1229	1229
9/29/2020				1124	1124
9/28/2020				1151	1151
9/27/2020				1191	1191
9/26/2020				1361	1361
9/25/2020				1427	1427
9/24/2020				1435	1435
9/23/2020				1417	1417
9/22/2020				1415	1415
9/21/2020				1438	1438
9/20/2020				1451	1451
9/19/2020				1454	1454
9/18/2020				1443	1443
9/17/2020				1388	1388
9/16/2020				1386	1386
9/15/2020				1256	1256
9/14/2020				1160	1160
9/13/2020				1130	1130
9/12/2020				1260	1260
9/11/2020				1251	1251
9/10/2020				1281	1281
9/9/2020				1381	1381
9/8/2020				1322	1322
9/7/2020				1209	1209
9/6/2020				1179	1179
9/5/2020				1238	1238
9/4/2020				1462	1462
9/3/2020				1375	1375
9/2/2020				1346	1346
9/1/2020				1263	1263
8/31/2020				1277	1277
8/30/2020				1238	1238
8/29/2020				1216	1216
8/28/2020				1246	1246
8/27/2020				1171	1171
8/26/2020				1179	1179
8/25/2020				1212	1212
8/24/2020				1200	1200
8/23/2020				1186	1186
8/22/2020				1186	1186
8/21/2020				1321	1321
8/20/2020				1436	1436
8/19/2020				1453	1453
8/18/2020				1279	1279
8/17/2020				1409	1409
8/16/2020				1413	1413
8/15/2020				1446	1446

8/14/2020				1256	1256
8/13/2020				1181	1181
8/12/2020				1244	1244
8/11/2020				1194	1194
8/10/2020				1185	1185
8/9/2020				1241	1241
8/8/2020				1205	1205
8/7/2020				1230	1230
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12/29/2018				1372	1372
12/28/2018				1376	1376
12/27/2018				1373	1373
12/26/2018				1356	1356
12/25/2018				1381	1381
12/24/2018				1341	1341
12/23/2018				1358	1358
12/22/2018				1354	1354
12/21/2018				1455	1455
12/20/2018				1324	1324
12/19/2018				1382	1382
12/18/2018				1355	1355
12/17/2018				1312	1312
12/16/2018				1200	1200
12/15/2018				1042	1042
12/14/2018				1223	1223
12/13/2018				1222	1222

12/12/2018				1167	1167
12/11/2018				1164	1164
12/10/2018				1293	1293
12/9/2018				1446	1446
12/8/2018				1369	1369
12/7/2018				1546	1546
12/6/2018				1430	1430
12/5/2018				1389	1389
12/4/2018				1413	1413
12/3/2018				1364	1364
12/2/2018				1327	1327
12/1/2018				1368	1368
11/30/2018				1411	1411
11/29/2018				1241	1241
11/28/2018				1231	1231
11/27/2018				1453	1453
11/26/2018				1430	1430
11/25/2018				1404	1404
11/24/2018				1315	1315
11/23/2018				1442	1442
11/22/2018				1424	1424
11/21/2018				1258	1258
11/20/2018				1212	1212
11/19/2018				1271	1271
11/18/2018				1240	1240
11/17/2018				1248	1248
11/16/2018				1132	1132
11/15/2018				1103	1103
11/14/2018				1255	1255
11/13/2018				1274	1274
11/12/2018				1251	1251
11/11/2018				1360	1360
11/10/2018				1317	1317
11/9/2018				1261	1261
11/8/2018				1535	1535
11/7/2018				1455	1455
11/6/2018				1386	1386
11/5/2018				1311	1311
11/4/2018				1422	1422
11/3/2018				1332	1332
11/2/2018				1258	1258
11/1/2018				1324	1324
10/31/2018				1250	1250
10/30/2018				1272	1272
10/29/2018				1291	1291
10/28/2018				1304	1304
10/27/2018				1396	1396

10/26/2018				1309	1309
10/25/2018				1339	1339
10/24/2018				1369	1369
10/23/2018				1373	1373
10/22/2018				1324	1324
10/21/2018				1369	1369
10/20/2018				1347	1347
10/19/2018				1084	1084
10/18/2018				1293	1293
10/17/2018				1299	1299
10/16/2018				1487	1487
10/15/2018				1447	1447
10/14/2018				1443	1443
10/13/2018				1369	1369
10/12/2018				1401	1401
10/11/2018				1512	1512
10/10/2018				1454	1454
10/9/2018				1437	1437
10/8/2018				1380	1380
10/7/2018				1279	1279
10/6/2018				1300	1300
10/5/2018				1453	1453
10/4/2018				1418	1418
10/3/2018				1349	1349
10/2/2018				1194	1194
10/1/2018				1144	1144
9/30/2018				1339	1339
9/29/2018				1403	1403
9/28/2018				1333	1333
9/27/2018				1501	1501
9/26/2018				1436	1436
9/25/2018				1457	1457
9/24/2018				1523	1523
9/23/2018				1419	1419
9/22/2018				1340	1340
9/21/2018				1503	1503
9/20/2018				1386	1386
9/19/2018				1402	1402
9/18/2018				1419	1419
9/17/2018				1270	1270
9/16/2018				1259	1259
9/15/2018				724	724
9/14/2018				685	685
9/13/2018				812	812
9/12/2018				864	864
9/11/2018				704	704
9/10/2018				1211	1211

9/9/2018				1431	1431
9/8/2018				1367	1367
9/7/2018				1346	1346
9/6/2018				1483	1483
9/5/2018				1846	1846
9/4/2018				1254	1254
9/3/2018				1218	1218
9/2/2018				1381	1381
9/1/2018				1407	1407
8/31/2018				1291	1291
8/30/2018				1362	1362
8/29/2018				1317	1317
8/28/2018				1264	1264
8/27/2018				1211	1211
8/26/2018				1270	1270
8/25/2018				1294	1294
8/24/2018				1347	1347
8/23/2018				1192	1192
8/22/2018				1237	1237
8/21/2018				1290	1290
8/20/2018				1350	1350
8/19/2018				1381	1381
8/18/2018				1348	1348
8/17/2018				1221	1221
8/16/2018				1213	1213
8/15/2018				1270	1270
8/14/2018				1191	1191
8/13/2018				1188	1188
8/12/2018				1252	1252
8/11/2018				1285	1285
8/10/2018				1284	1284
8/9/2018				1201	1201
8/8/2018				1099	1099
8/7/2018				1111	1111
8/6/2018				1190	1190
8/5/2018				1090	1090
8/4/2018				1192	1192
8/3/2018				1161	1161
8/2/2018				1146	1146
8/1/2018				1223	1223
7/31/2018				1240	1240
7/30/2018				1175	1175
7/29/2018				1213	1213
7/28/2018				1157	1157
7/27/2018				1253	1253
7/26/2018				1332	1332
7/25/2018				1287	1287

7/24/2018				1237	1237
7/23/2018				1346	1346
7/22/2018				1382	1382
7/21/2018				1544	1544
7/20/2018				1551	1551
7/19/2018				1354	1354
7/18/2018				1046	1046
7/17/2018				1152	1152
7/16/2018				1245	1245
7/15/2018				1334	1334
7/14/2018				1233	1233
7/13/2018				1295	1295
7/12/2018				1243	1243
7/11/2018				1197	1197
7/10/2018				1225	1225
7/9/2018				1265	1265
7/8/2018				1304	1304
7/7/2018				1275	1275
7/6/2018				1262	1262
7/5/2018				1307	1307
7/4/2018				1288	1288
7/3/2018				1193	1193
7/2/2018				1212	1212
7/1/2018				1152	1152
6/30/2018				1246	1246
6/29/2018				1202	1202
6/28/2018				1143	1143
6/27/2018				1159	1159
6/26/2018				1087	1087
6/25/2018				1144	1144
6/24/2018				1088	1088
6/23/2018				1075	1075
6/22/2018				1067	1067
6/21/2018				1160	1160
6/20/2018				1128	1128
6/19/2018				1189	1189
6/18/2018				1285	1285
6/17/2018				929	929
6/16/2018				1042	1042
6/15/2018				1132	1132
6/14/2018				1289	1289
6/13/2018				1275	1275
6/12/2018				1312	1312
6/11/2018				1212	1212
6/10/2018				1245	1245
6/9/2018				1229	1229
6/8/2018				1290	1290

6/7/2018				1325	1325
6/6/2018				1210	1210
6/5/2018				1187	1187
6/4/2018				1383	1383
6/3/2018				1355	1355
6/2/2018				1329	1329
6/1/2018				1342	1342
5/31/2018				1270	1270
5/30/2018				1262	1262
5/29/2018				1265	1265
5/28/2018				1316	1316
5/27/2018				1183	1183
5/26/2018				1195	1195
5/25/2018				1163	1163
5/24/2018				1241	1241
5/23/2018				1203	1203
5/22/2018				1217	1217
5/21/2018				1257	1257
5/20/2018				1199	1199
5/19/2018				1272	1272
5/18/2018				1203	1203
5/17/2018				1164	1164
5/16/2018				1085	1085
5/15/2018				1135	1135
5/14/2018				1183	1183
5/13/2018				1255	1255
5/12/2018				1307	1307
5/11/2018				1316	1316
5/10/2018				1085	1085
5/9/2018				879	879
5/8/2018				1117	1117
5/7/2018				1342	1342
5/6/2018				1381	1381
5/5/2018				1337	1337
5/4/2018				1282	1282
5/3/2018				1538	1538
5/2/2018				1177	1177
5/1/2018				1150	1150
4/30/2018				1322	1322
4/29/2018				1221	1221
4/28/2018				1198	1198
4/27/2018				1154	1154
4/26/2018				1334	1334
4/25/2018				1220	1220
4/24/2018				1242	1242
4/23/2018				1237	1237
4/22/2018				1219	1219

4/21/2018				1277	1277
4/20/2018				1206	1206
4/19/2018				1256	1256
4/18/2018				1226	1226
4/17/2018				1167	1167
4/16/2018				1301	1301
4/15/2018				1389	1389
4/14/2018				1382	1382
4/13/2018				1355	1355
4/12/2018				1264	1264
4/11/2018				1303	1303
4/10/2018				1255	1255
4/9/2018				1299	1299
4/8/2018				1263	1263
4/7/2018				1234	1234
4/6/2018				1212	1212
4/5/2018				1258	1258
4/4/2018				1170	1170
4/3/2018				1099	1099
4/2/2018				1266	1266
4/1/2018				1213	1213
3/31/2018				1276	1276
3/30/2018				1394	1394
3/29/2018				1285	1285
3/28/2018				1207	1207
3/27/2018				1222	1222
3/26/2018				1060	1060
3/25/2018				1088	1088
3/24/2018				1025	1025
3/23/2018				1253	1253
3/22/2018				1314	1314
3/21/2018				1241	1241
3/20/2018				1230	1230
3/19/2018				1320	1320
3/18/2018				1255	1255
3/17/2018				1087	1087
3/16/2018				1084	1084
3/15/2018				1178	1178
3/14/2018				1060	1060
3/13/2018				1192	1192
3/12/2018				1188	1188
3/11/2018				1152	1152
3/10/2018				1139	1139
3/9/2018				1127	1127
3/8/2018				1207	1207
3/7/2018				1274	1274
3/6/2018				1293	1293

3/5/2018				1098	1098
3/4/2018				1017	1017
3/3/2018				1025	1025
3/2/2018				1098	1098
3/1/2018				1030	1030
2/28/2018				1051	1051
2/27/2018				1044	1044
2/26/2018				993	993
2/25/2018				1043	1043
2/24/2018				1136	1136
2/23/2018				1014	1014
2/22/2018				1121	1121
2/21/2018				1063	1063
2/20/2018				1057	1057
2/19/2018				999	999
2/18/2018				1055	1055
2/17/2018				1002	1002
2/16/2018				1078	1078
2/15/2018				1060	1060
2/14/2018				1077	1077
2/13/2018				1147	1147
2/12/2018				1149	1149
2/11/2018				1114	1114
2/10/2018				1119	1119
2/9/2018				1049	1049
2/8/2018				1050	1050
2/7/2018				1096	1096
2/6/2018				1203	1203
2/5/2018				1065	1065
2/4/2018				1015	1015
2/3/2018				1114	1114
2/2/2018				1067	1067
2/1/2018				1000	1000
1/31/2018				1068	1068
1/30/2018				916	916
1/29/2018				1009	1009
1/28/2018				1123	1123
1/27/2018				1083	1083
1/26/2018				1051	1051
1/25/2018				1141	1141
1/24/2018				1228	1228
1/23/2018				1419	1419
1/22/2018				1483	1483
1/21/2018				931	931
1/20/2018				841	841
1/19/2018				814	814
1/18/2018				981	981

1/17/2018				889	889
1/16/2018				889	889
1/15/2018				892	892
1/14/2018				905	905
1/13/2018				740	740
1/12/2018				930	930
1/11/2018				774	774
1/10/2018				899	899
1/9/2018				890	890
1/8/2018				936	936
1/7/2018				861	861
1/6/2018				860	860
1/5/2018				820	820
1/4/2018				924	924
1/3/2018				833	833
1/2/2018				817	817
1/1/2018				886	886
12/31/2017				853	853
12/30/2017				893	893
12/29/2017				899	899
12/28/2017				905	905
12/27/2017				881	881
12/26/2017		871	0		871
12/25/2017		889	0		889
12/24/2017		888	0		888
12/23/2017		172	75		247
12/22/2017		433	233		666
12/21/2017		731	311		1042
12/20/2017		814	270		1084
12/19/2017		650	289		939
12/18/2017		666	282		948
12/17/2017		626	283		909
12/16/2017		721	306		1027
12/15/2017		714	287		1001
12/14/2017		731	279		1010
12/13/2017		786	290		1076
12/12/2017		721	277		998
12/11/2017		866	290		1156
12/10/2017		744	290		1034
12/9/2017		880	270		1150
12/8/2017		794	288		1082
12/7/2017		861	286		1147
12/6/2017		500	295		795
12/5/2017		623	267		890
12/4/2017		644	291		935
12/3/2017		544	286		830
12/2/2017		665	280		945

Outfall 020A PFAS Concentration Data

(from Marler 2022)

Table 1, Results of Analysis for PFAS Compounds, Outfall 020A (CO0001147)

		Results (ng/L)																				
		5/28/2020	6/26/2020	7/22/2020	8/25/2020	9/30/2020	10/21/2020	11/20/2020	12/17/2020	1/20/2021	2/26/2021	3/25/2021	4/21/2021	5/18/2021	6/22/2021	7/20/2021	8/24/2021	9/23/2021	10/19/2021	11/17/2021	12/14/2021	1/18/2022
Analyte	Acronym	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample	sample
Perfluorobutanoic acid	PFBA	19	12	14	16	16	13	12	25	ND	13	21	33	22	13	14	19	27	25	28	18	24
Perfluoropentanoic acid	PFPeA	32	21	25	21	21	19	18	29	26	38	26	51	52	35	40	34	29	32	25	21	24
Perfluorohexanoic acid	PFHxA	54	35	40	33	33	28	30	43	44	43	42	75	78	47	44	51	45	56	37	36	37
Perfluoroheptanoic acid	PFHpA	11	7.7	9.3	7.6	8.5	7.5	7.9	10	8.9	8.5	10	16	18	12	11	13	10	12	8.3	7.8	8
Perfluorooctanoic acid	PFOA	15	7.6	9	8.5	7.3	9.3	8.9	11	15	11	21	12	19	14	12	13	15	16	8.6	9.1	7
Perfluorononanoic acid	PFNA	13	3.6	4.2	4.8	3.7	6.9	5.7	6	15	10	18	3.5	12	7.9	6.5	6.5	22	8.3	6.4	4.9	3.4
Perfluorodecanoic acid	PFDA	1.8	0.47	0.28	0.31	0.29	0.46	0.42	0.27	ND	0.53	4.3	0.61	0.8	0.54	ND	0.57	2.6	ND	ND	ND	ND
Perfluoroundecanoic acid	PFUnA	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.7	ND	ND	ND	ND	1.3	ND	ND	ND	ND	ND
Perfluorododecanoic acid	PFDoA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.79	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid	PFTriA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid	PFTeA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid	PFBS	25	24	25	23	24	27	21	23	31	37	27	43	41	33	33	36	34	39	21	20	24
Perfluoropentanesulfonic acid	PFPeS	21	19	18	16	18	21	15	20	21	35	16	33	33	23	21	29	27	20	15	18	15
Perfluorohexanesulfonic acid	PFHxS	110	87	89	83	80	100	78	94	120	110	140	130	180	130	110	140	120	120	80	100	81
Perfluoroheptanesulfonic acid	PFHpS	5.3	1.5	1.4	1.7	1.3	3.4	2.3	2.1	5.3	3	11	2.5	4.7	3.5	1.2	3.4	7.6	2.2	1.4	1.8	0.98
Perfluorooctanesulfonic acid	PFOS	290	54	45	55	44	130	64	61	190	140	990	99	140	100	52	72	490	65	50	53	26
Perfluorononanesulfonic acid	PFNS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorodecanesulfonic acid	PFDS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.75	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide	FOSA	0.57	0.61	ND	ND	ND	ND	ND	ND	ND	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluorooctanesulfonamidoacetic acid	NMeFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluorooctanesulfonamidoacetic acid	NEtFOSAA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotelomer sulphonic acid 4:2	4:2 FTS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorotelomer sulphonic acid 6:2	6:2 FTS	17	5.5	5.9	ND	ND	10	4	ND	ND	4.9	22	16	7.1	ND	2.4	6.8	5.5	3.6	ND	ND	ND
Fluorotelomer sulphonic acid 8:2	8:2 FTS	12	2.1	ND	ND	ND	1.8	1.6	0.49	4.4	1.9	22	3	1.3	ND	ND	1.5	9.2	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid	GenX	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Surface Water Flow Data

- South Platte River 2021 Average Daily Flows (USGS 2022)
- Sand Creek at Mouth 2021 Average Daily Flows (from DWR 2022a)
- South Platte Reservoir Complex Outfall 2021 Average Daily Flows (from DWR 2022a)

South Platte Daily Streamflow
2021 Daily Mean Flows
At 64th Ave
39°48'44", - 104°57'28"
https://waterdata.usgs.gov/co/nwis/uv/?site_no=06714215&PARAmeter_cd=00065,00060
USGS Download, 2/27/22

agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
5s	15s	20d	14n	10s
USGS	6714215	1/1/2021	3.67	A
USGS	6714215	1/2/2021	3.6	A
USGS	6714215	1/3/2021	3.53	A
USGS	6714215	1/4/2021	3.55	A
USGS	6714215	1/5/2021	3.46	A
USGS	6714215	1/6/2021	3.51	A
USGS	6714215	1/7/2021	3.55	A
USGS	6714215	1/8/2021	3.56	A
USGS	6714215	1/9/2021	3.53	A
USGS	6714215	1/10/2021	3.92	A
USGS	6714215	1/11/2021	3.83	A
USGS	6714215	1/12/2021	3.71	A
USGS	6714215	1/13/2021	3.69	A
USGS	6714215	1/14/2021	3.79	A
USGS	6714215	1/15/2021	6.33	A
USGS	6714215	1/16/2021	6.89	A
USGS	6714215	1/17/2021	6.22	A
USGS	6714215	1/18/2021	6.45	A
USGS	6714215	1/19/2021	5.51	A
USGS	6714215	1/20/2021	6.59	A
USGS	6714215	1/21/2021	6.6	A
USGS	6714215	1/22/2021	5.39	A
USGS	6714215	1/23/2021	6.34	A
USGS	6714215	1/24/2021	7.12	A
USGS	6714215	1/25/2021	6.22	A
USGS	6714215	1/26/2021	6.1	A
USGS	6714215	1/27/2021	5.8	A
USGS	6714215	1/28/2021	6.56	A
USGS	6714215	1/29/2021	6.29	A
USGS	6714215	1/30/2021	5.46	A
USGS	6714215	1/31/2021	6.55	A
USGS	6714215	2/1/2021	5.92	A
USGS	6714215	2/2/2021	6.28	A
USGS	6714215	2/3/2021	5.24	A
USGS	6714215	2/4/2021	5.92	A
USGS	6714215	2/5/2021	6.47	A
USGS	6714215	2/6/2021	6.65	A
USGS	6714215	2/7/2021	5.79	A
USGS	6714215	2/8/2021	5.93	A

South Platte Daily Streamflow
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At 64th Ave
39°48'44", - 104°57'28"
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agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	2/9/2021	5.56	A
USGS	6714215	2/10/2021	6.95	A
USGS	6714215	2/11/2021	5.89	A
USGS	6714215	2/12/2021	5.24	A
USGS	6714215	2/13/2021	5.22	A
USGS	6714215	2/14/2021	4.66	A
USGS	6714215	2/15/2021	4.7	A
USGS	6714215	2/16/2021	4.65	A
USGS	6714215	2/17/2021	5.16	A
USGS	6714215	2/18/2021	5.28	A
USGS	6714215	2/19/2021	7.53	A
USGS	6714215	2/20/2021	6.24	A
USGS	6714215	2/21/2021	6.19	A
USGS	6714215	2/22/2021	5.72	A
USGS	6714215	2/23/2021	5.77	A
USGS	6714215	2/24/2021	6.65	A
USGS	6714215	2/25/2021	12.4	A
USGS	6714215	2/26/2021	5.64	A
USGS	6714215	2/27/2021	4.95	A
USGS	6714215	2/28/2021	5.32	A
USGS	6714215	3/1/2021	5.24	A
USGS	6714215	3/2/2021	6.15	A
USGS	6714215	3/3/2021	5.94	A
USGS	6714215	3/4/2021	6.58	A
USGS	6714215	3/5/2021	20.4	A
USGS	6714215	3/6/2021	5.2	A
USGS	6714215	3/7/2021	5.74	A
USGS	6714215	3/8/2021	6.68	A
USGS	6714215	3/9/2021	7.41	A
USGS	6714215	3/10/2021	6.93	A
USGS	6714215	3/11/2021	5.79	A
USGS	6714215	3/12/2021	6.25	A
USGS	6714215	3/13/2021	11.6	A
USGS	6714215	3/14/2021	10.7	A
USGS	6714215	3/15/2021	35.4	A
USGS	6714215	3/16/2021	23.7	A
USGS	6714215	3/17/2021	15.3	A
USGS	6714215	3/18/2021	14.3	A
USGS	6714215	3/19/2021	10.5	A
USGS	6714215	3/20/2021	9.15	A

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At 64th Ave
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agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	3/21/2021	8.07	A
USGS	6714215	3/22/2021	22.5	A
USGS	6714215	3/23/2021	10.6	A
USGS	6714215	3/24/2021	8.73	A
USGS	6714215	3/25/2021	7.3	A
USGS	6714215	3/26/2021	6.71	A
USGS	6714215	3/27/2021	6.83	A
USGS	6714215	3/28/2021	6.8	A
USGS	6714215	3/29/2021	6.58	A
USGS	6714215	3/30/2021	7.83	A
USGS	6714215	3/31/2021	8.09	A
USGS	6714215	4/1/2021	7.15	A
USGS	6714215	4/2/2021	7.34	A
USGS	6714215	4/3/2021	6.37	A
USGS	6714215	4/4/2021	5.18	A
USGS	6714215	4/5/2021	5.01	A
USGS	6714215	4/6/2021	22.4	A
USGS	6714215	4/7/2021	13.2	A
USGS	6714215	4/8/2021	5.75	A
USGS	6714215	4/9/2021	5.4	A
USGS	6714215	4/10/2021	5.89	A
USGS	6714215	4/11/2021	5.69	A
USGS	6714215	4/12/2021	5.64	A
USGS	6714215	4/13/2021	5.52	A
USGS	6714215	4/14/2021	5.54	A
USGS	6714215	4/15/2021	9.67	A
USGS	6714215	4/16/2021	41.1	A
USGS	6714215	4/17/2021	10.8	A
USGS	6714215	4/18/2021	8.86	A
USGS	6714215	4/19/2021	7.54	A
USGS	6714215	4/20/2021	13.7	A
USGS	6714215	4/21/2021	9.52	A
USGS	6714215	4/22/2021	9.22	A
USGS	6714215	4/23/2021	7.82	A
USGS	6714215	4/24/2021	7.13	A
USGS	6714215	4/25/2021	6.68	A
USGS	6714215	4/26/2021	6.61	A
USGS	6714215	4/27/2021	149	A
USGS	6714215	4/28/2021	223	A
USGS	6714215	4/29/2021	10.7	A

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agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	4/30/2021	7.82	A
USGS	6714215	5/1/2021	7.31	A
USGS	6714215	5/2/2021	17.6	A
USGS	6714215	5/3/2021	1460	A
USGS	6714215	5/4/2021	143	A
USGS	6714215	5/5/2021	30.2	A
USGS	6714215	5/6/2021	19	A
USGS	6714215	5/7/2021	24.5	A
USGS	6714215	5/8/2021	76.3	A
USGS	6714215	5/9/2021	282	A
USGS	6714215	5/10/2021	290	A
USGS	6714215	5/11/2021	400	A
USGS	6714215	5/12/2021	137	A
USGS	6714215	5/13/2021	27.8	A
USGS	6714215	5/14/2021	14.3	A
USGS	6714215	5/15/2021	30.4	A
USGS	6714215	5/16/2021	54.3	A
USGS	6714215	5/17/2021	167	A
USGS	6714215	5/18/2021	118	A
USGS	6714215	5/19/2021	75.6	A
USGS	6714215	5/20/2021	11.5	A
USGS	6714215	5/21/2021	19	A
USGS	6714215	5/22/2021	11.4	A
USGS	6714215	5/23/2021	336	A
USGS	6714215	5/24/2021	25.6	A
USGS	6714215	5/25/2021	11	A
USGS	6714215	5/26/2021	10.7	A
USGS	6714215	5/27/2021	10.7	A
USGS	6714215	5/28/2021	11.2	A
USGS	6714215	5/29/2021	38.9	A
USGS	6714215	5/30/2021	807	A
USGS	6714215	5/31/2021	498	A
USGS	6714215	6/1/2021	96.1	A
USGS	6714215	6/2/2021	21.2	A
USGS	6714215	6/3/2021	24.5	A
USGS	6714215	6/4/2021	10.1	A
USGS	6714215	6/5/2021	10.3	A
USGS	6714215	6/6/2021	12.6	A
USGS	6714215	6/7/2021	11.9	A
USGS	6714215	6/8/2021	11.4	A

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agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	6/9/2021	10.4	A
USGS	6714215	6/10/2021	9.31	A
USGS	6714215	6/11/2021	16.7	A
USGS	6714215	6/12/2021	10.2	A
USGS	6714215	6/13/2021	38.3	A
USGS	6714215	6/14/2021	24	A
USGS	6714215	6/15/2021	23.7	A
USGS	6714215	6/16/2021	8.7	A
USGS	6714215	6/17/2021	126	A
USGS	6714215	6/18/2021	198	A
USGS	6714215	6/19/2021	251	A
USGS	6714215	6/20/2021	220	A
USGS	6714215	6/21/2021	363	A
USGS	6714215	6/22/2021	173	A
USGS	6714215	6/23/2021	145	A
USGS	6714215	6/24/2021	190	A
USGS	6714215	6/25/2021	536	A
USGS	6714215	6/26/2021	1410	A
USGS	6714215	6/27/2021	337	A
USGS	6714215	6/28/2021	108	A
USGS	6714215	6/29/2021	26.9	A
USGS	6714215	6/30/2021	173	A
USGS	6714215	7/1/2021	356	A
USGS	6714215	7/2/2021	47.5	A
USGS	6714215	7/3/2021	13.2	A
USGS	6714215	7/4/2021	217	A
USGS	6714215	7/5/2021	419	A
USGS	6714215	7/6/2021	527	A
USGS	6714215	7/7/2021	676	A
USGS	6714215	7/8/2021	418	A
USGS	6714215	7/9/2021	288	A
USGS	6714215	7/10/2021	260	A
USGS	6714215	7/11/2021	247	A
USGS	6714215	7/12/2021	254	A
USGS	6714215	7/13/2021	261	A
USGS	6714215	7/14/2021	286	A
USGS	6714215	7/15/2021	244	A
USGS	6714215	7/16/2021	146	A
USGS	6714215	7/17/2021	156	A
USGS	6714215	7/18/2021	162	A

South Platte Daily Streamflow
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At 64th Ave
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agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	7/19/2021	152	A
USGS	6714215	7/20/2021	157	A
USGS	6714215	7/21/2021	152	A
USGS	6714215	7/22/2021	157	A
USGS	6714215	7/23/2021	237	A
USGS	6714215	7/24/2021	280	A
USGS	6714215	7/25/2021	310	A
USGS	6714215	7/26/2021	294	A
USGS	6714215	7/27/2021	272	A
USGS	6714215	7/28/2021	254	A
USGS	6714215	7/29/2021	241	A
USGS	6714215	7/30/2021	478	A
USGS	6714215	7/31/2021	571	A
USGS	6714215	8/1/2021	405	A
USGS	6714215	8/2/2021	350	A
USGS	6714215	8/3/2021	368	A
USGS	6714215	8/4/2021	435	A
USGS	6714215	8/5/2021	453	A
USGS	6714215	8/6/2021	427	A
USGS	6714215	8/7/2021	416	A
USGS	6714215	8/8/2021	402	A
USGS	6714215	8/9/2021	388	A
USGS	6714215	8/10/2021	379	A
USGS	6714215	8/11/2021	330	A
USGS	6714215	8/12/2021	315	A
USGS	6714215	8/13/2021	311	A
USGS	6714215	8/14/2021	165	A
USGS	6714215	8/15/2021	151	A
USGS	6714215	8/16/2021	164	A
USGS	6714215	8/17/2021	198	A
USGS	6714215	8/18/2021	211	A
USGS	6714215	8/19/2021	497	A
USGS	6714215	8/20/2021	443	A
USGS	6714215	8/21/2021	257	A
USGS	6714215	8/22/2021	243	A
USGS	6714215	8/23/2021	158	A
USGS	6714215	8/24/2021	131	A
USGS	6714215	8/25/2021	122	A
USGS	6714215	8/26/2021	118	A
USGS	6714215	8/27/2021	137	A

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agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	8/28/2021	134	A
USGS	6714215	8/29/2021	109	A
USGS	6714215	8/30/2021	116	A
USGS	6714215	8/31/2021	110	A
USGS	6714215	9/1/2021	125	A
USGS	6714215	9/2/2021	150	A
USGS	6714215	9/3/2021	176	A
USGS	6714215	9/4/2021	251	A
USGS	6714215	9/5/2021	167	A
USGS	6714215	9/6/2021	142	A
USGS	6714215	9/7/2021	109	A
USGS	6714215	9/8/2021	102	A
USGS	6714215	9/9/2021	98.9	A
USGS	6714215	9/10/2021	103	A
USGS	6714215	9/11/2021	104	A
USGS	6714215	9/12/2021	104	A
USGS	6714215	9/13/2021	108	A
USGS	6714215	9/14/2021	105	A
USGS	6714215	9/15/2021	104	A
USGS	6714215	9/16/2021	92.2	A
USGS	6714215	9/17/2021	87	A
USGS	6714215	9/18/2021	79.8	A
USGS	6714215	9/19/2021	75.9	A
USGS	6714215	9/20/2021	70.3	A
USGS	6714215	9/21/2021	84.3	A
USGS	6714215	9/22/2021	52.7	A
USGS	6714215	9/23/2021	26.2	A
USGS	6714215	9/24/2021	14.5	A
USGS	6714215	9/25/2021	6.57	A
USGS	6714215	9/26/2021	5.89	A
USGS	6714215	9/27/2021	5.68	A
USGS	6714215	9/28/2021	5.5	A
USGS	6714215	9/29/2021	31.5	A
USGS	6714215	9/30/2021	7.62	A
USGS	6714215	10/1/2021	10.7	A
USGS	6714215	10/2/2021	14.8	A
USGS	6714215	10/3/2021	12.8	A
USGS	6714215	10/4/2021	11.6	A
USGS	6714215	10/5/2021	11.4	A
USGS	6714215	10/6/2021	11.4	A

South Platte Daily Streamflow
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At 64th Ave
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agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	10/7/2021	11.4	A
USGS	6714215	10/8/2021	11.2	A
USGS	6714215	10/9/2021	11.4	A
USGS	6714215	10/10/2021	12	A
USGS	6714215	10/11/2021	12.2	A
USGS	6714215	10/12/2021	12.4	A
USGS	6714215	10/13/2021	12.3	A
USGS	6714215	10/14/2021	12.3	A
USGS	6714215	10/15/2021	11.9	A
USGS	6714215	10/16/2021	11.5	A
USGS	6714215	10/17/2021	11.6	A
USGS	6714215	10/18/2021	11.4	A
USGS	6714215	10/19/2021	11.4	A
USGS	6714215	10/20/2021	11.3	A
USGS	6714215	10/21/2021	11.2	A
USGS	6714215	10/22/2021	11.8	A
USGS	6714215	10/23/2021	11.6	A
USGS	6714215	10/24/2021	11.8	A
USGS	6714215	10/25/2021	11.1	A
USGS	6714215	10/26/2021	48.1	A
USGS	6714215	10/27/2021	171	A
USGS	6714215	10/28/2021	116	A
USGS	6714215	10/29/2021	77.9	A
USGS	6714215	10/30/2021	11.6	A
USGS	6714215	10/31/2021	12.3	A
USGS	6714215	11/1/2021	12.3	A
USGS	6714215	11/2/2021	12.2	A
USGS	6714215	11/3/2021	11.9	A
USGS	6714215	11/4/2021	11.5	A
USGS	6714215	11/5/2021	12	A
USGS	6714215	11/6/2021	12.2	A
USGS	6714215	11/7/2021	11.8	A
USGS	6714215	11/8/2021	11.2	A
USGS	6714215	11/9/2021	10.6	A
USGS	6714215	11/10/2021	11.8	A
USGS	6714215	11/11/2021	14.1	A
USGS	6714215	11/12/2021	13.8	A
USGS	6714215	11/13/2021	12.3	A
USGS	6714215	11/14/2021	10.9	A
USGS	6714215	11/15/2021	10.8	A

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At 64th Ave
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USGS Download, 2/27/22

agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	11/16/2021	10.8	A
USGS	6714215	11/17/2021	56.3	A
USGS	6714215	11/18/2021	92	P
USGS	6714215	11/19/2021	85	P
USGS	6714215	11/20/2021	10.9	P
USGS	6714215	11/21/2021	10.3	P
USGS	6714215	11/22/2021	11.8	P
USGS	6714215	11/23/2021	12.8	P
USGS	6714215	11/24/2021	12.5	P
USGS	6714215	11/25/2021	12.3	P
USGS	6714215	11/26/2021	12.1	P
USGS	6714215	11/27/2021	11.7	P
USGS	6714215	11/28/2021	11.5	P
USGS	6714215	11/29/2021	11.4	P
USGS	6714215	11/30/2021	11.8	P
USGS	6714215	12/1/2021	14.7	P
USGS	6714215	12/2/2021	18.5	P
USGS	6714215	12/3/2021	18.4	P
USGS	6714215	12/4/2021	16.8	P
USGS	6714215	12/5/2021	16.1	P
USGS	6714215	12/6/2021	16.5	P
USGS	6714215	12/7/2021	17.4	P
USGS	6714215	12/8/2021	17	P
USGS	6714215	12/9/2021	16.9	P
USGS	6714215	12/10/2021	17.8	P
USGS	6714215	12/11/2021	17.4	P
USGS	6714215	12/12/2021	17.4	P
USGS	6714215	12/13/2021	17.1	P
USGS	6714215	12/14/2021	17.3	P
USGS	6714215	12/15/2021	17.7	P
USGS	6714215	12/16/2021	16.7	P
USGS	6714215	12/17/2021	16.7	P
USGS	6714215	12/18/2021	16.8	P
USGS	6714215	12/19/2021	16.7	P
USGS	6714215	12/20/2021	17.1	P
USGS	6714215	12/21/2021	17.2	P
USGS	6714215	12/22/2021	17.3	P
USGS	6714215	12/23/2021	17.1	P
USGS	6714215	12/24/2021	16.9	P
USGS	6714215	12/25/2021	16.9	P

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39°48'44", - 104°57'28"
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USGS Download, 2/27/22

agency_cd	site_no	datetime	Streamflow (cfs)	17536_00060_00003_cd
USGS	6714215	12/26/2021	16.9	P
USGS	6714215	12/27/2021	17.1	P
USGS	6714215	12/28/2021	17.2	P
USGS	6714215	12/29/2021	17.1	P
USGS	6714215	12/30/2021	17	P
USGS	6714215	12/31/2021	10.6	P
USGS	6714215	1/1/2022	5.47	P

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
DWR Download, 2/27/22
https://dwr.state.co.us/tools/Stations/SANCOMCO?params=DISCHRG

abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	01/01/2021 00:00	8.5
SANCOMCO	01/02/2021 00:00	7.9
SANCOMCO	01/03/2021 00:00	7.6
SANCOMCO	01/04/2021 00:00	8.3
SANCOMCO	01/05/2021 00:00	7.6
SANCOMCO	01/06/2021 00:00	7.5
SANCOMCO	01/07/2021 00:00	7.3
SANCOMCO	01/08/2021 00:00	7.6
SANCOMCO	01/09/2021 00:00	7.4
SANCOMCO	01/10/2021 00:00	7.6
SANCOMCO	01/11/2021 00:00	9.6
SANCOMCO	01/12/2021 00:00	8.7
SANCOMCO	01/13/2021 00:00	10.7
SANCOMCO	01/14/2021 00:00	10.4
SANCOMCO	01/15/2021 00:00	10.8
SANCOMCO	01/16/2021 00:00	11.2
SANCOMCO	01/17/2021 00:00	10.1
SANCOMCO	01/18/2021 00:00	10.8
SANCOMCO	01/19/2021 00:00	10.2
SANCOMCO	01/20/2021 00:00	10.2
SANCOMCO	01/21/2021 00:00	10.6
SANCOMCO	01/22/2021 00:00	10.2
SANCOMCO	01/23/2021 00:00	10.2
SANCOMCO	01/24/2021 00:00	10.8
SANCOMCO	01/25/2021 00:00	9.9
SANCOMCO	01/26/2021 00:00	9.9
SANCOMCO	01/27/2021 00:00	10.4
SANCOMCO	01/28/2021 00:00	13.8
SANCOMCO	01/29/2021 00:00	15.7
SANCOMCO	01/30/2021 00:00	13.4
SANCOMCO	01/31/2021 00:00	12.9
SANCOMCO	02/01/2021 00:00	12.4
SANCOMCO	02/02/2021 00:00	12.4
SANCOMCO	02/03/2021 00:00	11.5
SANCOMCO	02/04/2021 00:00	11.2
SANCOMCO	02/05/2021 00:00	11.5
SANCOMCO	02/06/2021 00:00	11.3
SANCOMCO	02/07/2021 00:00	11.0
SANCOMCO	02/08/2021 00:00	11.1
SANCOMCO	02/09/2021 00:00	11.1

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	02/10/2021 00:00	10.9
SANCOMCO	02/11/2021 00:00	10.3
SANCOMCO	02/12/2021 00:00	9.4
SANCOMCO	02/13/2021 00:00	8.1
SANCOMCO	02/14/2021 00:00	8.8
SANCOMCO	02/15/2021 00:00	8.7
SANCOMCO	02/16/2021 00:00	10.1
SANCOMCO	02/17/2021 00:00	10.6
SANCOMCO	02/18/2021 00:00	12.2
SANCOMCO	02/19/2021 00:00	15.3
SANCOMCO	02/20/2021 00:00	14.9
SANCOMCO	02/21/2021 00:00	36.7
SANCOMCO	02/22/2021 00:00	38.2
SANCOMCO	02/23/2021 00:00	27.7
SANCOMCO	02/24/2021 00:00	15.6
SANCOMCO	02/25/2021 00:00	37.3
SANCOMCO	02/26/2021 00:00	43.0
SANCOMCO	02/27/2021 00:00	28.1
SANCOMCO	02/28/2021 00:00	17.3
SANCOMCO	03/01/2021 00:00	14.4
SANCOMCO	03/02/2021 00:00	17.3
SANCOMCO	03/03/2021 00:00	15.4
SANCOMCO	03/04/2021 00:00	12.6
SANCOMCO	03/05/2021 00:00	80.1
SANCOMCO	03/06/2021 00:00	32.4
SANCOMCO	03/07/2021 00:00	18.4
SANCOMCO	03/08/2021 00:00	11.8
SANCOMCO	03/09/2021 00:00	14.6
SANCOMCO	03/10/2021 00:00	15.2
SANCOMCO	03/11/2021 00:00	11.7
SANCOMCO	03/12/2021 00:00	10.2
SANCOMCO	03/13/2021 00:00	30.9
SANCOMCO	03/14/2021 00:00	49.3
SANCOMCO	03/15/2021 00:00	87.2
SANCOMCO	03/16/2021 00:00	143.0
SANCOMCO	03/17/2021 00:00	138.0
SANCOMCO	03/18/2021 00:00	124.0
SANCOMCO	03/19/2021 00:00	122.0
SANCOMCO	03/20/2021 00:00	118.0
SANCOMCO	03/21/2021 00:00	96.1

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	03/22/2021 00:00	177.0
SANCOMCO	03/23/2021 00:00	92.6
SANCOMCO	03/24/2021 00:00	82.3
SANCOMCO	03/25/2021 00:00	58.0
SANCOMCO	03/26/2021 00:00	41.9
SANCOMCO	03/27/2021 00:00	31.2
SANCOMCO	03/28/2021 00:00	29.3
SANCOMCO	03/29/2021 00:00	25.2
SANCOMCO	03/30/2021 00:00	42.2
SANCOMCO	03/31/2021 00:00	30.1
SANCOMCO	04/01/2021 00:00	22.7
SANCOMCO	04/02/2021 00:00	20.6
SANCOMCO	04/03/2021 00:00	18.8
SANCOMCO	04/04/2021 00:00	16.2
SANCOMCO	04/05/2021 00:00	15.2
SANCOMCO	04/06/2021 00:00	34.3
SANCOMCO	04/07/2021 00:00	83.7
SANCOMCO	04/08/2021 00:00	38.1
SANCOMCO	04/09/2021 00:00	27.6
SANCOMCO	04/10/2021 00:00	26.0
SANCOMCO	04/11/2021 00:00	21.9
SANCOMCO	04/12/2021 00:00	20.1
SANCOMCO	04/13/2021 00:00	17.7
SANCOMCO	04/14/2021 00:00	17.6
SANCOMCO	04/15/2021 00:00	28.4
SANCOMCO	04/16/2021 00:00	154.0
SANCOMCO	04/17/2021 00:00	71.4
SANCOMCO	04/18/2021 00:00	50.2
SANCOMCO	04/19/2021 00:00	32.4
SANCOMCO	04/20/2021 00:00	74.3
SANCOMCO	04/21/2021 00:00	55.0
SANCOMCO	04/22/2021 00:00	51.4
SANCOMCO	04/23/2021 00:00	34.0
SANCOMCO	04/24/2021 00:00	27.6
SANCOMCO	04/25/2021 00:00	26.1
SANCOMCO	04/26/2021 00:00	19.2
SANCOMCO	04/27/2021 00:00	45.9
SANCOMCO	04/28/2021 00:00	245.0
SANCOMCO	04/29/2021 00:00	63.7
SANCOMCO	04/30/2021 00:00	47.2

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	05/01/2021 00:00	40.5
SANCOMCO	05/02/2021 00:00	36.8
SANCOMCO	05/03/2021 00:00	408.0
SANCOMCO	05/04/2021 00:00	163.0
SANCOMCO	05/05/2021 00:00	85.0
SANCOMCO	05/06/2021 00:00	61.7
SANCOMCO	05/07/2021 00:00	49.7
SANCOMCO	05/08/2021 00:00	40.7
SANCOMCO	05/09/2021 00:00	83.0
SANCOMCO	05/10/2021 00:00	57.3
SANCOMCO	05/11/2021 00:00	159.0
SANCOMCO	05/12/2021 00:00	83.2
SANCOMCO	05/13/2021 00:00	53.7
SANCOMCO	05/14/2021 00:00	45.9
SANCOMCO	05/15/2021 00:00	38.0
SANCOMCO	05/16/2021 00:00	35.1
SANCOMCO	05/17/2021 00:00	48.4
SANCOMCO	05/18/2021 00:00	92.5
SANCOMCO	05/19/2021 00:00	62.9
SANCOMCO	05/20/2021 00:00	45.5
SANCOMCO	05/21/2021 00:00	38.6
SANCOMCO	05/22/2021 00:00	32.1
SANCOMCO	05/23/2021 00:00	191.0
SANCOMCO	05/24/2021 00:00	62.5
SANCOMCO	05/25/2021 00:00	61.7
SANCOMCO	05/26/2021 00:00	41.9
SANCOMCO	05/27/2021 00:00	34.1
SANCOMCO	05/28/2021 00:00	29.2
SANCOMCO	05/29/2021 00:00	27.4
SANCOMCO	05/30/2021 00:00	188.0
SANCOMCO	05/31/2021 00:00	164.0
SANCOMCO	06/01/2021 00:00	63.2
SANCOMCO	06/02/2021 00:00	45.5
SANCOMCO	06/03/2021 00:00	39.1
SANCOMCO	06/04/2021 00:00	35.9
SANCOMCO	06/05/2021 00:00	28.6
SANCOMCO	06/06/2021 00:00	23.1
SANCOMCO	06/07/2021 00:00	21.5
SANCOMCO	06/08/2021 00:00	20.3
SANCOMCO	06/09/2021 00:00	17.5

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	06/10/2021 00:00	12.4
SANCOMCO	06/11/2021 00:00	11.9
SANCOMCO	06/12/2021 00:00	10.9
SANCOMCO	06/13/2021 00:00	31.4
SANCOMCO	06/14/2021 00:00	52.2
SANCOMCO	06/15/2021 00:00	22.2
SANCOMCO	06/16/2021 00:00	16.5
SANCOMCO	06/17/2021 00:00	15.0
SANCOMCO	06/18/2021 00:00	14.3
SANCOMCO	06/19/2021 00:00	18.9
SANCOMCO	06/20/2021 00:00	16.7
SANCOMCO	06/21/2021 00:00	32.6
SANCOMCO	06/22/2021 00:00	18.8
SANCOMCO	06/23/2021 00:00	15.6
SANCOMCO	06/24/2021 00:00	13.5
SANCOMCO	06/25/2021 00:00	87.1
SANCOMCO	06/26/2021 00:00	276.0
SANCOMCO	06/27/2021 00:00	77.8
SANCOMCO	06/28/2021 00:00	58.1
SANCOMCO	06/29/2021 00:00	40.5
SANCOMCO	06/30/2021 00:00	31.1
SANCOMCO	07/01/2021 00:00	36.6
SANCOMCO	07/02/2021 00:00	50.5
SANCOMCO	07/03/2021 00:00	24.6
SANCOMCO	07/04/2021 00:00	20.5
SANCOMCO	07/05/2021 00:00	27.6
SANCOMCO	07/06/2021 00:00	97.9
SANCOMCO	07/07/2021 00:00	32.8
SANCOMCO	07/08/2021 00:00	18.8
SANCOMCO	07/09/2021 00:00	15.6
SANCOMCO	07/10/2021 00:00	12.5
SANCOMCO	07/11/2021 00:00	12.1
SANCOMCO	07/12/2021 00:00	11.6
SANCOMCO	07/13/2021 00:00	10.8
SANCOMCO	07/14/2021 00:00	32.1
SANCOMCO	07/15/2021 00:00	28.2
SANCOMCO	07/16/2021 00:00	13.4
SANCOMCO	07/17/2021 00:00	10.5
SANCOMCO	07/18/2021 00:00	12.8
SANCOMCO	07/19/2021 00:00	9.7

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	07/20/2021 00:00	8.2
SANCOMCO	07/21/2021 00:00	7.3
SANCOMCO	07/22/2021 00:00	10.6
SANCOMCO	07/23/2021 00:00	42.8
SANCOMCO	07/24/2021 00:00	14.5
SANCOMCO	07/25/2021 00:00	13.3
SANCOMCO	07/26/2021 00:00	11.8
SANCOMCO	07/27/2021 00:00	10.4
SANCOMCO	07/28/2021 00:00	8.8
SANCOMCO	07/29/2021 00:00	7.2
SANCOMCO	07/30/2021 00:00	37.8
SANCOMCO	07/31/2021 00:00	127.0
SANCOMCO	08/01/2021 00:00	38.8
SANCOMCO	08/02/2021 00:00	23.3
SANCOMCO	08/03/2021 00:00	16.1
SANCOMCO	08/04/2021 00:00	13.5
SANCOMCO	08/05/2021 00:00	11.8
SANCOMCO	08/06/2021 00:00	10.4
SANCOMCO	08/07/2021 00:00	13.2
SANCOMCO	08/08/2021 00:00	11.7
SANCOMCO	08/09/2021 00:00	10.2
SANCOMCO	08/10/2021 00:00	9.1
SANCOMCO	08/11/2021 00:00	8.0
SANCOMCO	08/12/2021 00:00	6.6
SANCOMCO	08/13/2021 00:00	8.5
SANCOMCO	08/14/2021 00:00	7.0
SANCOMCO	08/15/2021 00:00	6.4
SANCOMCO	08/16/2021 00:00	7.0
SANCOMCO	08/17/2021 00:00	7.4
SANCOMCO	08/18/2021 00:00	7.8
SANCOMCO	08/19/2021 00:00	19.3
SANCOMCO	08/20/2021 00:00	56.9
SANCOMCO	08/21/2021 00:00	22.5
SANCOMCO	08/22/2021 00:00	23.8
SANCOMCO	08/23/2021 00:00	16.2
SANCOMCO	08/24/2021 00:00	12.2
SANCOMCO	08/25/2021 00:00	10.8
SANCOMCO	08/26/2021 00:00	10.1
SANCOMCO	08/27/2021 00:00	9.3
SANCOMCO	08/28/2021 00:00	8.6

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	08/29/2021 00:00	7.6
SANCOMCO	08/30/2021 00:00	8.4
SANCOMCO	08/31/2021 00:00	8.4
SANCOMCO	09/01/2021 00:00	9.4
SANCOMCO	09/02/2021 00:00	9.9
SANCOMCO	09/03/2021 00:00	12.2
SANCOMCO	09/04/2021 00:00	27.8
SANCOMCO	09/05/2021 00:00	17.7
SANCOMCO	09/06/2021 00:00	11.3
SANCOMCO	09/07/2021 00:00	8.8
SANCOMCO	09/08/2021 00:00	8.3
SANCOMCO	09/09/2021 00:00	7.3
SANCOMCO	09/10/2021 00:00	9.0
SANCOMCO	09/11/2021 00:00	7.8
SANCOMCO	09/12/2021 00:00	9.5
SANCOMCO	09/13/2021 00:00	8.8
SANCOMCO	09/14/2021 00:00	7.8
SANCOMCO	09/15/2021 00:00	9.3
SANCOMCO	09/16/2021 00:00	8.2
SANCOMCO	09/17/2021 00:00	7.1
SANCOMCO	09/18/2021 00:00	7.5
SANCOMCO	09/19/2021 00:00	9.0
SANCOMCO	09/20/2021 00:00	8.0
SANCOMCO	09/21/2021 00:00	10.3
SANCOMCO	09/22/2021 00:00	11.8
SANCOMCO	09/23/2021 00:00	10.4
SANCOMCO	09/24/2021 00:00	9.6
SANCOMCO	09/25/2021 00:00	8.9
SANCOMCO	09/26/2021 00:00	10.1
SANCOMCO	09/27/2021 00:00	9.7
SANCOMCO	09/28/2021 00:00	8.6
SANCOMCO	09/29/2021 00:00	21.0
SANCOMCO	09/30/2021 00:00	30.1
SANCOMCO	10/01/2021 00:00	15.5
SANCOMCO	10/02/2021 00:00	13.3
SANCOMCO	10/03/2021 00:00	14.4
SANCOMCO	10/04/2021 00:00	12.1
SANCOMCO	10/05/2021 00:00	11.3
SANCOMCO	10/06/2021 00:00	11.3
SANCOMCO	10/07/2021 00:00	11.1

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	10/08/2021 00:00	11.3
SANCOMCO	10/09/2021 00:00	10.2
SANCOMCO	10/10/2021 00:00	13.0
SANCOMCO	10/11/2021 00:00	10.5
SANCOMCO	10/12/2021 00:00	11.6
SANCOMCO	10/13/2021 00:00	11.6
SANCOMCO	10/14/2021 00:00	11.6
SANCOMCO	10/15/2021 00:00	13.4
SANCOMCO	10/16/2021 00:00	13.6
SANCOMCO	10/17/2021 00:00	13.1
SANCOMCO	10/18/2021 00:00	10.4
SANCOMCO	10/19/2021 00:00	11.5
SANCOMCO	10/20/2021 00:00	13.3
SANCOMCO	10/21/2021 00:00	11.3
SANCOMCO	10/22/2021 00:00	12.1
SANCOMCO	10/23/2021 00:00	13.0
SANCOMCO	10/24/2021 00:00	13.5
SANCOMCO	10/25/2021 00:00	11.1
SANCOMCO	10/26/2021 00:00	10.1
SANCOMCO	10/27/2021 00:00	13.7
SANCOMCO	10/28/2021 00:00	14.1
SANCOMCO	10/29/2021 00:00	12.1
SANCOMCO	10/30/2021 00:00	13.4
SANCOMCO	10/31/2021 00:00	12.1
SANCOMCO	11/01/2021 00:00	11.2
SANCOMCO	11/02/2021 00:00	11.5
SANCOMCO	11/03/2021 00:00	13.2
SANCOMCO	11/04/2021 00:00	12.6
SANCOMCO	11/05/2021 00:00	12.9
SANCOMCO	11/06/2021 00:00	16.1
SANCOMCO	11/07/2021 00:00	11.8
SANCOMCO	11/08/2021 00:00	11.1
SANCOMCO	11/09/2021 00:00	12.2
SANCOMCO	11/10/2021 00:00	11.1
SANCOMCO	11/11/2021 00:00	10.3
SANCOMCO	11/12/2021 00:00	11.0
SANCOMCO	11/13/2021 00:00	9.6
SANCOMCO	11/14/2021 00:00	11.3
SANCOMCO	11/15/2021 00:00	10.0
SANCOMCO	11/16/2021 00:00	12.4

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	11/17/2021 00:00	8.9
SANCOMCO	11/18/2021 00:00	10.0
SANCOMCO	11/19/2021 00:00	12.2
SANCOMCO	11/20/2021 00:00	11.4
SANCOMCO	11/21/2021 00:00	12.7
SANCOMCO	11/22/2021 00:00	12.0
SANCOMCO	11/23/2021 00:00	12.1
SANCOMCO	11/24/2021 00:00	12.1
SANCOMCO	11/25/2021 00:00	17.3
SANCOMCO	11/26/2021 00:00	14.2
SANCOMCO	11/27/2021 00:00	11.9
SANCOMCO	11/28/2021 00:00	12.8
SANCOMCO	11/29/2021 00:00	11.7
SANCOMCO	11/30/2021 00:00	12.5
SANCOMCO	12/01/2021 00:00	12.4
SANCOMCO	12/02/2021 00:00	12.1
SANCOMCO	12/03/2021 00:00	12.1
SANCOMCO	12/04/2021 00:00	13.5
SANCOMCO	12/05/2021 00:00	12.5
SANCOMCO	12/06/2021 00:00	10.9
SANCOMCO	12/07/2021 00:00	12.5
SANCOMCO	12/08/2021 00:00	11.9
SANCOMCO	12/09/2021 00:00	11.5
SANCOMCO	12/10/2021 00:00	11.9
SANCOMCO	12/11/2021 00:00	14.3
SANCOMCO	12/12/2021 00:00	13.7
SANCOMCO	12/13/2021 00:00	13.0
SANCOMCO	12/14/2021 00:00	13.2
SANCOMCO	12/15/2021 00:00	12.1
SANCOMCO	12/16/2021 00:00	13.2
SANCOMCO	12/17/2021 00:00	11.9
SANCOMCO	12/18/2021 00:00	12.0
SANCOMCO	12/19/2021 00:00	12.4
SANCOMCO	12/20/2021 00:00	11.9
SANCOMCO	12/21/2021 00:00	8.9
SANCOMCO	12/22/2021 00:00	10.3
SANCOMCO	12/23/2021 00:00	10.1
SANCOMCO	12/24/2021 00:00	8.0
SANCOMCO	12/25/2021 00:00	8.58
SANCOMCO	12/26/2021 00:00	11.6

Sand Creek Streamflow
2021 Daily Mean Flows
SAND CREEK AT MOUTH NR COMMERCE CITY,CO (SANCOMCO)
39°48'39.5", -104°57'05.7" NAD83
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abbrev	Date Time	DISCHRG Value (cfs)
SANCOMCO	12/27/2021 00:00	11.5
SANCOMCO	12/28/2021 00:00	11.2
SANCOMCO	12/29/2021 00:00	12.4
SANCOMCO	12/30/2021 00:00	11.2
SANCOMCO	12/31/2021 00:00	11.6
SANCOMCO	01/01/2022 00:00	10.4

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
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https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

Date Time	SOUTH RESERVOIR COMPLEX DISCHRG	DISCHRG Units	DISCHRG Review Status	DISCHRG Obs Flag	DISCHRG Modified
01/01/2021 00:00	0.277	cfs	O		01/02/2021 00:00
01/02/2021 00:00	0.378	cfs	O		01/03/2021 00:01
01/03/2021 00:00	0.278	cfs	O		01/04/2021 00:01
01/04/2021 00:00	0.283	cfs	O		01/05/2021 00:00
01/05/2021 00:00	0.424	cfs	O		01/06/2021 00:01
01/06/2021 00:00	0.242	cfs	O		01/07/2021 00:01
01/07/2021 00:00	0.389	cfs	O		01/08/2021 00:01
01/08/2021 00:00	0.405	cfs	O		01/09/2021 00:02
01/09/2021 00:00	0.243	cfs	O		01/10/2021 00:00
01/10/2021 00:00	0.822	cfs	O		01/11/2021 00:01
01/11/2021 00:00	0.269	cfs	O		01/12/2021 00:01
01/12/2021 00:00	0.164	cfs	O		01/13/2021 00:01
01/13/2021 00:00	0.42	cfs	O		01/14/2021 00:01
01/14/2021 00:00	0.298	cfs	O		01/15/2021 00:01
01/15/2021 00:00	0.224	cfs	O		01/16/2021 18:24
01/16/2021 00:00	0.416	cfs	O		01/17/2021 00:00
01/17/2021 00:00	0.416	cfs	O		01/18/2021 00:01
01/18/2021 00:00	0.14	cfs	O		01/19/2021 00:01
01/19/2021 00:00	0.414	cfs	O		01/20/2021 00:01
01/20/2021 00:00	0.277	cfs	O		01/21/2021 00:00
01/21/2021 00:00	0.272	cfs	O		01/22/2021 00:01
01/22/2021 00:00	0.276	cfs	O		01/23/2021 00:00
01/23/2021 00:00	0.385	cfs	O		01/24/2021 00:16
01/24/2021 00:00	0.281	cfs	O		01/25/2021 00:01
01/25/2021 00:00	0.292	cfs	O		01/26/2021 00:00
01/26/2021 00:00	0.623	cfs	O		01/27/2021 00:01
01/27/2021 00:00	0.964	cfs	O		01/28/2021 00:00
01/28/2021 00:00	0.276	cfs	O		01/29/2021 00:00
01/29/2021 00:00	0.276	cfs	O		01/30/2021 00:03
01/30/2021 00:00	0.354	cfs	O		01/31/2021 00:00
01/31/2021 00:00	0.284	cfs	O		02/01/2021 00:01
02/01/2021 00:00	0.277	cfs	O		02/02/2021 00:01
02/02/2021 00:00	0.316	cfs	O		02/03/2021 00:01
02/03/2021 00:00	0.299	cfs	O		02/04/2021 00:01
02/04/2021 00:00	0.15	cfs	O		02/05/2021 00:00
02/05/2021 00:00	0.415	cfs	O		02/06/2021 00:01

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
DWR Download, 2/22/22
https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

02/06/2021 00:00	0.274	cfs	O		02/07/2021 00:01
02/07/2021 00:00	0.27	cfs	O		02/08/2021 00:01
02/08/2021 00:00	0.279	cfs	O		02/09/2021 00:01
02/09/2021 00:00	0.457	cfs	O		02/10/2021 00:01
02/10/2021 00:00	0.273	cfs	O		02/11/2021 00:01
02/11/2021 00:00	0.252	cfs	O		02/12/2021 00:00
02/12/2021 00:00	0.276	cfs	O		02/13/2021 00:01
02/13/2021 00:00	0.278	cfs	O		02/14/2021 00:00
02/14/2021 00:00	0.764	cfs	O		02/15/2021 00:00
02/15/2021 00:00	0.414	cfs	O		02/16/2021 00:01
02/16/2021 00:00	0.415	cfs	O		02/17/2021 00:01
02/17/2021 00:00	0.383	cfs	O		02/18/2021 00:00
02/18/2021 00:00	1.24	cfs	O		02/19/2021 00:01
02/19/2021 00:00	0.141	cfs	O		02/20/2021 00:03
02/20/2021 00:00	0.408	cfs	O		02/21/2021 00:06
02/21/2021 00:00	0.461	cfs	O		02/22/2021 00:01
02/22/2021 00:00	0.274	cfs	O		02/23/2021 00:01
02/23/2021 00:00	0.406	cfs	O		02/24/2021 00:01
02/24/2021 00:00	0.277	cfs	O		02/25/2021 00:00
02/25/2021 00:00	2.93	cfs	O		02/26/2021 00:01
02/26/2021 00:00	0.409	cfs	O		02/27/2021 00:01
02/27/2021 00:00	0.415	cfs	O		02/28/2021 00:01
02/28/2021 00:00	0.406	cfs	O		03/01/2021 00:01
03/01/2021 00:00	0.277	cfs	O		03/02/2021 00:01
03/02/2021 00:00	0.276	cfs	O		03/03/2021 00:02
03/03/2021 00:00	0.279	cfs	O		03/04/2021 00:01
03/04/2021 00:00	0.275	cfs	O		03/05/2021 00:01
03/05/2021 00:00	0.827	cfs	O		03/06/2021 00:01
03/06/2021 00:00	0.408	cfs	O		03/07/2021 00:01
03/07/2021 00:00	0.293	cfs	O		03/08/2021 00:01
03/08/2021 00:00	0.388	cfs	O		03/09/2021 00:01
03/09/2021 00:00	0.139	cfs	O		03/10/2021 00:01
03/10/2021 00:00	0.407	cfs	O		03/11/2021 00:00
03/11/2021 00:00	0.409	cfs	O		03/12/2021 00:01
03/12/2021 00:00	0.391	cfs	O		03/13/2021 00:01
03/13/2021 00:00	0.289	cfs	O		03/14/2021 00:18
03/14/2021 00:00	2.17	cfs	O		03/15/2021 00:01
03/15/2021 00:00	4.22	cfs	O		03/16/2021 00:01
03/16/2021 00:00	0.423	cfs	O		03/17/2021 00:01
03/17/2021 00:00	0.832	cfs	O		03/18/2021 00:01
03/18/2021 00:00	0.429	cfs	O		03/19/2021 00:01

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
DWR Download, 2/22/22
https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

03/19/2021 00:00	0.43	cfs	O		03/20/2021 00:01
03/20/2021 00:00	0.52	cfs	O		03/21/2021 00:00
03/21/2021 00:00	0.369	cfs	O		03/22/2021 00:01
03/22/2021 00:00	1.18	cfs	O		03/23/2021 00:01
03/23/2021 00:00	0.406	cfs	O		03/24/2021 00:01
03/24/2021 00:00	0.959	cfs	O		03/25/2021 00:01
03/25/2021 00:00	0.458	cfs	O		03/26/2021 00:01
03/26/2021 00:00	0.409	cfs	O		03/27/2021 00:01
03/27/2021 00:00	0.413	cfs	O		03/28/2021 00:01
03/28/2021 00:00	0.404	cfs	O		03/29/2021 00:01
03/29/2021 00:00	0.411	cfs	O		03/30/2021 00:01
03/30/2021 00:00	0.681	cfs	O		03/31/2021 00:01
03/31/2021 00:00	0.388	cfs	O		04/01/2021 00:01
04/01/2021 00:00	0.827	cfs	O		04/02/2021 00:00
04/02/2021 00:00	0.821	cfs	O		04/03/2021 00:04
04/03/2021 00:00	0.96	cfs	O		04/04/2021 00:01
04/04/2021 00:00	0.825	cfs	O		04/05/2021 00:01
04/05/2021 00:00	0.933	cfs	O		04/06/2021 00:01
04/06/2021 00:00	0.959	cfs	O		04/07/2021 00:01
04/07/2021 00:00	1.76	cfs	O		04/08/2021 00:01
04/08/2021 00:00	0.967	cfs	O		04/09/2021 00:00
04/09/2021 00:00	0.815	cfs	O		04/10/2021 00:01
04/10/2021 00:00	0.948	cfs	O		04/11/2021 00:01
04/11/2021 00:00	0.946	cfs	O		04/12/2021 00:01
04/12/2021 00:00	0	cfs	O		04/13/2021 00:01
04/13/2021 00:00	1.69	cfs	O		04/14/2021 00:01
04/14/2021 00:00	0.943	cfs	O		04/15/2021 00:01
04/15/2021 00:00	0.811	cfs	O		04/16/2021 00:01
04/16/2021 00:00	2.83	cfs	O		04/17/2021 00:02
04/17/2021 00:00	0.923	cfs	O		04/18/2021 00:00
04/18/2021 00:00	1.02	cfs	O		04/19/2021 00:00
04/19/2021 00:00	0.944	cfs	O		04/20/2021 00:01
04/20/2021 00:00	2.71	cfs	O		04/21/2021 00:01
04/21/2021 00:00	1.07	cfs	O		04/22/2021 00:01
04/22/2021 00:00	0.837	cfs	O		04/23/2021 00:01
04/23/2021 00:00	0.924	cfs	O		04/24/2021 00:01
04/24/2021 00:00	0.998	cfs	O		04/25/2021 00:01
04/25/2021 00:00	1.02	cfs	O		04/26/2021 00:01
04/26/2021 00:00	1.04	cfs	O		04/27/2021 00:01
04/27/2021 00:00	0.761	cfs	O		04/28/2021 00:01
04/28/2021 00:00	4.11	cfs	O		04/29/2021 00:01

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
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https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

04/29/2021 00:00	1.09	cfs	O		04/30/2021 00:01
04/30/2021 00:00	1.11	cfs	O		05/01/2021 00:02
05/01/2021 00:00	0.418	cfs	O		05/02/2021 00:01
05/02/2021 00:00	0.499	cfs	O		05/03/2021 00:01
05/03/2021 00:00	4.7	cfs	O		05/04/2021 00:01
05/04/2021 00:00	5.06	cfs	O		05/05/2021 00:01
05/05/2021 00:00	0.669	cfs	O		05/06/2021 00:01
05/06/2021 00:00	1.27	cfs	O		05/07/2021 00:01
05/07/2021 00:00	0.516	cfs	O		05/08/2021 00:01
05/08/2021 00:00	0.766	cfs	O		05/09/2021 00:01
05/09/2021 00:00	1.73	cfs	O		05/10/2021 00:01
05/10/2021 00:00	0.521	cfs	O		05/11/2021 00:03
05/11/2021 00:00	2.76	cfs	O		05/12/2021 00:01
05/12/2021 00:00	1.62	cfs	O		05/13/2021 00:01
05/13/2021 00:00	0	cfs	O		05/14/2021 00:01
05/14/2021 00:00	0.506	cfs	O		05/15/2021 00:00
05/15/2021 00:00	0.55	cfs	O		05/16/2021 00:01
05/16/2021 00:00	0.417	cfs	O		05/17/2021 00:01
05/17/2021 00:00	0.547	cfs	O		05/18/2021 00:01
05/18/2021 00:00	2.17	cfs	O		05/19/2021 00:01
05/19/2021 00:00	0.986	cfs	O		05/20/2021 00:01
05/20/2021 00:00	0.723	cfs	O		05/21/2021 00:00
05/21/2021 00:00	0.815	cfs	O		05/22/2021 00:01
05/22/2021 00:00	0.701	cfs	O		05/23/2021 00:01
05/23/2021 00:00	1.46	cfs	O		05/24/2021 00:01
05/24/2021 00:00	0.778	cfs	O		05/25/2021 00:01
05/25/2021 00:00	0.73	cfs	O		05/26/2021 00:01
05/26/2021 00:00	0.663	cfs	O		05/27/2021 00:00
05/27/2021 00:00	0.763	cfs	O		05/28/2021 00:01
05/28/2021 00:00	0.378	cfs	O		05/29/2021 00:01
05/29/2021 00:00	0.674	cfs	O		05/30/2021 00:03
05/30/2021 00:00	0.707	cfs	O		05/31/2021 00:01
05/31/2021 00:00	6.06	cfs	O		06/01/2021 00:01
06/01/2021 00:00	0.794	cfs	O		06/02/2021 00:01
06/02/2021 00:00	0.813	cfs	O		06/03/2021 00:01
06/03/2021 00:00	0.571	cfs	O		06/04/2021 00:01
06/04/2021 00:00	0.679	cfs	O		06/05/2021 00:01
06/05/2021 00:00	0.682	cfs	O		06/06/2021 00:00
06/06/2021 00:00	0.54	cfs	O		06/07/2021 00:01
06/07/2021 00:00	0.694	cfs	O		06/08/2021 00:01
06/08/2021 00:00	0.707	cfs	O		06/09/2021 00:01

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
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06/09/2021 00:00	0.565	cfs	O		06/10/2021 00:01
06/10/2021 00:00	0.742	cfs	O		06/11/2021 00:01
06/11/2021 00:00	2.2	cfs	O		06/12/2021 00:01
06/12/2021 00:00	0.799	cfs	O		06/13/2021 00:01
06/13/2021 00:00	0.202	cfs	O		06/14/2021 00:01
06/14/2021 00:00	0.772	cfs	O		06/15/2021 00:01
06/15/2021 00:00	0.569	cfs	O		06/16/2021 00:01
06/16/2021 00:00	0.719	cfs	O		06/17/2021 00:01
06/17/2021 00:00	0.691	cfs	O		06/18/2021 00:01
06/18/2021 00:00	0.547	cfs	O		06/19/2021 00:01
06/19/2021 00:00	0.535	cfs	O		06/20/2021 00:01
06/20/2021 00:00	0.555	cfs	O		06/21/2021 00:01
06/21/2021 00:00	1.21	cfs	O		06/22/2021 00:01
06/22/2021 00:00	27.9	cfs	O		06/23/2021 00:01
06/23/2021 00:00	40.8	cfs	O		06/24/2021 00:01
06/24/2021 00:00	43.7	cfs	O		06/25/2021 00:01
06/25/2021 00:00	47.2	cfs	O		06/26/2021 00:01
06/26/2021 00:00	47.9	cfs	O		06/27/2021 00:02
06/27/2021 00:00	46.8	cfs	O		06/28/2021 00:01
06/28/2021 00:00	47.1	cfs	O		06/29/2021 00:01
06/29/2021 00:00	11.5	cfs	O		06/30/2021 00:01
06/30/2021 00:00	1.01	cfs	O		07/01/2021 00:01
07/01/2021 00:00	0.525	cfs	O		07/02/2021 00:01
07/02/2021 00:00	1.17	cfs	O		07/03/2021 00:01
07/03/2021 00:00	0.671	cfs	O		07/04/2021 00:01
07/04/2021 00:00	0.732	cfs	O		07/05/2021 00:01
07/05/2021 00:00	0.599	cfs	O		07/06/2021 00:01
07/06/2021 00:00	0.693	cfs	O		07/07/2021 00:01
07/07/2021 00:00	0.933	cfs	O		07/08/2021 00:01
07/08/2021 00:00	32.8	cfs	O		07/09/2021 00:01
07/09/2021 00:00	45.9	cfs	O		07/10/2021 00:01
07/10/2021 00:00	43.4	cfs	O		07/11/2021 00:01
07/11/2021 00:00	42.4	cfs	O		07/12/2021 00:01
07/12/2021 00:00	40.7	cfs	O		07/13/2021 00:01
07/13/2021 00:00	41.2	cfs	O		07/14/2021 00:01
07/14/2021 00:00	45.5	cfs	O		07/15/2021 00:01
07/15/2021 00:00	46.1	cfs	O		07/16/2021 00:01
07/16/2021 00:00	44.5	cfs	O		07/17/2021 00:01
07/17/2021 00:00	43.9	cfs	O		07/18/2021 00:01
07/18/2021 00:00	43.4	cfs	O		07/19/2021 00:01
07/19/2021 00:00	42.9	cfs	O		07/20/2021 00:01

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
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07/20/2021 00:00	42.4	cfs	O		07/21/2021 00:01
07/21/2021 00:00	47.2	cfs	O		07/22/2021 00:01
07/22/2021 00:00	51	cfs	O		07/23/2021 00:01
07/23/2021 00:00	51.2	cfs	O		07/24/2021 00:01
07/24/2021 00:00	50.1	cfs	O		07/25/2021 00:00
07/25/2021 00:00	48.4	cfs	O		07/26/2021 00:01
07/26/2021 00:00	48.3	cfs	O		07/27/2021 00:01
07/27/2021 00:00	42.8	cfs	O		07/28/2021 00:01
07/28/2021 00:00	45.5	cfs	O		07/29/2021 00:01
07/29/2021 00:00	45.8	cfs	O		07/30/2021 00:01
07/30/2021 00:00	38.3	cfs	O		07/31/2021 00:01
07/31/2021 00:00	11.7	cfs	O		08/01/2021 00:01
08/01/2021 00:00	11.9	cfs	O		08/02/2021 00:01
08/02/2021 00:00	23.3	cfs	O		08/03/2021 00:01
08/03/2021 00:00	6.8	cfs	O		08/04/2021 00:01
08/04/2021 00:00	3.67	cfs	O		08/05/2021 00:01
08/05/2021 00:00	2.97	cfs	O		08/06/2021 00:01
08/06/2021 00:00	0	cfs	O		08/07/2021 00:00
08/07/2021 00:00	0	cfs	O		08/08/2021 00:01
08/08/2021 00:00	0	cfs	O		08/09/2021 00:01
08/09/2021 00:00	0	cfs	O		08/10/2021 00:01
08/10/2021 00:00	0	cfs	O		08/11/2021 00:01
08/11/2021 00:00	0	cfs	O		08/12/2021 00:01
08/12/2021 00:00	0	cfs	O		08/13/2021 00:01
08/13/2021 00:00	0	cfs	O		08/14/2021 00:02
08/14/2021 00:00	0	cfs	O		08/15/2021 00:01
08/15/2021 00:00	0	cfs	O		08/16/2021 00:01
08/16/2021 00:00	0	cfs	O		08/17/2021 00:01
08/17/2021 00:00	0	cfs	O		08/18/2021 00:01
08/18/2021 00:00	0	cfs	O		08/19/2021 00:01
08/19/2021 00:00	0	cfs	O		08/20/2021 00:01
08/20/2021 00:00	0	cfs	O		08/21/2021 00:01
08/21/2021 00:00	0	cfs	O		08/22/2021 00:01
08/22/2021 00:00	0	cfs	O		08/23/2021 00:01
08/23/2021 00:00	0	cfs	O		08/24/2021 00:01
08/24/2021 00:00	0	cfs	O		08/25/2021 00:01
08/25/2021 00:00	0	cfs	O		08/26/2021 00:01
08/26/2021 00:00	0	cfs	O		08/27/2021 00:01
08/27/2021 00:00	0	cfs	O		08/28/2021 00:01
08/28/2021 00:00	0	cfs	O		08/30/2021 00:23
08/29/2021 00:00	0	cfs	O		08/30/2021 00:28

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
DWR Download, 2/22/22
https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

08/30/2021 00:00	0	cfs	O		08/31/2021 00:01
08/31/2021 00:00	0	cfs	O		09/01/2021 00:02
09/01/2021 00:00	0	cfs	O		09/02/2021 00:01
09/02/2021 00:00	0	cfs	O		09/03/2021 00:01
09/03/2021 00:00	0	cfs	O		09/04/2021 00:00
09/04/2021 00:00	0	cfs	O		09/05/2021 00:01
09/05/2021 00:00	0	cfs	O		09/06/2021 00:01
09/06/2021 00:00	0	cfs	O		09/07/2021 00:01
09/07/2021 00:00	0	cfs	O		09/08/2021 00:01
09/08/2021 00:00	0	cfs	O		09/09/2021 00:01
09/09/2021 00:00	0	cfs	O		09/10/2021 00:01
09/10/2021 00:00	0	cfs	O		09/11/2021 00:01
09/11/2021 00:00	0	cfs	O		09/12/2021 00:01
09/12/2021 00:00	0	cfs	O		09/13/2021 00:01
09/13/2021 00:00	0	cfs	O		09/14/2021 00:01
09/14/2021 00:00	0	cfs	O		09/15/2021 00:01
09/15/2021 00:00	0	cfs	O		09/16/2021 00:01
09/16/2021 00:00	0	cfs	O		09/17/2021 00:01
09/17/2021 00:00	0	cfs	O		09/18/2021 00:01
09/18/2021 00:00	0	cfs	O		09/19/2021 00:02
09/19/2021 00:00	0	cfs	O		09/20/2021 00:01
09/20/2021 00:00	0	cfs	O		09/21/2021 00:01
09/21/2021 00:00	0	cfs	O		09/22/2021 00:01
09/22/2021 00:00	0	cfs	O		09/23/2021 00:01
09/23/2021 00:00	0	cfs	O		09/24/2021 00:01
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09/26/2021 00:00	0	cfs	O		09/27/2021 00:01
09/27/2021 00:00	0	cfs	O		09/28/2021 00:01
09/28/2021 00:00	0	cfs	O		09/29/2021 00:04
09/29/2021 00:00	0	cfs	O		09/30/2021 00:07
09/30/2021 00:00	0	cfs	O		10/01/2021 00:01
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10/02/2021 00:00	0	cfs	O		10/03/2021 00:01
10/03/2021 00:00	0	cfs	O		10/04/2021 00:01
10/04/2021 00:00	0	cfs	O		10/05/2021 00:01
10/05/2021 00:00	0	cfs	O		10/06/2021 00:02
10/06/2021 00:00	0	cfs	O		10/07/2021 00:01
10/07/2021 00:00	0	cfs	O		10/08/2021 00:01
10/08/2021 00:00	0	cfs	O		10/09/2021 00:02
10/09/2021 00:00	0	cfs	O		10/10/2021 00:01

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
DWR Download, 2/22/22
https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

10/10/2021 00:00	0	cfs	O		10/11/2021 00:02	
10/11/2021 00:00	0	cfs	O		10/11/2021 22:31	
10/12/2021 00:00	0	cfs	O		10/13/2021 00:01	
10/13/2021 00:00	0	cfs	O		10/14/2021 00:02	
10/14/2021 00:00	0	cfs	O		10/15/2021 00:03	
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10/20/2021 00:00	0.378	cfs	O		10/21/2021 00:01	
10/21/2021 00:00	0.416	cfs	O		10/22/2021 00:01	
10/22/2021 00:00	0.428	cfs	O		10/23/2021 00:01	
10/23/2021 00:00	0.438	cfs	O		10/24/2021 00:01	
10/24/2021 00:00	0.486	cfs	O		10/25/2021 00:01	
10/25/2021 00:00	0.372	cfs	O		10/26/2021 00:01	
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11/04/2021 00:00	0.383	cfs	O		11/05/2021 00:01	
11/05/2021 00:00	0.326	cfs	O		11/06/2021 00:01	
11/06/2021 00:00	0.428	cfs	O		11/07/2021 00:01	
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11/11/2021 00:00	0.334	cfs	O		11/12/2021 00:01	
11/12/2021 00:00	0.156	cfs	O		11/12/2021 22:01	
11/13/2021 00:00		cfs				
11/14/2021 00:00		cfs				
11/15/2021 00:00		cfs				
11/16/2021 00:00		cfs				
11/17/2021 00:00		cfs				
11/18/2021 00:00		cfs				
11/19/2021 00:00		cfs				

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
DWR Download, 2/22/22
https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

11/20/2021 00:00		cfs				
11/21/2021 00:00	0.593	cfs	O		11/22/2021 00:30	
11/22/2021 00:00	0.403	cfs	O		11/23/2021 00:30	
11/23/2021 00:00	0.406	cfs	O		11/24/2021 00:30	
11/24/2021 00:00	0.324	cfs	O		11/25/2021 00:30	
11/25/2021 00:00	0.371	cfs	O		11/26/2021 00:30	
11/26/2021 00:00	0.379	cfs	O		11/27/2021 00:30	
11/27/2021 00:00	0.334	cfs	O		11/28/2021 00:31	
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11/29/2021 00:00	0.331	cfs	O		11/30/2021 00:30	
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12/01/2021 00:00	0.321	cfs	O		12/02/2021 00:30	
12/02/2021 00:00	0.407	cfs	O		12/03/2021 00:30	
12/03/2021 00:00	0.248	cfs	O		12/04/2021 00:30	
12/04/2021 00:00	0.366	cfs	O		12/05/2021 00:30	
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12/08/2021 00:00	0.163	cfs	O		12/09/2021 00:30	
12/09/2021 00:00	0	cfs	O		12/10/2021 00:30	
12/10/2021 00:00	0.224	cfs	O		12/11/2021 00:31	
12/11/2021 00:00	0.202	cfs	O		12/12/2021 00:31	
12/12/2021 00:00	0.209	cfs	O		12/13/2021 00:31	
12/13/2021 00:00	0.222	cfs	O		12/14/2021 00:31	
12/14/2021 00:00	0.164	cfs	O		12/15/2021 00:31	
12/15/2021 00:00	0.29	cfs	O		12/16/2021 00:31	
12/16/2021 00:00	0.194	cfs	O		12/17/2021 00:31	
12/17/2021 00:00	0.213	cfs	O		12/18/2021 00:31	
12/18/2021 00:00	0.272	cfs	O		12/19/2021 00:31	
12/19/2021 00:00	0.189	cfs	O		12/20/2021 00:31	
12/20/2021 00:00	0.2	cfs	O		12/21/2021 00:31	
12/21/2021 00:00	0.201	cfs	O		12/22/2021 00:31	
12/22/2021 00:00	0.156	cfs	O		12/23/2021 00:31	
12/23/2021 00:00	0.158	cfs	O		12/24/2021 00:31	
12/24/2021 00:00	0.155	cfs	O		12/25/2021 00:31	
12/25/2021 00:00	0.226	cfs	O		12/26/2021 00:31	
12/26/2021 00:00	0.169	cfs	O		12/27/2021 00:31	
12/27/2021 00:00	0.221	cfs	O		12/28/2021 00:31	
12/28/2021 00:00	0.274	cfs	O		12/29/2021 00:31	
12/29/2021 00:00	0.213	cfs	O		12/30/2021 00:31	
12/30/2021 00:00	0.26	cfs	O		12/31/2021 00:30	

South Platte Reservoir Complex Outfall Flows (cfs)
2021 Daily Mean Flows
SOUTH RESERVOIR COMPLEX OUTFLOW (SCPOUTCO)
39.824354, -104.950687
DWR Download, 2/22/22
https://dwr.state.co.us/Tools/Stations/SCPOUTCO?params=DISCHRG

12/31/2021 00:00	0.251	cfs	O		01/01/2022 00:30
01/01/2022 00:00	0.301	cfs	O		01/02/2022 00:30

Metro WWTP Outfall Average Daily Flow Data

(Dopler 2022)

Metro Water Recovery

Plant Flows Monthly Report AVG, MAX, MIN

Report Date: 02/24/2022

FI-F350 **N. OUTFALL WEIR (001)** **350**

DATE		AVG FLOW MGD	MAX MGD	MIN MGD
01/01/2021	Fri	55.28	88.94	20.41
01/02/2021	Sat	61.58	97.51	19.44
01/03/2021	Sun	62.99	100.97	14.47
01/04/2021	Mon	61.67	87.65	23.64
01/05/2021	Tue	59.11	83.29	21.47
01/06/2021	Wed	55.71	77.20	16.65
01/07/2021	Thu	58.50	81.50	19.44
01/08/2021	Fri	53.96	78.02	12.89
01/09/2021	Sat	58.84	93.07	15.60
01/10/2021	Sun	57.65	88.85	7.32
01/11/2021	Mon	60.80	84.80	21.01
01/12/2021	Tue	48.42	76.69	17.03
01/13/2021	Wed	46.68	75.18	20.64
01/14/2021	Thu	40.97	71.19	0.18
01/15/2021	Fri	47.27	68.26	17.93
01/16/2021	Sat	47.78	74.27	15.45
01/17/2021	Sun	49.85	78.40	16.80
01/18/2021	Mon	48.45	70.51	16.34
01/19/2021	Tue	46.95	67.20	18.23
01/20/2021	Wed	50.17	68.78	17.70
01/21/2021	Thu	47.09	65.31	16.87
01/22/2021	Fri	48.62	72.76	15.22
01/23/2021	Sat	41.10	72.98	15.38
01/24/2021	Sun	46.74	79.54	14.17
01/25/2021	Mon	43.59	62.46	13.04
01/26/2021	Tue	45.07	63.36	18.01
01/27/2021	Wed	44.40	60.65	16.20
01/28/2021	Thu	46.28	61.26	16.58
01/29/2021	Fri	44.78	63.36	20.26
01/30/2021	Sat	50.97	74.79	23.12
01/31/2021	Sun	49.16	77.05	17.86
02/01/2021	Mon	48.88	65.47	20.19
02/02/2021	Tue	44.72	66.59	12.97
02/03/2021	Wed	48.13	67.50	16.65
02/04/2021	Thu	47.32	65.54	17.93
02/05/2021	Fri	48.85	71.56	20.19
02/06/2021	Sat	47.83	73.51	19.21
02/07/2021	Sun	51.63	83.14	20.86
02/08/2021	Mon	48.34	69.46	18.38
02/09/2021	Tue	48.43	66.15	19.81
02/10/2021	Wed	44.95	65.31	15.90
02/11/2021	Thu	48.31	67.20	16.28
02/12/2021	Fri	44.39	59.74	20.94

Metro Water Recovery

Plant Flows Monthly Report AVG, MAX, MIN

Report Date: 02/24/2022

FI-F350 **N. OUTFALL WEIR (001)** **350**

02/13/2021	Sat	49.64	70.28	20.41
02/14/2021	Sun	46.49	73.36	13.34
02/15/2021	Mon	51.14	72.98	18.38
02/16/2021	Tue	49.58	71.04	18.45
02/17/2021	Wed	49.29	73.89	23.28
02/18/2021	Thu	58.01	82.55	19.21
02/19/2021	Fri	58.61	88.64	17.70
02/20/2021	Sat	50.66	80.29	18.83
02/21/2021	Sun	51.25	79.61	14.47
02/22/2021	Mon	49.39	68.55	21.39
02/23/2021	Tue	50.10	73.29	18.98
02/24/2021	Wed	43.72	67.12	10.26
02/25/2021	Thu	50.81	75.02	17.93
02/26/2021	Fri	48.67	74.04	18.69
02/27/2021	Sat	49.62	68.17	21.09
02/28/2021	Sun	49.17	79.01	15.97
03/01/2021	Mon	50.43	68.17	18.54
03/02/2021	Tue	46.00	62.23	20.33
03/03/2021	Wed	48.15	72.01	15.45
03/04/2021	Thu	40.40	73.22	0.10
03/05/2021	Fri	49.55	70.35	18.45
03/06/2021	Sat	46.48	74.87	16.05
03/07/2021	Sun	49.63	77.28	13.87
03/08/2021	Mon	48.14	69.98	15.97
03/09/2021	Tue	47.22	72.54	14.02
03/10/2021	Wed	46.98	64.57	26.95
03/11/2021	Thu	45.79	62.23	16.05
03/12/2021	Fri	45.90	61.03	17.25
03/13/2021	Sat	52.91	77.58	18.76
03/14/2021	Sun	54.48	77.28	23.57
03/15/2021	Mon	62.80	90.14	22.66
03/16/2021	Tue	58.20	78.70	19.28
03/17/2021	Wed	59.50	77.05	25.30
03/18/2021	Thu	57.01	80.74	17.48
03/19/2021	Fri	59.20	76.98	25.46
03/20/2021	Sat	60.24	81.18	28.16
03/21/2021	Sun	58.97	90.36	26.73
03/22/2021	Mon	62.92	84.87	31.84
03/23/2021	Tue	63.37	80.97	32.37
03/24/2021	Wed	59.65	80.66	30.34
03/25/2021	Thu	60.90	81.04	26.42
03/26/2021	Fri	58.12	76.07	28.53
03/27/2021	Sat	55.62	79.54	25.30
03/28/2021	Sun	55.28	75.18	23.64
03/29/2021	Mon	57.78	75.85	28.84

Metro Water Recovery

Plant Flows Monthly Report AVG, MAX, MIN

Report Date: 02/24/2022

FI-F350 **N. OUTFALL WEIR (001)** **350**

03/30/2021	Tue	54.28	71.56	27.71
03/31/2021	Wed	56.39	80.36	26.42
04/01/2021	Thu	48.95	67.80	26.73
04/02/2021	Fri	57.66	77.20	25.90
04/03/2021	Sat	48.64	68.93	11.16
04/04/2021	Sun	58.28	81.64	26.65
04/05/2021	Mon	49.65	79.30	12.30
04/06/2021	Tue	59.35	82.69	24.77
04/07/2021	Wed	51.98	75.77	18.30
04/08/2021	Thu	52.91	76.52	26.20
04/09/2021	Fri	50.72	74.01	20.72
04/10/2021	Sat	55.57	80.74	25.98
04/11/2021	Sun	52.01	80.81	12.74
04/12/2021	Mon	51.32	75.90	24.55
04/13/2021	Tue	50.17	75.55	22.97
04/14/2021	Wed	60.84	87.20	24.25
04/15/2021	Thu	59.31	86.60	20.19
04/16/2021	Fri	64.98	86.07	34.10
04/17/2021	Sat	59.35	88.71	16.80
04/18/2021	Sun	61.65	92.10	16.96
04/19/2021	Mon	67.29	93.68	31.02
04/20/2021	Tue	72.83	98.26	35.99
04/21/2021	Wed	73.87	96.75	32.30
04/22/2021	Thu	73.36	96.91	30.26
04/23/2021	Fri	69.17	92.45	30.42
04/24/2021	Sat	63.85	91.94	24.62
04/25/2021	Sun	63.30	94.35	21.39
04/26/2021	Mon	67.70	94.50	30.34
04/27/2021	Tue	68.16	108.04	27.41
04/28/2021	Wed	70.34	94.25	45.16
04/29/2021	Thu	68.96	91.34	15.08
04/30/2021	Fri	70.01	90.74	33.04
05/01/2021	Sat	63.86	84.10	26.20
05/02/2021	Sun	64.30	87.36	22.06
05/03/2021	Mon	83.94	105.34	47.86
05/04/2021	Tue	76.65	97.88	46.44
05/05/2021	Wed	70.11	89.50	43.88
05/06/2021	Thu	67.40	87.02	41.77
05/07/2021	Fri	68.20	87.73	36.58
05/08/2021	Sat	68.58	94.73	31.92
05/09/2021	Sun	64.96	91.19	27.93
05/10/2021	Mon	66.44	91.04	29.82
05/11/2021	Tue	73.49	90.89	44.78
05/12/2021	Wed	74.18	94.88	42.98
05/13/2021	Thu	69.94	92.59	32.74

Metro Water Recovery

Plant Flows Monthly Report AVG, MAX, MIN

Report Date: 02/24/2022

FI-F350 **N. OUTFALL WEIR (001)** **350**

05/14/2021	Fri	67.64	87.21	38.84
05/15/2021	Sat	63.87	92.25	36.14
05/16/2021	Sun	66.11	92.84	28.76
05/17/2021	Mon	75.28	105.25	38.46
05/18/2021	Tue	78.27	95.84	45.84
05/19/2021	Wed	75.02	91.57	45.68
05/20/2021	Thu	73.16	95.03	43.13
05/21/2021	Fri	67.56	87.73	34.62
05/22/2021	Sat	65.60	91.19	37.72
05/23/2021	Sun	71.02	96.84	40.80
05/24/2021	Mon	70.09	90.43	38.54
05/25/2021	Tue	71.91	95.33	38.84
05/26/2021	Wed	70.32	91.72	39.97
05/27/2021	Thu	70.04	99.24	39.06
05/28/2021	Fri	66.70	86.83	38.10
05/29/2021	Sat	63.59	90.36	33.50
05/30/2021	Sun	68.77	101.49	30.49
05/31/2021	Mon	75.98	101.35	44.40
06/01/2021	Tue	74.76	92.39	45.84
06/02/2021	Wed	74.70	93.59	46.51
06/03/2021	Thu	73.43	93.75	45.01
06/04/2021	Fri	66.99	82.62	39.30
06/05/2021	Sat	63.78	86.38	30.26
06/06/2021	Sun	63.73	90.06	23.05
06/07/2021	Mon	64.26	79.54	36.73
06/08/2021	Tue	61.65	81.79	30.79
06/09/2021	Wed	62.94	80.81	36.66
06/10/2021	Thu	63.14	84.80	35.90
06/11/2021	Fri	62.38	80.81	40.04
06/12/2021	Sat	56.91	78.48	21.01
06/13/2021	Sun	63.81	82.32	24.32
06/14/2021	Mon	59.12	79.46	24.10
06/15/2021	Tue	59.94	87.88	31.25
06/16/2021	Wed	58.40	87.06	27.79
06/17/2021	Thu	53.58	85.78	4.62
06/18/2021	Fri	56.44	73.14	18.76
06/19/2021	Sat	57.90	79.30	18.30
06/20/2021	Sun	59.95	81.94	20.48
06/21/2021	Mon	61.12	82.55	25.98
06/22/2021	Tue	62.79	82.24	37.04
06/23/2021	Wed	58.16	76.66	21.54
06/24/2021	Thu	62.48	88.11	24.32
06/25/2021	Fri	59.42	87.88	24.70
06/26/2021	Sat	68.94	90.14	29.58
06/27/2021	Sun	64.18	85.86	24.48

Metro Water Recovery

Plant Flows Monthly Report AVG, MAX, MIN

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FI-F350 **N. OUTFALL WEIR (001)** **350**

06/28/2021	Mon	59.95	78.93	28.68
06/29/2021	Tue	63.45	82.24	29.14
06/30/2021	Wed	58.93	81.50	18.38
07/01/2021	Thu	61.71	85.54	24.62
07/02/2021	Fri	61.60	75.70	30.79
07/03/2021	Sat	58.87	76.60	24.55
07/04/2021	Sun	54.75	78.48	23.87
07/05/2021	Mon	58.50	81.41	17.18
07/06/2021	Tue	59.26	83.06	25.46
07/07/2021	Wed	61.51	83.75	23.19
07/08/2021	Thu	58.52	78.86	21.32
07/09/2021	Fri	52.23	74.79	20.79
07/10/2021	Sat	52.95	78.93	14.55
07/11/2021	Sun	55.44	77.72	17.25
07/12/2021	Mon	54.08	75.41	17.33
07/13/2021	Tue	52.14	74.49	19.81
07/14/2021	Wed	51.91	78.40	16.34
07/15/2021	Thu	55.83	75.06	20.64
07/16/2021	Fri	55.77	75.09	22.59
07/17/2021	Sat	55.08	75.55	22.06
07/18/2021	Sun	61.37	86.22	21.24
07/19/2021	Mon	62.33	93.52	23.57
07/20/2021	Tue	66.36	94.28	21.70
07/21/2021	Wed	63.60	96.00	17.03
07/22/2021	Thu	64.22	97.44	16.65
07/23/2021	Fri	65.17	93.20	22.44
07/24/2021	Sat	57.77	79.98	17.48
07/25/2021	Sun	58.17	81.64	15.52
07/26/2021	Mon	66.26	96.08	20.79
07/27/2021	Tue	68.08	96.31	21.24
07/28/2021	Wed	67.55	95.25	25.08
07/29/2021	Thu	56.97	92.54	20.56
07/30/2021	Fri	63.28	100.36	18.01
07/31/2021	Sat	63.44	95.40	17.78
08/01/2021	Sun	60.53	85.69	19.13
08/02/2021	Mon	65.18	97.96	19.88
08/03/2021	Tue	66.28	95.15	25.68
08/04/2021	Wed	65.56	91.11	20.72
08/05/2021	Thu	64.09	90.32	11.61
08/06/2021	Fri	66.09	86.38	20.64
08/07/2021	Sat	61.72	83.44	18.54
08/08/2021	Sun	62.56	87.43	21.84
08/09/2021	Mon	63.89	91.72	21.61
08/10/2021	Tue	64.38	92.39	20.04
08/11/2021	Wed	64.48	91.40	17.63

Metro Water Recovery

Plant Flows Monthly Report AVG, MAX, MIN

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FI-F350 **N. OUTFALL WEIR (001)** **350**

08/12/2021	Thu	62.97	88.18	17.40
08/13/2021	Fri	65.16	87.67	19.74
08/14/2021	Sat	60.56	82.46	17.48
08/15/2021	Sun	59.48	83.82	17.10
08/16/2021	Mon	58.53	81.39	16.65
08/17/2021	Tue	60.85	89.53	18.23
08/18/2021	Wed	62.67	94.80	21.17
08/19/2021	Thu	62.72	92.92	18.38
08/20/2021	Fri	64.42	84.72	21.24
08/21/2021	Sat	60.55	85.54	18.69
08/22/2021	Sun	62.62	92.02	17.03
08/23/2021	Mon	63.68	94.65	16.13
08/24/2021	Tue	62.12	93.43	18.23
08/25/2021	Wed	61.17	94.42	15.90
08/26/2021	Thu	61.93	93.59	19.28
08/27/2021	Fri	63.70	88.71	18.23
08/28/2021	Sat	57.48	80.51	14.02
08/29/2021	Sun	59.38	85.54	17.48
08/30/2021	Mon	59.43	89.16	17.63
08/31/2021	Tue	60.49	92.84	14.09
09/01/2021	Wed	60.82	91.50	19.06
09/02/2021	Thu	61.33	86.21	16.50
09/03/2021	Fri	59.88	81.00	15.22
09/04/2021	Sat	56.67	79.76	14.70
09/05/2021	Sun	52.81	78.18	13.34
09/06/2021	Mon	56.65	85.10	13.87
09/07/2021	Tue	61.29	90.81	15.00
09/08/2021	Wed	61.80	90.06	13.87
09/09/2021	Thu	60.35	88.29	16.50
09/10/2021	Fri	59.98	84.17	16.13
09/11/2021	Sat	55.81	78.40	15.75
09/12/2021	Sun	54.55	78.18	14.02
09/13/2021	Mon	57.54	90.89	15.22
09/14/2021	Tue	60.97	88.49	14.70
09/15/2021	Wed	60.44	88.85	19.44
09/16/2021	Thu	58.68	87.73	21.61
09/17/2021	Fri	54.01	82.88	16.65
09/18/2021	Sat	52.37	76.30	15.08
09/19/2021	Sun	53.96	80.29	14.24
09/20/2021	Mon	56.50	89.53	15.60
09/21/2021	Tue	58.96	88.49	17.33
09/22/2021	Wed	58.14	87.58	15.00
09/23/2021	Thu	59.02	87.13	18.91
09/24/2021	Fri	54.45	83.47	15.97
09/25/2021	Sat	53.00	76.98	17.70

Metro Water Recovery

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FI-F350 **N. OUTFALL WEIR (001)** **350**

09/26/2021	Sun	54.10	86.91	15.22
09/27/2021	Mon	57.68	85.93	15.38
09/28/2021	Tue	56.44	89.08	15.67
09/29/2021	Wed	57.47	83.41	23.35
09/30/2021	Thu	55.38	82.91	22.44
10/01/2021	Fri	57.68	80.36	17.78
10/02/2021	Sat	56.42	83.97	14.40
10/03/2021	Sun	57.26	85.86	14.47
10/04/2021	Mon	55.64	87.13	15.22
10/05/2021	Tue	55.74	83.55	17.33
10/06/2021	Wed	55.85	85.78	18.08
10/07/2021	Thu	55.96	82.91	13.71
10/08/2021	Fri	58.07	79.39	24.84
10/09/2021	Sat	55.10	77.88	24.32
10/10/2021	Sun	56.08	86.68	15.29
10/11/2021	Mon	54.74	77.81	18.83
10/12/2021	Tue	54.48	86.07	20.86
10/13/2021	Wed	58.53	87.50	16.20
10/14/2021	Thu	55.46	80.59	16.20
10/15/2021	Fri	60.15	81.79	18.54
10/16/2021	Sat	56.70	83.75	20.12
10/17/2021	Sun	56.76	83.07	19.44
10/18/2021	Mon	56.96	83.44	22.29
10/19/2021	Tue	55.61	84.57	23.80
10/20/2021	Wed	57.01	81.33	21.92
10/21/2021	Thu	56.10	83.37	16.43
10/22/2021	Fri	57.49	78.46	23.42
10/23/2021	Sat	53.45	76.82	19.44
10/24/2021	Sun	52.70	80.81	15.00
10/25/2021	Mon	56.29	84.13	18.30
10/26/2021	Tue	58.03	84.80	24.48
10/27/2021	Wed	55.18	81.03	23.95
10/28/2021	Thu	56.00	79.54	21.47
10/29/2021	Fri	55.86	74.67	24.55
10/30/2021	Sat	52.74	74.12	18.76
10/31/2021	Sun	53.01	87.88	19.81
11/01/2021	Mon	53.63	71.71	25.37
11/02/2021	Tue	50.14	69.08	26.58
11/03/2021	Wed	52.86	68.17	23.64
11/04/2021	Thu	57.53	80.97	23.42
11/05/2021	Fri	54.96	77.72	23.80
11/06/2021	Sat	57.31	86.98	22.59
11/07/2021	Sun	54.53	82.17	18.91
11/08/2021	Mon	60.27	91.19	21.24
11/09/2021	Tue	56.06	80.66	19.51

Metro Water Recovery

Plant Flows Monthly Report AVG, MAX, MIN

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FI-F350 **N. OUTFALL WEIR (001)** **350**

11/10/2021	Wed	59.30	84.65	21.77
11/11/2021	Thu	58.53	82.02	22.22
11/12/2021	Fri	61.75	85.47	22.14
11/13/2021	Sat	52.74	81.56	16.05
11/14/2021	Sun	57.84	89.38	20.64
11/15/2021	Mon	55.31	77.05	18.98
11/16/2021	Tue	60.97	86.83	22.52
11/17/2021	Wed	53.66	77.65	19.66
11/18/2021	Thu	62.34	89.99	21.70
11/19/2021	Fri	58.03	79.55	23.80
11/20/2021	Sat	51.55	75.62	20.41
11/21/2021	Sun	54.66	85.40	16.73
11/22/2021	Mon	53.53	77.72	17.03
11/23/2021	Tue	57.62	83.67	22.22
11/24/2021	Wed	54.60	78.02	16.34
11/25/2021	Thu	56.37	91.94	22.97
11/26/2021	Fri	50.20	77.28	18.30
11/27/2021	Sat	54.26	82.62	18.16
11/28/2021	Sun	54.30	83.29	15.15
11/29/2021	Mon	58.48	84.13	23.72
11/30/2021	Tue	52.98	77.78	19.59
12/01/2021	Wed	57.78	78.18	23.50
12/02/2021	Thu	56.15	79.15	17.40
12/03/2021	Fri	55.39	75.62	19.74
12/04/2021	Sat	53.92	86.91	13.71
12/05/2021	Sun	54.91	87.36	11.08
12/06/2021	Mon	54.76	75.77	20.26
12/07/2021	Tue	54.83	81.94	19.59
12/08/2021	Wed	56.02	79.98	20.79
12/09/2021	Thu	56.68	74.54	21.77
12/10/2021	Fri	55.26	74.27	14.47
12/11/2021	Sat	55.87	86.38	15.75
12/12/2021	Sun	57.21	91.49	17.40
12/13/2021	Mon	57.74	79.68	20.72
12/14/2021	Tue	57.02	81.56	19.51
12/15/2021	Wed	57.36	77.26	21.39
12/16/2021	Thu	56.09	76.60	20.64
12/17/2021	Fri	59.19	83.82	21.70
12/18/2021	Sat	56.50	89.61	21.32
12/19/2021	Sun	54.77	100.36	19.74
12/20/2021	Mon	57.62	84.34	20.94
12/21/2021	Tue	55.32	83.22	21.24
12/22/2021	Wed	60.67	83.90	24.02
12/23/2021	Thu	59.90	86.38	20.56
12/24/2021	Fri	58.29	93.15	21.61

Metro Water Recovery

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FI-F350 **N. OUTFALL WEIR (001)** **350**

12/25/2021	Sat	51.01	81.18	18.91
12/26/2021	Sun	58.08	93.00	16.80
12/27/2021	Mon	59.44	88.71	22.22
12/28/2021	Tue	58.99	84.87	19.51
12/29/2021	Wed	57.42	82.24	21.39
12/30/2021	Thu	58.86	85.25	20.56
12/31/2021	Fri	59.67	92.32	19.88

TOTAL	**21,179.56**
AVERAGE	**58.03**
HIGHEST DAILY	**83.94**
LOWEST DAILY	**40.40**
MAXIMUM FLOWRATE	**108.04**
MINIMUM FLOWRATE	**0.10**

Metro Water Recovery

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FY-F44 **S. OUTFALL FLOW** **044**

DATE		AVG FLOW MGD	MAX MGD	MIN MGD
01/01/2021	Fri	53.84	79.46	24.27
01/02/2021	Sat	58.72	75.47	33.52
01/03/2021	Sun	57.58	76.07	29.32
01/04/2021	Mon	60.66	75.18	35.02
01/05/2021	Tue	60.49	75.40	29.76
01/06/2021	Wed	62.11	74.42	32.69
01/07/2021	Thu	62.28	75.55	33.08
01/08/2021	Fri	62.49	73.44	39.69
01/09/2021	Sat	59.14	74.05	37.88
01/10/2021	Sun	61.22	104.42	23.82
01/11/2021	Mon	61.19	76.38	32.32
01/12/2021	Tue	69.18	115.62	32.62
01/13/2021	Wed	73.79	118.93	30.14
01/14/2021	Thu	75.68	126.44	24.80
01/15/2021	Fri	68.86	116.75	32.39
01/16/2021	Sat	71.14	112.69	30.37
01/17/2021	Sun	66.59	111.26	19.01
01/18/2021	Mon	73.53	115.24	29.91
01/19/2021	Tue	68.61	97.42	24.58
01/20/2021	Wed	70.62	110.13	32.99
01/21/2021	Thu	67.73	100.81	33.60
01/22/2021	Fri	69.69	105.55	30.73
01/23/2021	Sat	70.56	102.31	25.25
01/24/2021	Sun	73.50	114.34	32.24
01/25/2021	Mon	72.45	103.14	33.37
01/26/2021	Tue	71.09	106.15	33.14
01/27/2021	Wed	68.60	97.80	29.39
01/28/2021	Thu	73.56	109.98	31.12
01/29/2021	Fri	71.41	108.18	30.37
01/30/2021	Sat	68.16	113.52	30.52
01/31/2021	Sun	66.44	110.96	23.75
02/01/2021	Mon	71.83	112.83	29.54
02/02/2021	Tue	69.97	112.16	29.09
02/03/2021	Wed	70.93	108.70	28.86
02/04/2021	Thu	66.84	95.24	23.90
02/05/2021	Fri	69.66	112.24	30.66
02/06/2021	Sat	66.52	105.32	22.17
02/07/2021	Sun	69.15	115.54	30.06
02/08/2021	Mon	67.56	99.83	31.26
02/09/2021	Tue	69.91	109.68	31.49
02/10/2021	Wed	66.41	95.69	29.39
02/11/2021	Thu	69.77	105.55	34.57
02/12/2021	Fri	68.17	99.09	27.44

Metro Water Recovery

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FY-F44 **S. OUTFALL FLOW** **044**

02/13/2021	Sat	68.31	113.96	30.29
02/14/2021	Sun	68.35	109.91	17.95
02/15/2021	Mon	73.39	109.08	35.71
02/16/2021	Tue	72.14	98.85	35.62
02/17/2021	Wed	74.55	111.87	24.20
02/18/2021	Thu	60.67	95.69	29.09
02/19/2021	Fri	66.28	109.38	35.55
02/20/2021	Sat	66.84	96.52	21.04
02/21/2021	Sun	75.59	114.72	21.72
02/22/2021	Mon	71.76	97.88	33.37
02/23/2021	Tue	73.81	115.85	32.92
02/24/2021	Wed	73.91	103.52	26.68
02/25/2021	Thu	74.29	109.08	33.52
02/26/2021	Fri	72.26	101.94	35.92
02/27/2021	Sat	74.11	115.32	37.88
02/28/2021	Sun	72.82	109.38	24.80
03/01/2021	Mon	75.47	113.81	38.11
03/02/2021	Tue	73.92	109.15	29.46
03/03/2021	Wed	76.01	115.47	34.50
03/04/2021	Thu	79.52	113.81	8.26
03/05/2021	Fri	77.14	112.31	40.43
03/06/2021	Sat	72.39	105.48	23.45
03/07/2021	Sun	75.65	111.41	37.80
03/08/2021	Mon	71.52	95.92	33.14
03/09/2021	Tue	76.37	117.95	20.97
03/10/2021	Wed	71.79	100.88	29.39
03/11/2021	Thu	76.29	116.68	34.87
03/12/2021	Fri	68.29	98.40	31.19
03/13/2021	Sat	73.83	116.52	37.20
03/14/2021	Sun	69.34	104.49	38.49
03/15/2021	Mon	74.03	108.62	36.07
03/16/2021	Tue	75.66	114.04	32.39
03/17/2021	Wed	77.21	109.08	40.36
03/18/2021	Thu	74.76	102.84	35.55
03/19/2021	Fri	80.58	109.83	42.39
03/20/2021	Sat	76.39	108.40	35.10
03/21/2021	Sun	82.34	114.12	42.69
03/22/2021	Mon	80.65	107.73	43.90
03/23/2021	Tue	77.35	115.18	40.74
03/24/2021	Wed	75.84	106.53	39.46
03/25/2021	Thu	78.34	109.30	43.44
03/26/2021	Fri	73.83	106.07	39.54
03/27/2021	Sat	79.63	107.06	42.10
03/28/2021	Sun	76.02	107.27	33.30
03/29/2021	Mon	76.82	117.73	37.96

Metro Water Recovery

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FY-F44 **S. OUTFALL FLOW** **044**

03/30/2021	Tue	77.68	101.70	42.17
03/31/2021	Wed	76.61	106.44	41.42
04/01/2021	Thu	74.32	105.39	40.06
04/02/2021	Fri	74.59	115.32	39.23
04/03/2021	Sat	70.18	105.32	25.02
04/04/2021	Sun	74.95	116.30	39.91
04/05/2021	Mon	69.93	101.87	30.52
04/06/2021	Tue	74.40	111.94	41.72
04/07/2021	Wed	67.28	95.84	24.95
04/08/2021	Thu	68.85	103.74	39.31
04/09/2021	Fri	66.20	95.84	25.02
04/10/2021	Sat	71.62	106.68	35.40
04/11/2021	Sun	65.98	101.41	21.42
04/12/2021	Mon	68.10	95.62	36.91
04/13/2021	Tue	67.11	90.88	30.37
04/14/2021	Wed	64.74	87.74	36.53
04/15/2021	Thu	58.92	98.56	25.78
04/16/2021	Fri	66.88	93.29	35.92
04/17/2021	Sat	68.41	100.74	32.24
04/18/2021	Sun	68.16	98.56	24.42
04/19/2021	Mon	61.32	85.10	34.65
04/20/2021	Tue	60.44	76.00	29.23
04/21/2021	Wed	60.88	74.94	38.85
04/22/2021	Thu	58.81	75.47	26.23
04/23/2021	Fri	60.63	75.32	34.95
04/24/2021	Sat	66.20	100.21	31.79
04/25/2021	Sun	66.04	92.91	22.09
04/26/2021	Mon	64.64	90.17	43.97
04/27/2021	Tue	61.63	108.09	37.88
04/28/2021	Wed	71.71	99.00	43.22
04/29/2021	Thu	60.83	92.61	35.10
04/30/2021	Fri	61.92	76.37	39.61
05/01/2021	Sat	66.65	98.85	34.65
05/02/2021	Sun	70.81	106.22	34.13
05/03/2021	Mon	92.99	116.68	51.79
05/04/2021	Tue	86.46	113.36	56.00
05/05/2021	Wed	81.01	106.30	49.02
05/06/2021	Thu	78.95	100.67	42.84
05/07/2021	Fri	77.94	107.57	40.74
05/08/2021	Sat	72.40	95.48	28.86
05/09/2021	Sun	78.03	110.96	31.64
05/10/2021	Mon	79.54	105.69	34.57
05/11/2021	Tue	77.48	105.35	41.04
05/12/2021	Wed	70.73	100.21	29.61
05/13/2021	Thu	73.66	101.63	40.74

Metro Water Recovery

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FY-F44 **S. OUTFALL FLOW** **044**

05/14/2021	Fri	77.17	103.59	42.39
05/15/2021	Sat	81.34	106.97	45.24
05/16/2021	Sun	78.05	110.51	39.69
05/17/2021	Mon	76.68	112.92	39.69
05/18/2021	Tue	79.02	108.93	41.42
05/19/2021	Wed	76.13	106.75	41.72
05/20/2021	Thu	76.54	106.44	41.79
05/21/2021	Fri	78.70	110.43	41.26
05/22/2021	Sat	79.12	106.60	42.69
05/23/2021	Sun	82.47	117.80	56.15
05/24/2021	Mon	79.16	106.07	41.42
05/25/2021	Tue	74.60	109.00	42.92
05/26/2021	Wed	75.15	108.40	40.22
05/27/2021	Thu	73.98	104.64	39.46
05/28/2021	Fri	78.71	104.80	42.92
05/29/2021	Sat	76.52	116.07	43.30
05/30/2021	Sun	86.02	122.01	46.30
05/31/2021	Mon	83.90	115.18	41.11
06/01/2021	Tue	78.66	100.58	45.62
06/02/2021	Wed	73.16	99.00	40.89
06/03/2021	Thu	71.24	100.74	41.42
06/04/2021	Fri	72.73	96.75	39.99
06/05/2021	Sat	75.91	96.07	39.31
06/06/2021	Sun	74.84	105.02	31.57
06/07/2021	Mon	73.05	102.31	35.18
06/08/2021	Tue	74.50	98.00	40.43
06/09/2021	Wed	75.32	96.52	44.35
06/10/2021	Thu	75.65	96.30	45.47
06/11/2021	Fri	74.41	95.48	33.45
06/12/2021	Sat	73.20	94.87	33.37
06/13/2021	Sun	68.75	98.25	27.36
06/14/2021	Mon	73.07	98.30	33.14
06/15/2021	Tue	70.93	110.58	34.27
06/16/2021	Wed	72.44	105.02	33.90
06/17/2021	Thu	73.84	98.33	18.41
06/18/2021	Fri	69.54	96.75	29.61
06/19/2021	Sat	68.40	94.35	30.90
06/20/2021	Sun	68.91	93.66	22.55
06/21/2021	Mon	72.11	94.79	35.62
06/22/2021	Tue	74.69	111.49	41.64
06/23/2021	Wed	74.00	98.71	30.97
06/24/2021	Thu	64.57	104.64	28.11
06/25/2021	Fri	70.03	105.87	25.40
06/26/2021	Sat	78.59	106.75	34.13
06/27/2021	Sun	77.26	109.53	31.34

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06/28/2021	Mon	78.03	100.67	33.22
06/29/2021	Tue	75.60	100.43	33.60
06/30/2021	Wed	76.54	97.42	25.92
07/01/2021	Thu	75.79	102.31	33.67
07/02/2021	Fri	73.60	99.45	28.94
07/03/2021	Sat	72.54	99.76	30.29
07/04/2021	Sun	72.50	97.42	33.60
07/05/2021	Mon	69.56	99.68	29.23
07/06/2021	Tue	72.87	96.89	29.76
07/07/2021	Wed	73.62	96.65	35.71
07/08/2021	Thu	74.42	98.63	36.30
07/09/2021	Fri	76.98	102.16	32.46
07/10/2021	Sat	72.94	110.20	33.60
07/11/2021	Sun	73.00	102.69	37.96
07/12/2021	Mon	74.50	104.12	36.98
07/13/2021	Tue	76.07	100.05	42.46
07/14/2021	Wed	76.88	98.93	38.71
07/15/2021	Thu	76.60	98.18	34.13
07/16/2021	Fri	74.27	99.91	34.95
07/17/2021	Sat	73.82	99.83	26.30
07/18/2021	Sun	70.87	96.15	33.14
07/19/2021	Mon	66.53	99.83	29.01
07/20/2021	Tue	61.69	76.83	27.65
07/21/2021	Wed	63.79	76.23	37.88
07/22/2021	Thu	64.70	77.81	40.29
07/23/2021	Fri	62.02	75.25	30.66
07/24/2021	Sat	67.97	105.77	33.52
07/25/2021	Sun	68.22	107.57	34.80
07/26/2021	Mon	61.54	83.37	32.69
07/27/2021	Tue	63.53	75.55	38.94
07/28/2021	Wed	64.34	116.00	37.96
07/29/2021	Thu	71.78	100.14	40.89
07/30/2021	Fri	65.49	114.86	32.69
07/31/2021	Sat	73.32	105.39	30.37
08/01/2021	Sun	74.15	110.81	31.57
08/02/2021	Mon	63.18	98.34	31.12
08/03/2021	Tue	61.94	112.24	28.70
08/04/2021	Wed	62.58	81.62	27.44
08/05/2021	Thu	63.00	77.51	36.53
08/06/2021	Fri	61.64	76.98	27.95
08/07/2021	Sat	61.46	98.71	27.81
08/08/2021	Sun	66.51	101.87	24.72
08/09/2021	Mon	62.26	101.05	27.50
08/10/2021	Tue	59.98	79.76	28.11
08/11/2021	Wed	58.29	78.40	31.41

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08/12/2021	Thu	56.56	77.81	26.45
08/13/2021	Fri	54.84	74.27	26.53
08/14/2021	Sat	59.67	92.24	25.55
08/15/2021	Sun	60.03	92.99	22.40
08/16/2021	Mon	61.18	95.77	24.95
08/17/2021	Tue	59.41	93.08	24.95
08/18/2021	Wed	55.59	99.61	21.87
08/19/2021	Thu	57.23	103.74	23.22
08/20/2021	Fri	55.30	79.89	20.97
08/21/2021	Sat	62.06	102.01	26.76
08/22/2021	Sun	62.01	101.11	22.55
08/23/2021	Mon	56.62	78.64	22.77
08/24/2021	Tue	55.30	74.49	20.21
08/25/2021	Wed	55.96	75.70	20.59
08/26/2021	Thu	54.98	73.94	22.47
08/27/2021	Fri	53.38	71.56	22.24
08/28/2021	Sat	59.88	93.52	23.75
08/29/2021	Sun	61.04	100.14	17.95
08/30/2021	Mon	58.76	88.43	25.48
08/31/2021	Tue	57.60	77.88	23.29
09/01/2021	Wed	56.20	76.60	23.07
09/02/2021	Thu	56.24	78.63	24.66
09/03/2021	Fri	55.94	78.40	23.14
09/04/2021	Sat	58.29	96.15	23.52
09/05/2021	Sun	62.53	98.03	24.34
09/06/2021	Mon	62.74	100.28	20.06
09/07/2021	Tue	56.90	90.06	21.42
09/08/2021	Wed	56.39	77.65	24.13
09/09/2021	Thu	56.39	76.45	22.62
09/10/2021	Fri	55.89	73.82	23.45
09/11/2021	Sat	60.04	96.30	21.12
09/12/2021	Sun	61.28	94.11	16.08
09/13/2021	Mon	58.16	89.43	23.22
09/14/2021	Tue	53.75	72.84	20.44
09/15/2021	Wed	52.89	79.30	26.60
09/16/2021	Thu	56.28	79.23	26.23
09/17/2021	Fri	55.38	79.54	24.58
09/18/2021	Sat	58.58	95.40	19.24
09/19/2021	Sun	60.28	100.14	18.03
09/20/2021	Mon	54.51	86.90	16.90
09/21/2021	Tue	49.17	77.72	22.62
09/22/2021	Wed	54.35	79.39	25.02
09/23/2021	Thu	53.86	79.08	23.82
09/24/2021	Fri	55.56	76.07	23.82
09/25/2021	Sat	59.07	94.72	24.27

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09/26/2021	Sun	60.60	98.71	19.61
09/27/2021	Mon	51.55	84.03	15.40
09/28/2021	Tue	55.38	76.45	20.82
09/29/2021	Wed	57.19	97.05	33.45
09/30/2021	Thu	55.59	77.20	20.21
10/01/2021	Fri	56.19	77.65	23.52
10/02/2021	Sat	58.02	95.92	18.26
10/03/2021	Sun	61.66	100.21	19.09
10/04/2021	Mon	57.80	82.94	18.48
10/05/2021	Tue	57.37	101.26	19.61
10/06/2021	Wed	56.57	78.90	17.43
10/07/2021	Thu	56.13	77.28	21.72
10/08/2021	Fri	50.06	74.05	31.94
10/09/2021	Sat	56.47	91.86	28.56
10/10/2021	Sun	57.32	92.08	16.61
10/11/2021	Mon	62.22	108.09	22.47
10/12/2021	Tue	57.99	85.85	24.72
10/13/2021	Wed	62.24	76.14	23.22
10/14/2021	Thu	52.33	80.80	18.18
10/15/2021	Fri	50.77	71.44	22.55
10/16/2021	Sat	56.53	92.39	23.22
10/17/2021	Sun	59.14	99.53	23.82
10/18/2021	Mon	57.80	78.21	30.37
10/19/2021	Tue	55.44	76.45	31.05
10/20/2021	Wed	54.69	77.88	25.33
10/21/2021	Thu	55.13	77.05	25.40
10/22/2021	Fri	53.02	74.72	29.84
10/23/2021	Sat	56.52	95.77	20.82
10/24/2021	Sun	58.44	97.58	16.68
10/25/2021	Mon	56.12	81.53	25.71
10/26/2021	Tue	53.98	74.05	33.75
10/27/2021	Wed	55.26	76.52	31.87
10/28/2021	Thu	55.82	76.45	34.57
10/29/2021	Fri	57.33	74.12	34.50
10/30/2021	Sat	62.58	99.53	27.06
10/31/2021	Sun	60.16	93.59	26.91
11/01/2021	Mon	66.80	103.96	22.62
11/02/2021	Tue	64.30	93.59	26.60
11/03/2021	Wed	68.17	102.31	31.87
11/04/2021	Thu	62.29	104.64	31.26
11/05/2021	Fri	57.48	75.40	30.73
11/06/2021	Sat	64.03	113.07	31.79
11/07/2021	Sun	60.48	99.30	25.33
11/08/2021	Mon	60.43	75.92	32.10
11/09/2021	Tue	51.74	74.58	21.19

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11/10/2021	Wed	59.89	80.74	34.87
11/11/2021	Thu	52.30	73.67	31.57
11/12/2021	Fri	57.73	77.51	31.87
11/13/2021	Sat	58.38	94.19	18.03
11/14/2021	Sun	67.67	112.16	32.46
11/15/2021	Mon	58.72	115.77	20.82
11/16/2021	Tue	60.72	88.60	35.18
11/17/2021	Wed	54.22	75.25	27.13
11/18/2021	Thu	55.45	74.94	30.59
11/19/2021	Fri	56.24	73.52	32.77
11/20/2021	Sat	62.62	98.93	21.87
11/21/2021	Sun	65.75	110.96	34.27
11/22/2021	Mon	57.28	78.03	22.24
11/23/2021	Tue	61.57	76.98	31.72
11/24/2021	Wed	52.51	74.20	17.28
11/25/2021	Thu	62.66	109.08	29.23
11/26/2021	Fri	50.30	67.13	27.28
11/27/2021	Sat	61.30	106.07	31.79
11/28/2021	Sun	56.79	90.21	16.75
11/29/2021	Mon	62.72	77.20	32.02
11/30/2021	Tue	54.15	74.94	26.53
12/01/2021	Wed	61.89	77.12	32.92
12/02/2021	Thu	57.96	75.25	29.01
12/03/2021	Fri	56.45	73.44	25.33
12/04/2021	Sat	58.73	102.01	18.56
12/05/2021	Sun	61.40	93.59	22.09
12/06/2021	Mon	58.28	98.33	31.72
12/07/2021	Tue	61.55	78.63	25.55
12/08/2021	Wed	58.84	76.00	32.84
12/09/2021	Thu	60.66	77.12	32.69
12/10/2021	Fri	56.01	87.16	21.72
12/11/2021	Sat	60.42	97.20	33.60
12/12/2021	Sun	63.90	103.28	31.19
12/13/2021	Mon	61.12	77.65	29.91
12/14/2021	Tue	61.06	76.37	32.46
12/15/2021	Wed	60.10	75.18	30.90
12/16/2021	Thu	59.78	76.37	30.21
12/17/2021	Fri	56.98	74.72	30.97
12/18/2021	Sat	60.32	99.83	29.39
12/19/2021	Sun	63.82	108.40	29.39
12/20/2021	Mon	60.35	78.51	30.97
12/21/2021	Tue	65.13	103.74	31.64
12/22/2021	Wed	57.03	74.12	31.94
12/23/2021	Thu	57.53	75.25	33.22
12/24/2021	Fri	61.94	98.85	32.02

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12/25/2021	Sat	54.75	72.91	30.73
12/26/2021	Sun	53.34	74.65	30.14
12/27/2021	Mon	55.77	73.82	29.01
12/28/2021	Tue	55.50	72.09	32.92
12/29/2021	Wed	57.35	74.42	29.84
12/30/2021	Thu	57.26	73.74	32.39
12/31/2021	Fri	57.67	75.40	29.23

TOTAL	**24,121.33**
AVERAGE	**66.09**
HIGHEST DAILY	**92.99**
LOWEST DAILY	**49.17**
MAXIMUM FLOWRATE	**126.44**
MINIMUM FLOWRATE	**8.26**