

CITY OF NORMAN, OK AIM NORMAN COMPREHENSIVE PLAN WATER/WASTEWATER SUB-COMMITTEE

Development Center, Room B, 225 N. Webster Ave., Norman, OK 73069 Friday, April 12, 2024 at 9:00 AM

AGENDA

It is the policy of the City of Norman that no person or groups of persons shall on the grounds of race, color, religion, ancestry, national origin, age, place of birth, sex, sexual orientation, gender identity or expression, familial status, marital status, including marriage to a person of the same sex, disability, relation, or genetic information, be excluded from participation in, be denied the benefits of, or otherwise subjected to discrimination in employment activities or in all programs, services, or activities administered by the City, its recipients, sub-recipients, and contractors. In the event of any comments, complaints, modifications, accommodations, alternative formats, and auxiliary aids and services regarding accessibility or inclusion, please contact the ADA Technician at 405-366-5424, Relay Service: 711. To better serve you, five (5) business days' advance notice is preferred.

All AIM Sub-Committee Meetings are not regular meetings of the AIM Norman Comprehensive Plan Steering Committee, but the Steering Committee will be invited to attend, and this notice is being posted in compliance with the Oklahoma Open Meetings Act in the event of a quorum.

ROLL CALL

MINUTES

1. CONSIDERATION OF APPROVAL, REJECTION, AMENDMENT, AND/OR POSTPONEMENT OF THE MINUTES AS FOLLOWS:

AIM NORMAN COMPREHENSIVE PLAN WATER/WASTEWATER SUB-COMMITTEE MEETING MINUTES OF JANUARY 10, 2024.

DISCUSSION ITEMS

- 2. GROUNDWATER DISCUSSION BY JOHN HARRINGTON FROM THE ASSOCIATION OF CENTRAL OKLAHOMA GOVERNMENTS.
- 3. WATER RECLAMATION FACILITY INDIRECT POTABLE REUSE.
- 4. DISCUSSION OF GENERAL COMMITTEE, OVERALL LAND USE PLAN PROGRESS AND PUBLIC ENGAGEMENT EFFORTS.
- 5. WATER BASELINE TECHNICAL MEMORANDUM.
- 6. WASTEWATER BASELINE TECHNICAL MEMORANDUM
- 7. SCHEDULE OF UPCOMING WORK.

MISCELLANEOUS COMMENTS

ADJOURNMENT



CITY OF NORMAN, OR AIM NORMAN COMPREHENSIVE PLAN WATER/WASTEWATER SUB-COMMITTEE

Development Center, Room B, 225 N. Webster Ave., Norman, OK 73069 Wednesday, January 10, 2024 at 9:00 AM

MINUTES

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Chair Dan Bergey called the meeting to order at 9:00 am

ROLL CALL & PROJECT TEAM INTRODUCTIONS

Present Dan Bergey, Chair Mark Daniels Dr. David Sabatini Bill Scanlon Karen Goodchild Hossein Farzaneh Kyle Arthur Doris Kupfer (Alternate) James Chappel (Alternate)

Absent Dr. Robert Knox

<u>Guests Present</u> Amada Nairn, AIM Steering Committee Member Lee Hall, AIM Steering Committee Member

<u>Consultants</u> Amy Haase, RDG Molly Hanson, RDG

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Bailey Aldridge, RDG Marty Shukert, RDG Cole Niblett, Garver Mary Elizabeth Mach, Garver Evan Tromble, Garver Michael Nguyen, Garver

<u>Staff</u>

Beth Muckala, Assistant City Attorney Chris Mattingly, Utilities Director Nathan Madenwald, Utilities Engineer Gay Webb, Administrative Technician

Chair Dan Bergey welcomed everyone to the meeting. Cole Niblett, Oklahoma Water Team Leader for Garver, introduced himself and asked members and guests to introduce themselves.

WATER & WASTEWATER MASTER PLANNING PROCESS OVERVIEW

- A. REVIEW OF PREVIOUS MASTER PLANS/REPORTS
- **B. REVIEW OF EXISTING SYSTEMS**

Cole explained the goal of the meeting is to introduce the Garver team, explain the water and wastewater master planning process and familiarize members with the existing systems and challenges.

Sub-committee members were asked for major interests or priorities as it relates to Norman's water and wastewater infrastructure. Members expressed interest in wastewater reuse, future water security, groundwater management protection, Lake Thunderbird management, infrastructure for development, development affecting natural waterways and how this process links to development and growth from a cost and environmental impact.

Cole provided an overview of the master planning process. Both water and wastewater master plans will be developed using four specific tasks. At the conclusion of each task, the team will provide a summary of major findings to the sub-committee for input, review and feedback.

- Task 1 Baseline Development establishes the demands and areas of new growth to be serviced
- Task 2 Existing System Assessments evaluate the future demands against existing capacities
- Task 3 Alternative Evaluations consider the viable options to meet capacity gaps
- Task 4 Plan Development combines the preferred alternatives into a single plan, with phasing as needed

Cole described Norman's water supply and distribution system. The water supply comes from three main sources: surface water from Lake Thunderbird, groundwater wells and a wholesale water connection from Oklahoma City. Norman's water distribution system extends generally from 48th Ave W to 36th Ave E and consists of the well field, water mains, storage tanks and the Water Treatment Plant. Water discussion included withdrawal rates from and water levels within

the Garber-Wellington Aquifer, Lake Thunderbird design/capacity/firm yield, augmentation a the Norman water well field. Specifically for Lake Thunderbird, the life of the reservoir was also discussed. Kyle Arthur discussed the design of the lake and expected life of the reservoir. Generally, the 50-100 year life is referring to the siltation estimate of the lake. The Bureau of Reclamation estimates how fast the siltation will fill up the dead storage (volume below the intake to the bottom of the lake) when designing a lake. Siltation will occur for every lake and, even when the siltation of the dead storage occurs, the lake will still continue to function though any additional siltation will then begin to proportionately reduce the volume of storage to be used for water supply.

Cole described the existing sewer collection system, which is comprised of numerous sub-basins and lift stations. A ridge divides the sewershed into two main basins, the Little River sewershed to the north and the Canadian River sewershed to the south. This topography feature splits the flow on either side. The Water Reclamation Facility (WRF) was built in the 1940s and began as a set of lagoons. The infrastructure has been rehabbed many times, with the last major sewer plant expansion completed in 2016. The Water Reclamation Facility has been master planned to build toward future potable reuse opportunities as well as future permit changes.

WATER SCOPE REVIEW

- A. WATER MODELING CONCEPTS
- B. WATER SUPPLY PLAN UPDATES & CONCEPTS

Cole referenced previous reports that will be revisited and noted deliverables expected to be received during this master planning process. The 2060 Strategic Water Supply Plan will be reviewed and updated to include projected growth within the service area and new areas, regulatory and permit changes and how water quality regulations will impact costs for treatment compared to alternate water supplies. Review of the distribution system modeling report will focus on delivery pressure, improvements to southeast portion of the distribution system along 24th Ave SE, pressure plane improvements and expansion of water mains along Robinson and 24th Ave SE.

WASTEWATER SCOPE REVIEW

- A. WASTEWATER COLLECTION CONCEPTS
- B. WASTEWATER TREATMENT/REUSE CONCEPTS

The wastewater master plan update will include review of several engineering reports as they relate to reuse at the existing facility. The team will also evaluate expansion of the existing facility compared to a new North WRF.

DISCUSS SCHEDULE, DELIVERABLES, AND WORKSHOPS

The group discussed frequency of meetings. Workshops are scheduled for April 12th, July 12th, October 11th with a final presentation December 2024. Members suggested additional meetings may be needed. Amy Haase, RDG, recommended waiting until the next meeting to determine if more meetings should be scheduled. Tasks 1 and 2 information will be discussed at the April 12th meeting. Members are encouraged to reach out to Chris Mattingly, Nathan Madenwald or Garver staff, if they have any questions prior to workshops.

DISCUSS NEXT STEPS

Sub-committee members will receive a copy of the presentation and links to reports referenced. Technical Memos will be sent to members prior to meetings for review. Amy Haase shared that AIM Norman Steering Committee presentations are available on the AIM Norman website, a link will be provided. Mary Elizabeth Mach said members are welcome to attend the AIM Norman Steering committee meetings, which will be held the second Wednesday of each month at 6:00 pm at the Adult Wellness & Education Center. She also encouraged members to complete the water survey on the AIM Norman website.

ADJOURNMENT

The meeting adjourned at 10:55 am.

Passed and approved on this _____ day of 2024.

Dan Bergey, Chair

AIM NORMAN

Area & Infrastructure Master Plan

Water Utility

Baseline Development Technical Memorandum

City of Norman Norman, Oklahoma



Prepared by:



In Partnership with:



DRAFT April 2024

Garver Project No.: 22W02320 Norman Project No.: WA0385



Water Utility Baseline Development Technical Memorandum DRAFT

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List of Acronyms

City	City of Norman
NUA	Norman Utilities Authority
μg/L	micrograms per liter
ADD	average day demand
AIM Norman	Area & Infrastructure Master Plan
AWWA	American Water Works Association
CIP	capital improvement plan
DBPs	disinfection byproducts
gpcd	gallons per capita per day
gpd	gallons per day
HAA5	haloacetic acid
IFC	International Fire Code
KPI	key performance indicator
LCR	Lead and Copper Rule
LCRI	Lead and Copper Rule Improvements
LRAAs	locational running annual averages
MCLs	maximum contaminant levels
MDD	maximum day demand
mg/L	milligrams per liter
MGD	million gallons per day
NOM	natural organic matter
ODEQ	Oklahoma Department of Environmental Quality
RTCR	Revised Total Coliform Rule
SFE	single-family equivalent
TM	technical memorandum
TTHM	total trihalomethanes
WSA	water service area





1.0 Introduction

The City of Norman (City) and the Norman Utilities Authority (NUA) are developing an Area & Infrastructure Master Plan (AIM Norman) that will cover a wide spectrum of city planning aspects, including land use, transportation, stormwater management, water infrastructure, wastewater infrastructure, parks, and housing. The AIM Norman effort includes updates to related master plans for the City's infrastructure, including transportation, stormwater, water, and wastewater. This technical memorandum (TM) is the first in a series of TMs that will be incorporated into the Water Master Plan Report. The purpose of this TM is to establish a baseline for upcoming water system evaluations that will be used to identify future capital improvements. This TM will cover the following:

- Summary of previous water planning documents
- Analysis of historical water consumption
- Projections of future water demands
- Review of historical water quality data

1.1 Water System Overview

The NUA water system serves the urban area within the city limits. The water system includes two primary components:

- Water Distribution System The pipes and tanks that convey water from the sources of supply to each customer.
- Sources of Supply The NUA water system has three sources of supply.
 - o Surface water from Lake Thunderbird treated at the Vernon Campbell Water Treatment Plant
 - Groundwater from the Garber-Wellington aquifer supplied from 43 groundwater wells
 - Wholesale treated water purchased from Oklahoma City

NUA's current water service area (WSA) extends from 48th Avenue West to 36th Avenue East as shown below in Map 1.1. Approximately 90% of the City's population resides within the water service boundary.

1.2 Operations and Management

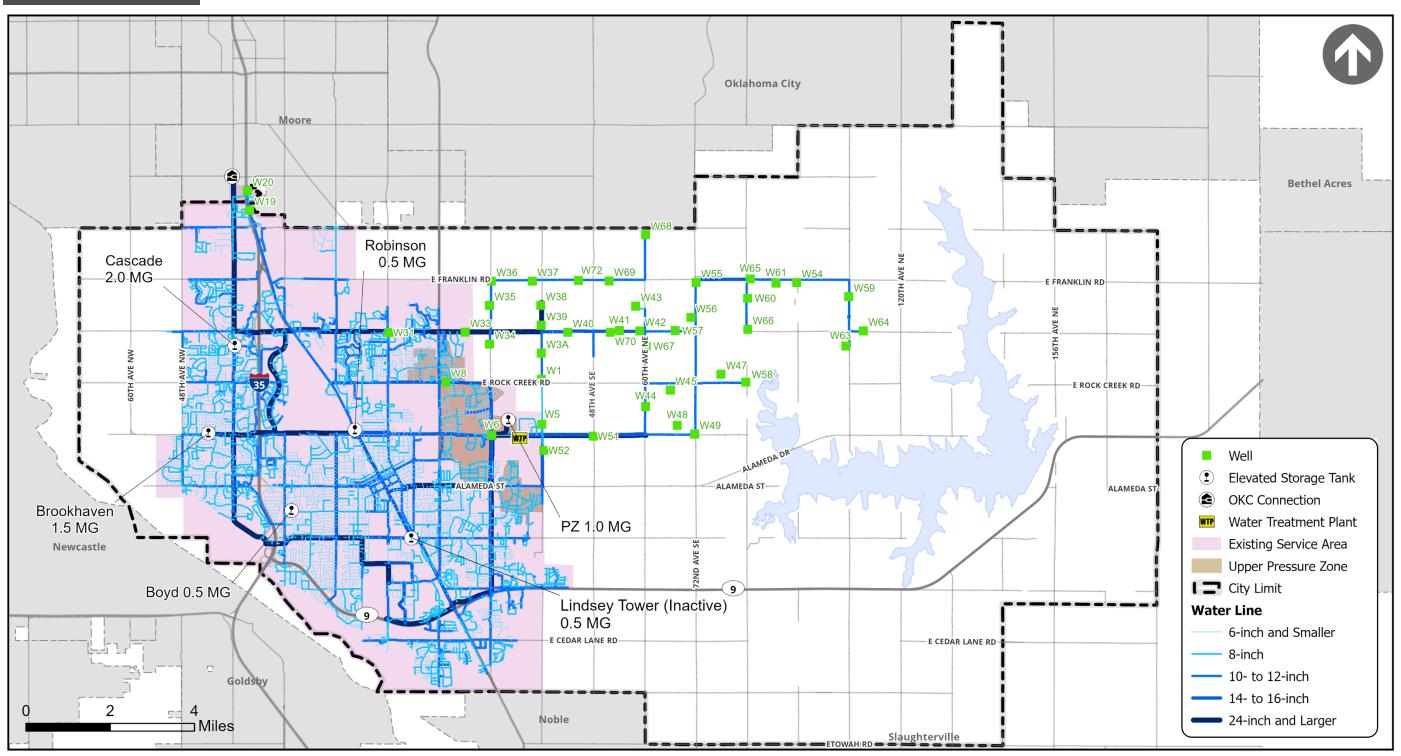
The NUA is a public trust that oversees policy and financial authorizations as they relate to City-managed utilities. The elected mayor and City Council members also serve as the Board of Trustees for NUA. Three of the Norman Utilities Department Divisions administer and operate the water utility: Administration & Engineering, Water Treatment, and Line Maintenance. The Utilities Department has adopted the following Mission Statement:

Providing environmentally sound, efficient utility service to our customers in a professional, safe manner at sustainable rates through six divisions.





Map 1.1: Water System Overview



City of Norman Area & Infrastructure Master Plan

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1.3 Related Documents

Table 1.1 summarizes the previous work by others that was used in the baseline development. The reference names listed in the table are used throughout this report to refer to each document.

Table 1.1: Related Documents			
Document	Author/Agency	Date	Reference Name
2060 Strategic Water Supply Plan	Carollo	2014	2060 Water Supply Plan
Update Distribution System Modeling	Alan Plummer Associates, Inc.	2018	2018 Modeling Update
AIM Norman Area & Infrastructure Master Plan - Norman Today	RDG	2024	Norman Today

1.4 Historical Data Collection

The following data was provided by NUA for the use in the creation of this baseline development:

- Customer Meter Data (2019–2023)
- Water Production Data (1990–2023)
- Monthly Operating Reports (2014–2023)
- Water Audit Reports (2019–2023)
- Water Quality Data (2010–2023)
- GIS base files with water infrastructure information

2.0 Water Service Area

2.1 Water Service Area

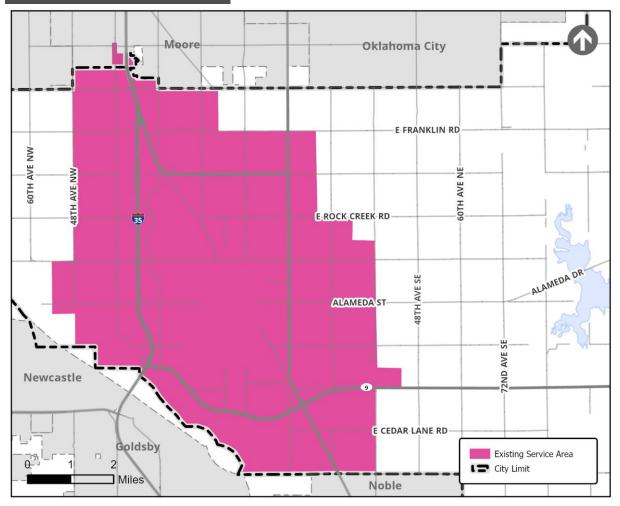
The existing NUA water distribution system serves a portion of the City. The NUA water service area (WSA) is illustrated in Map 2.1. In general, the current boundary extends from 48th Avenue West to 36th Avenue East as shown below. Future WSA expansion will be based on future urban expansion related to future land use and will be discussed further in the *Norman Tomorrow: Vision & Future Land Use* report.





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2.2 Adjacent Water Utilities

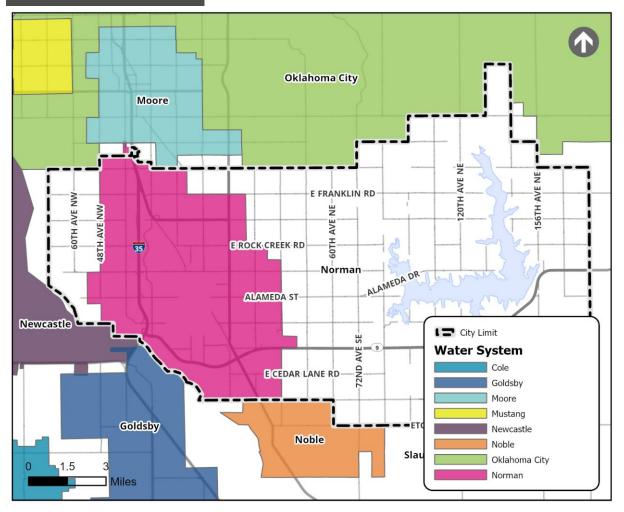
The water utilities adjacent to the NUA WSA are shown in Map 2.2. Clockwise from the north, NUA's WSA is bounded by the following water utilities:

- Moore
- Oklahoma City
- Noble
- Goldsby
- Newcastle



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Map 2.2: Adjacent Water Systems



2.3 Land Use

Existing land use for the purpose of this report was derived from the Norman Today report and was used to predict future development demand rates based on land use classification and historical billing data. Future land use is being developed as part of the *Norman Tomorrow: Vision & Future Land Use* report and will be discussed in a future technical memorandum.





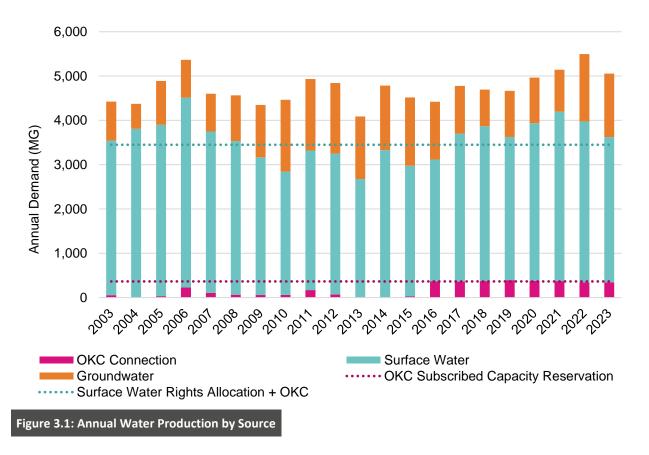
3.0 Historical Population and Water Demands

3.1 Historical Water Production

Three main sources of water are used for water supply including surface water, groundwater, and purchased water from a neighboring utility. Figure 3.1 summarizes the annual water supply by source from 2003-2023.

Since 2000, NUA has had the ability to purchase treated water from Oklahoma City via a connection in the northernmost part of the WSA. In 2015, NUA entered into an agreement with the Oklahoma City Water Utilities Trust to regularly purchase treated water based on a subscribed monthly capacity reservation of approximately 1 million gallons per day (MGD).

A majority of NUA's supply is provided by surface water from Lake Thunderbird. The NUA currently has an annual water rights allocation of 3,084 MG of supply from Lake Thunderbird. However, when the lake's water elevation is in the flood pool, NUA's withdrawals do not count towards the water rights allocation. In recent years, NUA has relied on flood pool water to meet demands. The remaining demand is met by groundwater from the Garber-Wellington aquifer underlying Norman via 43 groundwater wells in the eastern portion of the WSA. Further discussion related to existing water supply challenges will be included in the upcoming Water Supply Plan Review Technical Memorandum.







3.2 Historical Population Growth

Historical population data for both the City and Cleveland County were obtained from the U.S. Census Bureau and are shown in Table 3.1.

Table 3.1: U.S. Census Population Data					
Year	Cleveland County Population	City of Norman Population			
1990	174,253	80,071			
2000	208,016	95,693			
2010	255,755	110,925			
2020	295,528	128,026			

NUA provided historical service population data from 1990–2023, and a summary of the data in five-year intervals is shown in Table 3.2. As of 2022, NUA served a retail population of approximately 113,553 customers via approximately 42,600 meters. Historically, the service population has been approximately 88% of the total City population. The 2060 Water Supply Plan estimated that the NUA service population would be about 90% of the total City population by 2025, and this assumption was used for the purpose of determining the future service population discussed in Section 4.1.

Table 3.2: Historical Water Service Population Data					
Year	Service Population	Percent of City of Norman Population			
1990	70,462	88%			
1995	76,987	88%			
2000	84,538	88%			
2005	94,398	91%			
2010	98,075	88%			
2015	104,843	88%			
2020	112,151	88%			

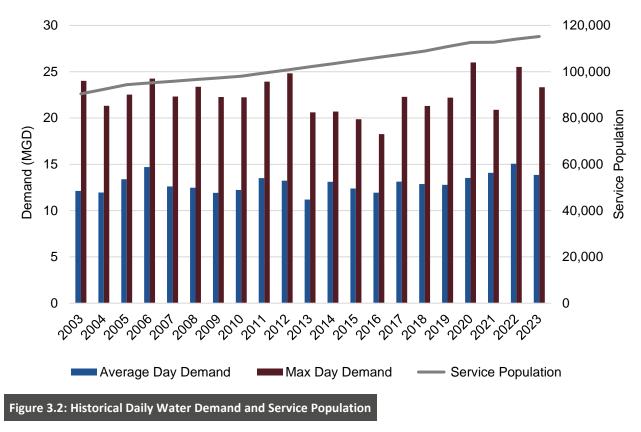
3.3 Historical Water Demand

NUA provided historical production data from 1990 to 2023. The historical average day demand (ADD) and maximum day demand (MDD), as well as the service population estimates, are shown in Figure 3.2. The figure indicates that the population growth over the last 20 years has generally been linear. However, both the ADD and MDD fluctuated over the period, with the ADD appearing to increase over time, although at a lower rate than the increase in the service population. Local maxima within the data set often correlate to known drought/dry years (2006, 2012, and 2020).





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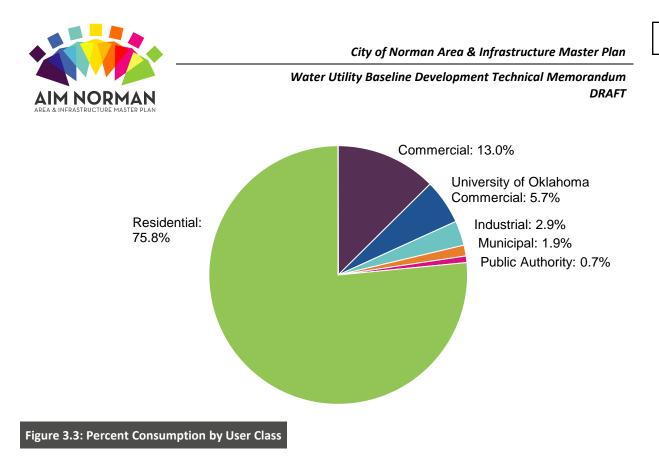


3.4 Historical Customer Billing Data

Garver categorized consumption into six separate user classes: Residential, Commercial, University of Oklahoma Commercial, Industrial, Municipal, and Public Authority from historical billing data for 2021 and 2022. Figure 3.3 illustrates the percent of the total metered consumption by user class. Residential water use accounts for the highest portion of billed volume at 75.8% of the annual water consumption. The commercial, University of Oklahoma commercial, and industrial account for approximately 13.0%, 5.7%, and 2.9% of the annual water consumption, respectively.

Historical water production and consumption data was used to determine that the ratio of the average day demand to average day consumption has typically been approximately 1.25. This ratio was used for the purposes of adjusting data derived from historical metered consumption to a realistic demand value (Section 3.6 and Section 3.7). Water loss is discussed in more detail in Section 3.8.





3.5 Per Capita Water Demands

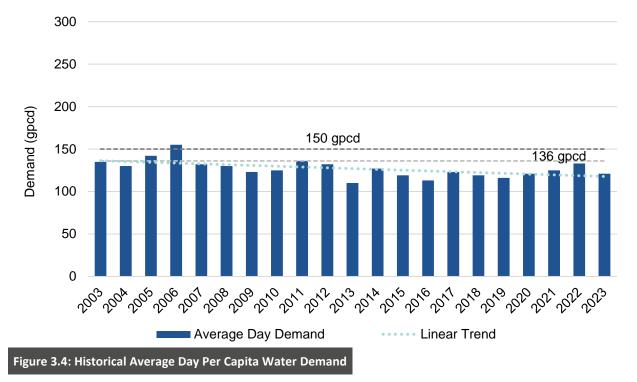
Garver evaluated per capita demands using historical service population data and historical water demand data to determine ADD and MDD trends. Figure 3.4 and Figure 3.5 illustrate the per capita demand for ADD and MDD conditions between 2002 and 2022, respectively. The per capita MDD has been steadily decreasing since 2002, while per capita ADD has marginally decreased since 2002.

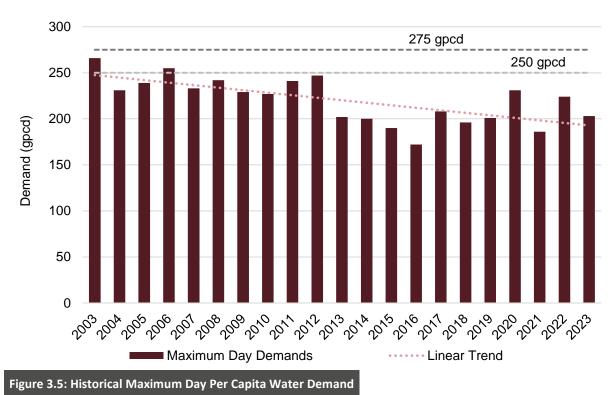
For the purpose of developing future projections, 136 gallons per capita per day (gpcd) will be used as the ADD baseline with an additional 14 gpcd reserve capacity for a total ADD value of 150 gpcd. A baseline value of 250 gpcd for MDD will be used with an additional reserve capacity of 25 gpcd for a total MDD value of 275 gpcd. These values are shown as dashed horizontal lines on Figure 3.4 and Figure 3.5 for reference. Further discussion of these projections can be found in Section 4.2.





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3.6 Water Demand by Land Use

Garver used historical water consumption data from 2022 and GIS data to determine historical demands associated by existing land use. A GIS analysis was completed to determine the lot size and the existing land use associated with each geolocated meter by extracting data for the nearest parcel. Table 3.3 summarizes the demands by land use category. The projected demand rate values will be used to determine future demand for new developments within the WSA, which will be discussed in more detail in the upcoming Distribution System Hydraulic Model Update Technical Memorandum. For single-family residential developments, the residential area will be assumed to be about 80% of the total development area for high-density developments and 70% for lowdensity developments to account for the area of streets, detention ponds, and other open spaces.

Table 3.3: Historical and Projected Demands by Customer Class						
Customer Class	Customer Sub Class	Total Annual Demand (MG)	Total Area (acre)	Historical Demand (gpd/acre)	Projected Demand Rate (gpd/acre)	
	Residential - Multi- Family	6,777	700	2,654	2,700	
Residential	Residential - Single Family Attached	1,946	311	1,714	1,800	
	Residential - Single Family Detached	30,619	7,575	1,107	See Table 3.4	
Industrial	Light Industrial	907	293	848	900	
industriai	Heavy Industrial	407	94	1,182	1,200	
Commercial	Commercial	5,615	1,745	3,218	3,300	
Commercial	Office	2,901	403	1,974	2,000	

As discussed in Section 3.4, residential users make up over 75% of all consumers within the WSA. A majority of residential users are classified as single-family detached lots. Due to the large percentage of single family detached users, further analysis was completed to determine the varied usage based on lot size. Table 3.4 and Figure 3.6 summarize the differences in usage related to differing lot sizes.



Table 3.4: Single Family Detached Historical Demands by Lot Size

Lot Size (acre)	Total Annual Demand (MG)	Total Area (acre)	Historical Demand (gpd/acre)	Projected Demand Rate (gpd/acre)	Historic Demand (gpd/connection)
<0.14	1,921	358	1,470	1,500	165
0.15 - 0.25	16,372	3,557	1,261	1,300	216
0.26 - 0.50	9,574	1,925	1,363	1,400	361
0.51 - 1.00	1,498	366	1,123	1,200	552
>1.00	1,254	1,041	330	350	577

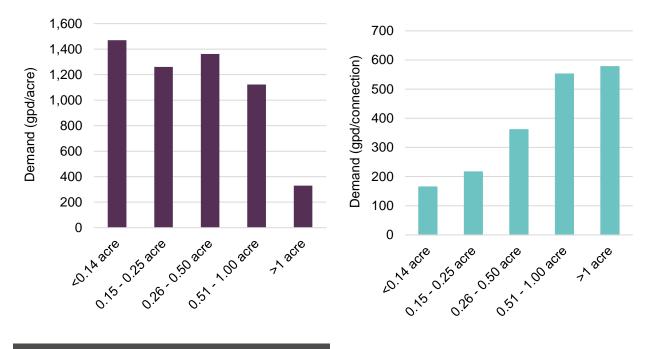


Figure 3.6: Demand by Single Family Detached Lot Sizes

3.7 Single-Family Equivalents

Norman Project No. WA0385

A single-family equivalent (SFE) value was determined using historical billed consumption data provided by NUA. SFE values are used to compare water system demands for other customer classes and the system overall to the demand of a typical single-family detached dwelling. Single family residential demands are often used as the benchmark for demand planning because they tend to represent the majority of system demands and they tend to remain more stable over time compared to other benchmarks. Multi-family, industrial, and commercial demands tend to vary significantly, and changes in these types of demands over time can cause variability in a water system's per capita demands. Once the SFE value has been determined, it can be used to express the system





capacity as the number of single-family customer connections the water system can serve currently or in the future.

Garver used historical consumption data to determine the SFE value for the distribution system. The 2022 singlefamily water demand was determined using the annual consumption of all meters classified as single-family with a diameter of 1-inch or less. The total demand was then divided by the total number of single-family meters within the system, for an estimated value of 250 gallons per day (gpd)/connection. These values are summarized in Table 3.5.

Table 3.5: Single-Family Equivalent Projection						
Total Single-Family Demand (MG/year) (MGD)		Number of Meters	ADD SFE Value (gpd/SFE)			
3,067	8.4	33,641	250			

3.8 Water Loss

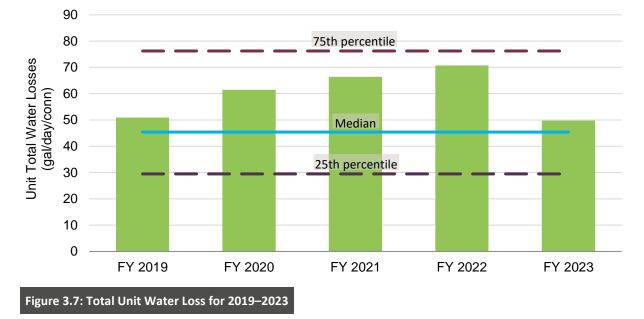
Garver reviewed water loss audits prepared by NUA for fiscal years 2019-2023. The audits were prepared by NUA using the American Water Works Association (AWWA) Free Water Audit Software.

Figure 3.7 summarizes the normalized total water losses for fiscal years 2019-2023. Total water losses are the sum of real losses (system leakage) and apparent losses (customer meter inaccuracies, unauthorized consumption, and data handling errors). Dividing the total losses by a measure of a water system's size (e.g., number of connections) provides a normalized key performance indicator (KPI) for tracking losses over time and comparing losses to reference data. Urban water systems typically use total or real losses per connection as their primary normalized KPI.

Figure 3.7 also shows the 25th percentile, median, and 75th percentile from the AWWA reference data included in the audit software. NUA's unit total water losses were between the median and the 75th percentile of the AWWA reference data for each fiscal year. During the 2023 fiscal year, NUA's unit total water losses were near the median compared to other systems. Higher losses near the 75th percentile in earlier years may be partially attributed to the impact of apparent losses caused by customer meter inaccuracies. NUA is currently implementing advanced water metering infrastructure to improve customer meter accuracy.



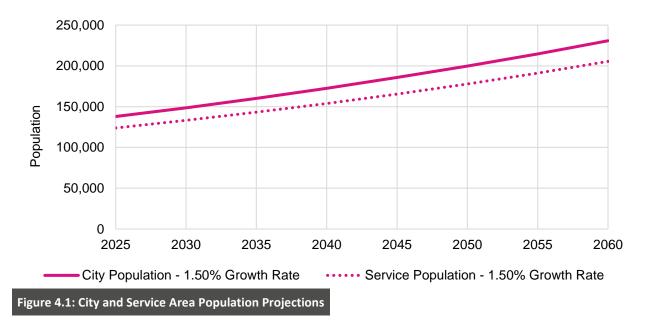




4.0 Population and Water Demand Projections

4.1 Population Projections

Garver used the 1.5% annual growth rate projection included in the Norman Today report as the basis of the city population projections through the year 2045 and is presented in Figure 4.1. It was assumed that the service population would be approximately 90% of the city's population, and the growth rate percentage was applied independently to both the city population and the service population.







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Figure 4.2 compares the population projection that was included in the 2060 Water Supply Plan. The population projection completed as part of this baseline development closely aligns with the previous population projection included in the 2060 Water Supply Plan.

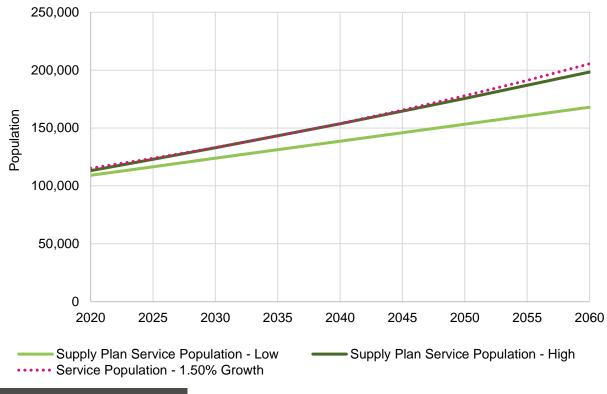


Figure 4.2: Population Projection

4.2 Water Demand Projections

As discussed in Section 3.3 and Section 3.5, the historical service population was used to determine the ADD and MDD per capita values of 136 gpcd and 250 gpcd, respectively. Production data was provided for the years 1990-2022. For the purpose of determining the ADD and MDD per capita demands for the system, only data after 2008 was considered to capture values that more closely reflect current usage. In addition to the values discussed above, a reserve capacity of 10% was included for both the ADD and MDD projections to remain consistent with the 2060 Water Supply Plan. Garver recommends the inclusion of a reserve capacity to mitigate any potential changes to per capita demand as a result of a new large user, unanticipated growth, or severe droughts. The projected ADD and MDD at the projected population discussed in Section 4.1 is shown below in Table 4.1.

Garver determined that the ADD per capita was around 136 gpcd. The value was derived comparing maximum ADD data over the noted period. An additional 10% (14 gpcd) was applied to account for reserve capacity for a total ADD per capita demand of 150 gpcd. This value is within the range of 144–160 gpcd used in the 2060 Water







Supply Plan. Per capita demand varied in the 2060 Water Supply Plan projection due to the inclusion of passive conservation savings. The comparison between Garver's projections and the 2060 Water Supply Plan projections will be discussed in greater detail in the upcoming Water Supply Plan Review Technical Memorandum.

The projected MDD was derived using the MDD over the past 15 years which correlated to a value of 250 gpcd. An additional 10% (25 gpcd) was added to account for reserve capacity for a total MDD of 275 gpcd. This value is within the range of 274–304 gpcd used in the 2060 Water Supply Plan. The 2060 Water Supply Plan values were derived by applying the maximum historical peaking factor between 1990-2012 of 1.9 to the ADD demand discussed above. Garver used the historical daily production data that was provided to determine historical MDD per capita instead of using a peaking factor. The comparison between Garver's projections and the 2060 Water Supply Plan Review Technical Memorandum.

Table 4.1: Year	Projected Wat Service Population	er Demano ADD (MGD)	ADD Reserve Capacity (MGD)	ADD Total (MGD)	MDD (MGD)	MDD Reserve Capacity (MGD)	MDD Total (MGD)	SFE ¹
2025	123,865	16.8	1.7	18.5	31.0	3.1	34.1	74,904
2030	133,155	18.1	1.8	19.9	33.3	3.3	36.6	81,355
2035	143,142	19.5	1.9	21.4	35.8	3.6	39.4	88,341
2040	153,877	20.9	2.1	23.0	38.5	3.8	42.3	95,906
2045	165,418	22.5	2.2	24.7	41.4	4.1	45.5	104,098
Notes: ¹ Based on projected ADD with reserve capacity and a value of 250 gpd/SFE as discussed in Section 3.7								

Figure 4.3 and Figure 4.4 show the historical consumption and the projected ADD and MDD through 2045. Projections through the year 2045 will be used for the purpose of the capital improvement plan (CIP) development. The projections through buildout will be determined based off the land use capacity of the service area and will be used to determine sizing.





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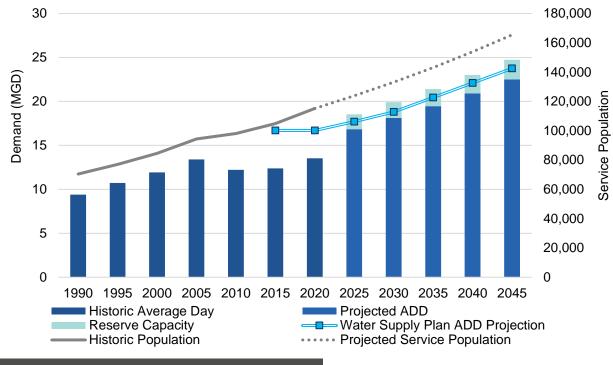
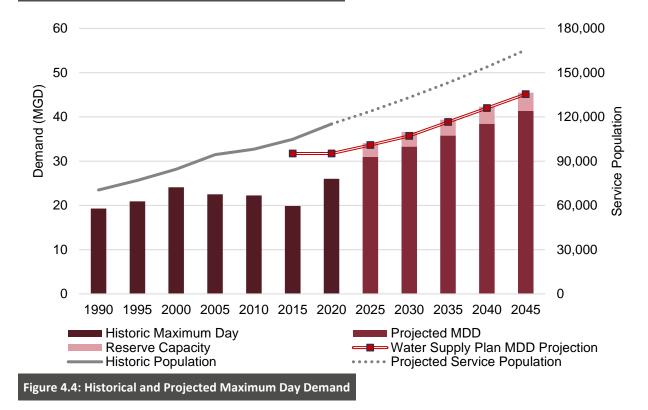


Figure 4.3: Historical and Projected Average Day Demand







5.0 Water Quality

Garver reviewed the following historical water quality data provided by NUA and downloaded from the Oklahoma Drinking Water Watch database to gain a better understanding of the current system and identify current system challenges:

- Disinfectant Residual
- Bacteriological
- Nitrite
- Disinfection Byproducts (DBPs)
- Lead and Copper

5.1 Disinfectant Residual

Disinfectant residuals serve as a surrogate for the potential for or presence of microbial activity. Disinfectant residuals are measured as total chlorine in chloraminated systems and are typically lowest in areas with high water age or with sediment, corrosion products, biofilm, or other sources of disinfectant demand, or where undisinfected groundwater enters the distribution system. Figure 5.1 summarizes disinfectant residual data provided by NUA from the regulatory compliance sampling conducted from 2021 to 2023. Average total chlorine residuals for the entire system, denoted by "x" symbols, ranged from 1.1 to 2.9 milligrams per liter (mg/L).

Oklahoma Department of Environmental Quality (ODEQ) regulations require a minimum total chlorine residual of 1.0 mg/L throughout the water distribution system. The regulatory minimum total chlorine residual is shown as a dashed red line on Figure 5.1. Several total chlorine residual samples, denoted by "o" symbols, were below 1.0 mg/L in the data provided. Finished water leaving the Vernon Campbell Water Treatment Plant typically has a total chlorine residual of at least 3.0 mg/L. However, undisinfected groundwater is pumped directly into the distribution system at multiple well sites, which is likely contributing to low total chlorine residuals at some locations. A new centralized groundwater blending and disinfection facility that will address this issue is currently in the design phase. Because nitrification can also contribute to low disinfectant residuals, the total chlorine residuals will be evaluated in comparison to hydraulic model results (source trace) as part of the upcoming Distribution System Hydraulic Model Update Technical Memorandum to identify any low residuals unlikely to have been associated with groundwater.





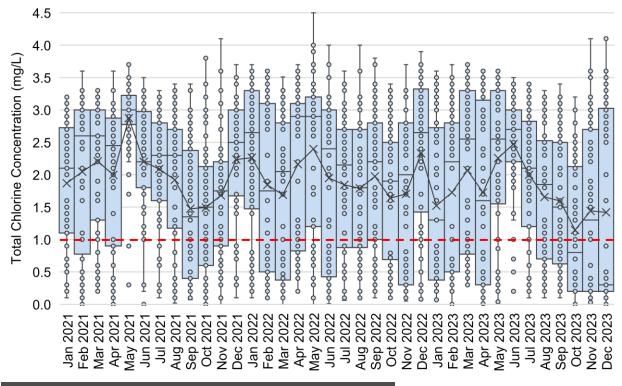


Figure 5.1: Total Chlorine Residual Box Plots by Month for 2021–2023

5.2 Total Coliform and E. coli

The Revised Total Coliform Rule (RTCR) requires monitoring of total coliform and *E. coli* according to a sample siting plan and schedule specific to each water system. According to the Oklahoma Drinking Water Watch database, NUA is currently required to sample 100 sites per month. A Level 1 Assessment to find sanitary defects is triggered when 5% of routine/repeat samples in the same month are total coliform-positive.

Bacteriological sample results were obtained from the Oklahoma Drinking Water Watch database for 2020 through 2023. According to these sample results, 5% of the samples during the months of October 2023 and May 2022 were total coliform-positive. No samples from 2020 through 2023 tested positive for *E. coli*.

5.3 Nitrification

Nitrification is the microbial process by which ammonia is oxidized to nitrite and nitrate. It occurs in chloraminated systems due to the presence of free ammonia from the decay of chloramines, excess ammonia addition during the formation of chloramines, or possibly from source water. Nitrification typically begins in areas with low disinfectant residuals and can lead to additional disinfectant residual loss, excessive microbial activity, and a drop in pH which can lead to corrosion. Nitrification is typically identified based on total chlorine, monochloramine, free ammonia, nitrite, and nitrate measurements.



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NUA currently collects two samples daily to monitor nitrite in the water distribution system, rotating through 14 different sampling locations throughout the system. Figure 5.2 summarizes nitrite data provided by NUA for 2021 to 2023. Average nitrite for the entire system, denoted by "x" symbols, increased during the last summer months of each year, reaching as high as 0.3 mg/L-N in 2021. The locations with high nitrite concentrations will be evaluated in comparison to hydraulic model results as part of the upcoming Distribution System Hydraulic Model Update Technical Memorandum.

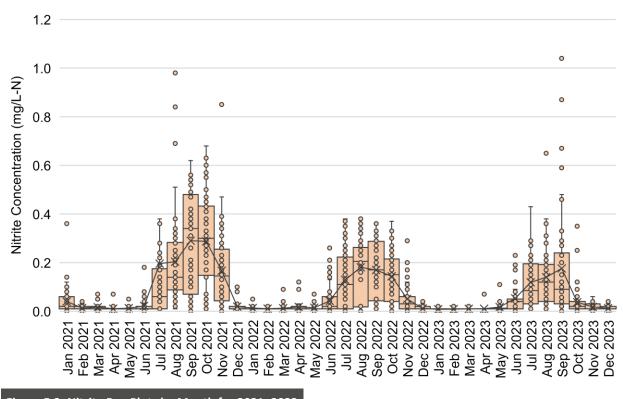


Figure 5.2: Nitrite Box Plots by Month for 2021–2023

5.4 Disinfection Byproducts

Disinfection byproducts (DBPs) can form when a disinfectant reacts with natural organic matter (NOM). Some DBPs are associated with negative impacts on human health and have maximum contaminant levels (MCLs) based on locational running annual averages (LRAAs) under the Stage 2 Disinfectants/DBP Rule. Two groups of regulated DBPs are measured in NUA's distribution system:

- Haloacetic acid (HAA5), with an MCL of 60 micrograms per liter (μ g/L)
- Total trihalomethanes (TTHM), with an MCL of 80 $\mu g/L$

NUA provided quarterly sampling results for HAA5 and TTHM at four sampling locations for 2021 through 2023. All individual HAA5 and TTHM samples were below 60 μ g/L and 80 μ g/L, respectively. The maximum HAA5 and TTHM detected concentrations for 2023 were 10.1 μ g/L and 14.9 μ g/L, respectively.





5.5 Lead and Copper

Lead and copper typically enter drinking water via release from service line and premise plumbing materials. Lead is associated with negative human health outcomes even at low levels. Copper is primarily associated with aesthetic complaints but could have health impacts at high levels.

The Lead and Copper Rule (LCR) sets action levels for copper and lead at 1.3 milligrams per liter (mg/L) and 0.015 mg/L, respectively, based on the 90th percentile tap sample collected during each monitoring period. If the 90th percentile sample exceeds an action level, the water system must take steps to reduce lead or copper release, such as service line replacement or optimization of corrosion control treatment.

NUA provided lead and copper sample results from tap sampling in the distribution system from 2010 to 2023. Table 5.1. summarizes lead and copper data for 2010–2023. The 90th percentile samples for both copper and lead are well below their action levels. No individual samples have been above the copper action level since at least 2010 and only one sample has been above the lead action level since 2010.

The proposed Lead and Copper Rule Improvements (LCRI), which is expected to be finalized in 2024 and have a compliance date in 2027, will require water systems to revise their sampling sites to preferentially sample from sites with known lead service lines or lead premise plumbing. At present, NUA collects lead and copper samples that are known or expected to have lead service lines or lead premise plumbing. NUA will need to confirm the service line and/or premise plumbing materials at sites that are currently only expected to have lead.

The LCRI also will require water systems to revise their sampling sites to preferentially sample from sites with known lead service lines or lead premise plumbing. At present, NUA collects lead and copper samples that are known or expected to have lead service lines or lead premise plumbing. NUA will need to confirm the service line and/or premise plumbing materials at sites that are currently only expected to have lead. Should new sites be needed, it is possible that the measured lead levels will increase.



Table 5.1: 90th Percentile Lead and Copper Concentrations for 2010–2023

	Сорр		Lead		
Monitoring Period	90 th Percentile Concentration (mg/L)	Number of Samples Exceeding 1.3 mg/L Action Level	90 th Percentile Concentration (mg/L)	Number of Samples Exceeding 0.015 mg/L Current Action Level	Number of Samples Exceeding 0.010 mg/L Future Action Level
07/01/2010 - 12/31/2010	0.0259	0	0	1	1
01/01/2011 - 06/30/2011	0.0224	0	0	0	0
01/01/2012 - 06/30/2012	0.0167	0	0	0	0
07/01/2012 - 12/31/2012	0.0144	0	0	0	0
01/01/2013 - 12/31/2013	0.0922	0	0.000634	0	0
01/01/2018 - 12/31/2018	0.078	0	0	0	0
01/01/2019 - 12/31/2019	0.07	0	0	0	0
01/01/2020 - 06/30/2020	0.109	0	0	0	1
07/01/2020 - 12/31/2020	0.086	0	0	0	0
01/01/2021 - 12/31/2021	0.066	0	0	0	0
01/01/2022 - 12/31/2022	0.177	0	0.000365	0	0
01/01/2023 - 12/31/2023	0.155	0	0.00072	0	0

6.0 Water System Evaluation Criteria

Design criteria and regulatory requirements from a variety of sources were assembled to develop the evaluation criteria for analysis of the distribution system. Specifically, documents from the following sources were reviewed:

- Oklahoma Department of Environmental Quality (ODEQ)
- International Fire Code (IFC)



- City of Norman 2023 Engineering Design Criteria and Standard Specifications (Norman EDC)
- American Water Works Association (AWWA) Manuals

Table 6.1 summarizes the evaluation criteria that will be used to evaluate the water system's performance and identify potential capital improvement projects.

Table 6.1: Water Syste	em Evaluation Criteria	
Criteria	Limiting Source	Description
Supply	ODEQ	ODEQ requires documentation demonstrating an adequate quantity of water will be available and that water will meet or exceed current drinking water standards.
Water Lines	Norman EDC	All water lines along section lines and arterial streets must be at least 12-inch diameter. All water lines along half-section lines and all collector streets should be a minimum of 8-inch diameter. All other lines shall be minimum 6-inch diameter
Pumping	ODEQ	All pumping stations shall have a minimum of two pumping units. With any pump out of service the remaining pump(s) shall be capable of providing the maximum pumping demand of the system.
Storage	ODEQ	System must be able to maintain sufficient storage capacity to meet domestic demands and fire flow demands over a 24-hour period while maintaining 25 psi throughout distribution system.
	ODEQ	A minimum pressure of 25 pounds per square inch (psi) shall be maintained, including during fire flow events.
Minimum Pressure	NUA target level of service (2018 Modeling Update Report)	A minimum pressure of 40 pounds per square inch shall be maintained if possible.
	IFC	The City enforces the International Fire Code (IFC), 2018 edition. A system-wide minimum pressure criteria of 25 psi is used to determine available fire flow.
Fire Flow	NUA target level of service (2018 Modeling Update Report)	A minimum available fire flow of 1,500 gpm at 25 psi residual pressure, if possible.
Maximum Flow Velocity	AWWA (guideline)	Water distribution lines should not experience a maximum flow velocity of 6 ft/s. (Note: Guideline is not a regulatory requirement and will be used to identify water lines for potential replacement)
Maximum Head Loss Gradient	AWWA (guideline)	The maximum head loss gradient for smaller pipes (diameter < 16 inches) should not exceed 7 ft/1,000 ft. The maximum head loss gradient for larger pipes (diameter ≥ 16 inches) should not exceed 3 ft/1,000 ft. (Note: Guideline is not a regulatory requirement and will be used to identify water lines for potential replacement)





7.0 Future Work

The City's population projections and future land use plan are being developed in parallel with the baseline development for the water system. Once the future land use plan is finalized, Garver will update the water baseline development presented in this TM and move forward with the following future water system evaluations:

- Distribution System Hydraulic Model Update
- Hydraulic Model Evaluation
- Water Supply Plan Review
- Capital Improvement Program

Each evaluation will be documented in an upcoming TM that will be incorporated in the Water Master Plan Report.



AIM NORMAN

Area & Infrastructure Master Plan

Wastewater Utility

Baseline Development Technical Memorandum

City of Norman Norman, Oklahoma



Prepared by:



In Partnership with:



DRAFT April 2024

Garver Project No.: 22W02320 Norman Project No.: WW0179

Item 6.

DRAFT

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Appendix A: Flow Meter and Rain Gauge Site Sheets Appendix B: Flow Monitoring Hydrographs





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List of Acronyms

ADF	average daily flows
ADWF	average dry weather flows
AIM Norman	Area & Infrastructure Master Plan
CIP	Capital Improvement Plan
City	City of Norman
DMR	discharge monitoring reports
GARR	gauge-adjusted radar rainfall
gpcd	gallons per capita per day
IPR	indirect potable reuse
MGD	million gallons per day
MOR	monthly operating reports
NOAA	National Oceanic and Atmospheric Administration
NUA	Norman Utilities Authority
OAC	Oklahoma Administrative Code
ODEQ	Oklahoma Department of Environmental Quality
OPDES	Oklahoma Pollutant Discharge Elimination System
OU	University of Oklahoma
RDII	rainfall-derived infiltration and inflow
SFE	single-family equivalent
TM	technical memorandum
WEF	Water Environment Federation
WRF	Water Reclamation Facility
WWSA	wastewater service area



1.0 Introduction

The City of Norman (City) and the Norman Utilities Authority (NUA) are developing an Area & Infrastructure Master Plan (AIM Norman) that will cover a wide spectrum of city planning aspects including land use, transportation, stormwater management, water infrastructure, wastewater infrastructure, parks, and housing. The AIM Norman effort includes updates to related master plans for the City's infrastructure including transportation, stormwater, water, and wastewater. This technical memorandum (TM) is the first in a series of TMs that will be incorporated into the Wastewater Master Plan Report. The purpose of this TM is to establish a baseline for upcoming wastewater system evaluations that will be used to identify future capital improvements. This TM will cover the following:

- Summary of previous wastewater planning documents
- Analysis of recent wastewater collection system flow monitoring data
- Analysis of historical wastewater flows
- Projections of future wastewater flows

1.1 Wastewater System Overview

The NUA wastewater system serves the urban area within the city limits. The wastewater system includes two primary components:

- Wastewater Collection System The gravity sewers, lift stations, and force mains that collect sewage from each customer and convey it to the treatment facility.
- Water Reclamation Facility (WRF) The treatment facility that treats sewage received from the collection system and returns highly-treated water to the Canadian River.

NUA's current wastewater service area (WWSA) extends from 48th Avenue West to 36th Avenue East as shown below in Map 1.1.

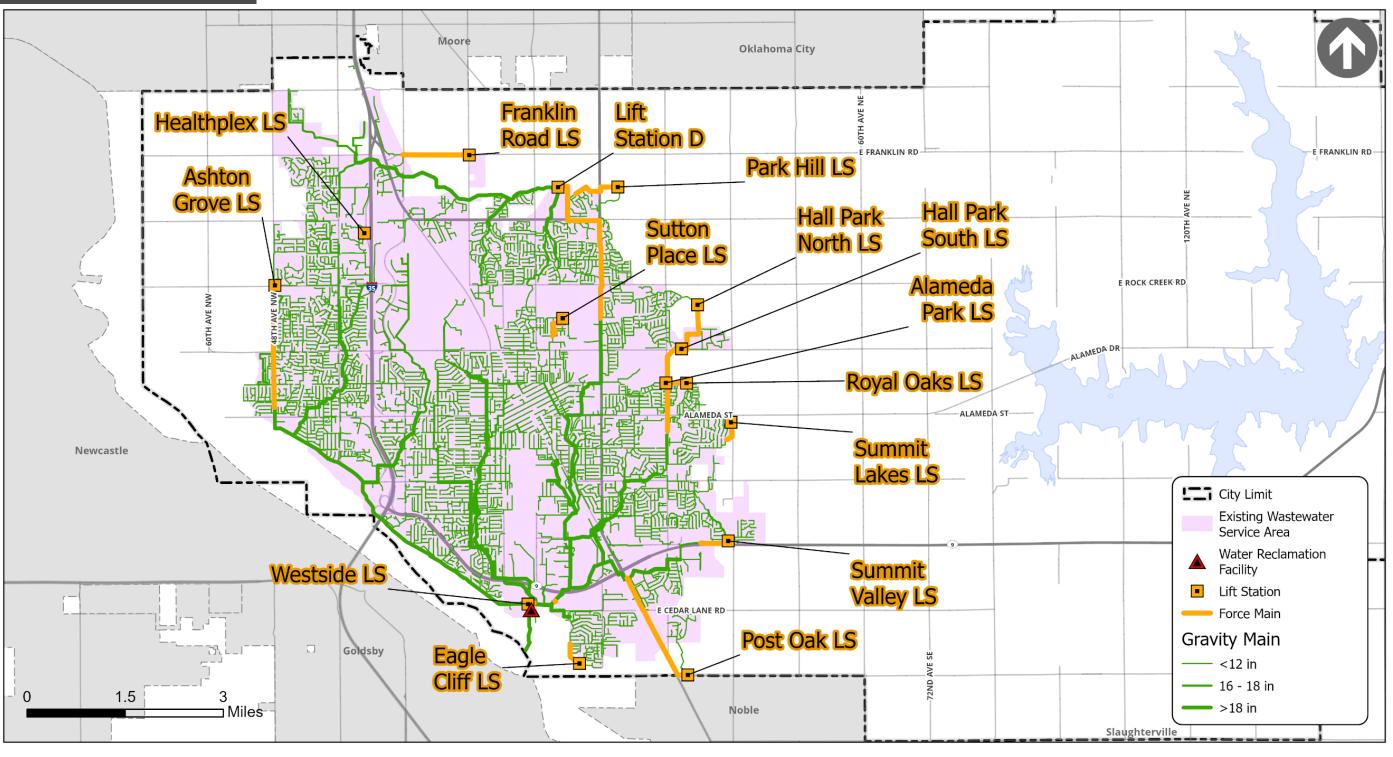
1.2 Operations and Management

The NUA is a public trust that oversees policy and financial authorizations as they relate to City-managed utilities. The elected mayor and City Council members also serve as the Board of Trustees for NUA. Three of the Norman Utilities Department Divisions administer and operate the water utility: Administration & Engineering, Water Treatment, and Line Maintenance. The Utilities Department has adopted the following Mission Statement:

Providing environmentally sound, efficient utility service to our customers in a professional, safe manner at sustainable rates through six divisions.











1.3 Related Documents

Table 1.1 summarizes the previous work by others that used in this baseline development. The reference names listed in the table are used throughout this report to refer to each document.

Table 1.1: Related Documents

Desument		Data	Defense Nome
Document	Author/Agency	Date	Reference Name
Wastewater Systems Master Plan	CDM Smith	2001	2001 WWMP
WRF Phase II Improvements Engineering Report	Garver, Carollo	2011	WRF Phase 2 ER
Wastewater Flow Monitoring & Modeling Report	HDR	2013	2013 WW Modeling Report
Wastewater Flow Monitoring & Modeling Report	HDR	2018	2018 WW Modeling Report
North Water Reclamation Facility Engineering Report	HDR	2018	2018 North WRF ER
AIM Norman Area & Infrastructure Master Plan - Norman Today	RDG	2024	Norman Today

1.4 Historical Data Collection

The following data was provided by NUA for use in the creation of this baseline development:

- WRF monthly operating reports (MOR) (2015–January 2024)
- Discharge monitoring reports (DMR) (2021–2023)
- GIS files with wastewater infrastructure information
- Rain and flow metering data from April 2023 to August 2023

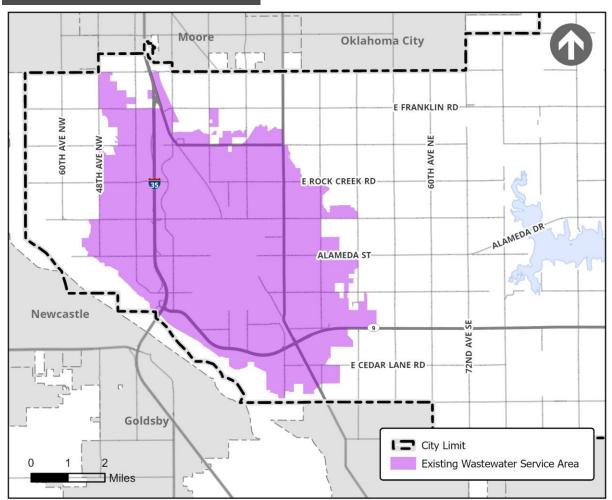
2.0 Wastewater Service Area

The existing NUA wastewater collection system serves the urban portion of the area within the city limits. Slightly less than 90% of the City's population resides within the WWSA. Residents outside the WWSA boundary are served by private septic systems. The WWSA is illustrated in Map 2.1. The current boundary extends from 48th Avenue West to 36th Avenue East as shown below. Future WWSA expansion will be based on future urban expansion related to future land use and will be discussed further in the *Norman Tomorrow: Vision & Future Land Use* report.





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Map 2.1: Wastewater Service Area Overview

2.1 Land Use

Existing land use for the purpose of this report was derived from the Norman Today report and was used to predict future development loading rates based on land use classification and historical billing data. Future land use is being developed as part of the *Norman Tomorrow: Vision & Future Land Use* report and will be discussed in a future TM.

3.0 Historical Population and Wastewater Flow

3.1 Historical Wastewater Service Population

Historically, the water service population has been approximately 88% of the City's total population. As discussed in the *Water Utility Baseline Development Technical Memorandum*, previous population projections have been







based on the assumption that the NUA service population will be about 90% of the City's total population by 2025. Based on recent GIS data, approximately 450 properties with water connections do not have connections to the City's wastewater collection system. The majority of these properties are residential. Assuming an average of 2.3 persons per household per the 2020 US Census, the wastewater system currently serves approximately 1,000 fewer people than the water system, which is equivalent to nearly 1% less of the City's total population. For the purposes of this analysis, Garver will use a historical wastewater service population of 87% of the City's total population, which will be assumed to increase to 89% of the City's total population by 2025. The historical estimated WWSA service population is summarized in Table 3.1.

Table 3.1: Historical Wastewater Service Population Estimates						
Year	Service Population	Percent of Total City Population				
2015	104,042	87%				
2016	105,426	87%				
2017	106,810	87%				
2018	108,194	87%				
2019	109,579	87%				
2020	111,383	87%				
2021	111,444	87%				
2022	112,775	87%				

3.2 Historical Water Reclamation Facility Flows

Figure 3.1 illustrates the historical influent flow to the Norman WRF spanning from January 2015 to January 2024. The figure includes daily data points along with lines representing the annual and monthly averages. Rolling averages are taken on a 30-day (monthly) and a 365-day (annual) basis for the influent flow data. Peaking factors are calculated according to the equation below. Here, the monthly average influent flow is divided by the annual average influent flow at a specific date to calculate the peaking factor. A peaking factor represents a peak month condition when the facility receives maximum flow and potentially maximum contaminant loadings over the course of a consecutive 30-day period. The identified peaking factor(s) can be utilized in establishing the proper maximum month conditions when the facility receives maximum levels of loadings over a month.

 $Peaking Factor(Date) = \frac{30 \text{-} day \text{ Average Flow (Date)}}{365 \text{-} day \text{ Average Flow (Date)}}$

Figure 3.2 shows the historical minimum monthly average and the annual average influent flows to the WRF by year for 2015–2023. The minimum monthly flows during dry-weather periods gradually increased over this period, while the annual average has fluctuated due to the variability in storm events.

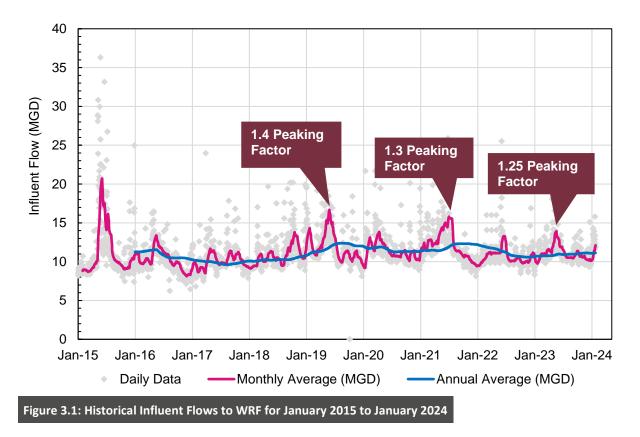
The data from 2015 indicates a period of elevated flows, with daily rates reaching up to 36 million gallons per day (MGD). However, the subsequent timeframe demonstrates a more consistent flow pattern. May 2015 experienced record rainfall (23.4-inches), leading to exceptionally high flows. While the methodology employed does not allow for an exact calculation of the mid-2015 annual average flow, it is estimated that the peak flow observed in 2015 had a peaking factor of nearly 2. This peak significantly exceeds the peaking factors recorded in subsequent years





and surpasses the typical peaking factors for a municipal treatment facility of comparable size. Figure 3.3 summarizes the historical rainfall from 2002 to 2024 and showcases the level of intensity of the May 2015 rainfall relative to other years.

Between 2016 and January 2024, monthly average peaks fluctuated within an estimated range of 13.0 to 16.6 MGD. Although there has been a slight increase in the annual average flow since 2018, it has remained relatively stable, hovering around 11 to 12 MGD. A peaking factor of 1.4 is recommended to be used for treatment capacity planning purposes within this project. It must be noted that the assessment of the treatment capacity requirement at the existing and potential future Norman WRF(s) will also be considering maximum month contaminant loadings which will be documented in the upcoming Treatment and Reuse TM.







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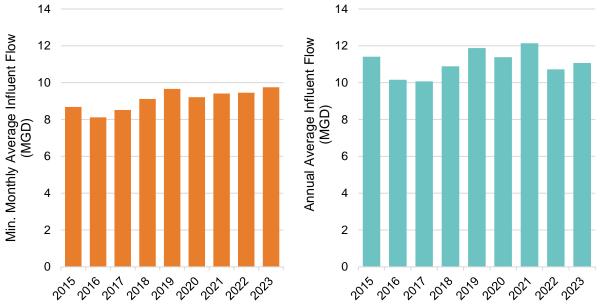
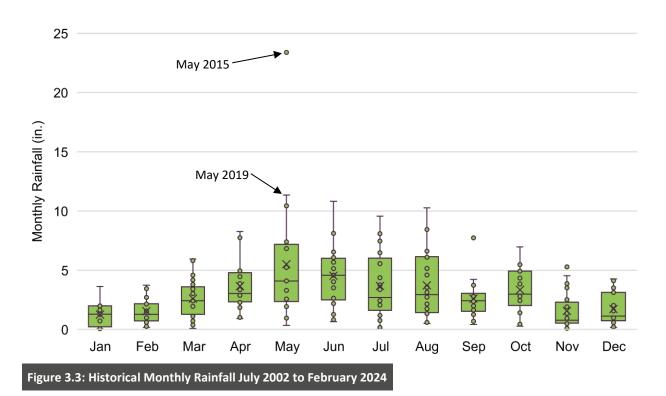


Figure 3.2: Historical Minimum Monthly Average (left) and Annual Average (right) Influent Flows to WRF by year for 2015-2023





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3.3 Per Capita Wastewater Flows

Table 3.2: Historic ADF Per Capita

Garver evaluated per capita average daily flows (ADF) using historical service population data and annual average WRF flows. Table 3.2 summarizes the historical ADF per capita. A value of 100 gallons per capita per day (gpcd) will be used to project future flows based on population projections. This value is slightly higher than recent ADF per capita and aligns with the Oklahoma Department of Environmental Quality (ODEQ) ADF design requirement of 100 gpcd.

Year	Service Population	ADF (MGD)	ADF Per Capita (gpcd)			
2015	104,042	11.20	94			
2016	105,426	10.16	84			
2017	106,810	10.08	82			
2018	108,194	10.88	88			
2019	109,579	11.88	94			
2020	111,383	11.38	89			
2021	111,444	12.16	95			
2022	112,775	10.72	83			

3.4 Single-Family Equivalents

A single-family equivalent (SFE) value was determined using historical billed water consumption data provided by NUA. SFE values are used to compare water system demands for other customer classes and the system overall to the flows for a typical single-family detached dwelling. Single family residential flows are often used as the benchmark for flow planning because they tend to represent the majority of system flows, and remain more stable over time compared to other benchmarks. Multi-family, industrial, and commercial flows tend to vary significantly, and changes in these types of flows over time can cause variability in a collection system's per capita flows. Once the SFE value is determined, it can be used to express the system capacity as the number of single-family customer connections the collection system can serve currently or in the future.

Garver used historical consumption data to determine the SFE value for the wastewater collection system. The 2022 single-family water demand was determined using the total consumption from November to February for all meters classified as single-family with a diameter of 1-inch or less. The total demand was then divided by the total number of single-family meters within the system. Historically, the winter water demands have been approximately equal to the wastewater ADF. A summary of the data used to determine the SFE value is presented in Table 3.3.





Table 3.3: Single-Family Equivalent Projection						
Total Single-Family Wi	nter Water Demand	Number of	ADF SFE Value			
(MG)	(MGD)	Meters	(gpd/SFE)			
828.1	6.9	33,641	205			

3.5 Wastewater Flows by Land Use

Garver used historical water consumption data from November 2022 to February 2023 and GIS data to determine historical land use loading rates. A GIS analysis was completed to determine the lot size and the existing land use associated with each geolocated meter by extracting data for the nearest parcel. Table 3.4 summarizes the loading rate by land use category. The projected loading rate values will be used to determine future wastewater flows for new developments, which will be discussed in more detail in the upcoming Collection System Modeling and Evaluation TM. For single-family residential developments, the residential area will be assumed to be about 80% of the total development area for high-density developments and 70% for low-density developments to account for the area of streets, detention ponds, and other open spaces. The actual development area will be used to determine loading rates for the new developments.

Table 3.4: Historical Loading Rates by Customer Class						
Customer Class	Customer Sub Class	Winter Water Demand (MG)	Total Area (acre)	Historical Loading Rate (gpd/acre)	Projected Loading Rate (gpd/acre)	
	Residential - Multi-Family	2,155	700	2,567	2,600	
Residential	Residential - Single Family Attached	621	311	1,664	1,700	
	Residential - Single Family Detached	7,576	7,575	833	See Table 3.5	
Inductoial	Light Industrial	270	293	768	800	
Industrial	Heavy Industrial	117	94	1,035	1,100	
Communial	Commercial	1,622	1,745	775	800	
Commercial	Office	870	403	1,802	1,800	

Table 3.4: Historical Loading Rates by Customer Class

Residential users make up a large percentage of users with a majority of residential users being classified as single family detached. Due to the large percentage of single family detached users, further analysis was completed to determine the varied flows based on lot size. An analysis was completed to determine the correlation between lot size and flows to better predict future loading rates for new subdivision developments. Table 3.5 and Figure 3.4 summarize the differences in flows related to differing lot sizes.





Table 3.5: Single F	by Lot Size				
Lot Size (acre)	Winter Water Demand (MG)	Total Area (acre)	Historical Loading (gpd/acre)	Projected Loading Rate (gpd/acre)	Historical Loading (gpd/connection)
<0.14	560	358	1,304	1,300	146
0.15 - 0.25	4,301	3,557	1,008	1,000	173
0.26 - 0.50	2,114	1,925	915	900	243
0.51 - 1.00	331	366	754	800	371
>1.00	270	1,041	216	250	379

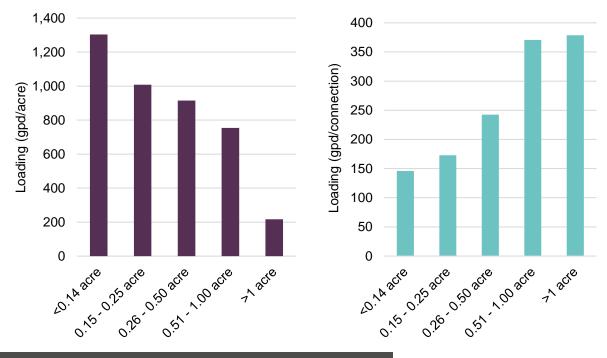


Figure 3.4: Historical Single Family Detached Loading Rates by Lot Size

4.0 Flow Metering Data Analysis

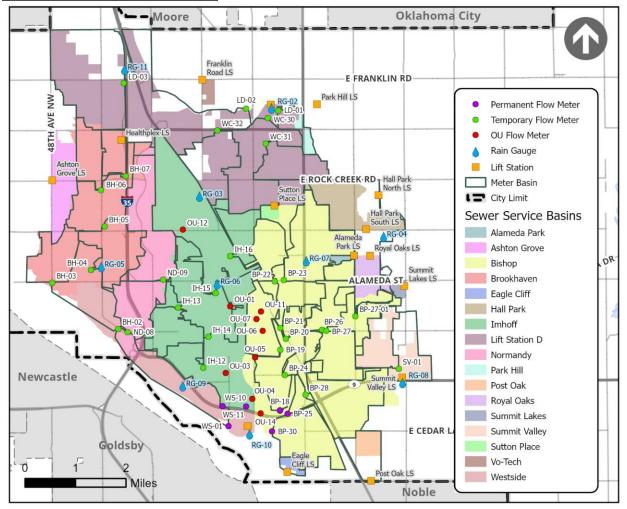
Flow meter data was collected to assess existing dry- and wet-weather flows in the collection system. Thirty-one temporary flow meters and ten temporary rain gauges were installed throughout the collection system. Temporary flow metering data was supplemented by six permanent flow meters that are installed just upstream of the WRF. A map of the flow metering basins is shown in Map 4.1. Flow metering and rainfall data were collected on 5- to 15-minute increments between April 20, 2023 and August 1, 2023. Site sheets showing detailed location and hydraulic information for the flow meter and rain gauge sites are provided in Appendix A. The flow monitoring hydrographs are included in Appendix B.





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Map 4.1: Flow Monitoring Basin Map



Note: The OU flow meters included in the above figure were not used for the purpose of the flow metering data analysis.





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Flow meter analysis involved determination of average dry-weather flows (ADWF) and diurnal patterns, as well as rainfall-derived infiltration and inflow (RDII) during wet-weather events. Figure 4.1 shows a schematic of the flow network of all the metered basins.

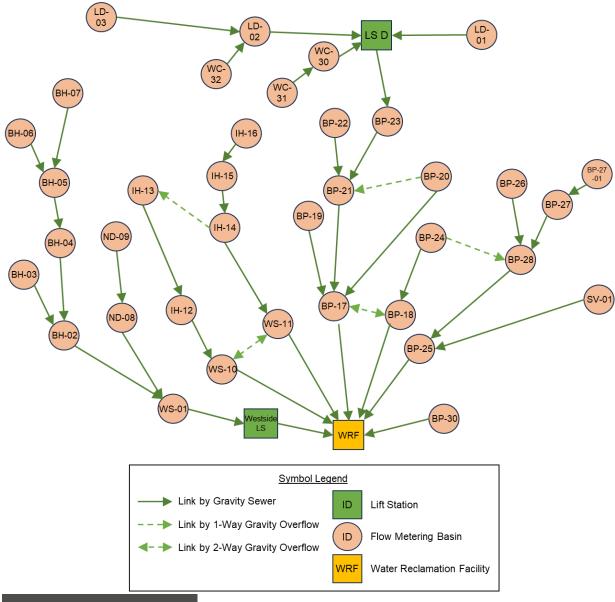


Figure 4.1: Flow Meter Schematic

Dry-weather flow days were used for calculation of ADWF and diurnal patterns. A dry-weather flow day was considered to be any day in the flow metering period that had five or more days without rainfall preceding it.





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Depending on the rain gauge associated with the metered basin, as many as 18 to 30 dry-weather days were used to determine dry-weather flow conditions. Table 4.1 shows the ADWF and the dry-weather flow peaking factor for each basin. The values shown are for the total metered flow at each flow meter, without upstream flows subtracted out. The dry-weather flow peaking factor is the ratio of the peak hour dry-weather flow to the ADWF. The dry-weather peaking factors range from 1.16 to 1.5, and the average dry-weather peaking factor is 1.29 as shown in Figure 4.2.

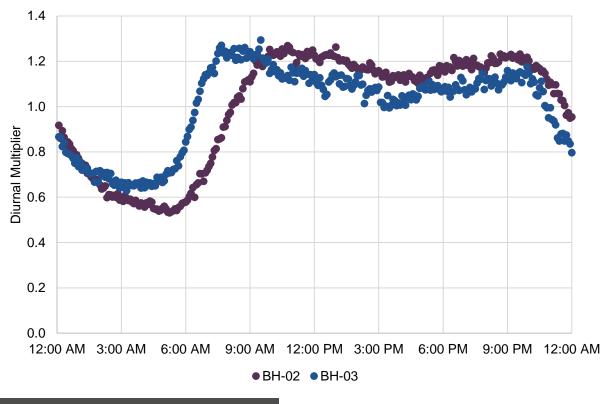


Figure 4.2: Example Dry-Weather Diurnal Patterns





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Table 4.1: Dry-Weather Flows

Flow Meter	Average Dry-Weather Flow (MGD)	Peak Hour Dry- Weather Flow (MGD)	Dry-Weather Flow Peaking Factor
BH-02	1.85	2.37	1.28
BH-03	0.39	0.51	1.30
BH-04	1.39	1.72	1.24
BH-05	0.81	1.06	1.32
BH-06	0.23	0.30	1.29
BH-07	0.19	0.27	1.45
BP-17	3.47	4.01	1.16
BP-18	0.41	0.49	1.20
BP-19	0.55	0.66	1.20
BP-20	0.16	0.21	1.32
BP-21	2.70	3.28	1.21
BP-22	0.34	0.42	1.22
BP-23	2.45	2.92	1.19
BP-24	0.30	0.39	1.32
BP-25	2.09	2.62	1.25
BP-26	0.62	0.80	1.28
BP-27	0.57	0.76	1.33
BP-27-01	0.46	0.69	1.50
BP-28	0.69	0.89	1.29
BP-30	0.28	0.42	1.48
IH-13	0.24	0.30	1.28
IH-14	1.14	1.50	1.31
IH-15	0.60	0.74	1.22
IH-16	0.39	0.46	1.18
LD-02	0.81	1.01	1.25
LD-03	0.25	0.33	1.30
ND-08	0.70	0.92	1.31
ND-09	0.65	0.84	1.29
SV-01	0.10	0.15	1.43
WC-30	0.69	0.90	1.31
WC-31	0.28	0.38	1.35
WC-32	0.20	0.29	1.44
WS-01	2.70	3.42	1.27
WS-10	0.64	0.81	1.27
WS-11	1.25	1.52	1.21

Each flow meter is associated to the nearest rain gauge in the rainfall monitoring network. Wet-weather events were determined for each rain gauge, and the wet-weather events were used as analysis periods for wet weather flows. Wet-weather events were considered to be rainfall events in which 24-hour rainfall totals exceed 0.9 inches. This 24-hour rainfall total was selected so that multiple qualifying wet-weather events could be evaluated at each flow meter, while ensuring that only significant rainfall events were analyzed. Several rain gauges did not have multiple events that met this criteria, in which case the wet-weather event criteria was lowered to 0.5 inches of





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rainfall in a 24-hour period. A summary of the rainfall experienced at each of the rain gauges during the monitoring period is shown in Table 4.2. This table also shows an estimate of the maximum 24-hour and 1-hour frequency storms experienced during the monitoring period (according to the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 precipitation frequency-duration curves).

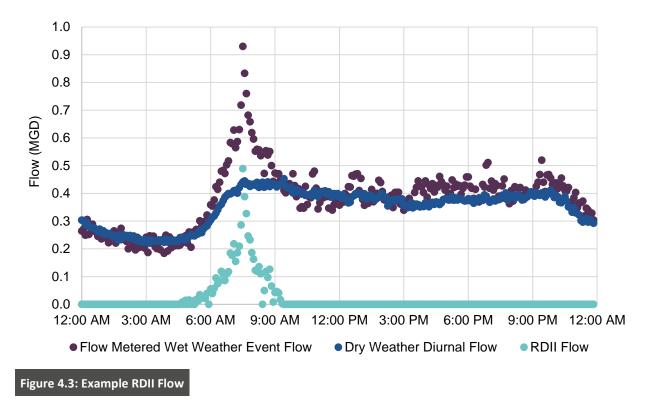
Table 4.	2: Wet-Weather Events					
Rain Gauge	Associated Flow Meters	Number of Wet- Weather Events	Maximum 24-hour Rainfall (in)	Equivalent 24-hour Frequency Storm	Maximum 1-hour Rainfall (in)	Equivalent 1-hour Frequency Storm
RG-02	LD-02, WC-30, WC-31, WC-32	4	2.36	< 1-year	0.78	< 1-year
RG-04	BP-18, BP-22, BP-23, BP-26, BP-27-01, BP-28, IH-14	4	3.91	2-year	2.90	10-year
RG-05	BH-02, BH-03, BH-04, BH-05, BH-06, BH-07, ND-08	4	3.77	2-year	2.57	10-year
RG-06	IH-13, IH-15, IH-16, ND-09	3	3.50	1-year	2.36	5-year
RG-07	BP-19, BP-20, BP-21, BP-24, BP-27	3	5.41	5-year	3.52	25-year
RG-08	SV-01	4	4.08	2-year	2.99	10-year
RG-09	WS-10	4	1.04	<1-year	0.62	<1-year
RG-10	BP-25, BP-30, WS-01, WS-11, BP-17	2	3.83	2-year	2.73	10-year
RG-11	LD-03	3	2.36	<1-year	0.78	<1-year

Table 4.2: Wet-Weather Events

The RDII was calculated at each basin for each wet-weather event. RDII was calculated as the difference between the wet-weather event flow and the typical dry-weather flow of the basin. Figure 4.3 shows an example of the wet-weather (combined dry-weather and RDII flow), RDII, and dry-weather flow for flow meter basin BH-03.



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For each wet-weather event, the RDII flow was modeled using the RTK method. The RTK method is a parameterization of RDII flow that estimates flow by defining three separate unit hydrographs (the hypothetical flow response to a unit of rainfall). The three hydrographs represent inflow, short-term infiltration, and long-term infiltration of rainwater into the wastewater system after a rainfall event. The RTK parameters were generated with a genetic algorithm that selects parameters with the goal of minimizing average peak flows and volume errors for each wet-weather event in the monitoring period. The RTK parameters are then used to simulate wet-weather flows for the 2-year, 5-year, and 10-year 24-hour design storms. The design storm volumes were taken from the NOAA Atlas 14 precipitation frequency-duration tables. The design storm volumes were distributed over 24-hours using the SCS Type II rainfall distribution. The rain volumes and the maximum 1-hour rainfall intensities used for the design storms are shown in Table 4.3.

Table 4.3: Design Storm Rain Volume		
Design Storm	Rain Volume (inch)	Maximum 1-hour Intensity (inch/hour)
2-year	3.77	1.71
5-year	4.67	2.12
10-year	5.53	2.51



Table 4.2. Desire Otenne Dein Malen



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Table 4.4 shows the resulting peaking factors and design peak flows. This table also shows the average peak flow error the selected RTK parameters result in for the monitored wet-weather events. Figure 4.4 shows a graphical representation of the 5-year wet-weather peaking factor and the RTK calibration peak flow errors. The peak flow error represents the average overestimation (positive error) or underestimation (negative error) of RDII peak flow for each wet-weather event. There are several basins that have high peak flow errors. This is typically caused by inconsistent wet-weather responses in the flow metering data, often as a result of the influence of lift station pumping on the flow patterns or due to high geospatial variability in the rainfall data. The calibration of these basins can be revisited with more sophisticated methods, including the use of gauge-adjusted radar rainfall (GARR) for more precise definition of wet-weather events. Additionally, basins with large amounts of pumped flow can be further calibrated during hydraulic model development. The wet-weather analysis in this report was conducted on total flows at each flow meter, without upstream flows subtracted out. Discrete dry- and wet-weather flows will be assessed during model development and calibration and discussed in the Collection System Modeling and Evaluation TM.

Table 4.4: Temporary Flow Meters Wet-Weather Flows

Flow		Peaking Factor	s	Design S	torm Peak Flow	vs (MGD)	Average
Flow Meter	2 Year Storm	5 Year Storm	10 Year Storm	2 Year Storm	5 Year Storm	10 Year Storm	Event Peak Flow Error (%)
BH-02	9.33	11.25	13.06	17.28	20.83	24.19	7%
BH-03	8.60	10.33	11.97	3.35	4.02	4.66	0%
BH-04	4.88	5.75	6.57	6.79	8.00	9.14	0%
BH-05	11.80	14.30	16.65	9.54	11.55	13.46	13%
BH-06	9.66	11.65	13.54	2.23	2.69	3.12	0%
BH-07	8.28	9.91	11.45	1.56	1.87	2.16	10%
BP-19	10.28	12.44	14.48	5.65	6.84	7.96	48%
BP-20	8.68	10.44	12.09	1.39	1.68	1.94	-3%
BP-21	4.68	5.51	6.29	12.64	14.87	16.97	1%
BP-22	10.44	12.63	14.70	3.58	4.33	5.04	-3%
BP-23	6.55	7.82	9.03	16.06	19.19	22.14	111%
BP-24	9.33	11.24	13.04	2.79	3.36	3.89	8%
BP-26	15.15	18.45	21.57	9.46	11.52	13.47	50%
BP-27	5.17	6.08	6.95	2.94	3.46	3.95	0%
BP-27-01	18.55	22.61	26.45	8.58	10.45	12.23	1%
BP-28	6.03	7.16	8.22	4.16	4.94	5.67	-3%
IH-13	5.83	6.91	7.94	1.37	1.63	1.87	-4%
IH-14	5.12	6.02	6.88	5.83	6.86	7.84	-5%
IH-15	12.75	15.49	18.09	7.66	9.31	10.86	15%
IH-16	9.04	10.91	12.68	3.49	4.22	4.90	2%
LD-02	15.77	19.23	22.50	12.76	15.56	18.20	10%
LD-03	8.49	10.20	11.82	2.12	2.55	2.95	9%
ND-08	5.68	6.72	7.71	3.98	4.71	5.40	15%
ND-09	5.67	6.71	7.69	3.68	4.36	5.00	1%
SV-01	12.67	15.34	17.87	1.28	1.55	1.81	12%
WC-30	11.59	14.04	16.35	8.00	9.69	11.28	12%







F low		Peaking Factor	S	Design St	torm Peak Flov	ws (MGD)	Average
Flow Meter	2 Year Storm	5 Year Storm	10 Year Storm	2 Year Storm	5 Year Storm	10 Year Storm	Event Peak Flow Error (%)
WC-31	8.87	10.66	12.35	2.50	3.01	3.48	-9%
WC-32	15.23	18.52	21.62	3.09	3.76	4.39	19%

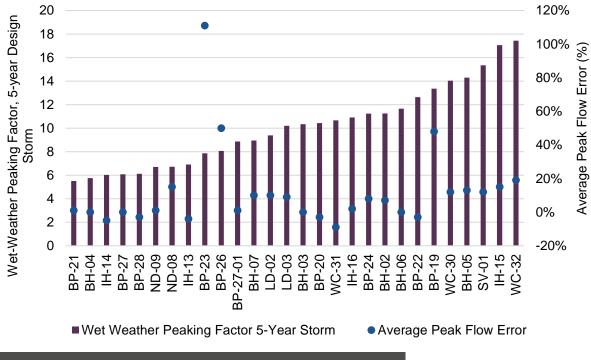


Figure 4.4: 5-Year Storm Peaking Factors and Peak Flow Calibration Errors

Table 4.5 shows the statistics of the basin peaking factors for the 2-year, 5-year, and 10-year design storms. The median peaking factor for the 2-year storm is 8.5. The median peaking factor for the 5-year storm is 10.3, and the median peaking factor for the 10-year storm is 11.9. These peaking factors represent the impact of RDII on collection system flows. Actual peak flows experienced at the WRF and at other locations in the system will depend on travel time, flow attenuation, and storage as water is conveyed through the collection system. The peak influent flows to the WRF will be evaluated in hydraulic modeling scenarios.

Table 4.5: Basin Peaking Factor Summary for 2-Year, 5-Year, and 10-Year Design Storms						
Design Storm	Minimum Peaking Factor	Median Peaking Factor	Maximum Peaking Factor			
2-year	4.7	8.5	14.4			
5-year	5.5	10.3	17.4			
10-year	6.3	11.9	20.3			
Note: Peaking factor	s shown represent 5-minute pea	k flows divided by ADWF to b	e used for collection system			

Note: Peaking factors shown represent 5-minute peak flows divided by ADWF to be used for collection system infrastructure capacity evaluations.







The six permanent flow meters were not included in the wet-weather analysis. These flow meters are located on interceptors at the downstream end of the collection system, just upstream of the outfall to the WRF. These meters were not included in the evaluation because they are located on interceptors that are designed to surcharge, store water, and attenuate peak flow rates through diversions to other interceptors. The wet weather response of these basins will be investigated during wet-weather calibration for the upcoming Collection System Modeling and Evaluation TM. The permanent flow meters and their maximum observed flows reported during the flow metering period are shown in Table 4.6.

Table 4.6: Permanent Flow Meters Wet-Weather Fl	lows
Flow Meter	Maximum Observed Flow (MGD)
BP-17	11.15
BP-18	9.02
BP-25	7.55
BP-30	1.32
WS-01	12.57
WS-10	2.00
WS-11	12.74

5.0 Wastewater Flow Projections

As discussed in Section 3.3, the wastewater flow rate projections are calculated based on the anticipated service population and an ADF per capita of 100 gpcd. Garver used the 1.5% annual growth rate projection included in the Norman Today report as the basis of the population projections through the year 2045. It was assumed that the service population would be approximately 90% of the city's population, and the growth rate percentage was applied independently to both the city population and the service population. The projected service population and ADF are shown below in Table 5.1 and Figure 5.1 for the WWSA throughout the planning period. Projections through the year 2045 will be used for the purpose of the capital improvement plan (CIP) development. The projections through buildout will be determined based off the land use capacity of the service area and will be used to determine the sizing of proposed wastewater infrastructure.

In addition to the flow calculated based on population growth, a reserve capacity of 10% was included to remain consistent with the reserve capacity projected for the water system. Garver recommends the inclusion of a reserve capacity to mitigate any potential changes to per capita flows as a result of new industrial flows, unanticipated growth, or severe weather events.

Previous wastewater flow projection efforts have focused on buildout flows based on the future WWSA anticipated at the time of their development. The 2001 WWMP predicted that the buildout ADF would be 20.5 MGD and the ADF plus planning capacity would be 21.5 MGD. The 2013 WW Modeling Report buildout projections, which is also referenced in the 2018 WW Modeling Report, predicted that the ADF would be 17.1 MGD and the ADF plus planning capacity would be 18.0 MGD.

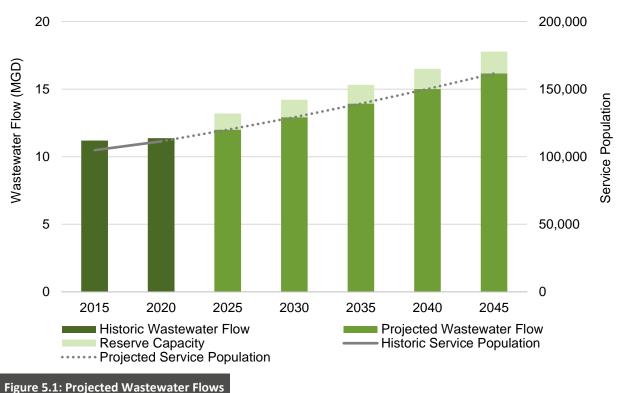


Table 5.1: Projected Wastewater Flows

Year	Service Population	ADF (MGD)	ADF Reserve Capacity (MGD)	ADF Total (MGD)	SFE ¹
2025	119,990	12.00	1.20	13.20	58,532
2030	129,264	12.93	1.29	14.22	63,055
2035	139,254	13.93	1.39	15.32	67,929
2040	150,016	15.00	1.50	16.50	73,178
2045	161,610	16.16	1.62	17.78	78,834
Notes:					

Notes:

¹Based on projected ADF with reserve capacity and value of 205 gpd/SFE discussed in Section 3.4.



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6.0 Wastewater System Evaluation Criteria

Design criteria and regulatory requirements from a variety of sources were assembled to develop the evaluation criteria for analysis of the wastewater system. Specifically, documents from the following sources were reviewed:

• Oklahoma Department of Environmental Quality (ODEQ)



Item 6.



- City of Norman 2023 Engineering Design Criteria and Standard Specifications (Norman EDC)
- Water Environment Federation's Manual of Practice (WEF MOP 8)

Table 6.1 summarizes the evaluation criteria that will be used to evaluate the wastewater system's performance and identify potential capital improvement projects. The table also includes NUA system-specific goals/criteria recommended by Garver for evaluating the existing collection system.

Table 6.1: Wastewat	ter System Evaluatior	n Criteria
Criteria	Limiting Source	Description
Treatment Plant Design Life	ODEQ	Design sewage treatment plants for an estimated 20-year population projection. Construction may occur in phases.
Gravity Sewer Sizing	Norman EDC	No public gravity sewer should be less than 8 inches in diameter.
Gravity Pipe Velocity	ODEQ	Gravity pipes should obtain a velocity of 2 ft/s.
Minimum Gravity Pipe Slope	Norman EDC	Minimum pipe grade by diameter as presented in the 2023 Norman EDC.
Gravity Sewer Hydraulic Capacity	Industry Standard	A "d/D" ratio of 0.75 will be used to determine the sizing of future infrastructure. The d/D ratio is defined as the depth of water in the gravity main during peak flow conditions divided by the inside diameter.
Maximum Surcharge	NUA system performance target	Existing gravity mains should surcharge no more than 1 foot above the crown of pipe.
Minimum Freeboard	NUA system performance criteria	Existing gravity mains should surcharge to no more than 3 feet below the manhole rim elevation.
Lift Station Capacity	ODEQ	All lift stations shall have a minimum of two pumping units. With any pump out of service the remaining pump(s) shall be capable of providing the maximum sewage flows of the system.
Force Main Velocity	ODEQ	Force mains should obtain a velocity of 2 ft/s.
Force Main Maximum Flow Velocity	Industry Standard	Force mains should not experience a maximum flow velocity of 6 ft/s. (Note: Guideline is not a regulatory requirement)

6.1 Wastewater Treatment Evaluations and Planning

The assessment of the wastewater treatment system will be conducted in accordance with the Oklahoma Department of Environmental Quality (ODEQ) standards for the design of water pollution control facilities,





alongside the treatment specifications required by the Norman WRF to comply with the facility's Oklahoma Pollutant Discharge Elimination System (OPDES) permit limits. Additionally, the industry-recommended practices outlined in the Water Environment Federation's Manual of Practice (WEF MOP 8) for municipal water reclamation facilities will also be taken into consideration. This assessment of the existing wastewater treatment system and further discussion of the WRF will be detailed in the upcoming Treatment and Reuse TM.

The CIP improvements for the Norman WRF will be designed based on a 20-year planning horizon, extending to the year 2045. These CIP enhancements aim to provide sufficient capacity to manage and treat this average wastewater flow rate. However, the implementation of CIP improvements can adopt a trigger-based approach, meaning they will only be executed once the projected wastewater flows are observed in the future.

If all or a portion of the treated effluent from the existing WRF or a potential greenfield WRF is planned to be discharged to Lake Thunderbird, the findings of the 2022 Indirect Potable Reuse (IPR) Pilot Study together with the Oklahoma Administrative Code § 252:628 (OAC) Requirements for IPR in a Reservoir will be used to determine the scope of improvements required to reach the treatment limits established for IPR.

Regarding capacity expansions, Garver's approach assumes that once the facility reaches 75% of its rated capacity, planning, and design phases for the next phase of capacity expansion must begin. This 75% capacity level acts as the trigger for initiating the planning and design process. Additionally, when the facility hits 90% of its rated capacity, construction to implement the designed improvements must be initiated. Anticipated construction timelines will be evaluated and considered in development of final triggers for recommended projects.

7.0 Future Work

The City's population projections and future land use plan are being developed in parallel with the baseline development for the wastewater system. Once the future land use plan is finalized, Garver will update the wastewater baseline development presented in this TM and move forward with the following future wastewater system evaluations:

- Collection System Modeling and Evaluation
- Treatment and Reuse Evaluation
- Capital Improvement Plan

Each evaluation will be documented in an upcoming TM that will be incorporated in the Wastewater Master Plan Report.





Appendix A: Flow Meter and Rain Gauge Site Sheets



rin		Nor	man,OK	Site Name
grou	р	2023 Norman Tem	oorary Flow Monitoring	BH-02
Inspected By	mjaurez		Project No.	Site Code
Inspected Date/Time	3/22/20	23 9:24 AM	30-3984-00	т
Syste	m Information		Area Location Map	Area View Picture
Target Pipe Dia. (in)	43.0	F CONTRACTOR	THERE AND THE ADDRESS OF	
Municipality	Norman			
District		36th Pre SW	The Home I	Depot
Assigned Rain Gauge		- FL	Lease and the	
Client Manhole #	253006	SW	e a service a s	Torregard A Contraction of the C
U/S Connecting MH I.D	253005			
System Characteristics:				
Residential -	Commercial -	Industrial -	Magers and	Braue
P/S Influence	No		igers and	
WWTP Influence				Top View Picture
		2 6 18 8	McClain Ban	K-SUS
Locati	on Information	1. 20	McClain Banl Norman Bran	ch
Site Address 600-672 3	6th Ave SW			
Site Access	Off-Road		Sa a statistic statistic statistics	
Longitude	-97.48880000	an Raiver	A MARTIN C	
Latitude	35.20480000		REAL CONDUCT	
MH Type	Precast Concrete	S / Stationer G		ALTERNARY CONTRACT
		Google		
Manhole Depth (ft)	13.90	Mager 9120	23 Maxar Technologies, USDA	A/FPAC/GEO
Manhole Width (ft)	4.0	Access Notes		
Elevated MH	Yes			
Height Elevated (ft)	1.5		nvestigation Photo	Installation Photo
Structural Integrity	Safe			
Site	Information	648 83		
Pipe Height (in)	42.50			
Pipe Width (in)	42.50	and the second second		
Ріре Туре	Other	ALC: NO.		
Pipe Shape	Circular			
02 20.9	LEL % 0.0	and the second second	A CONTRACTOR	
H2S 0.0	CO 0.0	and the second		
Hydrau	lic Information			
Flow Depth (in)	12.00			
Instant Velocity (fps)	1.84		4	la stallation
Surcharge Evidence (ft)	13.00	Hydraulic Characteristics		Installation Notes
Silt Type	None			
Silt Depth (in)	0.00		nstall Plan Sketch	Install Cross-Section Sketch
Needs Cleaning	No		Δ	Flow
Backwater	No			Dep
Flow Path	Straight		Ń N	Velo Sens
Drop Inlet	No			A/V
Hydraulic Rating	Good		This Meter	Sens
Insta	llation Notes			
Location in Pipe (ft)	1.0		Elevated	
Location from Manhole			Pipe	
Sensors	Pressure, Velocity, and	d Ultra	\sim	A/V Clock Position: 6:00
Antenna Surface	Non-Paved Surface			
Signal Strength				Velocity Clock Position: 0:00
Post In	stallation Notes		Aj	pprovals
Meter Type	-		Recommended by FSP	Client Approval
Telemetry Type			-	
relementy type				
Installation Date	4/20/2023			

rin			Norman, O	ЭК	Site Name
I J _{grou}	р	2023 N	orman Temporary	Flow Monitoring	BH-03
Inspected By		mjaurez		Project No.	Site Code
Inspected Date/Time	:	3/21/2023 7:15 PM		30-3984-00	т
Syster	m Informat	ion	Are	ea Location Map	Area View Picture
Target Pipe Dia. (in)	22.0		MP DAS DELES		
Municipality	Norman				
District			Construction of the second second		State of the second sec
Assigned Rain Gauge			Enhabit H	lome Health	
Client Manhole #	235001				
U/S Connecting MH I.D	204039				HERENA
System Characteristics:					
Residential -	Commercial -	Industrial -			
P/S Influence	No		Gra	ce S Mad Nursing Therapy - Norman	
WWTP Influence			Market Ca	merapy-norman	Top View Picture
					A MARINA X
Locatio	on Informa	tion	and the second	AR LECALF	
Site Address 4746 W N	1ain St			Also I Carlos	
Site Access	Sidewalk			Canadian Sh	ores
Longitude	-97.5118000	0		Mobile He	ome
Latitude	35.21810000)	AFR AR	The state of the state	
МН Туре	Precast Conc	rete			
Manhole Depth (ft)	10.00		Google 123 May	ar Technologies, USDA/I	EPACIGEO
Manhole Width (ft)	4.0		Inager Jozo Max	ar reenhologics, oobAn	TAO/OEO
Elevated MH	No		Access Notes		
Height Elevated (ft)					
Structural Integrity	Safe		Investig	ation Photo	Installation Photo
			77.8° (1987)		
	Informatio	on		and the	and the second s
Pipe Height (in) Pipe Width (in)	22.00				and all marked in the
Pipe Type	Other				
Pipe Shape	Circular				
		0.0	a contraction	The second s	
02 20.9 H2S 0.0		0.0 0.0	i.		The second second second second
	ilic Informa	ation			
Flow Depth (in)	4.00				
Instant Velocity (fps)	2.02		Hydraulic		Installation
Surcharge Evidence (ft)	5.00		Characteristics		Notes
Silt Type	None		Install	Plan Sketch	Install Cross-Section Sketch
Silt Depth (in)	0.00		instan		
Needs Cleaning	No			Δ	Flow
Backwater	No		, wh		Depth
Flow Path	Straight			Ń N	
Drop Inlet	No		M		Sensor
Hydraulic Rating	Good			This Meter	A/V Sensor
Insta	llation Not	es	(
Location in Pipe (ft)	1.0			Elevated	
Location from Manhole				Pipe	
Sensors	Pressure, Vel	locity, and Ultra			A A/ Clash Desition - C 00
Antenna Surface	Non-Paved S				A/V Clock Position: 6:00
Signal Strength					Velocity Clock Position: 0:00
	stallation N	lotes		Ann	provals
Meter Type			Dacam	nended by FSP	Client Approval
Telemetry Type			Necomi	nenueu by FJF	επεπε Αμμιυναι
	4/20/2023				
Installation Date					

rin			Norman,C	Ж		Site Name	Item 6.
J group)	2023 N	orman Temporary	Flow Monitoring		BH-04	
Inspected By		mjaurez		Project No.		Site Code	
Inspected Date/Time		3/21/2023 6:41 PM		30-3984-00		Т	
System	n Informat	ion	Are	a Location Map		Area View Pictu	re
Target Pipe Dia. (in)	24.0				1-1-1	B Kalki	
Municipality	Norman						h and
District			Lions/		n T		
Assigned Rain Gauge			emorial Park		the state	रिन्द्र तिरुद्ध	The second
Client Manhole #	205071						
U/S Connecting MH I.D	205063				TT IS	1) of the states	10 00
System Characteristics:							
Residential - 🔲	Commercial -	Industrial -		M Tinker Fe	ederal		
P/S Influence	No			Credit	Union		
WWTP Influence					S	Top View Pictur	e
Locatio	n Informa	tion	Wiz	ard's Asylum 🕒			
			Comics	and Games			365
Site Address 3837 Cedar	•						
Site Access	Off-Road			Raising Cane's 😲			- 1 mil
Longitude	-97.4982000				S		
Latitude	35.22180000)		edEx Office Print 合	NE		A States
МН Туре	Precast Conc	rete		& Ship Center 🗸	a defining a		
Manhole Depth (ft)	25.00		I Google J23 Max	ar Technologies, USDA/FP	AC/GEO		
Manhole Width (ft)	4.0		Access Notes				
Elevated MH	Yes		Access Notes				
Height Elevated (ft)	0.0		Investig	ation Photo		Installation Photo	
Structural Integrity	Safe		Investig			mstanation r noto	
			Contraction of the second s				
Site	nformatio	on	11			26.	
Site I Pipe Height (in)	nformatio	on				- Star	
		9n					
Pipe Height (in)	23.00		131			2.12.	and
Pipe Height (in) Pipe Width (in)	23.00 23.00		111	765		2 BA	Carlo and Carlo
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9	23.00 23.00 Vitrified Clay Circular LEL %	0.0	104			2.82	Lu l
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape	23.00 23.00 Vitrified Clay Circular LEL %						
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0	23.00 23.00 Vitrified Clay Circular LEL %	0.0					
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0	23.00 23.00 Vitrified Clay Circular LEL % CO	0.0					
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Hydraul	23.00 23.00 Vitrified Clay Circular LEL % CO	0.0	Hydraulic		Installation		
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 HQCRUE	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00	0.0	Hydraulic Characteristics		Installation Notes		
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps)	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78	0.0	Characteristics	1	Notes		
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft)	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00	0.0	Characteristics		Notes	all Cross-Section Sket	ch
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None	0.0	Characteristics	1	Notes	all Cross-Section Sket	
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in)	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00	0.0	Characteristics	1	Notes	all Cross-Section Sket	ch Flow Depth
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No	0.0	Characteristics	1	Notes		Flow Depth
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No	0.0	Characteristics	1	Notes		Flow
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No	0.0	Characteristics	1	Notes		Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No Fair	0.0 0.0 ition	Characteristics	1	Notes		Flow Depth Velocity Sensor
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No	0.0 0.0 ition	Characteristics	Plan Sketch	Notes		Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No Fair	0.0 0.0 ition	Characteristics	Plan Sketch	Notes		Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No Fair	0.0 0.0 ition	Characteristics	Plan Sketch	Notes		Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Instal Location i Pipe (ft)	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No Fair Lation Not	0.0 0.0 ition	Characteristics	Plan Sketch	Notes		Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location Firm Manhole	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No Fair Lation Not	0.0 0.0 Ition Itios Itios	Characteristics	Plan Sketch	Notes Inst	sition: 6:00	Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location From Manhole Sensors	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No Fair Lation Not	0.0 0.0 Ition Itios Itios	Characteristics	Plan Sketch	Notes Inst		Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Elocation in Pipe (ft) Location rom Manhole Sensors Antenna Surface Signal Strength	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No No Slight Bend No Fair Lation Not	0.0 0.0 ation ses	Characteristics	Plan Sketch	Notes Inst	sition: 6:00	Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Elocation in Pipe (ft) Location rom Manhole Sensors Antenna Surface Signal Strength	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No Slight Bend No Fair Iation Not 1.0 Pressure, Vel Non-Paved S	0.0 0.0 ation ses	Characteristics	Plan Sketch	Notes Inst	sition: 6:00	Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No Slight Bend No Fair Iation Not 1.0 Pressure, Vel Non-Paved S	0.0 0.0 ation ses	Characteristics	Plan Sketch	Notes Inst	sition: 6:00 k Position: 0:00	Flow Depth Velocity Sensor A/V
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Crop Inlet Hydraulic Rating Location in Pipe (ft) Location rom Manhole Sensors Antenna Surface Signal Strength Meter Type	23.00 23.00 Vitrified Clay Circular LEL % CO ic Informa 10.00 1.78 13.00 None 0.00 No Slight Bend No Fair Iation Not 1.0 Pressure, Vel Non-Paved S	0.0 0.0 ation ses	Characteristics	Plan Sketch	Notes Inst	sition: 6:00 k Position: 0:00	Flow Depth Velocity Sensor A/V

rin		Norman,	ОК	Site Name Item
grou	p 2023	Norman Temporary	Flow Monitoring	BH-05
Inspected By	mjaurez		Project No.	Site Code
Inspected Date/Time	3/21/2023 6:12 PN	1	30-3984-00	т
Syster	n Information	Ar	ea Location Map	Area View Picture
Target Pipe Dia. (in)	24.0	Brammer Dent	al 🖳 🖂 🖂 🗇	
Municipality	Norman	-Norma		A THE ALL
District				
Assigned Rain Gauge		Kanne.	a fun al a faither	
Client Manhole #	158106		1 Oker Harde	A LE LOW STATE AND
U/S Connecting MH I.D	158105			HERE STATES HOUSE HE
System Characteristics:			AMC Robinso	n n h h h h h h h h h h h h h h h h h h
Residential - 🔲	Commercial - 📄 Industrial - 🗌		M Crossing	6
P/S Influence	No			
WWTP Influence		CVS C		Top View Picture
Locatio	on Information		S Armetrong Bar	
Site Address 1219 36th			Armstrong Bar	The second se
Site Address 1219 36th	Off-Road			
	Оп-коаd -97.49330000	Volcano Sushi		
Longitude Latitude	-97.49330000 35.23420000	Bar & Hibachi	Phillips 66	
		CONTRACTOR OF A CONTRACTOR OF		
МН Туре	Precast Concrete	Google		
Manhole Depth (ft)	15.50	echiologie, U.S. G	eological Survey, USDA/Fl	PAC/GEO
Manhole Width (ft)	4.0	Access Notes		
Elevated MH	Yes			
Height Elevated (ft)	0.0	Investig	gation Photo	Installation Photo
Structural Integrity	Safe		B	
Site	Information	199	(income)	
Pipe Height (in)	23.00		A STATES	1 - A A A A
Pipe Width (in)	23.00	Real for		
Ріре Туре	Polyvinyl Chloride	Aller Aller Ar		
Pipe Shape	Circular			to the second water of
02 20.9	LEL % 0.0			
H2S 0.0	CO 0.0	2		
Hydrau	lic Information			
Flow Depth (in)	7.50	No.		
Instant Velocity (fps)	2.24	Hydraulic		Installation
Surcharge Evidence (ft)	10.00	Characteristics		Notes
Silt Type	None	المغميا	Plan Sketch	Install Cross-Section Sketch
Silt Depth (in)	0.00	Install	Fidn Sketch	
Needs Cleaning	No			Flow
Backwater	No			Depth
Flow Path	Slight Bend		N	Velocity
Drop Inlet	No			Sensor
Hydraulic Rating	Good	$ \lor \checkmark $		A/V Sensor
Insta	llation Notes		This Meter	
Location in Pipe (ft)	1.0		Pipe	
Location from Manhole			Elevated Pipe	
Sensors	Pressure, Velocity, and Ultra			
Antenna Surface	Non-Paved Surface			A/V Clock Position: 6:00
Signal Strength				Velocity Clock Position: 0:00
	tallation Notes		Аррг	rovals
Meter Type	-	Recom	mended by FSP	Client Approval
Felemetry Type				enen Approva
. c.c.neu y rype				
nstallation Date	4/19/2023			

rin			Norman,0	ЭК	Site N	lame	Item 6
group	0	2023 N	orman Temporary	Flow Monitoring	BH	-06	
Inspected By		mjaurez		Project No.	Site	Code	
Inspected Date/Time		3/21/2023 5:49 PM		30-3984-00	г	-	
System	n Informa	tion	Ar	ea Location Map	Area Vi	ew Pictur	e
Target Pipe Dia. (in)	18.0		MI AREAN				N.C.
Municipality	Norman			Walmart 🕤		10/200	- Sector
District			Neighborhoo	d Market 💙			
Assigned Rain Gauge			1 States 1			And a state of the	P
Client Manhole #	143107				D. W. M. F.		-
U/S Connecting MH I.D	143106		Okla	homa	ar Wash	me all	and the
System Characteristics:			Otolaryngo	ology	THURS		
Residential -	Commercial -	Industrial -	AN REALLY	M		Phillippine.	
P/S Influence	No			and an and the second second	Top Vi	ew Pictur	е
WWTP Influence						ew rictur	-
Locatio	on Informa	ation					
Site Address 2252 36th	Ave NW					he att	
Site Access	Off-Road		K X	See al anti-		3	
Longitude	-97.4946000	00				3 3 1	
Latitude	35.2447000	0	The Party				1. 16
МН Туре	Precast Con	crete	- Field		Contraction of the second		
Manhole Depth (ft)	18.80		e Google, U.S. Ge	eological Survey, USDA/F	PAC/GEO		ANN .
Manhole Width (ft)	4.0		Access Natas				
Elevated MH	Yes		Access Notes				
Height Elevated (ft)	1.5		Invosti	gation Photo	Installation	Photo	
Structural Integrity	Safe		Investig		Installation	FIIOLO	
Site	Informatio	on	1 all				15
Pipe Height (in)	17.50			Comments of Cold States		E. A.	
Pipe Width (in)	17.50				21/2		
Ріре Туре	Polyvinyl Ch	loride			Sel .		
Pipe Shape	Circular						
02 20.9	LEL %	0.0					1 318
H2S 0.0	со	0.0				12/2/	
Hydrau	lic Inform	ation	X			X	
Flow Depth (in)	3.50				1985 - C		100
Instant Velocity (fps)	2.31		Hydraulic		Installation		
Surcharge Evidence (ft)	8.00		Characteristics		Notes		
Silt Type	None		linete II	Dian Skotch	Install Cross Cor	tion Cluster	h
Silt Depth (in)	0.00		Install	Plan Sketch	Install Cross-Sec	tion Sketc	.n
Needs Cleaning	No						Flow
Backwater	No		. n				Depth
Flow Path	Straight			∕ N ヽ			Velocity
Drop Inlet	No				1		Sensor
Hydraulic Rating	Good						A/V Sensor
Insta	llation No	tes		This Meter Pipe	\backslash	/	
Location in Pipe (ft)	1.0			Elevated		7	
Location from Manhole				Pipe			
Sensors	Pressure, Ve	elocity, and Ultra			AA/ Clock Desition C.CO		
Antenna Surface	Non-Paved S				A/V Clock Position: 6:00		
Signal Strength					Velocity Clock Position: 0:00		
		Notes		Арр	rovals		
Post Ins	tanation						
			Recom	mended by FSP	Client Appr	oval	
	-		Recom	mended by FSP	Client Appr	oval	
Meter Type	- 4/19/2023		Recom	mended by FSP	Client Appr	oval	6

rin		Norman,	ОК	Site Name
grou	up 2023	Norman Temporary	Flow Monitoring	BH-07
Inspected By	zsanders		Project No.	Site Code
Inspected Date/Time	4/4/2023 3:18 PM		30-3984-00	т
Syste	m Information	Ar	ea Location Map	Area View Picture
Target Pipe Dia. (in)				and a second
Municipality	Norman			
District		Stall SA		
Assigned Rain Gauge		TIPAKA		
Client Manhole #	113038	A PARK	Norris Marine	
U/S Connecting MH I.D	113036		FedEx Drop	Box
System Characteristics:		Port		
Residential -		Bart C	astic cademy	
P/S Influence	No		dottee reduciny	Top View Picture
WWTP Influence				
Locati	on Information	W Rock C	reek ko	Aax
Site Address 3050 Yarl	brough Way	CONTRACT OF ALL		
Site Access	Off-Road	Contraction of the second		
Longitude	-97.48590000		HOTWORX-N	lorman,
Latitude	35.24870000		HOTWORX - N OK (University	Town
МН Туре	Precast Concrete			
Manhole Depth (ft)	12.30	Google U.S. G	eological Survey, USDA/F	PAC/GEO
Manhole Width (ft)	4.0	Access Notes		
Elevated MH	No	Access Notes		
Height Elevated (ft)		Investi	gation Photo	Installation Photo
Structural Integrity	Safe	investig	Gation Thoto	installation i noto
Site	Information			and the first
Pipe Height (in)	16.50		a second and a second	
Pipe Width (in)	16.50	18 M		
Ріре Туре	Polyvinyl Chloride	all aller	Station of the second	
Pipe Shape	Circular	and a set to so		and the second second
02 20.9	LEL % 0.0	and the second	A REAL PROPERTY AND A REAL	
H2S 0.0	CO 0.0	and the second		
Hydra	ulic Information	- Andrew	100	
Flow Depth (in)	6.00			
Instant Velocity (fps)	0.40	Hydraulic		Installation
Surcharge Evidence (ft)		Characteristics		Notes
	1.00			
Silt Type	Fine	Install	Plan Sketch	Install Cross-Section Sketch
Silt Type Silt Depth (in)	Fine 2.00	Install	Plan Sketch	Install Cross-Section Sketch
Silt Type Silt Depth (in) Needs Cleaning	Fine 2.00 No	Install	Plan Sketch	Flow
Silt Type Silt Depth (in) Needs Cleaning Backwater	Fine 2.00 No No	Install	Plan Sketch	Flow Depth
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path	Fine 2.00 No No Straight	Install	Plan Sketch	Flow
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet	Fine 2.00 No Straight No	Install	Plan Sketch	Flow Depth Silt Depth
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet	Fine 2.00 No No Straight	Install	ANN N	Flow Depth Silt Depth Velocity Sensor
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	Fine 2.00 No Straight No	Install	ANN N	Flow Depth Silt Depth Velocity
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta	Fine 2.00 No Straight No Good	Install	N <p< td=""><td>Flow Depth Silt Depth Velocity Sensor A/V</td></p<>	Flow Depth Silt Depth Velocity Sensor A/V
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft)	Fine 2.00 No Straight No Good	Install	×N ⊗ This Meter ⊇ Pipe	Flow Depth Silt Depth Velocity Sensor A/V
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole	Fine 2.00 No Straight No Good	Install	N <p< td=""><td>Flow Depth Silt Depth Velocity Sensor A/V</td></p<>	Flow Depth Silt Depth Velocity Sensor A/V
Silt Type Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors	Fine 2.00 No Straight No Good allation Notes 1.0	Install	N <p< td=""><td>Flow Depth Silt Depth Velocity Sensor A/V Sensor</td></p<>	Flow Depth Silt Depth Velocity Sensor A/V Sensor
Silt Type Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface	Fine 2.00 No Straight No Good Allation Notes 1.0 Pressure, Velocity, and Ultra	Install	N <p< td=""><td>Flow Depth Silt Depth Velocity Sensor A/V Sensor</td></p<>	Flow Depth Silt Depth Velocity Sensor A/V Sensor
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	Fine 2.00 No Straight No Good Allation Notes 1.0 Pressure, Velocity, and Ultra	Install	N <p< td=""><td>Flow Depth Silt Depth Velocity Sensor A/V Sensor</td></p<>	Flow Depth Silt Depth Velocity Sensor A/V Sensor
Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	Fine 2.00 No No Straight No Good Ilation Notes 1.0 Pressure, Velocity, and Ultra Non-Paved Surface		N <p< td=""><td>Flow Depth Silt Depth Velocity Sensor A/V Sensor A/V Clock Position: 6:00 Velocity Clock Position: 0:00</td></p<>	Flow Depth Silt Depth Velocity Sensor A/V Sensor A/V Clock Position: 6:00 Velocity Clock Position: 0:00
Silt Type Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Post In	Fine 2.00 No No Straight No Good Ilation Notes 1.0 Pressure, Velocity, and Ultra Non-Paved Surface		N <p< td=""><td>Flow Depth Silt Depth Velocity Sensor A/V Sensor A/V Sensor Velocity Clock Position: 6:00 Velocity Clock Position: 0:00</td></p<>	Flow Depth Silt Depth Velocity Sensor A/V Sensor A/V Sensor Velocity Clock Position: 6:00 Velocity Clock Position: 0:00

rin			Norman,OK		Site Name	Item 6
I J _{group}	2		Norman Utilities Authority		BP-17	<u> </u>
Inspected By	r_bass		Project N	lo.	Site Code	
Inspected Date/Time	12/10/2014	4 12:48 PN	30-3884-0	0	т	
System	n Information		Area Location Map		Area View Pictur	e
Target Pipe Dia. (in)	33.5			and the la		
Municipality	Norman					
District	Norman				A State of the second state of the	the all a sta
Assigned Rain Gauge	RG-04			1° 36. 1	7	
Client Manhole #	329011			2.1	A state of the sta	
				more that		A STATE
U/S Connecting MH I.D	329012					and the second
System Characteristics:				S. Al of		in the second
Residential - 🗹	Commercial - 🗹 Indu	ustrial - 🔲	M	and the state	The second second second	
P/S Influence	No			She was stall		
WWTP Influence	No		A SALE DE CONTRACTOR CONTRACTOR		Top View Pictur	e
			A State of the second s	And a state of the second		
Locatio	on Information		An a start water a start a	and Vieworking	1 STY	
Site Address 500 E Cons	tellation St		A Statement of the second of the			1 1
Site Access	Off-Road		at the pitter of the	Alto Sta	A MARCEN	1 1
Longitude	-97.43244600		- 12 A Th 12 P 0	Salar State		-
Latitude	35.18106800		and the second of the	10 marsha		1 A
				A Constant		1 july
МН Туре	Poured Concrete		Gaarla		all the second	1
Manhole Depth (ft)	17.60		xaoogleagery Program, USDA Farm	Service Agency	1 A Marcall 1	and the second s
Manhole Width (ft)	4.0					
Elevated MH	Yes		Access Notes			
Height Elevated (ft)	0.3					
Structural Integrity	Safe		Investigation Photo		Installation Photo	
Scructurar integrity	5816					
Site	Information			Children .		
Pipe Height (in)	32.94					A 14 M
Pipe Width (in)	33.98		Soft Street of the State of Minister			
Pipe Type	Concrete					1 1 1 1 1 1 F
Pipe Shape	Elliptical		and the second second		1 A State State State	
· ·				Line of Same		10 Line
02	LEL %			11/1	A CONTRACTOR	1 1 1 1
H2S	СО					Mary .
Hydrau	lic Information			N		N
Flow Depth (in)	20.00					
Instant Velocity (fps)	2.74		Hydraulic	Installation	1	
Surcharge Evidence (ft)			Characteristics	Notes	-	
Silt Type	None					
			Install Plan Sketch	In	stall Cross-Section Sketo	ch
Silt Depth (in)	0.00					
Needs Cleaning	No					Flow
Backwater	No					Depth
Flow Path	Straight			J \ /		Pressure
Drop Inlet	No					Sensor
Hydraulic Rating	Good					A/V
			S This M	eter		Sensor
Insta	llation Notes					Ultra Sensor
			> Elevate	ed 🛛 🔪		
Location in Pipe (ft)	1.0		/ Lievate			
Location in Pipe (ft) Location from Manhole	1.0 Upstream		¹ Pipe			
Location from Manhole						
Location from Manhole Sensors	Upstream			Pressure C	lock Position: 6:00	
Location from Manhole Sensors Antenna Surface	Upstream Non-Paved Surface			Pressure C	lock Position: 6:00	
Location from Manhole Sensors Antenna Surface Signal Strength	Upstream Non-Paved Surface 75				lock Position: 6:00	
Location from Manhole Sensors Antenna Surface Signal Strength	Upstream Non-Paved Surface			Pressure C Approvals	lock Position: 6:00	
Location from Manhole Sensors Antenna Surface Signal Strength	Upstream Non-Paved Surface 75				lock Position: 6:00	
Location from Manhole Sensors Antenna Surface Signal Strength Post Ins	Upstream Non-Paved Surface 75		Pipe			
Location from Manhole Sensors Antenna Surface Signal Strength Post Ins Meter Type	Upstream Non-Paved Surface 75		Recommended by FSP		Client Approval	69

k in		Norman,	ОК	Site N	ame Item
grou	p	Norman Utilities	Authority	BP-	18
nspected By	RJNGROUP\Kgarret	t	Project No.	Site C	Code
Inspected Date/Time	6/17/2014 5:23 PM		30-3884-00	т	
Syste	m Information	Ar	ea Location Map	Area Vi	ew Picture
Target Pipe Dia. (in)	36.0		10 10		•
Municipality	Norman				
District	Norman	Constellation	St	5 - 1 - 2 - 1	had a state of the
Assigned Rain Gauge	RG-04	Constendation			A Statement of the second s
Client Manhole #	329010				io in a
U/S Connecting MH I.D	329002		Por an		and the second
	323002			OD S	
System Characteristics:					So So Maria
Residential - 🔽	🕤 Commercial - 🗹 🛛 Industrial - 🔲	The	Chick Maw Nation		
P/S Influence	No		· · · · · · · · · · · · · · · · · · ·	Top Vie	ew Picture
WWTP Influence	No	Marrimon	- Standard	TOP VIE	ewFicture
Locati	on Information	Merrimac St	The state		
		1.0.00		West Print Party	N and
	istellation St	and son a find	A Destant Borry C	the state of the s	
Site Access	Off-Road	the spender	C. C. C. A.		
Longitude	-97.43236400	With the second			
Latitude	35.18122300	A DECEMBER OF THE OWNER OWNER OF THE OWNER OWN	9		
ИН Туре	Precast Concrete		and the second second		
Manhole Depth (ft)	16.50	Google _{adery Pr}	ogram, USDA Farm Serv	ice Agency	
Manhole Width (ft)	4.0		ogram, oobrit ann oorr		
Elevated MH	No	Access Notes			
	100				
Height Elevated (ft)		Investig	gation Photo	Installation	Photo
Structural Integrity	Safe		5		
Site	Information	1:52		1.5	
Pipe Height (in)	36.88				A REEL
Pipe Width (in)	36.88		Sten Milling	Mar Andres	
Pipe Type	Vitrified Clay	A A A A A A A A A A A A A A A A A A A	Manner Andrews	ALL	A Plante
Pipe Shape	Circular				- I A A A A A A A A A A A A A A A A A A
02	LEL %				
H2S	со		ALL		
Hydrau	ulic Information				
low Depth (in)	19.00				
nstant Velocity (fps)	0.60	Hydraulic		Installation	
Surcharge Evidence (ft)		Characteristics		Notes	
Silt Type	None				
Silt Depth (in)	0.00	Install	Plan Sketch	Install Cross-Sect	tion Sketch
Veeds Cleaning	No				
Backwater	No		Δ		Flow Depth
low Path	Straight		N	\/	A/V Sensor
Drop Inlet	No		1	1	1
Hydraulic Rating	Good		A -1 - 1 - 1		Ultra Sensor
Insta	allation Notes		This Meter		/
			Pipe		7
ocation in Pipe (ft)	1.0		Elevated		
ocation in Pipe (it)			* Pipe		
	Upstream				
ocation from Manhole	Upstream				
ocation from Manhole ensors	Upstream Non-Paved Surface		1	A/V Clock Position: 5:00	
ocation from Manhole ensors Intenna Surface	Non-Paved Surface		J	A/V Clock Position: 5:00	
ocation from Manhole iensors Antenna Surface ignal Strength	Non-Paved Surface 100	Uh	J		
Location from Manhole Sensors Antenna Surface Signal Strength Post In	Non-Paved Surface			rovals	
Location from Manhole Sensors Antenna Surface Signal Strength Post In Meter Type	Non-Paved Surface 100	Recom	mended by FSP	rovals Client Appro	oval
ocation from Manhole Sensors Antenna Surface Signal Strength Post In	Non-Paved Surface 100	Recom		rovals	oval

rin		Norman,0	ОК	Site Name Item
grou	p 2023 N	lorman Temporary	Flow Monitoring	BP-19
Inspected By	zsanders		Project No.	Site Code
Inspected Date/Time	3/21/2023 4:04 PM		30-3984-00	т
Syster	n Information	Are	ea Location Map	Area View Picture
Target Pipe Dia. (in)	30.0			
Municipality	Norman			
District		The University of Oklahoma	Line I had be to a	
Assigned Rain Gauge		Recreation		
Client Manhole #	286085	Fields	AS ALL LIFE	
U/S Connecting MH I.D	286084			
System Characteristics:		The	Edge At Norman 🖓	
Residential - 🔲	Commercial - 🔲 Industrial - 🔲			
P/S Influence	No	Madiso		
WWTP Influence		Elemen	tary School	Top View Picture
Locatio	on Information			
Site Address 730 Stime	on St	James and and a second second	Dank's Well	ness 🕒
Site Address 730 Stinso	Sidewalk	Revenues in Angel and a state	Empo	rium
Site Access			and a state	
Longitude	-97.43220000	limmin Ar	etin 🕞	
Latitude	35.19860000	Jimmie Au OU Golf	Club	ANN A SA
МН Туре	Precast Concrete			A A MARTIN A A A A A A A A A A A A A A A A A A A
Manhole Depth (ft)	12.50	In age 912023 Max	ar Technologies, USDA/FF	PAC/GEO
Manhole Width (ft)	4.0	Access Notes		
Elevated MH	No			
Height Elevated (ft)		Investig	ation Photo	Installation Photo
Structural Integrity	Safe			
Site	Information			
Pipe Height (in)	29.50			
Pipe Width (in)	29.50			11 A A A A A A A A A A A A A A A A A A
Ріре Туре	Polyvinyl Chloride			
Pipe Shape	Circular			
O2 20.9	LEL % 0.0	A REAL PROPERTY	AND AND AND AND	
H2S 0.0	CO 0.0	COLORADO COL	100 100	
Hydrau	lic Information			
Flow Depth (in)	8.40		-	
Instant Velocity (fps)	1.30	Hydraulic		Installation
Surcharge Evidence (ft)	1.00	Characteristics		Notes
Silt Type				
	None			
Silt Depth (in)	None 0.00	Install	Plan Sketch	Install Cross-Section Sketch
	0.00	Install	Plan Sketch	
Silt Depth (in) Needs Cleaning Backwater		Install	Plan Sketch	Install Cross-Section Sketch
Needs Cleaning	0.00 No No	Install	Plan Sketch	Flow Depth
Needs Cleaning Backwater Flow Path	0.00 No Straight	Install	Plan Sketch	Flow
Needs Cleaning Backwater Flow Path Drop Inlet	0.00 No Straight No	Install	Plan Sketch	Flow Depth Velocity Sensor A/V
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	0.00 No Straight No Good	Install	Plan Sketch	Flow Depth Velocity Sensor
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	0.00 No Straight No Good	Install	A N	Flow Depth Velocity Sensor A/V
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta	0.00 No Straight No Good	Install	N N N N N N N N N N N N N N	Flow Depth Velocity Sensor A/V
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole	0.00 No Straight No Good Ilation Notes 1.0	Install	N N N N N N N N N N N	Flow Depth Velocity Sensor A/V
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors	0.00 No Straight No Good Ilation Notes 1.0 Pressure, Velocity, and Ultra	Install	N N N N N N N N N N N N N N	Flow Depth Velocity Sensor A/V
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface	0.00 No Straight No Good Ilation Notes 1.0	Install	N N N N N N N N N N N N N N	Flow Depth Velocity Sensor A/V Sensor
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	0.00 No Straight No Good Ilation Notes 1.0 Pressure, Velocity, and Ultra Paved Surface	Install	N N N N N N N N N N N N N N N N N N N	Flow Depth Velocity Sensor A/V Sensor
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Post Inst	0.00 No Straight No Good Ilation Notes 1.0 Pressure, Velocity, and Ultra		► ► ► ► ► ► ► ► ► ► ► ► ► ►	Flow Depth Velocity Sensor A/V Sensor A/V Sensor
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	0.00 No Straight No Good Ilation Notes 1.0 Pressure, Velocity, and Ultra Paved Surface		N N N N N N N N N N N N N N N N N N N	Flow Depth Velocity Sensor A/V Sensor
Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Insta Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Post Inst	0.00 No Straight No Good Ilation Notes 1.0 Pressure, Velocity, and Ultra Paved Surface		► ► ► ► ► ► ► ► ► ► ► ► ► ►	Flow Depth Velocity Sensor A/V Sensor A/V Sensor

Inspected Date//Time 3/21/2023 4/25 PM 30/389-00 T System Information Area View Picture Target Per Dia (no) 1.0 Area View Picture Target Per Dia (no) 1.0 Area View Picture Target Per Dia (no) 1.0 Area View Picture Target Per Dia (no) 2.0001 To Managet Information Market Per Dia (no) Area View Picture Vis Conception To To Vis Concentation To Vis Conceptio			Norman,	ЭК	Site Name Item 6	
Inspected Dat/F/Im 3/71/2023 4.25 PM 30.3884.00 T System Information Area View Picture Target Ree Dial 3.0000 Area View Picture Municipality Name Name Name Name Name Name	group	202	23 Norman Temporary	Flow Monitoring	BP-20	
System Information Area View Picture Target Pipe Dia, (in) 15.0 Municipality Norman Municipality Norman Material Pipe Dia, (in) 15.0 Municipality Norman Material Pipe Dia, (in) 20013 U/S Consecting Min D 20013 WWTP Inflamene Intelligion Pinot Material View View Picture Intelligion Pinot Material View View View View View View View View	Inspected By	zsanders		Project No.	Site Code	
Target Pipe Dia (in) 9.0.0 Municipatify 80.0 Municipatify 20013 U/S Consecting Min ID 20022 Vijerin Nutaria Billion Barum Sile Conference Top View Picture 0 WUTP Influence 0 WUTP Influence 0 Data Mande Degit (i) 6.0 Min Nubel Degit (i) 5.0 Need Scharget (i) 6.0 Need Scharget (i) 6.0 <	Inspected Date/Time	3/21/2023 4:25	PM	30-3984-00	т	
Numbel Day II Norman Arright Mandball Name 26013 Stoneding M1D 26012 Yorman Norman Image: Mandball Name 26013 Yorman Norman Image: Mandball Name <	System	n Information	Ar	ea Location Map	Area View Picture	
Municipality Norma Adding and Sugge 2.601.3 Circle Mandiel 2 2.601.3 V/S Conscriptioned 1 industrial Interventioned 1 industrial V/S Conscriptioned 2 industrial V/S Conscriptioned 2 industrial Namedia Depth (Int) industrial Star Address 2.000 Classer Namedia Depth (Int) 3.0.0 Namedia Depth (Int) 1.50	Target Pipe Dia. (in)	18.0	Magic Noo	dle		
Access roles Clamba Guage Clamba Guage 28033 Visite Manhole Visite 28033 Visite Manhole Visite 0 maneral i Interacter Nation 0 maneral i Visite Manhole Visite 0 maneral i Manhole Visite 0 maneral i <td>Municipality</td> <td>Norman</td> <td></td> <td></td> <td></td>	Municipality	Norman				
Clan Manual P 20013 View Characteristic 0 meneratic Interacteristic 0 meneratic P/S Influence 0 meneratic P/S Influence 0 meneratic P/S Influence 0 meneratic Dista Address 0 meneratic Cocation Information	District			Braum's Ice C	ream	
Clan Manual P 20013 View P Industrial P/S Influence 01 Manual D 01 Site Address 2011 Site Address 2011 Site Address 2011 Site Address 2012 Manual D 47.4920000 Latitude 35.01/0000 Latitude 35.01/0000 Latitude 35.01/0000 Manual D 47.492000 Latitude 35.01/0000 Manual D 47.492000 Latitude 35.01/0000 Latitude 35.01/0000 Manual D 47.492000 Latitude 35.01/0000 Manual D 36.01/000 Pise Haget (m) 15.01 Pise Haget (m) 15.01<	Assigned Rain Gauge			& Dairy Store		
Parter Darear Related Tries Method Tries Northing Cocalion Information Ste Addres Ste Information Neede Clear Info Bis Departing Pres Value Value Clear Info Bis Departing Ste Information Pres Value Value Clear Information Rep Value Neede Clear Information Rep Value </td <td>Client Manhole #</td> <td>286013</td> <td></td> <td></td> <td></td>	Client Manhole #	286013				
Readmail Commenced Instantion PS influence No	U/S Connecting MH I.D	286012	- A CONTRACT			
P/S Influence No Top View Picture VWTP Influence Information Top View Picture Site Address 200 Classes Bivd Coston Information Coston Information Coston Information Site Address 200 Classes Bivd Coston Information Investigation Photo Installation Photo Pipe Weight (in) 8.50 None Steps (in) 8.50 None Steps (in) None Steps	System Characteristics:		North Contraction of the Contrac			
To yliew Picture To yliew Picture To yliew Picture Site Advance Site Advance 47,4502000 Linture 37,4502000 Colspan="2">Colspan="2" Colspan="2" Colspan="2" <th cols<="" td=""><td>-</td><td>-</td><td></td><td>M</td><td></td></th>	<td>-</td> <td>-</td> <td></td> <td>M</td> <td></td>	-	-		M	
With Printered Location Information Site Address 2100 (Lasen Bivd Site Address 97 Part Note Open M(I) 35 2070000 Min Ype Backward MH Nanhole With (I) 40 Backward MH No Site Information Pipe With (In) 18 So Pipe With (In) 300 Case Note Site Information Recompetition Notes Nambel Capting (In) Site Address None Site Address Site Address None Site Address Site Address None Site Address Site Address Recommended by 5P Cast	-	No	1 States		Top View Picture	
Site Address 2100 Classes Bivd Site Address 010 PC Latitude 35.20170000 Latitude 35.20170000 Latitude 35.20170000 Latitude 35.20170000 Latitude 4.0 Exercate MH No Height Exercate MH No Height Exercate MH No Height Exercate MH No Stel Information Prev Height (n) 18.50 Prev Height (n) 18.50 Height (n) 18.50 Height (n) 18.50 Height (n) 18.50 Height (n) 18.50 Height (n) 18.50 Height (n) 18.50 Prev Height (n) 18.50 Prev Height (n) 18.50 Height (n) 18.5	WWTP Influence				Top thew i lettere	
Site Access Other Longitude 35:207000 Wit Type Brick Manhole beyth (f) 5:20 Manhole beyth (f) 5:20 Manhole beyth (f) 5:20 Manhole beyth (f) 5:20 Manhole beyth (f) 13:50 Pipe Highe Elevated Mi 3:50 Pipe Highe Elevated Mi 13:50 Pipe Highe Elevated Mi 13:50 Pipe Highe Elevated Mi 13:50 Pipe Highe Circular O2 20:9 Co O2 20:9 Co O3 Co Neds Cleaning 0.0 High Elevated Mi 0.0 Nets Cleaning None Site Ope None Straight Site Ope None Straight Site Ope None None Site Ope None Straight Site Ope None Straight Site Ope None Straight Site Ope None None Site Ope None Straight Site Ope None Straight Site Ope None Straight Site Ope None Straight Bedwater None Site Ope None Straight S	Locatio	n Information	The Edge A	Normon		
tanglude 97.43202000 tattude 3.2017000 WT Ype Bidde Wanhole Bepth (f) 6.20 Manhole With (h) 4.0 Evaded MH No Height Evaded (H) Sife Structural Integrity Sife Pipe Vight (in) 13.50 Pipe Vight (in) 3.00 Install Information Pipe Vight (in) Row Depth (in) 0.00 Needs Cleaning None Sill Depth (in) 0.00 Needs Cleaning No Bill Depth (in) 0.00 Needs Cleaning No <	Site Address 2100 Classe	en Blvd	The Edge A	Nonnali		
Latitude 35.20170000 Mit Type Bick Manhole Depth (f) 6.20 Elevated Mi No Construction Integrity Sife Construction Integrity Sife Construction Integrity Sife Construction Integrity Sife Construction Integrity Construction Inte	Site Access	Other		Q. Martin II		
Mit Type Bit K Manhole Uddit (f) 6.20 Manhole Uddit (f) 18.50 Pipe Vatified (fa) 18.50 Pipe Vatified (fa) 0.0 Pipe Vatified (fa) 0.0 Manhole Uddit (fi) 0.0 Manhole Uddit (fi) 0.0 Install Pipe Vatified (fa) 0.0 Medet Elevate (fr) 0.0 Stri Pype 0.0 Manhole Uddit (fi) 0.0 Install Pipe (fi) 0.75 Stri Pype None Silt Pype (fi) 0.05 Reconteristics Install Cross-Section Sketch Medet Elation None Silt Pype (fi) 1.0 Location in Minelle Second Surface Signal Strength Cocode Surface	Longitude	-97.43020000		S I		
Manhole Depth (t) 6.20 Manhole Depth (t) 6.20 Manhole Width (t) 4.0 Evoluted Mit No Height Elevated Mit Safe Investigation Photo Installation Photo Installation Investigation Photo Installation Installation Installation Installation Installation Notes Installation Notes Installation Notes Installation Notes Post Installation Notes Post Installation Notes Post Installation Notes Signal Strength Intervent Yape Intervent Yape Intervent Yape Intervent Yape Intervent Yape Intervent Yape	Latitude	35.20170000		9		
Manhole With (h) 4.0 Elevated MH No Height Elevated MH No Stele Information Investigation Photo Site Information Investigation Photo Site Information Investigation Photo Pipe Night (in) 18.50 Pipe Night (in) 18.50 Pipe Night (in) 18.50 Pipe Night (in) 18.50 Pipe Night (in) 3.00 Hydraulic Information Pipe Night (in) 3.00 Hydraulic Notes Neade Clearing No No Backwater No Need Clearing No Backwater No Need Clearing No Hydraulic Rating Good Install Plan Sketch Install Cross-Section Sketch Need Clearing No Backwater No Hydraulic Rating Good Hydraulic Rating Good Backwater No Hydraulic Rating Good Hydraulic Rating Good Backwater No Backwater No Backwater No Backwater No Hydraulic Rating Good Backwater No Backwater No Hydraulic Rating Good Hydraulic Rating Good Backwater No Hydraulic Rating Good Hydraulic Rating Good Hydraulic Rating Good	МН Туре	Brick		Contraction		
Elevated MH No Access Notes Parking lot of carwash Height Elevated (H) Site Investigation Photo Installation Photo Site Information 18.50 Investigation Photo Installation Photo Pipe Height (in) 18.50 Pipe York Utrified Clay Pipe Shape Cicalar Co 0.0 Q2 20.9 LEL % 0.0 Hydraulic Information Installation Pipe Nape Cicalar Stic Depth (in) 0.0 Install Velocity (Ips) 0.75 Stic Depth (in) 0.00 Needs Cleaning No Bist Velocity (Ips) 0.75 Stic Depth (in) 0.00 Needs Cleaning No Bist Velocity (Ips) 0.75 Stic Depth (in) 0.00 Needs Cleaning No Bist Velocity (Ips) 0.75 Stic Depth (in) 0.00 Needs Cleaning No Bist Velocity (Ips) 0.75 Stic Depth (in) 0.00 Install Plan Sketch Install Cross-Section Sketch Drop Inlet No Bist Velocity (Ips) Ord Stictatior on Methole Sectore Sig	Manhole Depth (ft)	6.20	In google J23 Max	ar Technologies, USDA/FF	PAC/GEO	
Elevated MH No Height Elevated (M) Structural Integrity Safe Site Information Pipe Height (In) 18.50 Pipe Vyten Vurified Clay Pipe Shape Circular O2 20.9 LEL% 0.0 Hydraulic Information Flow Depth (In) 3.00 Install Velocity (Ips) 0.75 Surcharge Evidence (H) 1.00 Install Velocity (Ips) 0.75 Surcharge Evidence (H) 1.00 Needs Clasming No Backwater No Hydraulic Rating Good Hydraulic Rating So Hydraulic Rating No Backwater No Hydraulic Rating No Backwater No Hydraulic Rating No Backwater No Hydraulic Rating Evidence (H) 1.0 Drop Inlet No Hydraulic Rating Pipe (H) 1.0 Drop Inlet No Hydraulic Rating So Pipe Hydraulic Rating So Hydraulic Rating So Hydraul	Manhole Width (ft)	4.0	Access Notes	Parking lot of carwash		
structural Integrity Safe Investigation Photo Installation Note Install I	Elevated MH	No	Alless Notes			
Structural Integrity Safe Site Information Pipe Height (in) 18.50 Pipe Kidth (in) 18.50 Pipe Shape Circular O22 20.9 LEL % 0.0 D23 0.0 CO 0.0 D24 0.0 CO 0.0 D25 0.0 CO 0.0 D26 0.0 0.0 0.0 D27 0.00 CO 0.0 D28 0.0 CO 0.0 D29 D20 0.0 CO 0.0 D20 CO 0.0 CO Note Surcharge Evidence (h) 1.0 Install Plan Sketch Install Cross-Section Sketch Needs Cleaning No Hydraulic Rating This Mere Pipe Post Installation Notes Install Plan Sketch Install Cross-Section Sketch Location in Pipe (h) 1.0 Install Cross-Section Sketch Install Cross-Section Sketch Location from Mahole Singal Strength Pipe Install Cross-Section Sketch Signal Strength	Height Elevated (ft)		Investi	ation Photo	Installation Photo	
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Sint Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Straight Drop Inlet No Hydraulic Rating Good Installation Notes Location in Pipe (ft) 1.0 Location from Manhole Sensors Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength Post Installation Notes Meter Type - Telemetry Type - Location to Date 4/26/2023	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in)	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 ic Information 3.00 0.75				
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Drop Inlet No Hydraulic Rating Good Installation Notes This Meter Pipe Pipe Location in Pipe (ft) 1.0 Location from Manhole Sensor Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength Client Approval Meter Type Client Approval Meter Type Client Approval	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 tic Information 3.00 0.75 1.00 None 0.00 0.00	Characteristics		Notes Install Cross-Section Sketch Flow	
Hydraulic Rating Good Hydraulic Rating Good Installation Notes Location in Pipe (ft) 1.0 Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength Avion Post Installation Notes Meter Type Telemetry Type Location pate Alog 2023	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 H2C Variable Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in)	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 Ic Information 3.00 0.75 1.00 None 0.00 None 0.00 No	Characteristics		Notes Install Cross-Section Sketch Flow	
Installation Notes Location in Pipe (ft) 1.0 Location from Manhole Sensors Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength Recommended by FSP Client Approval Telemetry Type Location on Pipe (ft)	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 It Information 3.00 0.75 1.00 - None 0.00 0.00 - No -	Characteristics		Notes Install Cross-Section Sketch Flow Depth Velocity	
Installation Notes Location in Pipe (ft) 1.0 Location from Manhole Elevated Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength A/V Clock Position: 6:00 Velocity Clock Position: 0:00 Velocity Clock Position: 0:00 Meter Type - Recommended by FSP Client Approval Telemetry Type - Recommended by FSP Client Approval	Pipe Height (in) Pipe Width (in) Pipe Type 20.9 42S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 Ison 0.0 Ison 0.0 Ison 0.0 Ison 0.0 Ison 0.0 0.75 1.00 None 0.00 No 0.00 No 0.00 No 0.00 Straight 0.0	Characteristics		Notes Install Cross-Section Sketch Flow Depth Velocity Sensor	
Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength Velocity Clock Position: 0:00 Post Installation Notes Approvals Meter Type - Client Approval Telemetry Type	Pipe Height (in) Pipe Width (in) Pipe Type 20.9 42S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 Ison 0.0 Ison 0.0 Ison 0.0 Ison 0.0 Ison 0.0 0.75 1.00 None 0.00 No 0.00 No 0.00 No 0.00 Straight 0.0	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flow Depth Velocity Sensor A/V	
Location from Manhole Sensors Pressure, Velocity, and Ultra Antenna Surface Paved Surface Signal Strength Post Installation Notes Meter Type Telemetry Telemetry Telemetry Type Telemetry Type Telemetry Telem	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 Isolo 0.0 Isolo 0.0 Isolo 0.0 Isolo 0.0 0.75 0.0 1.00 - None - 0.00 - No - Straight - No - Good -	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flow Depth Velocity Sensor A/V	
Antenna Surface Paved Surface Signal Strength A/V Clock Position: 6:00 Velocity Clock Position: 0:00 Post Installation Notes Approvals Meter Type - Telemetry Type Listellition Data	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 ic Information 3.00 0.75 1.00 None 0.00 Straight No Good	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flow Depth Velocity Sensor A/V	
Antenna Surface Paved Surface Signal Strength Velocity Clock Position: 0:00 Post Installation Notes Approvals Meter Type - Recommended by FSP Client Approval Telemetry Type - Post Installation Notes	Pipe Height (in) Pipe Width (in) Pipe Type 20.2 20.9 H2S 0.0 H2S 0.0 H2S Covernment Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 ic Information 3.00 0.75 1.00 None 0.00 Straight No Good	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flow Depth Velocity Sensor A/V	
Post Installation Notes Approvals Meter Type - Recommended by FSP Client Approval Telemetry Type - - -	Pipe Height (in) Pipe Width (in) Pipe Type 202 20.9 H2S 0.0 H2S 0 H2S 0 H2S 0 H2S 0 H2	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 It Information 3.00 0.75 1.00 - None 0.00 0.00 - Straight No Straight - No - I.00 - I.00 - No - Straight - No - I.01 -	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flow Depth Velocity Sensor A/V Sensor	
Meter Type - Recommended by FSP Client Approval Telemetry Type	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location set manole	18.50 18.50 18.50 18.50 Vitrified Clay Circular Circular LEL % 0.0 CO 0.0 Itel No 0.0 0.75 1.00 - None 0.00 0.00 - Straight - No - Good - 1.0 - 1.0 - Pressure, Velocity, and Ultra	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Plow Depth Velocity Sensor A/V Sensor A/V Sensor	
Telemetry Type	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location Tim Manhole Sensors	18.50 18.50 18.50 18.50 Vitrified Clay Circular Circular LEL % 0.0 CO 0.0 Itel No 0.0 0.75 1.00 - None 0.00 0.00 - Straight - No - Good - 1.0 - 1.0 - Pressure, Velocity, and Ultra	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Plow Depth Velocity Sensor A/V Sensor A/V Sensor	
	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 Itel No 0.0 0.75 1.00 None 0.00 0.00 Straight No Good 1.0 Pressure, ∨elocity, and Ultra Paved Surface	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Plow Depth Velocity Sensor A/V Sensor A/V Sensor A/V Sensor A/V Sensor	
Installation Date 4/26/2023	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 Itel No 0.0 0.75 1.00 None 0.00 0.00 Straight No Good 1.0 Pressure, ∨elocity, and Ultra Paved Surface	Characteristics Install	Plan Sketch	Notes Install Cross-Section Sketch Plow Depth Velocity Sensor A/V Sensor Velocity Clock Position: 6:00 Velocity Clock Position: 0:00	
Installation Date 4/20/2023	Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path	18.50 18.50 Vitrified Clay Circular LEL % 0.0 CO 0.0 Itel No 0.0 0.75 1.00 None 0.00 0.00 Straight No Good 1.0 Pressure, ∨elocity, and Ultra Paved Surface	Characteristics Install	Plan Sketch	Notes Install Cross-Section Sketch Plow Depth Velocity Sensor A/V Sensor Velocity Clock Position: 6:00 Velocity Clock Position: 0:00	

rin		Norman,0	ЭК	Site Name Item
grou	2023 N	lorman Temporary	Flow Monitoring	BP-21
Inspected By	zsanders		Project No.	Site Code
Inspected Date/Time	3/21/2023 4:44 PM		30-3984-00	Т
System	n Information	Arc	ea Location Map	Area View Picture
Target Pipe Dia. (in)	30.0	5 1 F		States States and the
Municipality	Norman			
District				
Assigned Rain Gauge		OU Duck P		
Client Manhole #	260116	- OUDUCKP		
U/S Connecting MH I.D	260117			
System Characteristics:		The second second		
Residential -	Commercial - 🔲 Industrial - 🔲	1.1		
P/S Influence	No	Brandt Park	Magic Nood	
WWTP Influence				Top View Picture
Locatio	n Information	E Lindsey St		
Site Address Suite 115 1	915	ALL AND	Braum's Ice Crean	
Site Access	Off-Road		& Dairy Stor	
	-97.43210000	THE REAL PROPERTY AND INCOMENT	Carbon Contraction	
Longitude Latitude	-97.43210000 35.20480000		A A A A A A A A A A A A A A A A A A A	and the second sec
	35.20480000 Precast Concrete		The set of the	
MH Type		Google		
Manhole Depth (ft)	10.30	Inage 992023 Max	ar Technologies, USDA/F	PAC/GEO
Manhole Width (ft)	4.0	Access Notes		
Elevated MH	No			
Height Elevated (ft)		Investig	gation Photo	Installation Photo
Structural Integrity	Safe		,	
Site	Information			the section of
Pipe Height (in)	29.75			
Pipe Width (in)	28.75	and the second	And the Party of t	
Ріре Туре	Concrete	1 Population		
Pipe Shape	Circular			
02 20.9	LEL % 0.0	A CONTRACTOR OF		
H2S 0.0	CO 0.0			
Hydrau	lic Information			
Flow Depth (in)	1.00			-51 () () () () () () () () () (
Instant Velocity (fps)	1.50	Hydraulic		Installation
Surcharge Evidence (ft)	1.00	Characteristics		Notes
Silt Type	None			
Silt Depth (in)	0.00	Install	Plan Sketch	Install Cross-Section Sketch
Needs Cleaning	No			Flow
Backwater	No		$\mathbf{\Lambda}$	Depth
Flow Path	Straight		N	U Velocity
Drop Inlet	No		6 X	Sensor
Hydraulic Rating	Good		W	A/V Sensor
Insta	lation Notes		This Meter	Sensor
Location in Pipe (ft)	1.0		Pipe	
Location from Manhole			Elevated Pipe	
Sensors	Pressure, Velocity, and Ultra			
Antenna Surface	Non-Paved Surface			A/V Clock Position: 6:00
Signal Strength				Velocity Clock Position: 0:00
	tallation Notes		Δηρ	rovals
Meter Type	-	Recomm	mended by FSP	Client Approval
Telemetry Type			· · · · · · · · · · · · · · · · · · ·	
. c.c.i.c.i y i ypc		1		
Installation Date	4/20/2023			

Target Pipe Dia. (in) 18 Municipality No District Assigned Rain Gauge Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - CC P/S Influence No WWTP Influence C Location I Site Address 500 E Alameda Site Access Sid Longitude -9 Latitude 35 MH Type Pr	ssanders 3/22/2023 9:23 AM addition add	Norman	Project No. 30-3984-00 ea Location Map ORIGINAL OWN SITE Jueria San Tadeo Alameta St Lincoln Elementary School	BP-22 T Area View Picture
Inspected Date/Time System In Target Pipe Dia. (in) 18 Municipality No District Assigned Rain Gauge Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - CC P/S Influence No WWTP Influence No Site Address 500 E Alameda Site Access Site Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	3/22/2023 9:23 AM	Norman Tac Tac Ecocole 23 Max	30-3984-00 ea Location Map	T Area View Picture Output
System Ir Target Pipe Dia. (in) 18 Municipality No District Assigned Rain Gauge Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - □ CC P/S Influence No WWTP Influence Site Address 500 E Alameda Site Access Site Access Site Address Site Access Site Access Site Access Muttude 35 Site Access Site Access MH Type Pr Manhole Depth (ft) 14	nformation 3.0 orman 43054 12067 ommercial - Industrial - I o Industrial - I o I I I I I I I I I I I I I	Norman Tac Tac Ecocole 23 Max	ea Location Map	Area View Picture Image: Constraint of the second s
Target Pipe Dia. (in) 18 Municipality Na District Assigned Rain Gauge Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - Ca P/S Influence Na WWTP Influence C Location I Site Address 500 E Alameda Site Access Sid Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	3.0 orman 43054 12067 ommercial - Industrial - I o Information a St dewalk 7.43390000 5.21820000 recast Concrete 4.70 0	Norman Tac Tac Ecocole 23 Max	DRIGINAL OWNSITE queria San Tadeo Alameta St Lincoln Elementary School	Top View Picture
Municipality No District Assigned Rain Gauge Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - CC P/S Influence No WWTP Influence No WWTP Influence Site Address 500 E Alameda Site Address Site Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	orman 43054 12067 ommercial - Industrial - C o Industrial - C o Industrial - C Industrial - C Industr		OWNSITE queria San Tadeo Alameta St Lincoln Elementary School	
District Assigned Rain Gauge Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - CO P/S Influence NG WWTP Influence Location I Site Address 500 E Alameda Site Access 500 E Alameda Site Access 500 E Alameda Muthatitude 35 MH Type Pr Manhole Depth (ft) 14	A3054 L2067 ommercial - Industrial - O o Anformation A St dewalk 17.43390000 5.21820000 recast Concrete 4.70 0		OWNSITE queria San Tadeo Alameta St Lincoln Elementary School	
Assigned Rain Gauge Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - CAP/S Influence NA WWTP Influence UCCCATCON I Site Address 500 E Alameda Site Access 500 E Alameda Site Access 500 E Alameda Site Access 500 E Alameda MH Type Pr Manhole Depth (ft) 14	12067 ommercial - Industrial - O o Information a St dewalk 7.43390000 5.21820000 recast Concrete 1.70 0	Tac Tac Tac	OWNSITE queria San Tadeo Alameta St Lincoln Elementary School	
Client Manhole # 24 U/S Connecting MH I.D 21 System Characteristics: Residential - CC P/S Influence NG WWTP Influence Site Address 500 E Alameda Site Access Sid Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	12067 ommercial - Industrial - O o Information a St dewalk 7.43390000 5.21820000 recast Concrete 1.70 0	Tac Tac Tac	OWNSITE queria San Tadeo Alameta St Lincoln Elementary School	
U/S Connecting MH I.D 21 System Characteristics: Residential C C P/S Influence C WWTP Influence Location I Site Address 500 E Alameda Site Access 500 E Alameda Site Access 500 E Alameda MH Type P Manhole Depth (ft) 14	12067 ommercial - Industrial - O o Information a St dewalk 7.43390000 5.21820000 recast Concrete 1.70 0	Cocole 123 Max	Alamet a St Lincoln Elementary School	
System Characteristics: Residential - Co P/S Influence No WWTP Influence Location I Site Address 500 E Alameda Site Access Sid Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	ommercial - Industrial - O o Information a St dewalk 7.43390000 5.21820000 recast Concrete 4.70 0	Geogle 123 Max	Alamet a St Lincoln Elementary School	
System Characteristics: Residential - Co P/S Influence No WWTP Influence Location I Site Address 500 E Alameda Site Access Sid Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	o Information a St dewalk 17.43390000 5.21820000 recast Concrete 4.70 0	Google,123 Max	Lincoln Elementary School	
Residential - Co P/S Influence No WWTP Influence Location I Site Address 500 E Alameda Site Access Site Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	o Information a St dewalk 17.43390000 5.21820000 recast Concrete 4.70 0	Google,123 Max	Lincoln Elementary School	
P/S Influence No WWTP Influence Site Address 500 E Alameda Site Access Sit Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	o Information a St dewalk 17.43390000 5.21820000 recast Concrete 4.70 0	Google,123 Max	Lincoln Elementary School	
WWTP Influence Location I Site Address 500 E Alameda Site Access Sid Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	nformation St dewalk 17.43390000 5.21820000 recast Concrete 4.70 0	Google,123 Max	Lincoln Elementary School	
Location I Site Address 500 E Alameda Site Access Sit Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	a St dewalk 17.43390000 5.21820000 recast Concrete 4.70 0	Google J23 Max	Elementary School	PAC/GEO
Site Address 500 E Alameda Site Access Si Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	a St dewalk 17.43390000 5.21820000 recast Concrete 4.70 0	Google J23 Max	Elementary School	PAC/GEO
Site Access Site Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	dewalk (7.43390000 5.21820000 recast Concrete 4.70 0	Google J23 Max	Elementary School	EPAC/GEO
Longitude -9 Latitude 35 MH Type Pr Manhole Depth (ft) 14	7.43390000 5.21820000 recast Concrete 4.70 0	Google J23 Max	Elementary School	FPAC/GEO
Latitude 35 MH Type Pr Manhole Depth (ft) 14	5.21820000 recast Concrete 1.70 0	Google J23 Max	Elementary School	FPAC/GEO
MH Type Pr Manhole Depth (ft) 14	recast Concrete 1.70 0	Google J23 Max		-PAC/GEO
Manhole Depth (ft) 14	1.70 0		ar Technologies, USDA/F	PAC/GEO
	0		ar Technologies, USDA/F	PAC/GEO
	0			
		Access Notes		
Elevated MH No				
Height Elevated (ft)				
	afe	Investig	gation Photo	Installation Photo
Site Info	ormation			
	5.50	Ann	1	
,	7.00	ATTO AND AND	1 1	
	olyvinyl Chloride	Contract of the	and the second	
	rcular	A CONTRACT OF A		
	EL% 0.0	- material		
H2S 0.0 CC	D 0.0	and the second	the second	
Hydraulic	Information		and the second sec	
Flow Depth (in) 4.	80		and in	
Instant Velocity (fps) 0.	75	Hydraulic		Installation
Surcharge Evidence (ft) 1.0	00	Characteristics		Notes
Silt Type No	one			
	00	Install	Plan Sketch	Install Cross-Section Sketch
Needs Cleaning No	0			Flow
Backwater No	0		$\mathbf{\Lambda}$	Depth
Flow Path St	raight		∕ N	Velocity
Drop Inlet No	-			Sensor
•	ood			A/V
			🚫 This Meter	Sensor
	ion Notes		↓ ☐ Pipe	
Location in Pipe (ft) 1.	0		Elevated	
Location from Manhole			Pipe	
Sensors Pr	ressure, Velocity, and Ultra		¥	A/V Clock Position: 6:00
Antenna Surface No	on-Paved Surface			
Signal Strength				Velocity Clock Position: 0:00
Post Instal	lation Notes		Арр	rovals
Meter Type -		Recomm	mended by FSP	Client Approval
Telemetry Type				
	/26/2023			

rin		Norman,C	ЭК	Site Name Item
group	2023	Norman Temporary	Flow Monitoring	BP-23
Inspected By	zsanders		Project No.	Site Code
Inspected Date/Time	3/21/2023 6:01 PM		30-3984-00	т
Systen	n Information	Are	ea Location Map	Area View Picture
Target Pipe Dia. (in)	24.0	A CONTRACTOR		
Municipality	Norman			
District		the literation		
Assigned Rain Gauge		OPICINIAL		
Client Manhole #	213051	ORIGINAL TOWNSITE		PART AND
U/S Connecting MH I.D	213035		12 Jan Jan	
System Characteristics:		CH CH		
Residential -	Commercial - 🔲 Industrial - 🗌		omm My Health	
P/S Influence	No	C. L.	omm y-Health	
WWTP Influence		E Alameda St		Top View Picture
			E Banda Ca	
Locatio	n Information	E See Environ	Panda Ga	
Site Address 801 E Alam	neda St	Carles -		
Site Access	Sidewalk	D COMPANY COM		
Longitude	-97.43080000	Lincoln		
Latitude	35.21860000	Elementary	School	
MH Type	Poured Concrete		a state and the second	
Manhole Depth (ft)	12.10	Google	ar Technologies, USDA/F	PACICEO
Manhole Width (ft)	4.0	II hager Jose 2020 Max	ar recinologies, oobAn	FACIGEO CASA
Elevated MH	No	Access Notes		
Height Elevated (ft)				
Structural Integrity	Safe	Investig	gation Photo	Installation Photo
	Information	1 Let		
Pipe Height (in)	23.50		and the second	
Pipe Width (in)	25.00			
Ріре Туре	Concrete	ate and the set	UN AN REAL	
Pipe Shape	Circular	4.1933年1月1日		A MAR AND
02 20.9	LEL % 0.0			
H2S 0.0	CO 0.0	A REAL PROPERTY AND A REAL		
Hydrau	lic Information	TE IN	and the second sec	1 Aller
Flow Depth (in)	8.40	and a state	54	
Instant Velocity (fps)	2.40	Hydraulic		Installation
Surcharge Evidence (ft)	1.00	Characteristics		Notes
Silt Type	None	Install	Plan Sketch	Install Cross-Section Sketch
Silt Depth (in)	0.00	install		
Needs Cleaning	No		٨	Flow
Backwater	No			Depth
Flow Path	Straight		″N ℃	Velocity
Drop Inlet	No			Sensor
Hydraulic Rating	Good			A/V Sensor
Instal	lation Notes		This Meter	
Location in Pipe (ft)	1.0		Pipe	
Location from Manhole	*		Elevated Pipe	
			·	
	Pressure, Velocity and Elltra	1		A/V Clock Position: 6:00
Sensors	Pressure, Velocity, and Ultra Non-Paved Surface			
Sensors Antenna Surface	Pressure, Velocity, and Ultra Non-Paved Surface			Velocity Clock Position: 0:00
Sensors Antenna Surface Signal Strength	Non-Paved Surface		Area	
Sensors Antenna Surface Signal Strength Post Ins				rovals
Sensors Antenna Surface Signal Strength Post Ins Meter Type	Non-Paved Surface	Recom	App nended by FSP	
Sensors Antenna Surface Signal Strength	Non-Paved Surface	Recomm		rovals

rin			Norman,	ЭК		Site Name	Item 6
I J _{grou}	р	2023 N	orman Temporary	Flow Monitoring		BP-24	
Inspected By		zsanders		Project No.		Site Code	
Inspected Date/Time		3/21/2023 3:35 PM	_	30-3984-00			
Syster	n Informat	tion	Ar	ea Location Map		Area View Pictu	re
Target Pipe Dia. (in)	19.0		1 Comercia	· · · · · · · · · · · · · · · · · · ·		- A	1
Municipality	Norman		1 Jane		OU	NAME AND ADDRESS	
District				Jimmie Austin OU Golf Club			
Assigned Rain Gauge					1 2 1		
Client Manhole #	297022						iiine
U/S Connecting MH I.D	297099		A PARA	- 19			
System Characteristics:					H Las		
Residential -	Commercial -	Industrial -					
P/S Influence	No		The second of the			Top View Pictur	·•
WWTP Influence				State Bar	THE STATE		c
Locatio	on Informa	tion	Police De	of Oklahoma		11000	
Site Address 720 E Con	stitution St				1.367	1411 Barris	111/62
Site Access	Off-Road			Emerald Green			1. A. C.
Longitude	-97.4306000	0		Apartments		A Designed and the second s	
Latitude	35.19130000)			Strength .	A Contraction	
МН Туре	Brick			Ent E. P. Black	. 11	ILING AR	CHAND,
Manhole Depth (ft)	17.60		IL GOOG EJ23 Max	ar Technologies, USDA/F	PAC/GEO	MA	Shit!
Manhole Width (ft)	4.0						
Elevated MH	Yes		Access Notes	Need 9 foot tripod			
Height Elevated (ft)	3.0		lun ve ett.	nation Dhata		Installation Dhata	
Structural Integrity	Safe		Investi	gation Photo		Installation Photo	
Site	Informatio	on			522		Nin.
Pipe Height (in)	19.00		LANG AND		000	Letter a	
Pipe Width (in)	18.50				0000	AN SAME	
Pipe Type	Lined		The All of the	ES MARTINE	11 / 1		~
Pipe Shape	Circular		16 N / 18	14 W 10 10 10			No.
02 20.9	LEL %	0.0		CONTRACTOR OF THE OWNER			
H2S 0.0	со	0.0	1897 A 19 /2				
Hydrau	lic Informa	ation					
Flow Depth (in)	3.60						
Instant Velocity (fps)	2.10		Linderen 12 -		Inate		1000
Surcharge Evidence (ft)	1.00		Hydraulic Characteristics		Installation Notes		
Silt Type	None						
Silt Depth (in)	0.00		Install	Plan Sketch	Insta	ll Cross-Section Sket	ch
Needs Cleaning	0.00 No						
Backwater	No			$\mathbf{\Lambda}$			Flow Depth
Flow Path	Straight						
Drop Inlet	No			IN IN			Velocity Sensor
Hydraulic Rating	Good			. B.			A/V
	0000			This Meter			Sensor
	llation Not	tes		Pipe			
Location in Pipe (ft)	1.0			Elevated		-	
Location from Manhole	_			* Pipe	and the second se		
Sensors		locity, and Ultra	Ť		A/V Clock Positi	ion: 6:00	
Antenna Surface	Non-Paved S	urface			Velocity Clock P	osition: 0:00	
Signal Strength							
	stallation N	lotes	D		orovals	Client Assessed	
Meter Type	-		Recom	mended by FSP		Client Approval	
Telemetry Type	4/27/2023						
Installation Date							7

rin			Norman,0	ЭК	Site Name
grou	р		Norman Utilities	Authority	BP-25
Inspected By	r_bas	S		Project No.	Site Code
Inspected Date/Time	1/7/2	015 10:38 AM		30-3884-00	Т
Syste	m Information		Ar	ea Location Map	Area View Picture
Target Pipe Dia. (in)	36.0			niversity of Oklaho	ma
Municipality	Norman				
District	Norman		S CON		
Assigned Rain Gauge	RG-04		Pro-Arabitanta	In Dorthorship	
Client Manhole #	330006		Architects	In Partnership	
U/S Connecting MH I.D	330030		And so the so		
System Characteristics:				the strates -	
Residential - 🔽	Commercial - 🗹	Industrial - 🔲		M	
P/S Influence	No		Bishop C	reek) edical	
-			And Cour	nseling Grp	Top View Picture
WWTP Influence	No		Contraction and a second	Section .	
Locati	on Information			Contraction of the second	9
Site Address 3240 Mar	shall Ave				
Site Access	Other			and the second s	3
Longitude	-97.42970000		9	All and the second	TO THE
Latitude	35.18020000			AND ON O	Ta la
ИН Туре	Poured Concrete			13 A 10 - 11	
	8.57		Googleagery Pr		
Manhole Depth (ft)			xas en sinagery Pr	ogram, USDA Farm Serv	ice Agency
Manhole Width (ft)	5.0		Access Notes	In island	
Elevated MH	No				1
Height Elevated (ft)			Investio	gation Photo	Installation Photo
Structural Integrity	Safe		investig		mstanation i noto
Site	Information		Martin State	-	-
Pipe Height (in)	35.75			A PAR SIG	
Pipe Width (in)	35.75		and the man		A A A A A A A A A A A A A A A A A A A
Pipe Type	Concrete		A STANDARD		A B A
Pipe Shape	Circular				
02	LEL %				
H2S	со			Ar	A CONTRACTOR
Hydrau	lic Information			1	1
Flow Depth (in)	17.06				
Instant Velocity (fps)	1.41		Hydraulic		Installation
Surcharge Evidence (ft)			Characteristics		Notes
Silt Type	Fine				
Silt Depth (in)	6.00		Install	Plan Sketch	Install Cross-Section Sketch
Needs Cleaning	No				
-				Δ	Flow
Backwater	No				Depth Silt
low Path	Straight			Ń N	Silt Depth
Drop Inlet	No		_		
Hydraulic Rating	Good				A/V Sensor
				This Meter	Ultra
				Pipe	Sensor
Insta	Ilation Notes				
	1.0			> Flevated	
ocation in Pipe (ft)	1.0			Elevated Pipe	
ocation in Pipe (ft) ocation from Manhole					
ocation in Pipe (ft) ocation from Manhole Sensors	1.0 Upstream				A/V Clock Position: 4:00
ocation in Pipe (ft) ocation from Manhole Sensors Antenna Surface	1.0 Upstream Non-Paved Surface				A/V Clock Position: 4:00
ocation in Pipe (ft) ocation from Manhole Sensors Antenna Surface Signal Strength	1.0 Upstream Non-Paved Surface 75			¹ Pipe	
Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Post In	1.0 Upstream Non-Paved Surface			¹ Pipe	rovals
Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Post In Meter Type	1.0 Upstream Non-Paved Surface 75		Recom	Pipe App	rovals Client Approval
Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Post In	1.0 Upstream Non-Paved Surface 75		Recom	¹ Pipe	rovals

rin		Norman,0	ЭК	Site Name	ltem 6.
FJ _{group}	2	023 Norman Temporary	Flow Monitoring	BP-26	
Inspected By	zsanders		Project No.	Site Code	
Inspected Date/Time	3/21/2023 5:0	04 PM	30-3984-00	т	
System	n Information	Ar	ea Location Map	Area View Picture	
Target Pipe Dia. (in)	15.0				-
Municipality	Norman	AT MALE MANAGE	KA LANG	nmons Park	-
District				PELIS	a Basil
Assigned Rain Gauge		Cam	ous Lodge	O A. A. C. LEWIS & THE REAL PROPERTY OF THE	and the second second
Client Manhole #	261088			RISH	
U/S Connecting MH I.D	261058				
System Characteristics:					
Residential -	Commercial - 🔲 Industria		Plas M		
P/S Influence	No				
WWTP Influence				Top View Picture	
www.rr initiaence		Sonic D	Drive-In E Lindse	y St	1.5
Locatio	n Information				Ent
Site Address 1531 E Line	dsey St				1
Site Access	Other				
Longitude	-97.41750000				and a
Latitude	35.20420000	A THE THE			311
МН Туре	Precast Concrete	RUILLA REAL			1
Manhole Depth (ft)	15.50	Google J23 Max	ar Technologies, USDA/FP	AC/GEO	1.20
Manhole Width (ft)	4.0	magorjestoto max			
Elevated MH	Yes	Access Notes	Park, inside drop influenced by w	vater park	
Height Elevated (ft)	2.0				
Structural Integrity	Safe	Investig	gation Photo	Installation Photo	
	Information	The second second second second second			
Pipe Height (in)	14.50	the second	The local and the	and the second s	
Pipe Width (in)	15.62				
Pipe Type	Polyvinyl Chloride		· · · · · · · · · · · · · · · · · · ·		
Pipe Shape	Circular	Par C			
02 20.9	LEL % 0.0				
H2S 0.0	CO 0.0	an geographic			
	lic Information				
Flow Depth (in)	7.20				
Instant Velocity (fps)	0.80	Hydraulic		nstallation Flow picked up as we were finishing, may be a pump nea	ar bv.
Surcharge Evidence (ft)	1.00	Characteristics	N	Notes heights and flow speed both	
Silt Type	None	Install	Plan Sketch	Install Cross-Section Sketch	
Silt Depth (in)	0.00	instan		install stoss section sketch	
Needs Cleaning	No		Δ	Flo	
Backwater	No	, h		Dep	pth
Flow Path	Straight		ν Ν Ν		locity
Drop Inlet	Yes			Ser	nsor
Hydraulic Rating	Good			A/V Ser	V nsor
Instal	lation Notes	H	This Meter		
Location in Pipe (ft)	1.0		Pipe		
Location from Manhole			Elevated Pipe		
Sensors	Pressure, Velocity, and Ultra				
Antenna Surface	Non-Paved Surface	UF4		A/V Clock Position: 6:00	
Signal Strength				Velocity Clock Position: 0:00	
	tallation Notes		Appro		
Meter Type	-	Recom	mended by FSP	Client Approval	
Telemetry Type Installation Date	4/20/2023				

rin		Norman,	ЭК		Site Name	Item
group	2023 N	orman Temporary	Flow Monitoring		BP-27	
Inspected By	zsanders		Project No.		Site Code	
Inspected Date/Time	3/21/2023 5:21 PM	_	30-3984-00		т	
System	n Information	Ar	ea Location Map		Area View Pictu	ure
Target Pipe Dia. (in)	21.0			21: 10	A HT LFT	- 1
Municipality	Norman					
District Assigned Rain Gauge		Campus Lo	oage		- China	
Client Manhole #	261092				THE SHARE	
U/S Connecting MH I.D	262109	A PARTY AND	ALL AND ALL			-
System Characteristics:						the state
Residential -	Commercial - 🔲 Industrial - 🔲	CSL Plasr	ma Mrus II			
P/S Influence	No				Ton View Distu	
WWTP Influence		Sonic Drive-I	n E Lindsey St	TRANK	Top View Pictu	ire
Locatio	n Information					
Site Address 1699 E Ling	dsey St		THE WAY	anagaran .		
Site Access	Sidewalk			TRADICITY I	All and	R S
Longitude	-97.41610000	MILLEUL S		No. JA	12 h .	
Latitude	35.20390000		RIT	101	EN BL PM	
МН Туре	Brick				N W	
Manhole Depth (ft)	10.90	Google J23 Max	ar Technologies, USDA/FF	AC/GEO		- Stanfi
Manhole Width (ft)	4.0	Access Notes				
Elevated MH	No					
Height Elevated (ft)		Investig	gation Photo		Installation Photo	
Structural Integrity	Safe	mvestig	Sation Thoto		motanation i noto	
Site	Information	1 aller			1	
Pipe Height (in)	20.25			1 for 1		
Pipe Width (in)	20.25	A STATISTICS	and we have	19	1000	
Ріре Туре	Vitrified Clay	1 6			1000	
Pipe Shape						ALC: NOT THE REPORT OF
22 22 2	Circular		The second s	A A - T	PLA NO	Contes -
	LEL % 0.0		and a state	2 m	1 - N	
H2S 0.0	LEL % 0.0 CO 0.0			1 m	K	6
H2S 0.0 Hydrau	LEL % 0.0 CO 0.0 lic Information			la		
H2S 0.0 Hydrau Flow Depth (in)	LEL % 0.0 CO 0.0 lic Information 6.00					
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps)	LEL % 0.0 CO 0.0 lic Information 6.00 1.10	Hydraulic Characteristics		Installation Notes	Flow rates vary up and d to 9 inches	own from 6
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft)	LEL % 0.0 CO 0.0 lic Information 6.00	Characteristics		Notes	to 9 inches	
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 1.00	Characteristics		Notes		
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in)	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 1.00 None	Characteristics		Notes	to 9 inches	tch
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 None 0.00	Characteristics		Notes	to 9 inches	
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 1.00 Vone 0.00 Vone 0.00 Vone	Characteristics		Notes	to 9 inches	Flow Depth
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path	LEL % 0.0 CO 0.0 Iic Information 6.00 1.10 1.00 2.00 None 0.00 No 2.00	Characteristics		Notes	to 9 inches	Flow Depth Velocity Sensor
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet	LEL % 0.0 CO 0.0 It. Information 0.0 6.00 1.10 1.00 1.00 0.00 0.00 None 0.00 0.00 No 0.00 5traight	Characteristics	Plan Sketch	Notes	to 9 inches	Flow Depth Velocity
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	LEL % 0.0 CO 0.0 It. Information 0.0 6.00 1.10 1.00 1.00 2.00 0.00 None 0.00 2.00 No 3.00 3.00 No 3.00 3.00 No 3.00 3.00 No 3.00 3.00	Characteristics	Plan Sketch	Notes	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 1.00 None 0.00 No Straight No Good	Characteristics	Plan Sketch	Notes	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Instal	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 1.00 None 0.00 No Straight No Good	Characteristics	Plan Sketch	Notes	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Instal Location in Pipe (ft) Location from Manhole	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 1.00 None 0.00 No Straight No Good	Characteristics	Plan Sketch	Inst	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Instal Location in Pipe (ft) Location from Manhole Sensors	LEL % 0.0 CO 0.0 lic Information 6.00 1.10 1.00 None 0.00 No Straight No Good	Characteristics	Plan Sketch	Notes Inst	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Instal Location in Pipe (ft) Location from Manhole Sensors Antenna Surface	LEL % 0.0 co 0.0 l.co 0.0 b.co 0.0 1.10 - 1.00 - 0.00 - None - 0.00 - No - Straight - No - Good -	Characteristics	Plan Sketch	Notes Inst	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	LEL % 0.0 co 0.0 l.co 0.0 b.co 0.0 1.10 - 1.00 - 0.00 - None - 0.00 - No - Straight - No - Good -	Characteristics	Plan Sketch	Notes Inst A/V Clock Pos Velocity Clock	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	LEL % 0.0 CO 0.0 IIC Information 6.00 1.10 1.00 - 1.00 - 0.00 - 0.00 - 0.00 - 0.00 - None - 0.00 - No - Straight - No - Good - I.0 - Pressure, Velocity, and Ultra Non-Paved Surface	Characteristics Install	Plan Sketch N N N N N N N N N N N N	Notes Inst A/V Clock Pos Velocity Clock	all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V
H2S 0.0 Hydrau Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	LEL % 0.0 CO 0.0 IIC Information 6.00 1.10 1.00 - 1.00 - 0.00 - 0.00 - 0.00 - 0.00 - None - 0.00 - No - Straight - No - Good - I.0 - Pressure, Velocity, and Ultra Non-Paved Surface	Characteristics Install	Plan Sketch	Notes Inst A/V Clock Pos Velocity Clock	to 9 inches all Cross-Section Ske	tch Flow Depth Velocity Sensor A/V

rin		Norman,	ОК	Site Name	Item
F J _{grou}	p 2023 I	Norman Temporary	Flow Monitoring	BP-27-01	1
Inspected By	zsanders		Project No.	Site Code	
Inspected Date/Time	3/21/2023 5:41 PM		30-3984-00	т	
Syster	n Information	Ar	ea Location Map	Area View Pictu	ire
Target Pipe Dia. (in)	18.0		- Constanting and the		
Municipality	Norman			The T	
District		12	The second second	MARCO AND AND A TO THE	- Alla And
Assigned Rain Gauge			Detriet Alson	The second	
Client Manhole #	263060	CARLES THE REAL PROPERTY AND	Patriot Air Co		
U/S Connecting MH I.D	263059				
	203039	A Company of the second			-
System Characteristics:					
Residential -			C Oknoi	name	
P/S Influence	Yes				re
WWTP Influence			Rese	rvoir	
Locatio	on Information				3/
Site Address 769 24th A	Ave SE		and the second second		
Site Access	Off-Road	Creeks	ide Bike Park		
Longitude	-97.40580000		Just 4 I		-
Latitude	35.20810000		Coin Laundry		124-
МН Туре	Precast Concrete				
		Google	ey St	A DE	
Manhole Depth (ft)	13.90	In ager 992023 Max	ar Technologies, USDA/FF	PAC/GEO	1992
Manhole Width (ft)	4.0	Access Notes			
Elevated MH	No				
Height Elevated (ft)		Investig	gation Photo	Installation Photo	
Structural Integrity	Safe	investig			
Site	Information	1	and the second		
Pipe Height (in)	16.94		Part A		
Pipe Width (in)	17.25	de la compañía de la			See and
Pipe Type	Polyvinyl Chloride	1ª La participa			
Pipe Shape	Circular				21. 100
				AND A NOT	
02 20.9	LEL % 0.0				
H 2S 0.0	CO 0.0		and the second		and and
Hydrau	lic Information				9.0
Flow Depth (in)	1.50	and the second			
nstant Velocity (fps)	0.60	Hydraulic		Installation Flow fluctuates from 1.5	
Surcharge Evidence (ft)	1.00	Characteristics		Notes inches, when flow is at its the av sensor is no longer	
Silt Type	None				
Silt Depth (in)	0.00	Install	Plan Sketch	Install Cross-Section Ske	tch
Needs Cleaning	No				Electric
Backwater	No		$\mathbf{\Lambda}$		Flow Depth
low Path	Straight	I Mh			
	-		IN		Velocity Sensor
Drop Inlet	No				A/V
Hydraulic Rating	Good		🚫 This Meter	\	Sensor
Insta	llation Notes		Pipe		
Location in Pipe (ft)	1.0	$1 \qquad \qquad$	Elevated		
ocation from Manhole			¹ Pipe		
Sensors	Pressure, Velocity, and Ultra			A/V Clock Position: 6:00	
Antenna Surface	Non-Paved Surface	UP4			
ignal Strength				Velocity Clock Position: 0:00	
	stallation Notes		Appr	ovals	
Meter Type	-	Recom	mended by FSP	Client Approval	
Felemetry Type					
		1			
Installation Date	4/20/2023				

K ip		Norman,	ОК	Site Name
group	,	2023 Norman Temporary	Flow Monitoring	BP-28
Inspected By	zsanders		Project No.	Site Code
Inspected Date/Time	3/21/2023 2	:51 PM	30-3984-00	т
System	n Information	Ar	ea Location Map	Area View Picture
Target Pipe Dia. (in)	18.0	11/2		
Municipality	Norman	Classe	n Urgent	
District		Ca	n Urgent	
Assigned Rain Gauge		L - 2 & K &		
Client Manhole #	322001		D.V. S	
U/S Connecting MH I.D	322070			
System Characteristics:		The 290	00	
Residential -	Commercial - 🔲 Indust	trial - 🔲		A second s
P/S Influence	No			
WWTP Influence				Top View Picture
		and the second		
Locatio	n Information	Hampton W	loods	
Site Address 700 Oak Tr	ee Ave			
Site Access	Off-Road	The Overlook,		
Longitude	-97.42340000	Apartments	Buffalo Wild	d Wings
Latitude	35.18560000		Called	
МН Туре	Precast Concrete			
Manhole Depth (ft)	14.30	Google	ar Technologies, USDA/F	PACICEO
Manhole Width (ft)	4.0	Thage Delize Max	ar rechnologies, USDA/F	PAC/GEO
Elevated MH	4.0 No	Access Notes	Gate was open during investiga	ation, #1590 gate code
Height Elevated (ft)	INU			
	Safe	Investig	gation Photo	Installation Photo
Structural Integrity	5616			
Site I	Information		Station P. I.	
Pipe Height (in)	23.50		The State State	
Pipe Width (in)	23.81	All free and	The second second	
Ріре Туре	Polyvinyl Chloride	A		
Pipe Shape	Circular			
02 20.9	LEL % 0.0			
H2S 0.0	CO 0.0	18日本 //		
Hydraul	lic Information		No. AN	
Flow Depth (in)	3.70	DATA MA		
Instant Velocity (fps)	2.00	Hydraulic	A A A A A A A A A A A A A A A A A A A	Installation Flow changes from 4.5 to 6 inches
Surcharge Evidence (ft)	9.00	Characteristics		Notes variably
Silt Type	None			
Silt Depth (in)	0.00	Install	Plan Sketch	Install Cross-Section Sketch
Needs Cleaning	No			
Backwater	No		$\mathbf{\Lambda}$	Flow Depth
Flow Path	Straight	I Mh		
Drop Inlet	No		IN	Velocity Sensor
Hydraulic Rating	Good			A/∨
			This Meter	Sensor
	lation Notes		Pipe	
Location in Pipe (ft)	1.0		Elevated	
Location from Manhole			Pipe	
Sensors	Pressure, Velocity, and Ultr	ra		A/V Clock Position: 6:00
	Non-Paved Surface			Velocity Clock Position: 0:00
Antenna Surface	Non-Paved Surface			
Antenna Surface Signal Strength	tallation Notes		Арр	rovals
Antenna Surface Signal Strength		Recom		
Antenna Surface Signal Strength Post Ins Meter Type		Recom	App mended by FSP	rovals Client Approval
Antenna Surface Signal Strength Post Ins		Recom		

			Norman,	ОК	Site Name	Item 6
grou	р		Norman Utilities	Authority	BP-30	
Inspected By		r_bass		Project No.	Site Code	
Inspected Date/Time		10/7/2014 3:07	PM	30-3884-00		
Syster	m Informa	tion	Ar	ea Location Map	Area View Picture	e
Target Pipe Dia. (in)	24.0			and the state of the		TR .
Municipality	Norman			istop creek		
District	Norman		and the second	Contraction of the second seco	A REAL PROPERTY AND A REAL	ELLE .
Assigned Rain Gauge	RG-10			ethor.		
Client Manhole #	329087		8 A A A A A A A A A A A A A A A A A A A	Statute and a statute of the statute		1 K
U/S Connecting MH I.D	329051					SUD.
System Characteristics:						
Residential - 🔽	Commercial -	Industrial -				ALL D
P/S Influence	No	8				
WWTP Influence	No			And	Top View Picture	5
Locatio	on Informa	ition	· 1780			
Site Address 400 East 0			· AS AND			1 - P
Site Access	Fenced In		- 80 A - 48 (4)-		Contraction of the second s	
Longitude	-97.4352000	0	State of the		9-13	AR I
Latitude	35.1752000	D				
МН Туре	Precast Con	crete				13
Manhole Depth (ft)	14.48		Google dery Pl	rogram, USDA Farm Serv	vice Agency	1
Manhole Width (ft)	5.0				of East Cedar Lane, (RJN owned lock on gate)	all and a
Elevated MH	Yes		Access Notes		pass black iron gateMH located next to gate	
Height Elevated (ft)	1.7					
Structural Integrity	Safe		Investi	gation Photo	Installation Photo	
						(11) (15) (15)
	23.06	on	and the second			73
Pipe Height (in)	23.00		Para Halle		- W.	12.2
Pipe Width (in)						A second
Ріре Туре	Polyvinyl Ch	loride				A. Ar
Pipe Shape	Circular					- 1
02	LEL %					(Den)
H2S	CO					all a f
Hydrau	lic Inform	ation				
Flow Depth (in)	3.50					SPACE
Instant Velocity (fps)	0.70		Hydraulic		Installation	
Surcharge Evidence (ft)			Characteristics		Notes	
Silt Type	None					
Silt Depth (in)	0.00		Install	Plan Sketch	Install Cross-Section Sketc	n
Needs Cleaning	No					low
Backwater	No			$\mathbf{\Lambda}$		low Depth
Flow Path	Straight			N		
Drop Inlet	No			IN		A/V Sensor
Hydraulic Rating	No Flow					Jltra
	NO FIOW			This Meter	s	ensor
	Illation No	tes		Pipe		
Location in Pipe (ft)	1.0			Elevated		
Location from Manhole	Upstream			Pipe		
Sensors					A/V Clock Position: 6:00	
	Non-Paved S	Surface				
Antenna Surface						
Antenna Surface Signal Strength	75					
Signal Strength	75 stallation I	Notes		Арр	provals	
Signal Strength Post In		Notes	Deserve			
Signal Strength Post In: Meter Type		Notes	Recom	mended by FSP	Client Approval	
Signal Strength Post In		Notes	Recom			82

rin		Norman,	ЭК	Site Name
grou	p 2023	Norman Temporary	Flow Monitoring	IH-12
Inspected By	zsanders		Project No.	Site Code
Inspected Date/Time	3/22/2023 10:51 /	AM	30-3984-00	т
Syster	n Information	Ar	ea Location Map	Area View Picture
Target Pipe Dia. (in)	21.0		to the second	
Municipality	Norman			
District			An Mary Bally of Lands and Anna	
Assigned Rain Gauge				
Client Manhole #	293010	Pieces Reno	vation and	
U/S Connecting MH I.D	293009	Construction		
System Characteristics:				
Residential -	Commercial - 🔲 Industrial -		ek M	
P/S Influence	No		mare en	Top View Picture
WWTP Influence				Top view Picture
Locatio	on Information		o'iu	
Site Address 2522 S Bei	rry Rd		1-20000	
Site Access	Roadway, Low Traffic	and the second		
Longitude	-97.45910000			
Latitude	35.19350000			
МН Туре	Precast Concrete	The The	Church of	
Manhole Depth (ft)	11.70	Google 123 Max	ar Technologies, USDA/FR	PAC/GEO
Manhole Width (ft)	4.0			
Elevated MH	No	Access Notes		
Height Elevated (ft)				
Structural Integrity	Safe	Investig	gation Photo	Installation Photo
	Information			
Pipe Height (in)	22.12			
Pipe Width (in)	22.25			
Pipe Type	Concrete			
Pipe Shape	Circular	second second all the		
O2 20.9 H2S 0.0	LEL % 0.0 CO 0.0	and a state of the state of the	The second second second	
-	lic Information	1 M.		
Flow Depth (in)	8.40			
Instant Velocity (fps)	0.50	Hydraulic		Installation
Surcharge Evidence (ft)	1.00	Characteristics		Notes
Silt Type	None	Install	Plan Sketch	Install Cross-Section Sketch
Silt Depth (in)	0.00			
Needs Cleaning	No		Δ	Flow
Backwater	No	Mh		Depth
Flow Path	Straight		Ń N	Velocity
Drop Inlet	No	M		Sensor A/V
Hydraulic Rating	Good		🚫 This Meter	A/V Sensor
Insta	llation Notes		This Meter Pipe	
Location in Pipe (ft)	1.0		Elevated	
ocation from Manhole			Pipe	
Sensors	Pressure, Velocity, and Ultra			A/V Clock Position: 6:00
Antenna Surface	Paved Surface			
Signal Strength				Velocity Clock Position: 0:00
Post Ins	stallation Notes		Appr	ovals
Meter Type	-	Recom	mended by FSP	Client Approval
Telemetry Type				•••
Installation Date	4/21/2023			

rin		Norman,0	ЭК	Site Name	Item
FJN group	2023 N	lorman Temporary	Flow Monitoring	IH-13	1
Inspected By	mjaurez		Project No.	Site Code	
Inspected Date/Time	3/22/2023 10:22 AM	l	30-3984-00	Т	
System	n Information	Ar	ea Location Map	Area View Pictu	re
Target Pipe Dia. (in)	18.0				-
Municipality	Norman	AND A DECK			all a
District		S. S. Sales	laakaan		PA -
Assigned Rain Gauge			Jackson Elementary School		
Client Manhole #	255052		lementary School		1
U/S Connecting MH I.D	239129				-
System Characteristics:			Icott Middle School		
Residential -	Commercial - 🔲 Industrial - 🔲				
P/S Influence	No				
WWTP Influence		Carlo Barro Ma	ALLER OF STREET	Top View Pictur	re
www.rrinnuence					
Locatio	on Information				S. AV
Site Address 708 McGe				TELESCO AND	A DECAM
Site Address 708 McGe	Roadway, Low Traffic				E
		Vil-Pro			
Longitude	-97.46780000		ier Middle School		
Latitude	35.21080000	送着 一日中			100
МН Туре	Brick	Coord	Call Stran State And		
Manhole Depth (ft)	16.80	1999999912023 Max	ar Technologies, USDA/F	PAC/GEO	
Manhole Width (ft)	4.0	Access Notes			
Elevated MH	No				
Height Elevated (ft)		Investig	ation Photo	Installation Photo	
Structural Integrity	Safe	nivestig		Installation Photo	
Site	Information				
Pipe Height (in)	18.00				
Pipe Width (in)	18.00	700 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -			Same a
Pipe Type	Vitrified Clay	· · ·			Reality
Pipe Shape	Circular	12		Sault for gran hand	
02 20.9	LEL % 0.0				
H2S 0.0	CO 0.0	and the second s			
	lic Information				
Flow Depth (in)	6.00).K	
Instant Velocity (fps)	0.88	Hydraulic		Installation	
Surcharge Evidence (ft)	11.00	Characteristics		Notes	
Silt Type	None				
Silt Depth (in)	0.00	Install	Plan Sketch	Install Cross-Section Sket	ch
Needs Cleaning	No				
Backwater	No		$\mathbf{\Lambda}$		Flow Depth
Backwater Flow Path		I Mh			-
	Straight No		IN	/ -	Velocity Sensor
Drop Inlet Hydraulic Pating					A/V
Hydraulic Rating	Good		This Meter	\ J =	Sensor
Insta	llation Notes		Pipe		
Location in Pipe (ft)	1.0				
Location from Manhole			* Pipe		
Sensors	Pressure, Velocity, and Ultra			A/V Clock Position: 6:00	
Antenna Surface	Paved Surface				
Signal Strength				Velocity Clock Position: 0:00	
Post Ins	tallation Notes		Appr	ovals	
Meter Type	-	Recom	nended by FSP	Client Approval	
Telemetry Type				· · • • • • • • • • • • • • • • • •	_
		1			
Installation Date	4/20/2023				

rin			Norman,	ЭК		Site Name	Item 6
FJ _{group}	p	2023 N	orman Temporary	Flow Monitoring		IH-14	
Inspected By	m	jaurez		Project No.		Site Code	
Inspected Date/Time	3,	/22/2023 10:44 AM		30-3984-00		Т	
Syster	n Informatio	on	Ar	ea Location Map		Area View Pictu	re
Target Pipe Dia. (in)	36.0		TRADE OF TAXABLE				CEL
Municipality	Norman						1900
District			The Area		SE		
Assigned Rain Gauge			A Li	THE REAL	- <u>0</u>		
Client Manhole #	283007		THE REAL PROPERTY AND IN THE REAL PROPERTY AND INTERPORT		D A		
U/S Connecting MH I.D	283003				Ne C	And a second	Series.
System Characteristics:						The second	1. T
Residential - 🔲	Commercial -	Industrial -	THE SECOND	M			
P/S Influence	No		Pe	nny Bar and Cha	ar	n de la classifica de la constante de la consta	
WWTP Influence			CONTRACTORIA			Top View Pictu	re
			MARCH CONCERNES	2. 0. 6	S. S. S.	1 State Carlo	1
Locatio	on Informati	on		NR. A. A.	N L ME		
Site Address 1101 Cher	rystone Cir		Station and shares	P		1 March	
Site Access	, Off-Road					11 -2 1	
Longitude	-97.45730000					See 1	
Latitude	35.20240000						
МН Туре	Precast Concre	te					
Manhole Depth (ft)	15.60		Google 123 Max	ar Technologies, USDA/F	PACICEO		
Manhole Width (ft)	4.0		Thager Oscozo Max	ar recinitiongles, 03DArr	PAC/GEO		
Elevated MH	No		Access Notes				
Height Elevated (ft)	NO						
Structural Integrity	Safe		Investig	ation Photo	In	stallation Photo	
							-
	Information	l					
Pipe Height (in)	34.00			A State of the sta			
Pipe Width (in)	35.00				and the second	6YA PERSON	
Ріре Туре	Polyvinyl Chlor	ide			Stall - Carlo		
Pipe Shape	Circular		8	C. C	THE RES		An e
02 20.9	LEL % 0.	0		CONTRACTOR OF TAXABLE			
H2S 0.0	CO 0.	0	Southern Party of the	A Martin A Martin A	A STREET	Star.	
Hydrau	lic Informat	ion	1	E Contraction	18.37		
Flow Depth (in)	7.50		No.		and the second second		
Instant Velocity (fps)	1.98		Hydraulic	- a f	Installation		
Surcharge Evidence (ft)	11.00		Hydraulic Characteristics		Installation Notes		
Silt Type	None						
Silt Depth (in)	0.00		Install	Plan Sketch	Install	Cross-Section Sket	ch
Needs Cleaning	No						
Backwater	No			Λ			Flow Depth
Flow Path	Slight Bend			N	1	\ =	Velocity Sensor
Drop Inlet	No				1/		A/V
Hydraulic Rating	Good			🚫 This Meter			Sensor
Insta	llation Note	S		Pipe			
Location in Pipe (ft)	1.0			Elevated			
Location from Manhole				Pipe	The second se		
Sensors	Pressure, Velo	city, and Ultra		\checkmark		· 6·00	
Antenna Surface	Non-Paved Sur				A/V Clock Position		
Signal Strength					Velocity Clock Pos	tion: 0:00	
	tallation No	otes		Δηη	rovals		
Meter Type	-		Recomi	mended by FSP		Client Approval	
Telemetry Type Installation Date	4/20/2023						

rin		Norman,	ЭК	Site Name	ltem
r J _{grou}	p 2023	Norman Temporary	Flow Monitoring	IH-15	
Inspected By	zsanders		Project No.	Site Code	
Inspected Date/Time	3/22/2023 10:24 AI	M	30-3984-00	Т	
Syster	n Information	Ar	ea Location Map	Area View Picture	
Target Pipe Dia. (in)	30.0			The	Crow
Municipality	Norman	Sprou	ts Farmers Market	A Start March	PIUP
District		Dutch Bros	Coffee W Main		THE .
Assigned Rain Gauge			William		1
Client Manhole #	241027				
U/S Connecting MH I.D	241020	e			
System Characteristics:	241020	< red			
Residential -	Commercial - 🔲 Industrial - 🗌		e l		
P/S Influence	No	HARDER STREET			
WWTP Influence	NO		Service of the servic	Top View Picture	
wwiP Influence					
Locatio	on Information		Lions Park		
Site Address 949 W Syr	nmes St				
Site Access	Sidewalk	PL CORE SHALL SHE			
Longitude	-97.45460000	THE REAL PROPERTY AND INCOME.			
Latitude	35.21490000	W Boyd S	t W Boyd	St	
МН Туре	Precast Concrete	in Boya o			
Manhole Depth (ft)	12.80	Google J23 Max	ar Technologies. USDA/F	PACIGEO	
Manhole Width (ft)	4.0	intager jesz bező max	ar reennologies, cobran	NOICEO	1 24
Elevated MH	No	Access Notes			
Height Elevated (ft)					
Structural Integrity	Safe	Investig	gation Photo	Installation Photo	
	Information			Contraction Manager	
Pipe Height (in)	29.00			Last and	
Pipe Width (in)	30.25				
Ріре Туре	Polyvinyl Chloride	HUMAN HUMAN	Constant A L	1490 ····	
Pipe Shape	Circular				
02 20.9	LEL % 0.0				
H2S 0.0	CO 0.0	231 10522	V. A.L.		
Hydrau	lic Information			The state	
Flow Depth (in)	3.60	all of the second	1 Yes		
Instant Velocity (fps)	1.80	Hydraulic		Installation	
Surcharge Evidence (ft)	1.00	Characteristics		Notes	
Silt Type	None				
Silt Depth (in)	0.00	Install	Plan Sketch	Install Cross-Section Sketch	
Needs Cleaning	No				
Backwater	No	_	$\mathbf{\Lambda}$	Flow Deptil	
Flow Path	Straight	I M			city
Drop Inlet	No		IN	Veloc Senso	
Hydraulic Rating	Good			■ A/V	
			S This Meter	Senso	or
Insta	llation Notes		Pipe		
Location in Pipe (ft)	1.0	I M	Elevated		
Location from Manhole			Pipe		
Sensors	Pressure, Velocity, and Ultra			A/V Clock Position: 6:00	
Antenna Surface	Non-Paved Surface				
Signal Strength				Velocity Clock Position: 0:00	
Post Ins	stallation Notes		Аррг	ovals	
Meter Type	-	Recom	mended by FSP	Client Approval	
Telemetry Type				-	_
	4/21/2023				
Installation Date	4/21/2025				_

rin		Norman, (ОК	Site Name	Item 6
rjn group	2023 N	lorman Temporary	Flow Monitoring	IH-16	L
Inspected By	zsanders		Project No.	Site Code	
Inspected Date/Time	3/22/2023 9:47 AM		30-3984-00	т	
Systen	n Information	Ar	ea Location Map	Area View Picture	e
Target Pipe Dia. (in)	18.0				
Municipality	Norman		THE PARTY PROPERTY OF		188
District			OID	SILK	
Assigned Rain Gauge			STO	CKING	
Client Manhole #	211076	Walden Cleane			5
U/S Connecting MH I.D	211077	Laund			
System Characteristics:		Pione	er Library		
Residential -	Commercial - 🔲 Industrial - 🗍	System -			
P/S Influence	No	THE REAL PROPERTY AND		eres St	
WWTP Influence		Acres St		Top View Picture	е
					Manadar
Locatio	n Information	Floo	Andrews Park		3
Site Address 301 W Acre	es St				
Site Access	Roadway, Low Traffic	ě			
Longitude	-97.44950000	THE THREE POLICE	NG & SECON		
Latitude	35.22550000				
МН Туре	Precast Concrete			A A A A A A A A A A A A A A A A A A A	1 1
Manhole Depth (ft)	17.20	Googleus G	eological Survey, USDA/FF	PAC/GEO	
Manhole Width (ft)	4.0		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
Elevated MH	No	Access Notes			
Height Elevated (ft)					
Structural Integrity	Safe	Investi	ation Photo	Installation Photo	
Site	Information		and the second		
Pipe Height (in)	17.44				1
Pipe Width (in)	17.44				
		A STATISTICS			
Pipe Type	Polyvinyl Chloride Circular				
Pipe Shape		Saular 1			
02 20.9	LEL % 0.0				
H2S 0.0	CO 0.0		Constant Party	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	lic Information	1 A			-
Flow Depth (in)	3.00	No.	A CONTRACTOR		
Instant Velocity (fps)	1.70	Hydraulic		Installation Flow fluctuates between 3 inches during calibration, sp	
Surcharge Evidence (ft)	1.00	Characteristics		Notes also 2 to 3 fps	p
Silt Type	None	Install	Plan Sketch	Install Cross-Section Sketc	h
Silt Depth (in)	0.00	Install		install cross-section sketc	
Needs Cleaning	No				Flow
Backwater	No				Depth
Flow Path	Straight	#	N		Pressure
Drop Inlet	No				Sensor
Hydraulic Rating	Good				Velocity
Instal	lation Notes		This Meter Pine		Sensor A/V
Location in Pipe (ft)	1.0				Sensor
Location from Manhole			Elevated Pipe		
Sensors	Pressure Velocity and Ultra		,		
Sensors Antenna Surface	Pressure, Velocity, and Ultra Paved Surface			Pressure Clock Position: 0:00	
	Faveu Sullace			Velocity Clock Position: 0:00	
Signal Strength					
Post Ins	tallation Notes		Appr		
		Bocom	nended by FSP	Client Approval	
Meter Type	-	Recollin	nended by FSF	chent Approval	
Meter Type Telemetry Type	- 4/21/2023	Ketoini	nenueu by ror		

			Norman,	ЭК		Site Name	Item 6
I J _{grou}	p	2023 N	lorman Temporary	Flow Monitoring		LD-01	·
Inspected By		mjaurez		Project No.		Site Code	
Inspected Date/Time		3/21/2023 3:16 PM		30-3984-00			
Syste	m Informa	tion	Are	ea Location Map		Area View Pictur	e
Target Pipe Dia. (in)	10.0		A Second				
Municipality	Norman		The work when	a stand	2-5-	Barde Contra	N
District				AT A STATE			10
Assigned Rain Gauge			Q	Mar All		I ME - IN I	
Client Manhole #	79023						10 10
U/S Connecting MH I.D	79022		and a start of the start of the		Sel	Bar Dietor	
System Characteristics:			In State			State of the second	and a second second
Residential -	Commercial -	Industrial -		M Stor and I	113	Lan 2 . 14	
P/S Influence	No		Real Contraction of the local distance		18 -	Tau Miana Diatau	
WWTP Influence			Martin & All	1 15 1	1	Top View Picture	e
Locati	on Informa	ation				109330	(CEC
Site Address 4011 8th	Ave Cir NE			MAN KAN	1 1	A Star March	a con
Site Access	Off-Road						
Longitude	-97.432400	00			Chieffeith	1 JUST ALL STREET	
Latitude	35.2672000		and the second				
МН Туре	Poured Con						
		ciele	Google				C. Q.C.
Manhole Depth (ft) Manhole Width (ft)	3.80 4.0		ech magels; U.S. Ge	eological Survey, USDA/F	PAC/GEO		10 × /2
			Access Notes	Through drainage ditch off of ro the easement.	oad that goe	s to the treatment plant. Drive thro	ough
Elevated MH	Yes			the easement.			
Height Elevated (ft)	0.5		Investig	gation Photo		Installation Photo	
Structural Integrity	Safe						
Site	Informati	on	No an	ale No	-		
Pipe Height (in)	9.75		and the states			CAN I	1550 m.
Pipe Width (in)	9.75						
Ріре Туре	Polyvinyl Ch	loride			- Hant		
Pipe Shape	Circular						
02 20.9	LEL %	0.0			a de su		
H2S 0.0	со	0.0					and the second
Hydrau	ulic Inform	ation			and the second s		
Flow Depth (in)	1.00		CA STAT				
Instant Velocity (fps)	2.13				lunal II		
Surcharge Evidence (ft)	3.00		Hydraulic Characteristics		Installation Notes	l	
Silt Type	None						
Silt Depth (in)	0.00		Install	Plan Sketch	Ins	stall Cross-Section Sketo	h
Needs Cleaning	No			Δ			Flow Depth
Backwater	No		rin 🖌				ocpui
Flow Path	Straight		1	N	/		Velocity Sensor
Drop Inlet	No				1		A/V
Hydraulic Rating	Good			This Meter			Sensor
Insta	allation No	tes					
Location in Pipe (ft)	1.0] 📈	Elevated			
Location from Manhole				¹ Pipe	and the second se		
Sensors	Pressure, Ve	elocity, and Ultra				Position: 6:00	
Antenna Surface	Non-Paved		u ¹			Position: 6:00	
Signal Strength					Velocity Clo	ock Position: 0:00	
	stallation	Notes		Арр	rovals		
Meter Type	-		Recomm	mended by FSP		Client Approval	
Telemetry Type	A 10= 10						
Installation Date	4/25/2023		1				88

k ip			Norman,C	ЭК	Site Name Item 6.
group)	2023 N	orman Temporary	Flow Monitoring	LD-02
Inspected By	mjaure	22		Project No.	Site Code
Inspected Date/Time	3/21/2	023 2:30 PM		30-3984-00	т
System	Information		Are	ea Location Map	Area View Picture
Target Pipe Dia. (in) Municipality District Assigned Rain Gauge Client Manhole #	36.0 Norman 78009				J. S.
U/S Connecting MH I.D System Characteristics: Residential -	78008 Commercial - 🛛 No	Industrial - 🛛	Little Riv Homes & N	er Tr Ideal leigi rhoods	Top View Picture
Locatio	n Information		4 160	Little river trails -landmark homes	
Site Address 301 Sonora Site Access Longitude Latitude MH Type Manhole Depth (ft) Manhole Width (ft) Elevated MH	Ln Off-Road -97.44360000 35.26790000 Lined 16.70 4.0 Yes		Calvar Google U.S. Ge	y Church eological Survey, USDA/F Access On walking trail off of N	
Height Elevated (ft) Structural Integrity	1.5 Safe		Investig	ation Photo	Installation Photo
	nformation		/		
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0	35.50 36.00 Polyvinyl Chloride Circular LEL% 0.0 CO 0.0				
Hydraul	ic Information			Contraction of the second seco	
Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type	6.00 1.25 9.00 None		Hydraulic Characteristics		Installation Notes
Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	0.00 No No Slight Bend No Good			Plan Sketch	Install Cross-Section Sketch
Instal	lation Notes			This Meter Pipe	
Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	1.0 Pressure, Velocity, a Non-Paved Surface	nd Ultra		Elevated Pipe	A/V Clock Position: 6:00 Velocity Clock Position: 0:00
Post Inst	tallation Notes			Арр	rovals
Meter Type Telemetry Type Installation Date	- 4/24/2023		Recomm	nended by FSP	Client Approval

rin			Norman,C	ОК	Site Name Item 6
grou	2	2023 No	orman Temporary	Flow Monitoring	LD-03
Inspected By	mjaurez	z		Project No.	Site Code
Inspected Date/Time	3/21/20	023 12:29 PM		30-3984-00	т
Syster	n Information		Are	ea Location Map	Area View Picture
Target Pipe Dia. (in) Municipality District Assigned Rain Gauge Client Manhole # U/S Connecting MH I.D System Characteristics: Residential - P/S Influence WWTP Influence	24.0 Norman 69012 69011 Commercial -	Industrial - 🗌	OEC So Ruby Gr	lar Garden =	Top View Picture
Site Address 7GG7+5F I			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	35	A DATE OF A
Site Access Longitude Latitude MH Type Manhole Depth (ft)	Off-Road -97.48640000 35.27540000 Lined 12.60		1	Summit Climbing, Yo & Fitness - Norm Ruby Grant P Dark and Dis pological Survey, USDA/F	ark Dog
Manhole Width (ft) Elevated MH	4.0 No		Access Notes		
Height Elevated (ft)			Investio	ation Photo	Installation Photo
Structural Integrity	Safe		investig		Installation Photo
Site	Information				
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0	22.00 23.50 Polyvinyl Chloride Circular LEL % 0.0 CO 0.0				
Hydrau	lic Information				A Star Logar
Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft)	4.00 0.76 7.00		Hydraulic Characteristics		Installation Notes
Silt Type Silt Depth (in) Needs Cleaning Backwater	None 0.00 No No		Install	Plan Sketch	Install Cross-Section Sketch
Flow Path Drop Inlet Hydraulic Rating	Slight Bend No Good			N N Meter	Velocity Sensor A/V Sensor Sensor
Insta	llation Notes				
Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	1.0 Pressure, Velocity, an Non-Paved Surface	nd Ultra		Elevated Pipe	A/V Clock Position: 6:00 Velocity Clock Position: 0:00
	tallation Notes			Appr	ovals
Meter Type Telemetry Type	-		Recomm	nended by FSP	Client Approval
Installation Date	4/19/2023		1		

rin		Norman,C	ЭК	Site Name Item
grou	2023 r	Norman Temporary	Flow Monitoring	ND-08
Inspected By	mjaurez		Project No.	Site Code
Inspected Date/Time	3/22/2023 9:41 AM		30-3984-00	Т
Syste	m Information	Are	ea Location Map	Area View Picture
Farget Pipe Dia. (in)	24.0			
Municipality	Norman		AF B	
District				
Assigned Rain Gauge			Jason's Deli 💛	
Client Manhole #	279003			
J/S Connecting MH I.D	254073	Red Rob	oin Gourmet 🛖 📶	
System Characteristics:		Burgers	and Brews 📈 🥢	
Residential -	Commercial - 🔲 Industrial - 🗍			
P/S Influence	No		Pape	
WWTP Influence		Norman	Bank - S Branch	Top View Picture
		Norman	Dialicit	
Locati	on Information	- States of the	London Char	
Site Address 2900 W L	indsey St		Landers Chevron	man
Site Access	Off-Road			
ongitude	-97.48550000	ALL STREET		
atitude	35.20390000		2.53	
ИН Туре	Poured Concrete	W. Martin		
/lanhole Depth (ft)	12.50	Google J23 Max	ar Technologies, USDA/F	PAC/GEO
/lanhole Width (ft)	4.0			
levated MH	Yes	Access Notes		
leight Elevated (ft)	2.0			
itructural Integrity	Safe	Investig	gation Photo	Installation Photo
Site	Information	* 1		
Pipe Height (in)	24.00	0.0		
Pipe Width (in)	24.00	10		
Pipe Type	Polyvinyl Chloride		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	MAY ARE AN AR
Pipe Shape	Circular		A CARLON AND A CARLO	
02 20.9	LEL % 0.0			ALL CONSTRUCTION AND ADDRESS
H2S 0.0	CO 0.0			The second s
		ALC: NOT	and the second	
	ulic Information			
low Depth (in)	8.00		195 18	
nstant Velocity (fps)	1.43	Hydraulic		Installation
urcharge Evidence (ft)	5.00	Characteristics		Notes
ilt Type	None	Install	Plan Sketch	Install Cross-Section Sketch
ilt Depth (in)	0.00	mstan		
leeds Cleaning	No		٨	Flow
Backwater	No			Depth
low Path	Straight		ν [*] Ν [*]	🗖 Velocity
Drop Inlet	No			Sensor
Hydraulic Rating	Good			A/V Sensor
Insta	allation Notes		This Meter	
.ocation in Pipe (ft)	1.0		Pipe	
ocation in Pipe (It)	2.V		Elevated Pipe	
Sensors	Pressure, Velocity, and Ultra		·	
ensors Antenna Surface	Non-Paved Surface			A/V Clock Position: 6:00
Signal Strength	NUITE AVEN SUI Idle			Velocity Clock Position: 0:00
	stallation Notes			rovals
	-	Boserra		
Meter Type Felemetry Type	-	Recomm	nended by FSP	Client Approval
cicilicity type	4/20/2022			Г
Installation Date	4/20/2023			

Kin		Norman,	ЭК	Site Name	ltem 6
group	2023 1	Norman Temporary	Flow Monitoring	ND-09	
Inspected By	mjaurez		Project No.	Site Code	
Inspected Date/Time	3/22/2023 10:00 AN	М	30-3984-00	т	
System	n Information	Ar	ea Location Map	Area View Picture	
Target Pipe Dia. (in)	18.0				
Municipality	Norman				
District				Q 11	
Assigned Rain Gauge		Hobby Lobby			and the second second
Client Manhole #	208122	Includy Lobby			A THE REAL
U/S Connecting MH I.D	208121				and the second
System Characteristics:			🗢 Merkle Creek P	aza	sed -
Residential - 🔲	Commercial - 🔲 Industrial - 🗌		M		S. Sunta
P/S Influence	No	Chick-fil-A			
WWTP Influence			Ca Bagu Bakery a	ette Top View Picture	
			Bakery &	& Cafe	1192
Locatio	n Information		nera Bread		
Site Address 2121 W Ma	in St		STITTE IN	C. S. Maran	and the second
Site Access	Off-Road	Crunch F	itness - Norman		-
Longitude	-97.47300000	N			140
Latitude	35.21890000	4 4			
МН Туре	Poured Concrete	States A		Los ALLES	all the ge
Manhole Depth (ft)	14.30	Google J23 Max	T I I I I I I I I I I I I I I I I I I I		Sec. 1
	4.0	Inager 992023 Max	ar Technologies, USDA/FF	PAC/GEO	12.39
Manhole Width (ft)		Access Notes			
Elevated MH	Yes				
Height Elevated (ft)	0.5	Investig	gation Photo	Installation Photo	
Structural Integrity	Questionable				
Site I	nformation	5/ 3//			
Pipe Height (in)	17.00				ale - a
Pipe Width (in)	17.00				2
Ріре Туре	Polyvinyl Chloride	A CONTRACTOR		T	
Dina Chana			ALL AND A DECK OF A DECK O		
Pipe Shape	Circular				具態
O2 20.9	Circular LEL % 0.0				
					A LAND
O2 20.9 H2S 0.0	LEL % 0.0				
O2 20.9 H2S 0.0	LEL% 0.0 CO 0.0				
02 20.9 H2S 0.0 Hydraul	LEL % 0.0 co 0.0 ic Information	Hydraulic		Installation	
O2 20.9 H2S 0.0 Hydraul	LEL % 0.0 CO 0.0 ic Information 5.00	Hydraulic Characteristics		Installation Notes	
O2 20.9 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps)	LEL % 0.0 CO 0.0 ic Information 5.00 2.14	Characteristics		Notes	
O2 20.9 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft)	LEL % 0.0 CO 0.0 ic Information 5.00 2.14 8.00	Characteristics			
O2 20.9 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type	LEL % 0.0 CO 0.0	Characteristics		Notes Install Cross-Section Sketch	
O2 20.9 H2S 0.0 H2S D.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in)	LEL % 0.0 CO 0.0	Characteristics		Notes Install Cross-Section Sketch	
O2 20.9 H2S 0.0 H2S D.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning	LEL % 0.0 CO 0.0 IC Information 5.00 2.14 8.00 None 0.00 No	Characteristics		Notes Install Cross-Section Sketch	ow pth
O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater	LEL % 0.0 CO 0.0 IC Information 5.00 2.14 8.00 None 0.00 No No	Characteristics		Notes Install Cross-Section Sketch	w
O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet	LEL % 0.0 CO 0.0 Information 0.0 S.00 2.14 S.00 2.14 None 0.00 None 0.00 No 0.00 Slight Bend 0.00	Characteristics		Notes Install Cross-Section Sketch Flo Flo Vel Ser A	ow pth locity nsor V
O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	LEL % 0.0 CO 0.0 ic Information 5.00 2.14 8.00 None 0.00 No No Slight Bend No Good	Characteristics		Notes Install Cross-Section Sketch Flo Flo Vel Ser A	ow pth locity nsor
O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	LEL % 0.0 CO 0.0 ic Information 5.00 2.14 8.00 None 0.00 No Slight Bend No Slight Coold Attion Notes	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flo Flo Vel Ser A	ow pth locity nsor V
O2 20.9 H2S 0.0 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location i Pipe (ft)	LEL % 0.0 CO 0.0 ic Information 5.00 2.14 8.00 None 0.00 No No Slight Bend No Good	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flo Flo Vel Ser A	ow pth locity nsor V
O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location Form Manhole	LEL % 0.0 CO 0.0 ic Information	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flo Flo Vel Ser A	ow pth locity nsor V
O2 20.9 H2S 0.0 Flow Depth (in) Hydraul Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors	LEL % 0.0 CO 0.0	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flo Flo Vel Ser A	ow pth locity nsor V
O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface	LEL % 0.0 CO 0.0 ic Information	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flo Vel Ser A/V Clock Position: 6:00	ow pth locity nsor V
O2 20.9 H2S 0.0 Flow Depth (in) Hydraul Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors	LEL % 0.0 CO 0.0	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Plo Plo Plo Plo Plo Plo Plo Plo	ow pth locity nsor V
O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Prop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Singal Strength	LEL % 0.0 CO 0.0	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flo Velo Sec A/V Clock Position: 6:00 Velocity Clock Position: 0:00	ow pth locity nsor V
O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Prop Inlet Hydraulic Rating Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Singal Strength	LEL % 0.0 CO 0.0 It Information 0.0 S.00 2.14 2.00 2.14 2.00 2.14 8.00 3.00 No 3.00 Slight Bend No Good 1.0 Pressure, Velocity, and Ultra Non-Paved Surface	Characteristics Install	Plan Sketch	Notes Install Cross-Section Sketch Flo Velo Sec A/V Clock Position: 6:00 Velocity Clock Position: 0:00	ow pth locity nsor V
O2 20.9 H2S 0.0 Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Flow Path Install Drop Inlet Install Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength Post Install	LEL % 0.0 CO 0.0 It Information 0.0 S.00 2.14 2.00 2.14 2.00 2.14 8.00 3.00 No 3.00 Slight Bend No Good 1.0 Pressure, Velocity, and Ultra Non-Paved Surface	Characteristics Install	Plan Sketch	Notes Install Cross-Section Sketch Plo Pe Velo Ser A/V Clock Position: 6:00 Velocity Clock Position: 0:00 Ovals	ow pth locity nsor V
O2 20.9 H2S 0.0 H2S 0.0 Hydraul Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating Instal Location in Pipe (ft) Location rrom Manhole Sensors Antenna Surface Signal Strength Meter Type	LEL % 0.0 CO 0.0 It Information 0.0 S.00 2.14 2.00 2.14 2.00 2.14 8.00 3.00 No 3.00 Slight Bend No Good 1.0 Pressure, Velocity, and Ultra Non-Paved Surface	Characteristics Install	Plan Sketch	Notes Install Cross-Section Sketch Plo Pe Velo Ser A/V Clock Position: 6:00 Velocity Clock Position: 0:00 Ovals	ow pth locity nsor V

rin		Normar	ı,OK	Site Name Item
rjn group	2	2023 Norman Tempora	ry Flow Monitoring	SV-01
Inspected By	zsanders		Project No.	Site Code
Inspected Date/Time	3/21/2023	3 2:22 PM	30-3984-00	т
Systen	n Information		Area Location Map	Area View Picture
Target Pipe Dia. (in)	8.0		The and the star	
Municipality	Norman		Sec. M. Dara Province	
District		7	NET COLLECTIVE OF	- Marine Marine Andrews
Assigned Rain Gauge			日前的 人,是由他们人。	
Client Manhole #	301022	2/78	This suffer the	
U/S Connecting MH I.D	301038	and the second second		
System Characteristics:		Contraction of the		A LIN PARTY IN STATE
Residential -	Commercial - 🔲 Ind	dustrial - 🔲		
P/S Influence	No			2
WWTP Influence		ARE. SALES		Top View Picture
Locatio	on Information			Parts
	d Valley Rd	Sec. 19		THE ALL STREET
Site Access	Off-Road		NUT TO A STORE	
Longitude	-97.39080000		9	
Latitude	35.19290000	A PG IN CONTRACT	Band an and an and a state	
МН Туре	Precast Concrete	Goodla		
Manhole Depth (ft)	7.30	10000912023 N	laxar Technologies, USDA/F	PAC/GEO
Manhole Width (ft)	4.0	Access Notes		
Elevated MH	No			
Height Elevated (ft)		Inves	tigation Photo	Installation Photo
Structural Integrity	Safe			
Site	Information			(AL)
Pipe Height (in)	14.50	31.		
Pipe Width (in)	14.00	Contraction of		
Ріре Туре	Polyvinyl Chloride			
Pipe Shape	Circular	1 States of		MAR AN AND AND AND AND AND AND AND AND AND
02 20.9	LEL % 0.0			
H2S 0.0	CO 0.0		1 - California and	
Hvdrau	lic Information			
Flow Depth (in)	2.75		Jh.	
Instant Velocity (fps)	1.00	1 best and the set		Installation
Surcharge Evidence (ft)	1.50	Hydraulic Characteristics		Installation Notes
Silt Type	None			
Silt Depth (in)	0.00	Insta	all Plan Sketch	Install Cross-Section Sketch
Needs Cleaning	No			
Backwater	No		$\mathbf{\Lambda}$	Flow Depth
Flow Path	Straight	M I		
Drop Inlet	No	× × ×		Velocity Sensor
Hydraulic Rating	Good		1/7	
			This Meter	Sensor
Insta	llation Notes	—	Pipe	
Location in Pipe (ft)	1.0		Elevated	
Location from Manhole			¹ Pipe	
Sensors	Pressure, Velocity, and L	Ultra	1	A/V Clock Position: 6:00
Antenna Surface	Non-Paved Surface			
Signal Strength				Velocity Clock Position: 0:00
	tallation Notes		Арр	rovals
Post Ins				
Post Ins Meter Type	-	Reco	ommended by FSP	Client Approval
	-	Reco	ommended by FSP	Client Approval

٠			Norman,	אר	Site Name	
rjn		2023	Norman Temporary		WC-30	ltem
grou	р			-		
Inspected By		mjaurez		Project No.	Site Code	
Inspected Date/Time		3/21/2023 4:58 PN	1	30-3984-00	T	
	m Informa	tion	Ar	ea Location Map	Area View Picture	
Target Pipe Dia. (in) Municipality District Assigned Rain Gauge Client Manhole # U/S Connecting MH I.D System Characteristics: Residential -	18.0 Norman 79037 79036 Commercial -	Industrial - [
P/S Influence WWTP Influence	No				Top View Picture	
Location Site Address 7H87+2H Site Access Longitude Latitude MH Type Manhole Depth (ft)	On Informa Norman Off-Road -97.4361000 35.2651000 Precast Con 10.90	00 0	e Barracuda E-Tecumseh	Ima	nseh Rd-	1
Manhole Width (ft)	4.0		Access Notes		FRUGLO	
Elevated MH Height Elevated (ft)	Yes 1.5					
Structural Integrity	Safe		Investig	gation Photo	Installation Photo	
Site	Informati	on				
Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 20.9 H2S 0.0	23.00 23.00 Polyvinyl Ch Circular LEL % CO	loride 0.0 0.0				
	lic Inform		well.	- Ale		
Flow Depth (in)						1
Instant Velocity (fps) Surcharge Evidence (ft) Silt Type	2.12 2.00 None		Hydraulic Characteristics		Installation Notes	
Silt Depth (in) Needs Cleaning Backwater	0.00 No No		Install	Plan Sketch	Install Cross-Section Sketch	
Flow Path Drop Inlet Hydraulic Rating	Slight Bend No Good			N	A/V Sens	
	llation No	tes		This Meter		
Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	1.0	elocity, and Ultra		Pipe	A/V Clock Position: 6:00 Velocity Clock Position: 0:00	
Post In	stallation	Notes		Арр	rovals	
Meter Type	-		Recom	mended by FSP	Client Approval	
			1			
Telemetry Type Installation Date	4/27/2023					

rin		Norman, O	ЭК	Site Name	ltem
M grou	p 20)23 Norman Temporary	Flow Monitoring	WC-31	
Inspected By	mjaurez		Project No.	Site Code	
Inspected Date/Time	3/21/2023 5:1	3 PM	30-3984-00	т	
Syste	m Information	Ar	ea Location Map	Area View Picture	•
Target Pipe Dia. (in)	15.0	The Barracuda	A CONTRACTOR		See all
Municipality	Norman		seh Rd E Tecum	oob Dd	
District			E recum	senind	
Assigned Rain Gauge					2
Client Manhole #	105128				- Shield
U/S Connecting MH I.D	105025				
System Characteristics:					
Residential -] Commercial - 🔲 Industria				
P/S Influence	No		stolic orship Center		
WWTP Influence	NO			Top View Picture	1
		THE BOURD	Vineyard Park 🔶		
Locati	on Information				
Site Address 400 Nant	ucket Blvd	- Ze -			
Site Access	Off-Road	<u>्र</u> २			
ongitude	-97.43680000	rte			
atitude	35.25780000				
ИН Туре	Precast Concrete	Ve A			
Manhole Depth (ft)	15.00	eGoogle U.S. Ge	eological Survey, USDA/Fl	PAC/GEO	
/lanhole Width (ft)	4.0				
levated MH	Yes	Access Notes			
leight Elevated (ft)	1.5				
Structural Integrity	Safe	Investig	gation Photo	Installation Photo	
Site	Information	100000000000000000000000000000000000000		and the second s	
Pipe Height (in)	14.50	First Attended	North L		
Pipe Width (in)	15.00				
Pipe Type	Iron	All and a second		MAR 1	P 3
Pipe Shape	Circular		1215		
D2 20.9 H2S 0.0	LEL % 0.0 CO 0.0		COMPANY A		
	ulic Information	Sector 25			
Flow Depth (in)	4.50				
nstant Velocity (fps)	1.39	Hydraulic		Installation	
Surcharge Evidence (ft)		Characteristics		Notes	
Silt Type	None	Install	Plan Sketch	Install Cross-Section Sketch	h
Silt Depth (in)	0.00				
Needs Cleaning	No		Δ		low
Backwater	No			De	epth
low Path	Slight Bend		Ń Ì		elocity
Drop Inlet	No				ensor
Hydraulic Rating	Good		🚫 This Meter		/V ensor
Insta	allation Notes		This Meter Pipe		
ocation in Pipe (ft)	1.0		Elevated		
ocation from Manhole					
Sensors	Pressure, Velocity, and Ultra		\mathbf{v}	AAA Clock Position: 6:00	
Antenna Surface	Non-Paved Surface			A/V Clock Position: 6:00	
Signal Strength				Velocity Clock Position: 0:00	
Post In	stallation Notes		Аррг	ovals	
Meter Type	-	Recom	mended by FSP	Client Approval	
Telemetry Type				• • • • • • • • • • • • • • • • •	_
	4/21/2023				
Installation Date					

rin		Norman,0	ЭК	Site Name Item 6
group	2023 No	orman Temporary	Flow Monitoring	WC-32
Inspected By	mjaurez		Project No.	Site Code
Inspected Date/Time	3/21/2023 4:26 PM		30-3984-00	т
System Inf	formation	Are	ea Location Map	Area View Picture
District Assigned Rain Gauge Client Manhole # 103i U/S Connecting MH I.D 103i System Characteristics: Residential - Com P/S Influence No WWTP Influence Location In Site Address 796 W Tecumseh Site Access Off- Longitude -97.	man 013 012 nmercial - 📋 Industrial - 📋		all Homes	Image: state of the
MH TypePrecManhole Depth (ft)18.3Manhole Width (ft)4.0Elevated MHYesHeight Elevated (ft)2.0Structural IntegritySafe		Google S &	Trails - Ideal Neighborhoods sological Survey, USDA/F	PAC/GEO
Site Info	rmation	al Aria		
Pipe Height (in) 20.5 Pipe Width (in) 20.5 Pipe Type Poly Pipe Shape Circ O2 20.9 LEL H2S 0.0 CO	50 yvinyl Chloride :ular			
Hydraulic Ir	nformation	And There		
Flow Depth (in) 3.00 Instant Velocity (fps) 1.02 Surcharge Evidence (ft) 16.0 Silt Type Non	2 00 1e	Hydraulic Characteristics Install	Plan Sketch	Installation Notes Install Cross-Section Sketch
Silt Depth (in) 0.00 Needs Cleaning No Backwater No Flow Path Sligh Drop Inlet No	ht Bend		N N N N N N	Flow Depth Velocity Sensor A/V Sensor
Installatio	on Notes	₩(Pipe	
	ssure, Velocity, and Ultra n-Paved Surface	8	Elevated Pipe	A/V Clock Position: 6:00 Velocity Clock Position: 0:00
Post Installa	ation Notes		Аррі	rovals
Meter Type - Telemetry Type Installation Date 4/25	5/2023	Recomm	nended by FSP	Client Approval

rjn		Norman,OK		Site Name Item 6.	
		Norman Utilities	Authority	WS-01	
Inspected By	r	_bass		Project No.	Site Code
Inspected Date/Time	1	l/7/2015 9:12 AM		30-3884-00	т
Systen	n Informati	ion	Ar	ea Location Map	Area View Picture
	42.0 Norman RG-03 327074 327075 Commercial - No Yes In Informat tauqua Ave, No Off-Road -97.45040000 35.17670000	t ion rman, OK 73072	Norma Transfer S	nn-Cit tation Chautauqua Ave	Top View Picture
MH Type Manhole Depth (ft) Manhole Width (ft) Elevated MH Height Elevated (ft) Structural Integrity	Poured Concr 13.00 5.8 Yes 0.8 Safe Informatio 41.62		Access Notes	rogram, USDA Farm Serv By cattle gate on Chatauqua gation Photo	ice Agency Installation Photo
Pipe Width (in) Pipe Type Pipe Shape O2 H2S Hydrau	41.69 Polyvinyl Chlo Circular LEL % CO				
Flow Depth (in) Instant Velocity (fps)	9.62 2.13		Hydraulic	220	Installation
Surcharge Evidence (ft) Silt Type Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	None 0.00 No Straight No Good Iation Noto	es	Characteristics	Plan Sketch	Notes Install Cross-Section Sketch Flow Depth A/V Sensor Ultra Sensor A/V Clock Position: 6:00
Antenna Surface Signal Strength	Paved Surface 75	2			
Post Ins	tallation N	otes		Approvals	
Meter Type Telemetry Type Installation Date	3/2/2017		Recom	mended by FSP Yes	Client Approval Yes 97

rjn		Norman,OK Norman Utilities Authority			Site Name	Item
					WS-10	
Inspected By r_bass			Project No.		Site Code	
Inspected Date/Time	1/7/2015 9:45 AM		30-3884-00		т	
Syste	m Information	Ar	ea Location Map		Area View Picto	ure
Target Pipe Dia. (in)	22.0					200 B
Municipality	Norman					
District	Norman		120月公司任任118			. Aler
Assigned Rain Gauge	RG-03					
Client Manhole #	318010					
J/S Connecting MH I.D	318011					
-	518011			No -	8	
System Characteristics:		CARE TO LOT				
Residential - 🔽		The second second			Carlos Andrews	
P/S Influence	No	and a start and a start and a start and a start			Top View Pictu	ire
WWTP Influence	No	Alla Continue	1	Martines a restal		
Locati	on Information	冬 星丽震		9		
Site Address 3204 Ridg	gecrest Cir	A DE DEL	Rudy's Cou	ntry		111
Site Access	Off-Road		Rudy's Cou Store & Bar	-BÓ	TR-	
ongitude	-97.45240000	The I Contain	THE REAL PROPERTY OF			
Latitude	35.18250000				IR SW	
ИН Туре	Brick	A CONTRACTOR	· We when the state of the state		H B	
Manhole Depth (ft)	8.06	Google			M. Salar	
			ogram, USDA Farm Servi	ce Agency		
Manhole Width (ft)	5.0 Voc	Access Notes	South of Post Oak apartments.			
levated MH	Yes		·			
Height Elevated (ft)	0.3	Investig	gation Photo	In	stallation Photo	
Structural Integrity	Safe					
Site	Information					
Pipe Height (in)	22.62			- 16		
Pipe Width (in)	22.88		A AND AND AND AND AND AND AND AND AND AN	all.		
Ріре Туре	Vitrified Clay	All a had	Later i has h	AL .		A A
Pipe Shape	Circular	A SLAND			and the second sec	
02	LEL %	- 10 M	VANCE .			NX O-1
125	со	111		1		12 N
	ulic Information					
low Depth (in)	8.44	-	- Alex			
Instant Velocity (fps)	1.62	Hydraulic		Installation		
Surcharge Evidence (ft)		Characteristics		Notes		
Silt Type	None				_	
ilt Depth (in)	0.00	Install	Plan Sketch	Install	Cross-Section Ske	tch
leeds Cleaning	No					
Jackwater	No		$\mathbf{\Lambda}$			Flow Depth
low Path						
	Straight		IN	/		A/V Sensor
Drop Inlet	No			1		Ultra
lydraulic Rating	Good		This Meter	1	•	Sensor
Insta	allation Notes					
ocation in Pipe (ft)	1.0		Elevated			
Location from Manhole	Upstream		1 Pipe	Company of the second		
ensors				A/V Clock Position:	5.00	
Antenna Surface	Non-Paved Surface				3.00	
ignal Strength	75					
	stallation Notes		Approvals			
Meter Type		Recom	mended by FSP		Client Approval	
felemetry Type			Yes		Yes	_
	10/7/2014					
Installation Date						

rin		Norman,OK		Site Name Item 6.
group		Norman Utilities Authority		WS-11
Inspected By	r_bass		Project No.	Site Code
Inspected Date/Time	1/8/2015 10:01 AM		30-3884-00	т
Systen	n Information	Ar	ea Location Map	Area View Picture
	42.0 Norman Norman RG-03 328046 328045 Commercial - ♥ Industrial - □ No No Information ns Ave Norman, OK 73072 Other	Oliver Wildlife	ional Weather Center	Top View Picture
Longitude Latitude MH Type Manhole Depth (ft) Manhole Width (ft) Elevated MH Height Elevated (ft)	-97.44420000 35.18230000 Poured Concrete 22.60 5.0 Yes 0.4	Preserve xecoogleagery Pr Access Notes	ogram, USDA Farm Service ROTC training ground	
Structural Integrity	Safe	Investig	gation Photo	Installation Photo
Site Pipe Height (in) Pipe Width (in) Pipe Type Pipe Shape O2 H2S	41.25 41.13 Polyvinyl Chloride Circular LEL % CO			
	lic Information			
Flow Depth (in) Instant Velocity (fps) Surcharge Evidence (ft) Silt Type	26.13 0.78 Fine	Hydraulic Characteristics	N	stallation otes
Silt Depth (in) Needs Cleaning Backwater Flow Path Drop Inlet Hydraulic Rating	9.00 No No Straight No Good	Install	Plan Sketch	Install Cross-Section Sketch
Instal Location in Pipe (ft) Location from Manhole Sensors Antenna Surface Signal Strength	Iation Notes 1.0 Upstream Non-Paved Surface 75		Pipe	● Ultra Sensor
	tallation Notes	Approvals		
Meter Type Telemetry Type Installation Date	6/9/2017	Recomm	nended by FSP Yes	Client Approval Yes 99



2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-02

Monitor Location: D Pump station

Metadata

Date	Mar 22 2023 12:10PM	
Crew	C. Lyda; M. Juarez	
Coordinates	[35.2693105, -97.434748]	
ocation		
Facility Name	D Pump station	
Location Description	7H98+MG Norman	
nvestigation		
Arrival Time	Mar 22 2023 11:07AM	
Departure Time	Mar 22 2023 11:20AM	
Setup Conditions	Standard	
ccess and Safety		
Contact Name	N/A	
Phone Number	329-0703	
Contact Title	N/A	

Review

Recommended for Installation







Area

Yes

Area

Location

Item 6.



Area



2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-03

Monitor Location: Norman City Yard

Metadata

Date	Jun 4 2021 12:48PM	
Creator	Blangdon	
Coordinates	[35.244104, -97.460121]	
Location		
Facility Name	Norman City Yard	
Location Description	1301 Da Vinci St	
Investigation		
Arrival Time	Jun 4 2021 11:46AM	
Departure Time	Jun 4 2021 11:53AM	
Setup Conditions	Standard	
Access and Safety		
Contact Name	City	
Phone Number	NA	
Contact Title	Yard	
Access Instructions	Access through South East part of the city building. Use permanent black ladder that is attached to the building, rain gauge is right up on the roof there.	

Review

Recommended for Installation

Yes



Location





2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-04

Monitor Location: Vernon Campbell Water Treatment Plant

Metadata		Location
Date	Sep 11 2015 10:46AM	
Creator	mhuska	· · · · · · · · · · · · · · · · · · ·
Coordinates	[35.232275, -97.395774]	
Location		
Facility Name	Vernon Campbell Water Treatment Plant	Norm. Water Treatment Plant
Location Description	3000 East robinson St	
Investigation		
Arrival Time	Sep 11 2015 10:46AM	
Setup Conditions	Standard	GOOGLE gical Survey, USDA/FPAC/GEC
Access and Safety		
Contact Name	Jared Mattern	
Phone Number	405-329-0703	
Contact Title	Utility Supervisor	
Access Instructions	Coordinate with City	
Review		
Recommended for Installation	Yes	



2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-05

Monitor Location: Millenium Medical

Metadata

Date	May 2 2023 3:07PM
Crew	C. Lyda; M. Juarez
Coordinates	[35.22404, -97.494612]
Location	
Facility Name	Millenium Medical
Location Description	448 36th Ave NW
Investigation	
Arrival Time	May 2 2023 2:05PM
Departure Time	May 2 2023 2:18PM
Setup Conditions	Standard
Access and Safety	
Contact Name	Owner
Phone Number	4055739905
Contact Title	Owner
Access Instructions	On top of the NE part of the roof by the front corner of building.

Review

Recommended for Installation



Location







2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-06

Monitor Location: Taco Casa

Metadata

Date

Crew

Location

May 2 2023 2:02PM

[35.218927, -97.454122]

C. Lyda; M. Juarez

Coordinates

Facility Name	Taco Casa
Location Description	731 W Main St

Investigation

Arrival Time	May 2 2023 12:57PM
Departure Time	May 2 2023 1:06PM
Setup Conditions	Standard

Access and Safety

Contact Name	Manager	
Phone Number	4058014104	
Contact Title	Manager	
Access Instructions	On top of small NE corner building in the back.	

Yes

Review

Recommended for Installation



Location





2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-07

Monitor Location: Folks Auto Machine

Metadata

Date	May 2 2023 2:15PM	_
Crew	C. Lyda; M. Juarez	_
Coordinates	[35.225407, -97.422871]	-
Location		
Facility Name	Folks Auto Machine	_
Location Description	541 12th Ave NE	-
Investigation		
Arrival Time	May 2 2023 1:14PM	_
Departure Time	May 2 2023 1:21PM	_
Setup Conditions	Standard	-
Access and Safety		
Contact Name	Owner	_
Phone Number	4053292287	_
Contact Title	Owner	_
Access Instructions	On top of NE vehicle awning.	-

Review

Recommended for Installation



Location





2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-08

Monitor Location: Summit Valley L/S

Metadata

Date

Creator

Coordinates

Location

Facility Name

Location Description

Investigation

Arrival Time

Review

Recommended for Installation

Summit Valley L/S

[35.1902413, -97.389453]

May 11 2023 9:34AM

danglemartin

Wood Valley Road\n

Apr 25 2023 10:40AM

Yes



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Item 6.



2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-09

Monitor Location: St Michael's Episcopal Church

Metadata

Date Creator

Coordinates

May 11 2023 9:46AM

danglemartin

[35.1896856, -97.466331]

Location

Facility Name

Location Description

Investigation

Arrival Time

Review

Recommended for Installation

St Michael''s Episcopal Church 1601 W Imhoff RD\n

Apr 26 2023 10:30AM

Yes





Norman,OK

2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-10

Monitor Location: City of Norman Water Reclamation Facility

Sep 11 2015 10:46AM

[35.1757793, -97.443034]

City of Norman Water Reclamation

mhuska

Facility

Standard

3500 Jenkins ave

Sep 11 2015 11:46AM

Sep 11 2015 12:46PM

Metadata

Date

Creator

Coordinates

Location

Facility Name

Location Description

Investigation

Arrival Time Departure Time

Setup Conditions

Access and Safety

Contact Name	Jared Mattern	
Phone Number	405-329-0703	
Contact Title	Utility Supervisor	
Access Instructions	Norman waste water treatment plant on top of chlorine building.	

Review

Recommended for Installation

Yes

Location





Norman,OK

2023 Norman Temporary Flow Monitoring

Monitor Site

Monitor Site: RG-11

Monitor Location: Community Christian School Athletics

Metadata

Date	Mar 22 2023 11:42AM	
Crew	S. Gentry; Z. Sanders	
Coordinates	[35.280651, -97.486143]	
Location		
Facility Name	Community Christian School Athleti	
Location Description	5336 N Interstate Dr	
Investigation		
Arrival Time	Mar 22 2023 10:41AM	
Departure Time	Mar 22 2023 11:46AM	
Setup Conditions	Standard	
Access and Safety		
Contact Name	Kerry Filmore	
Phone Number	4056205487	

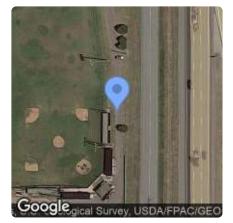
Review

Installation Instructions

Contact Title

On the dugout closest to the road, at the field south of the parking lot, or on a bleacher awning

Recommended for Installation



Location



Area

Maintenance



Area

Item 6.



Area



City of Norman Area & Infrastructure Master Plan

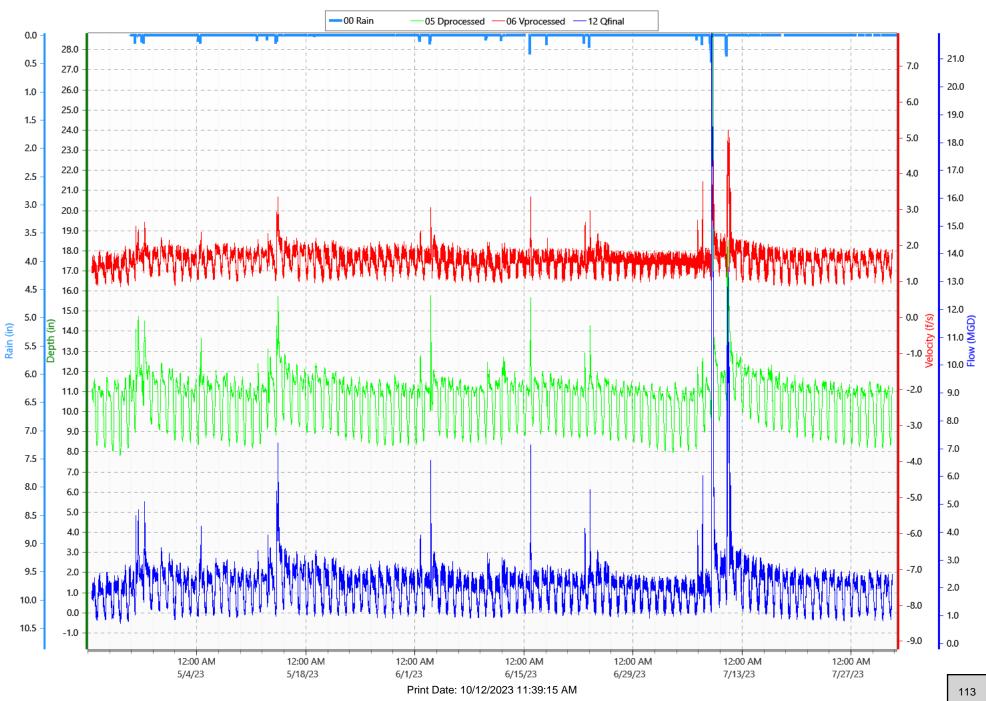
Wastewater Utility Baseline Development Technical Memorandum DRAFT

Appendix B: Flow Monitoring Hydrographs



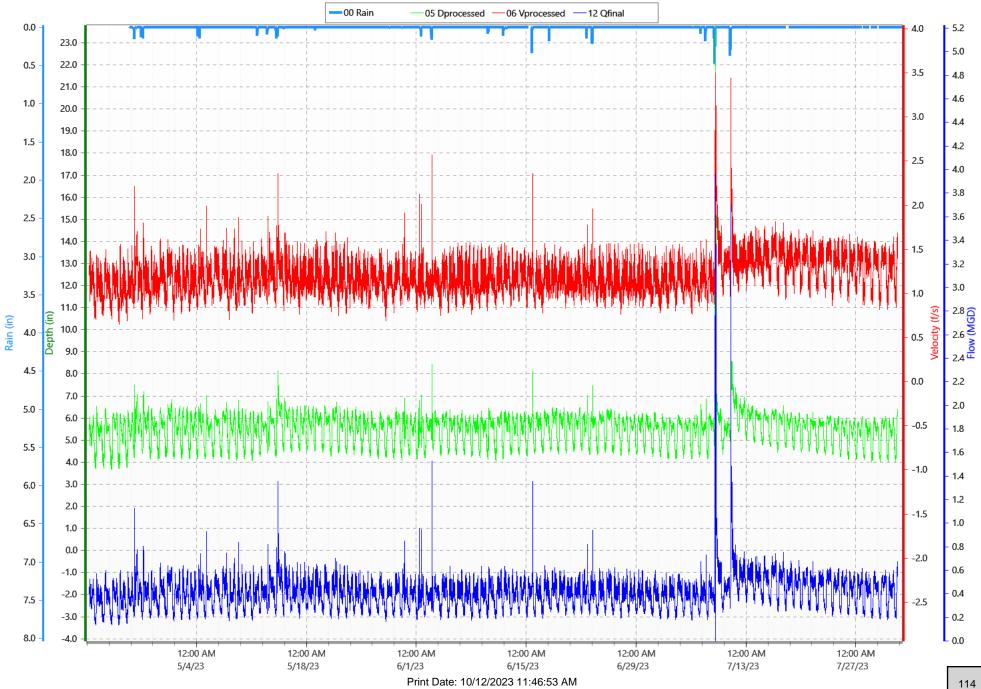
BH-02 (4/20/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 42.50 in.



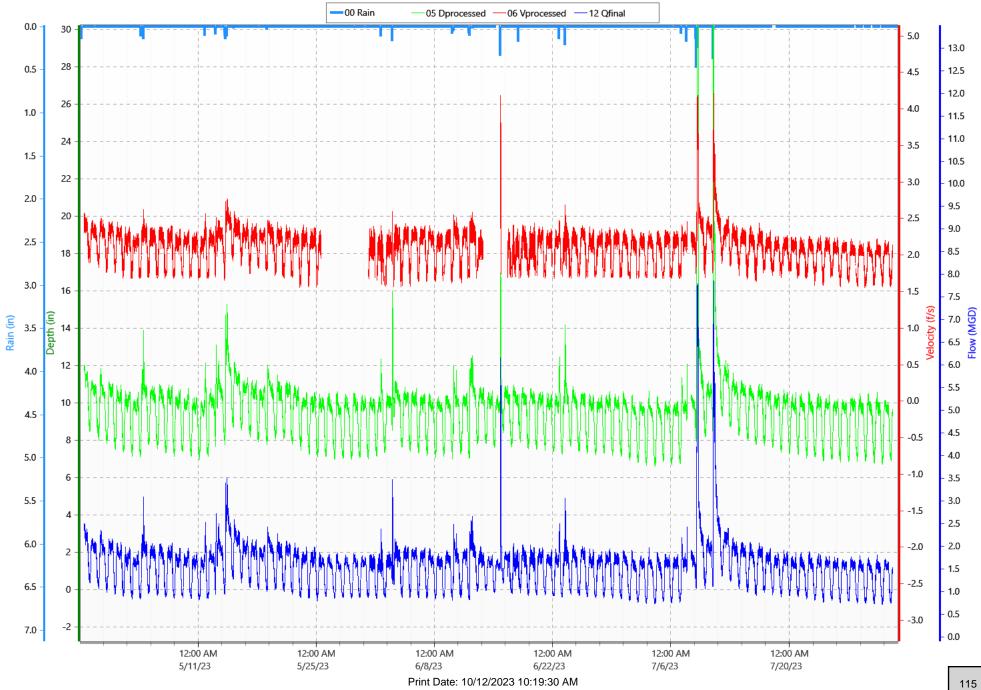
BH-03 (4/20/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 22.00 in.



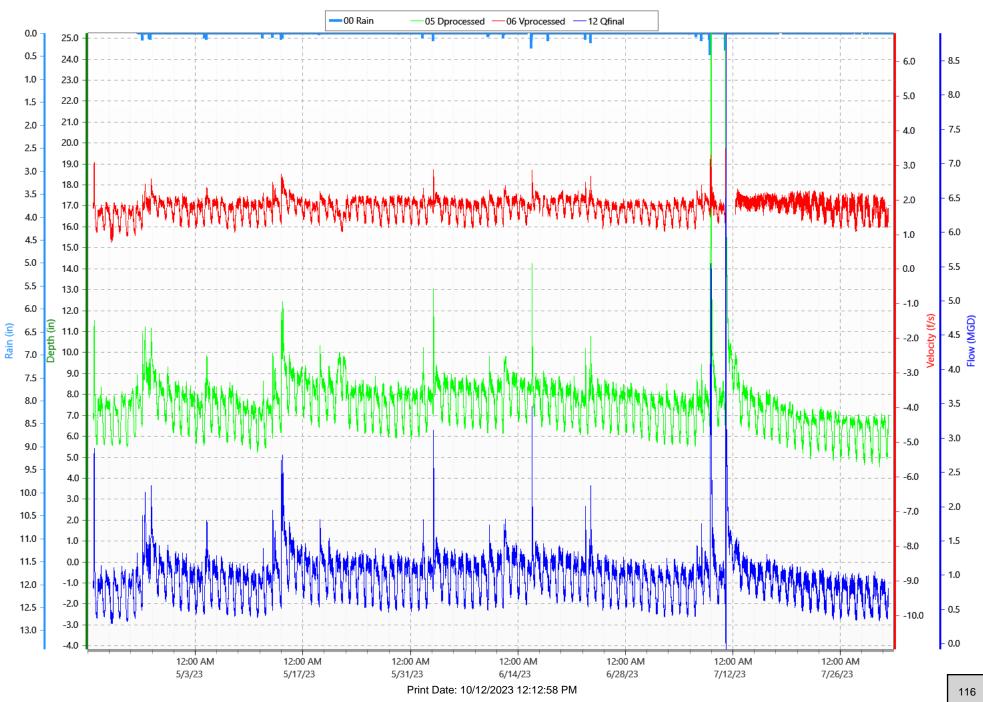
BH-04 (4/27/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 23.00 in.



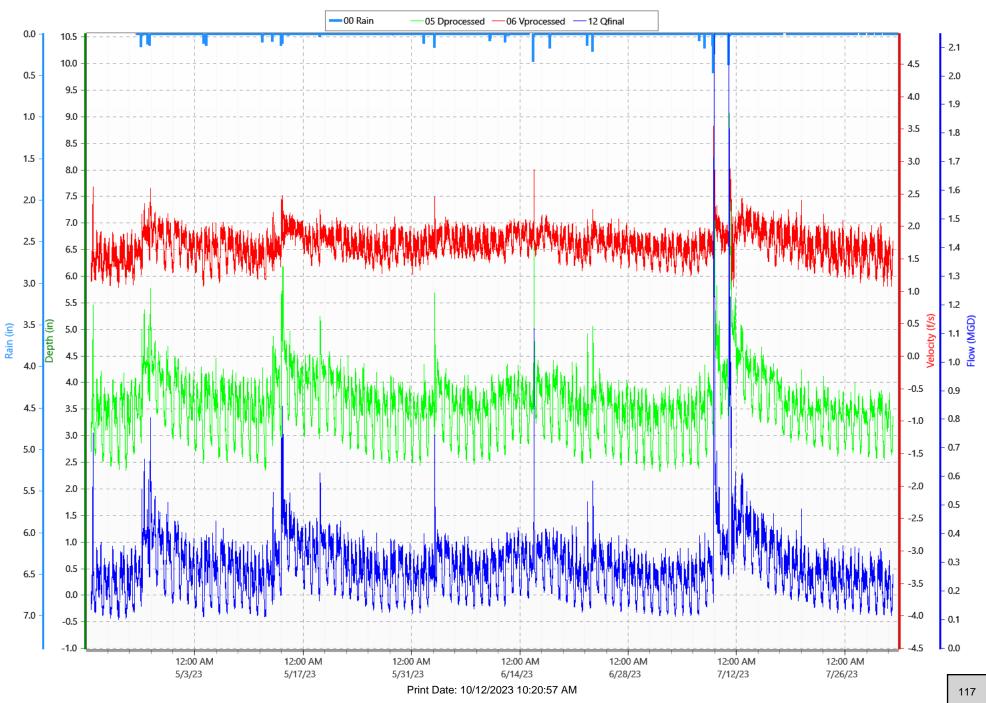
BH-05 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 23.00 in.



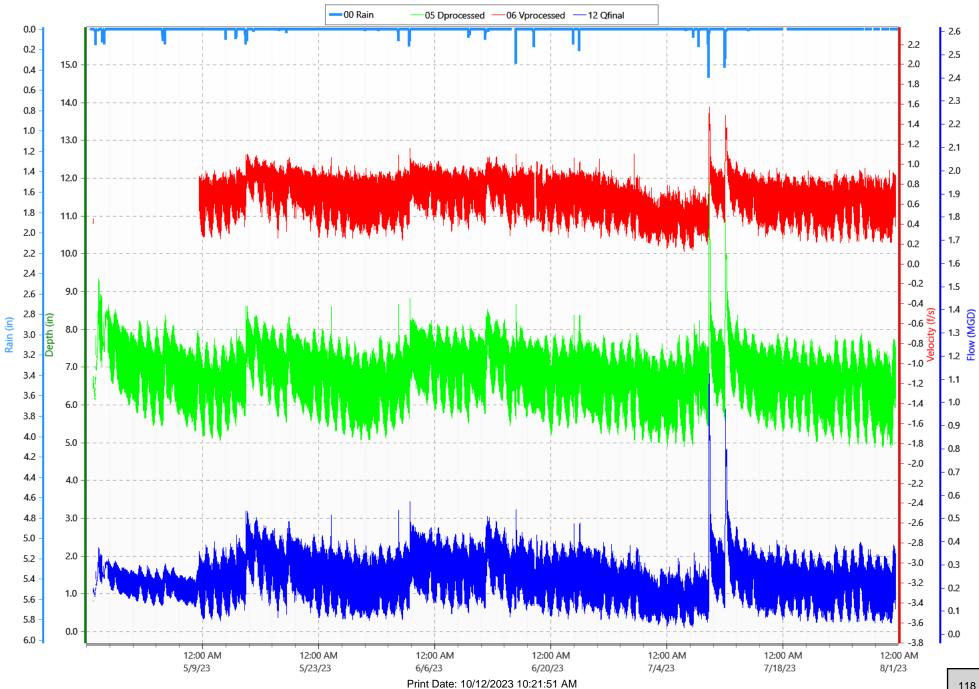
BH-06 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 17.5 in.



BH-07 (4/25/2023 to 8/1/2023)

DVQ with Rain - Pipe Dia: 16.50 in.

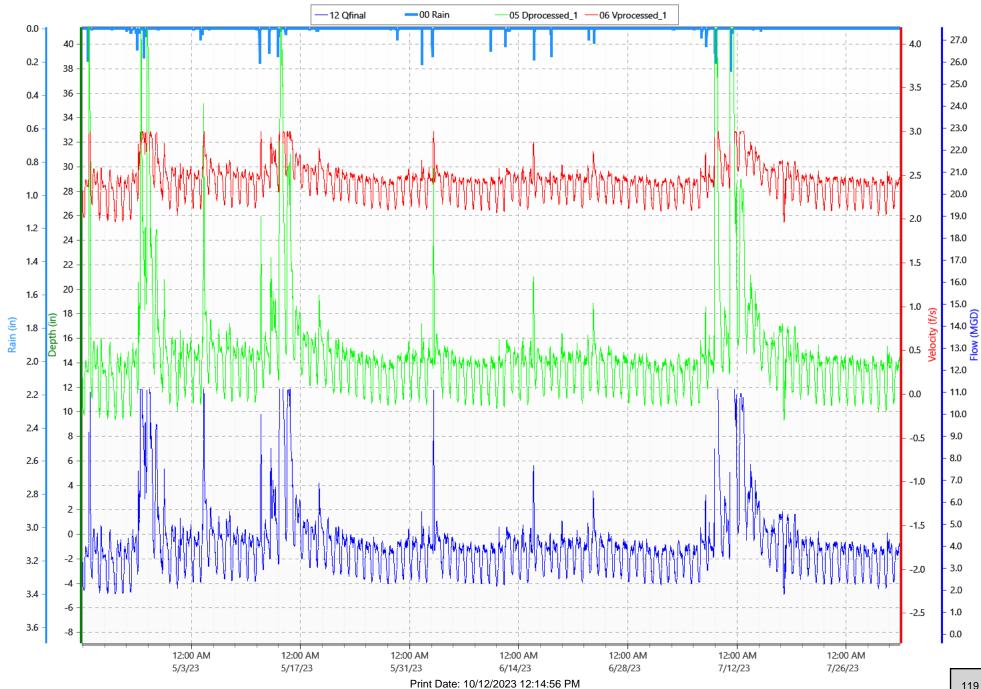


Item 6.

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BP-17 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 32.94 x 33.98 in.

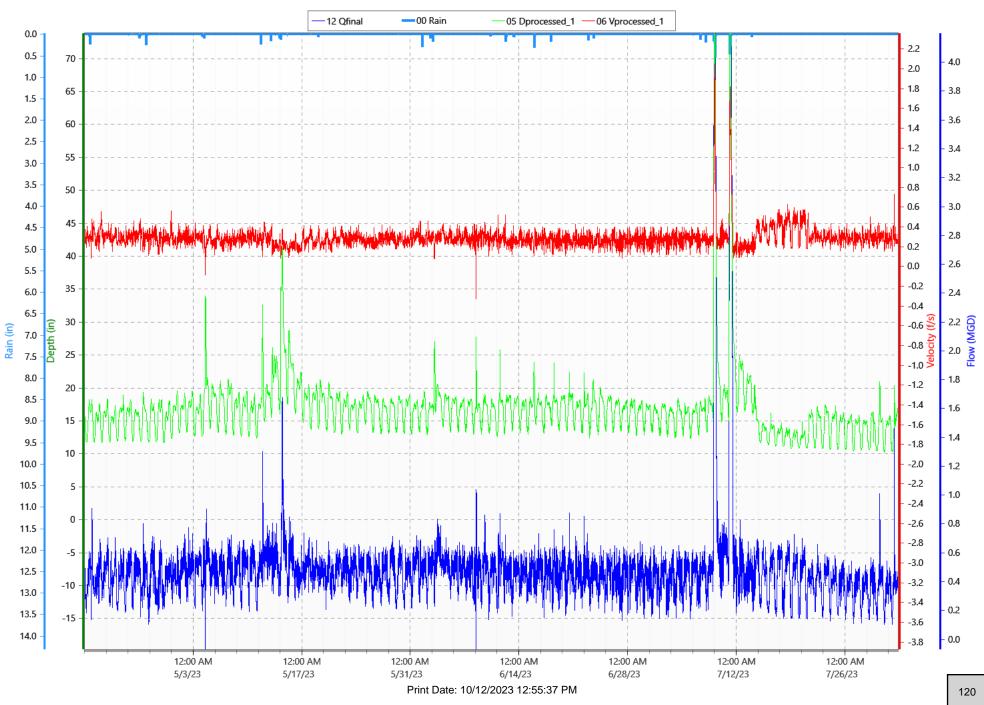


Item 6.

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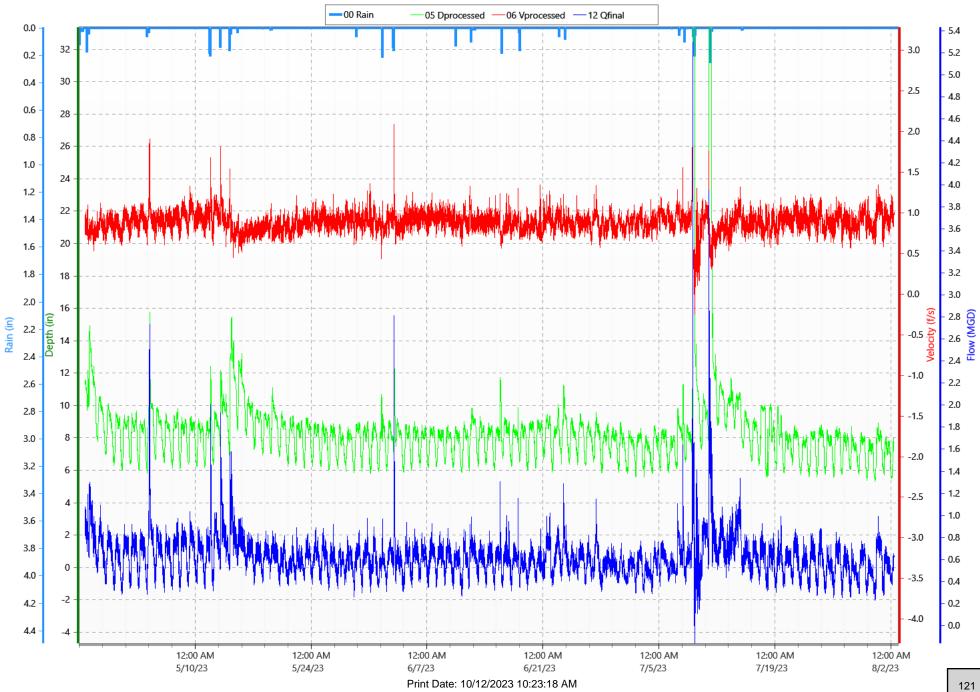
BP-18 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 36.88 in.



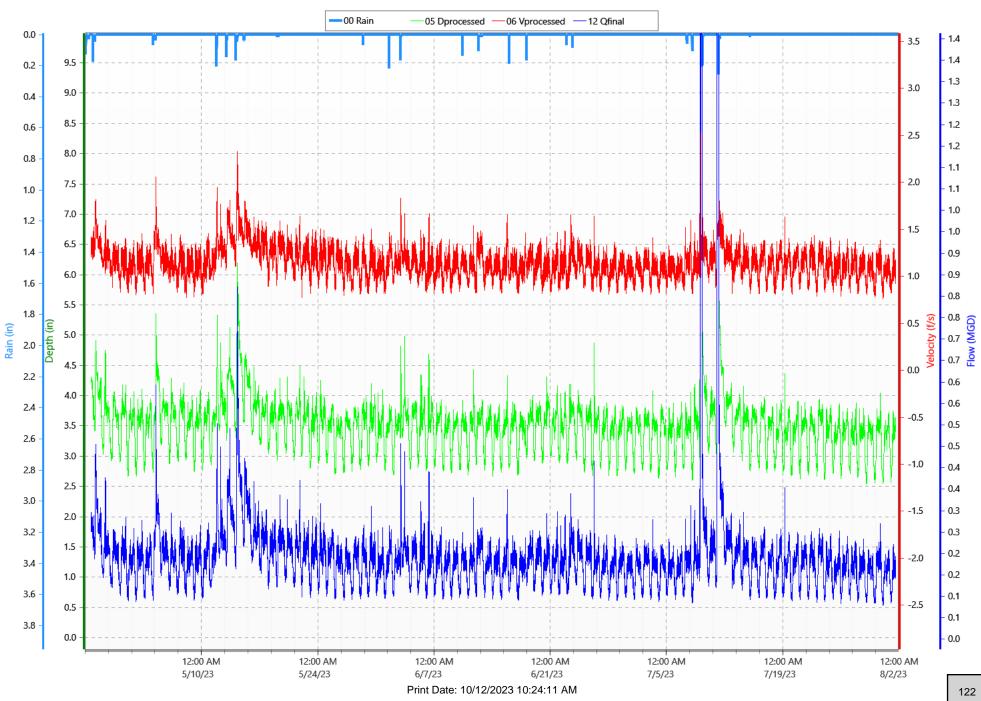
BP-19 (4/26/2023 to 8/3/2023)

DVQ with Rain - Pipe Dia: 29.50 in.



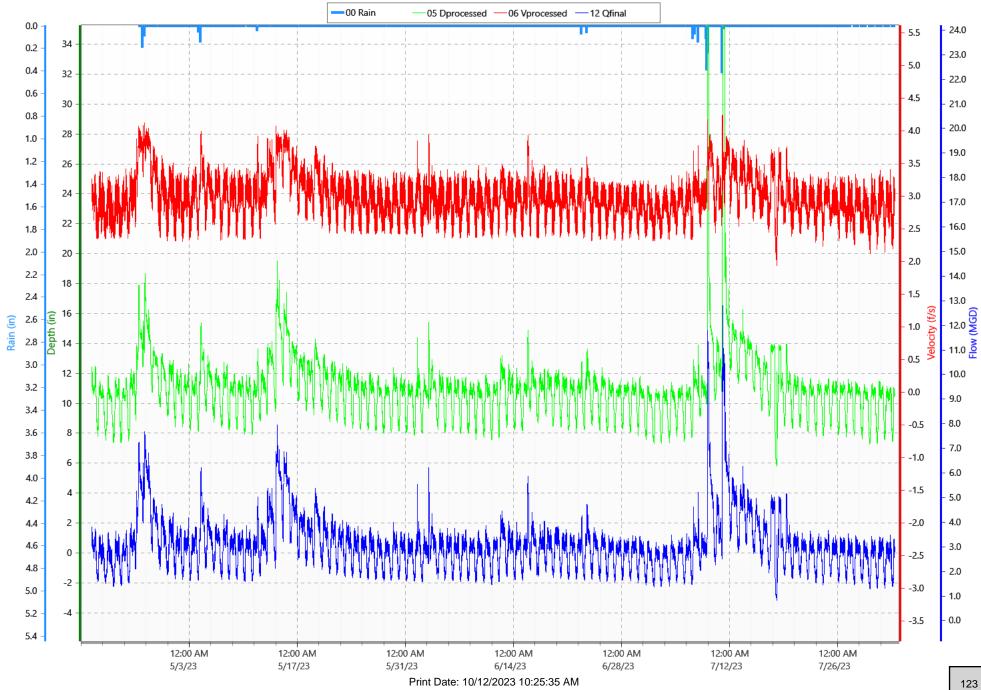
BP-20 (4/26/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 18.50 in.



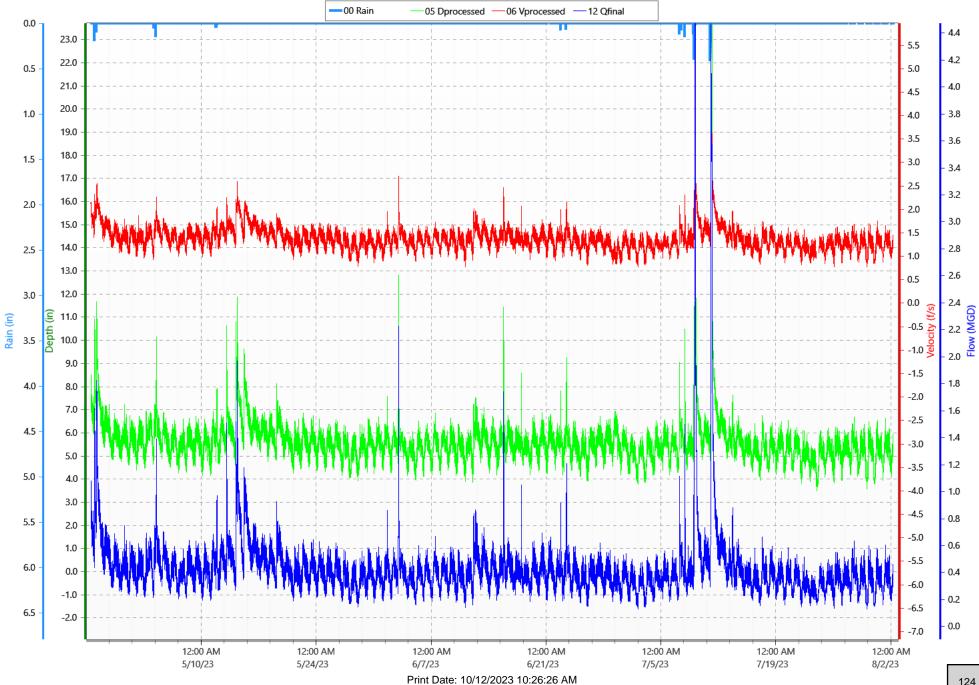
BP-21 (4/19/2023 to 8/3/2023)

DVQ with Rain - Pipe Dia: 28.75 x 29.75 in.



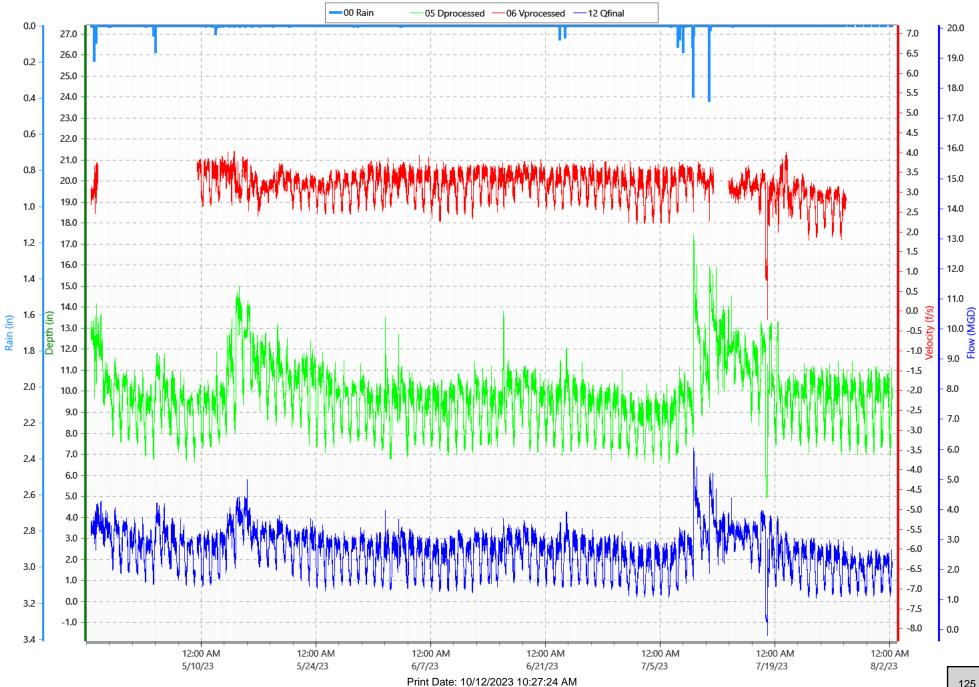
BP-22 (4/26/2023 to 8/3/2023)

DVQ with Rain - Pipe Dia: 16.50 x 17.00 in.



BP-23 (4/26/2023 to 8/3/2023)

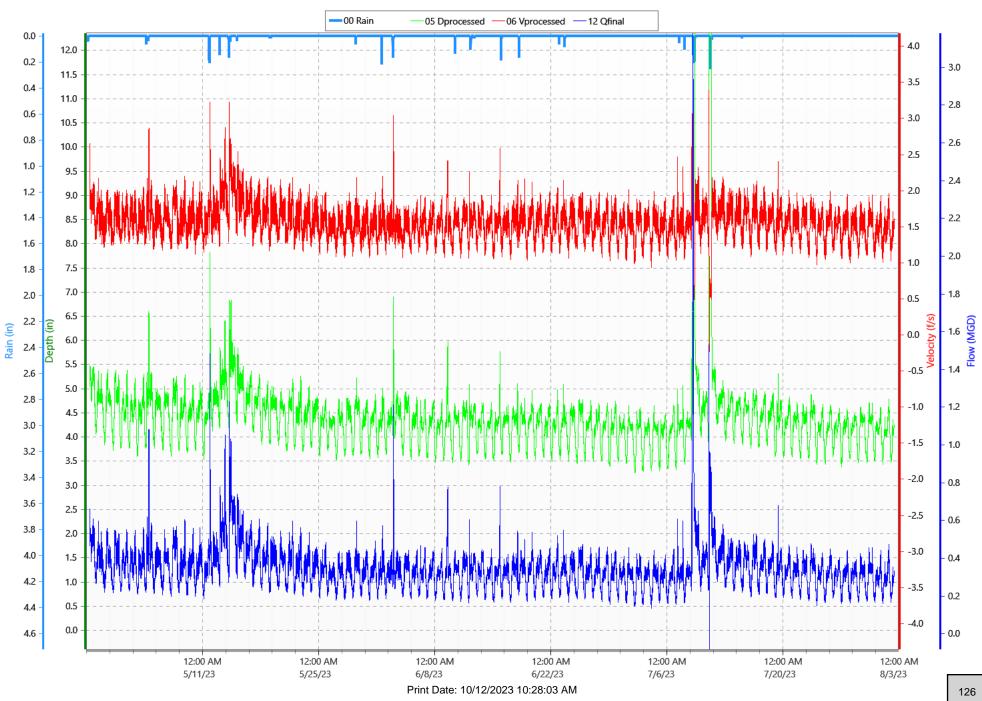
DVQ with Rain - Pipe Dia: 23.50 x 25.00 in.



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BP-24 (4/27/2023 to 8/3/2023)

DVQ with Rain - Pipe Dia: 18.50 x 19.00 in.



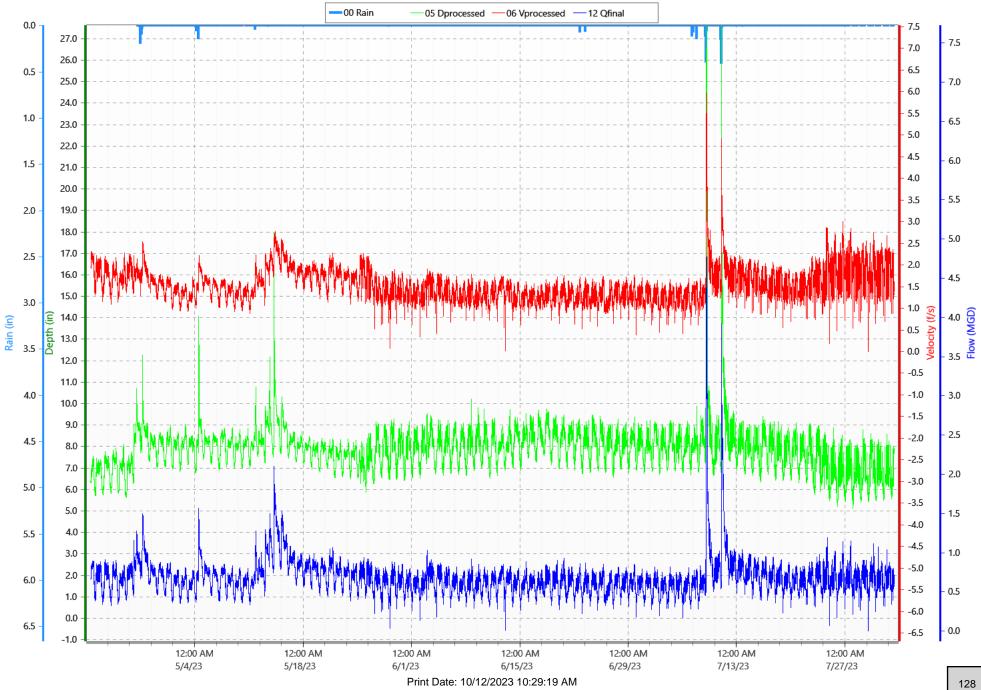
BP-25 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 35.75 in.



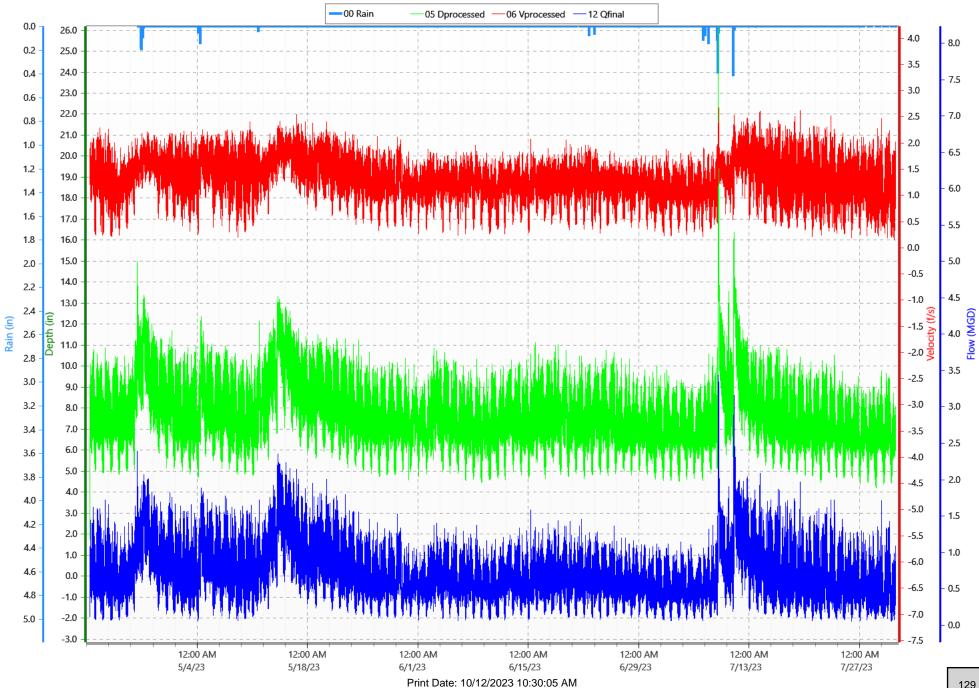
BP-26 (4/20/2023 to 8/3/2023)

DVQ with Rain - Pipe Dia: 1450 x 15.62 in.



BP-27 (4/20/2023 to 8/1/2023)

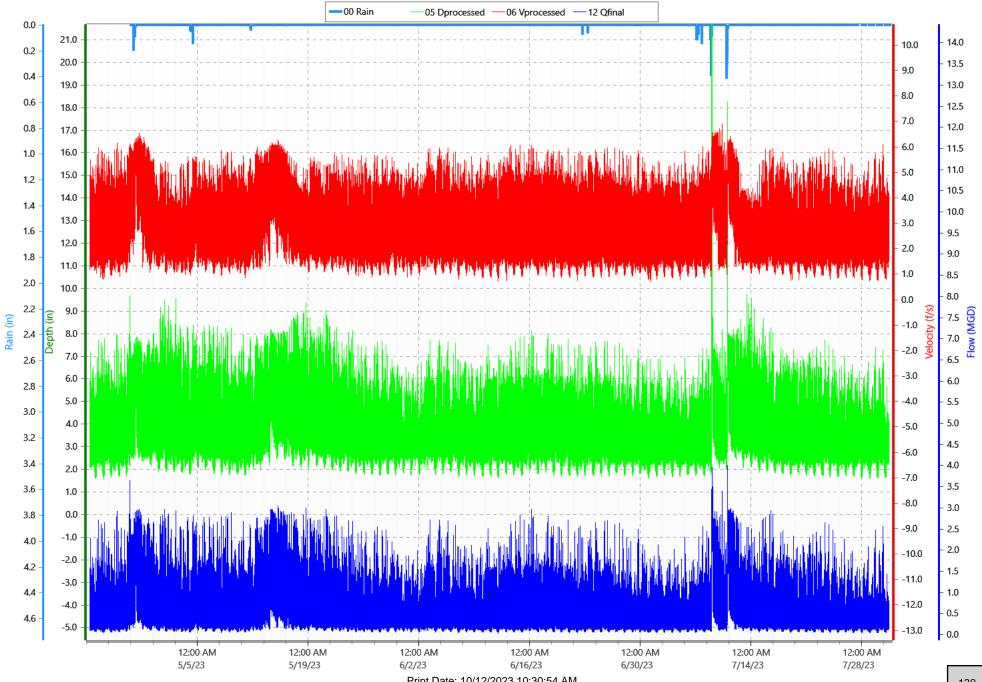
DVQ with Rain - Pipe Dia: 20.25 in.



129

BP-27-01 (4/21/2023 to 8/1/2023)

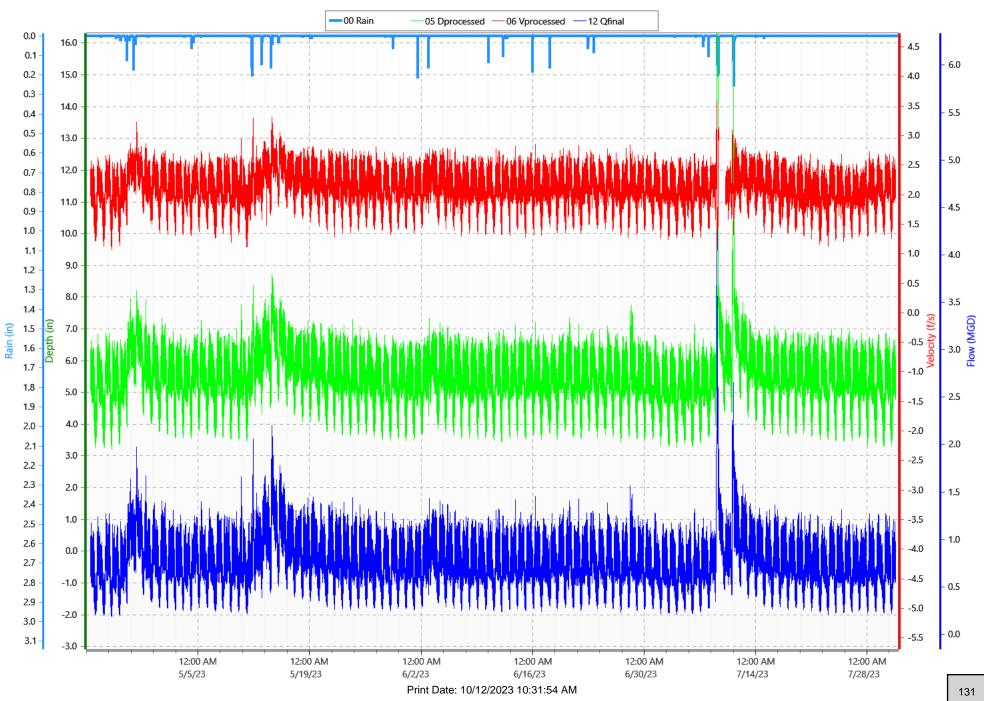
DVQ with Rain - Pipe Dia: 17.10 in.



130

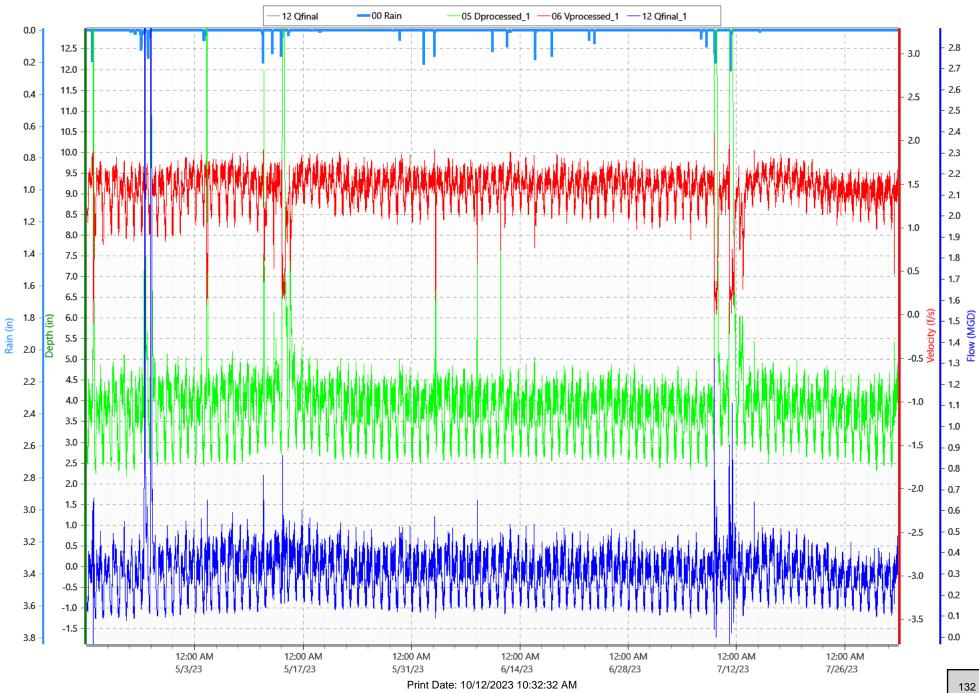
BP-28 (4/21/2023 to 8/1/2023)

DVQ with Rain - Pipe Dia: 23.70 in.



BP-30 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 23.20 in.



IH-12 (4/21/2023 to 8/2/2023)

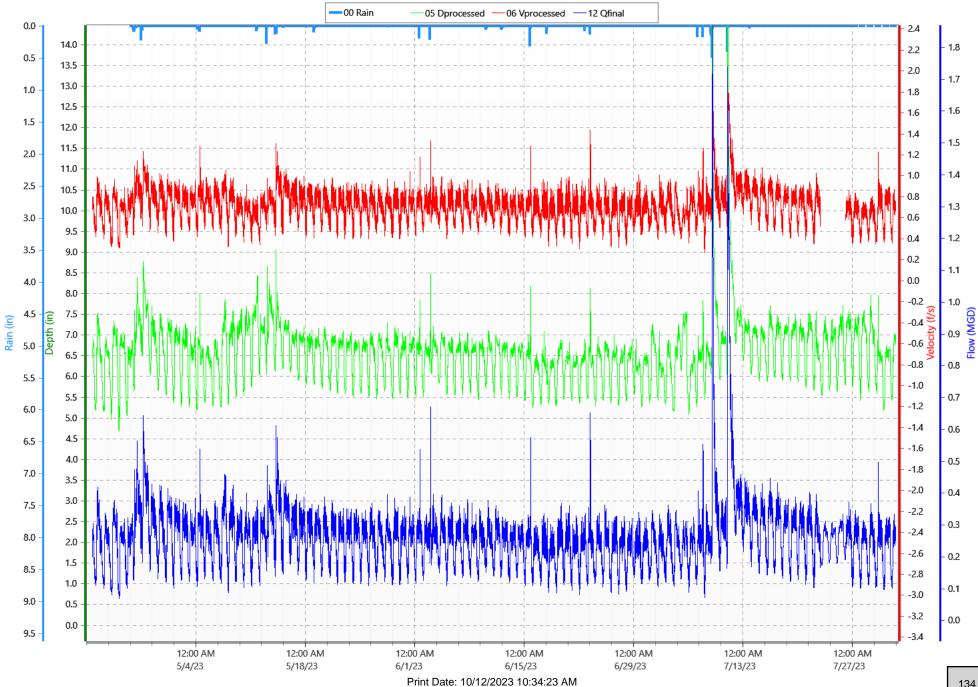
DVQ with Rain - Pipe Dia: 22.20 in.



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IH-13 (4/20/2023 to 8/2/2023)

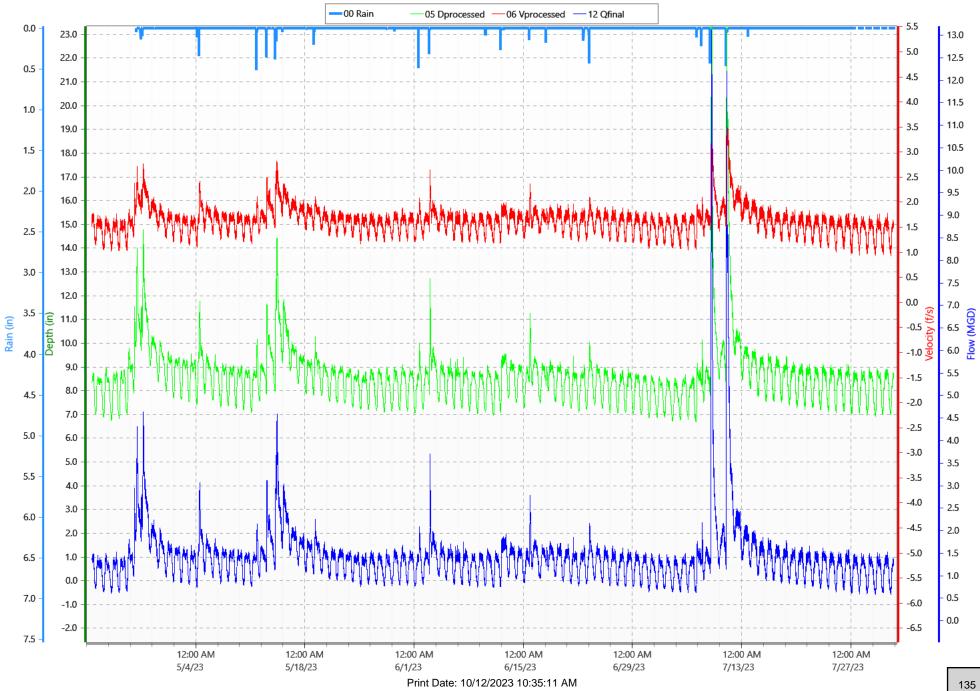
DVQ with Rain - Pipe Dia: 18.00 in.



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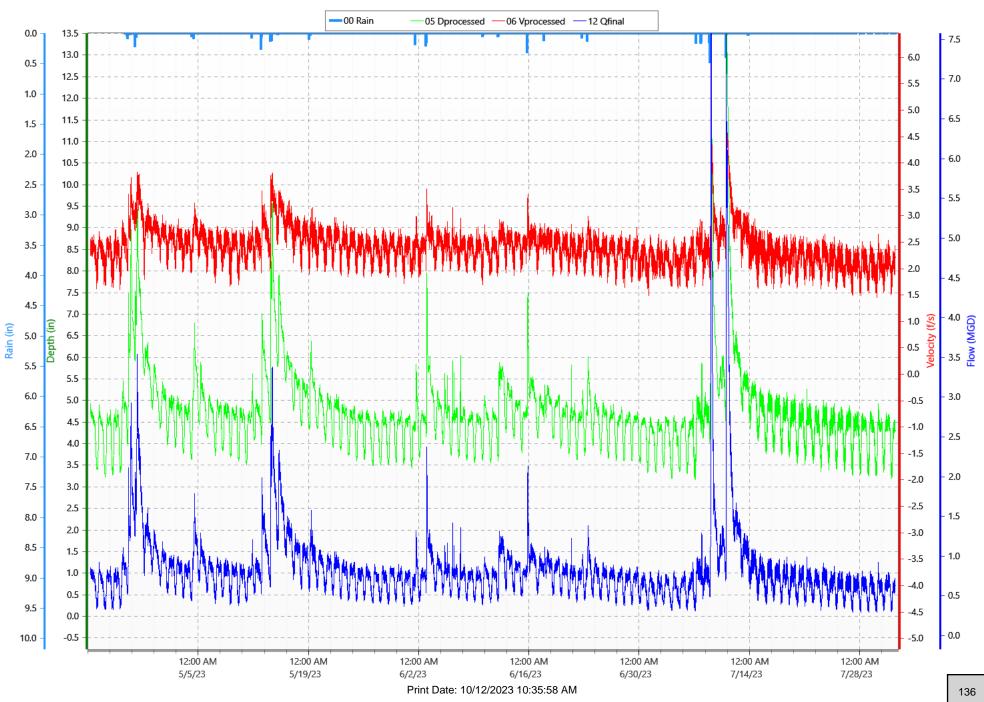
IH-14 (4/20/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 34.00 x 35.00 in.



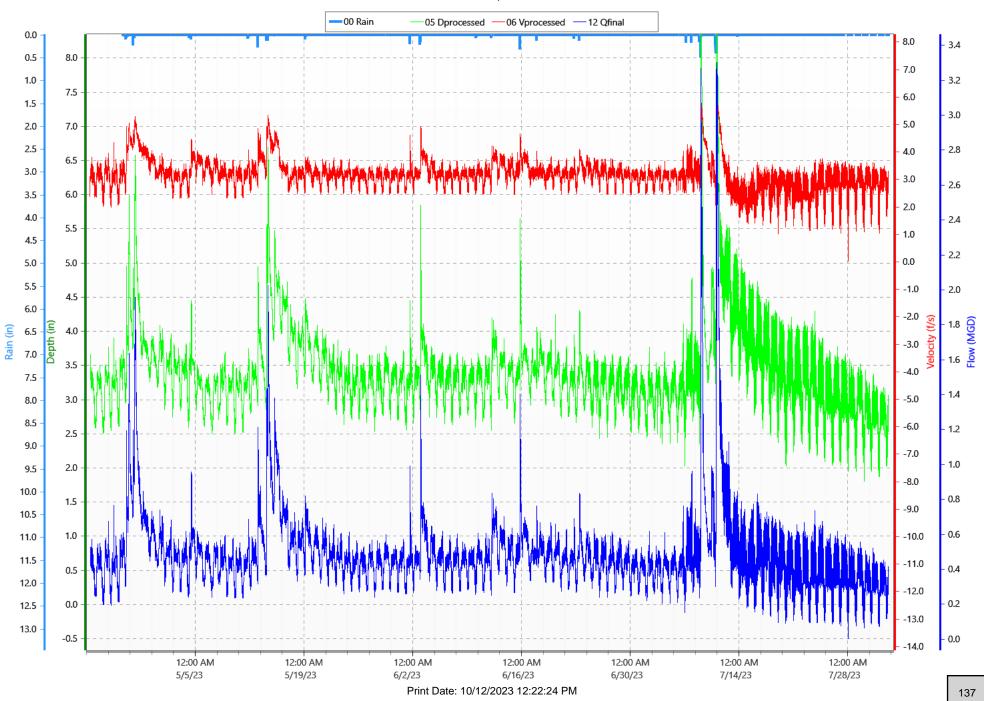
IH-15 (4/21/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 29.00 x 30.25 in.



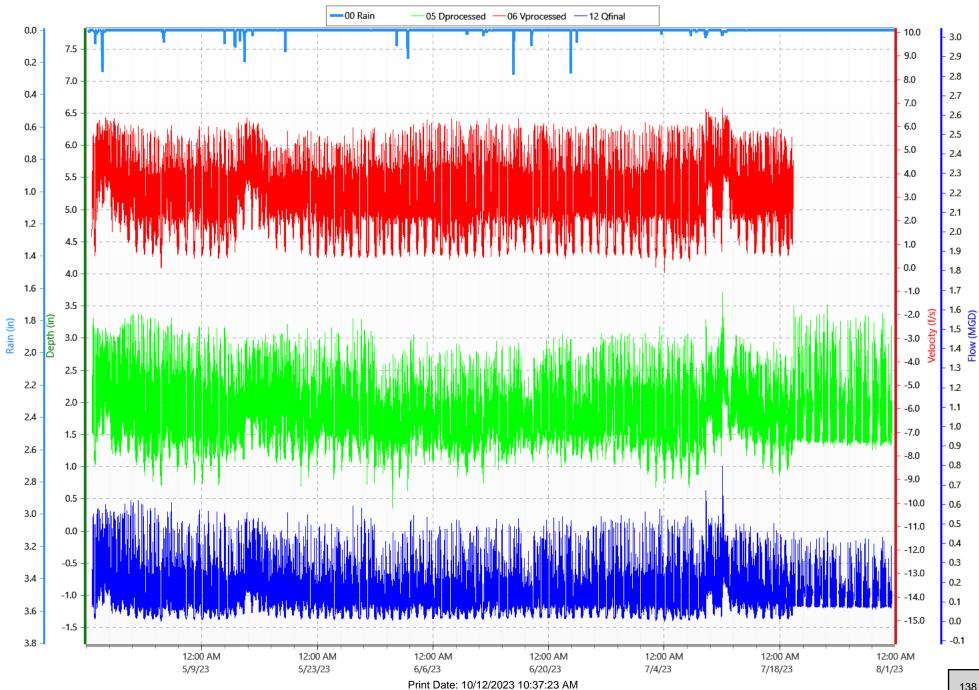
IH-16 (4/21/2023 to 8/3/2023)

DVQ with Rain - Pipe Dia: 17.44 in.



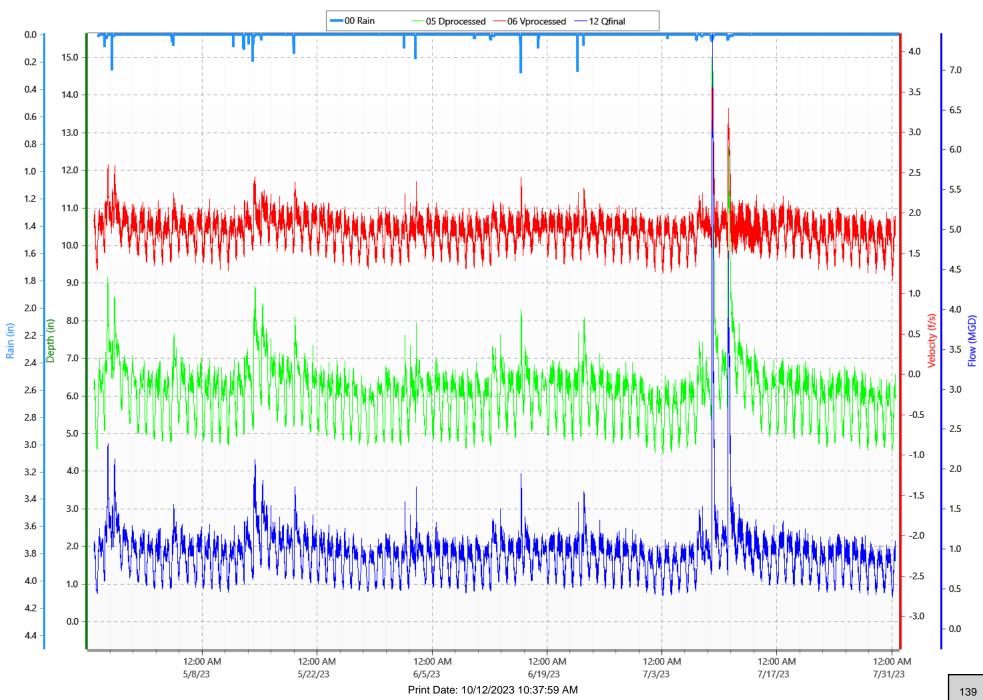
LD-01 (4/25/2023 to 8/1/2023)

DVQ with Rain - Pipe Dia: 9.75 in.



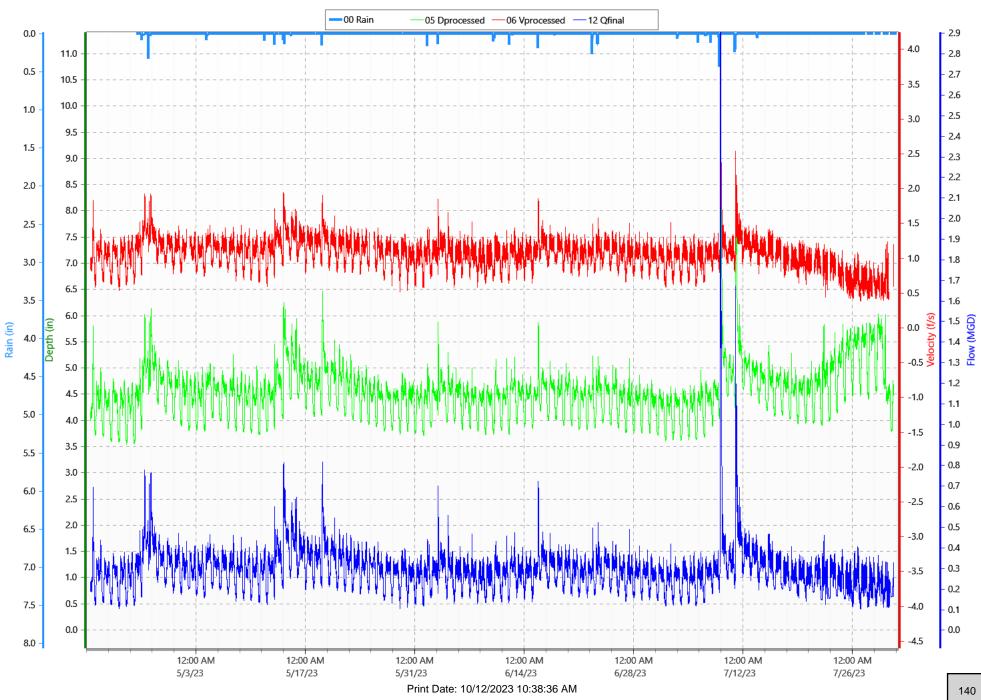
LD-02 (4/24/2023 to 8/1/2023)

DVQ with Rain - Pipe Dia: 35.50 x 36.00 in.



LD-03 (4/19/2023 to 8/1/2023)

DVQ with Rain - Pipe Dia: 22.00 x 23.50 in.



ND-08 (4/20/2023 to 8/2/2023)

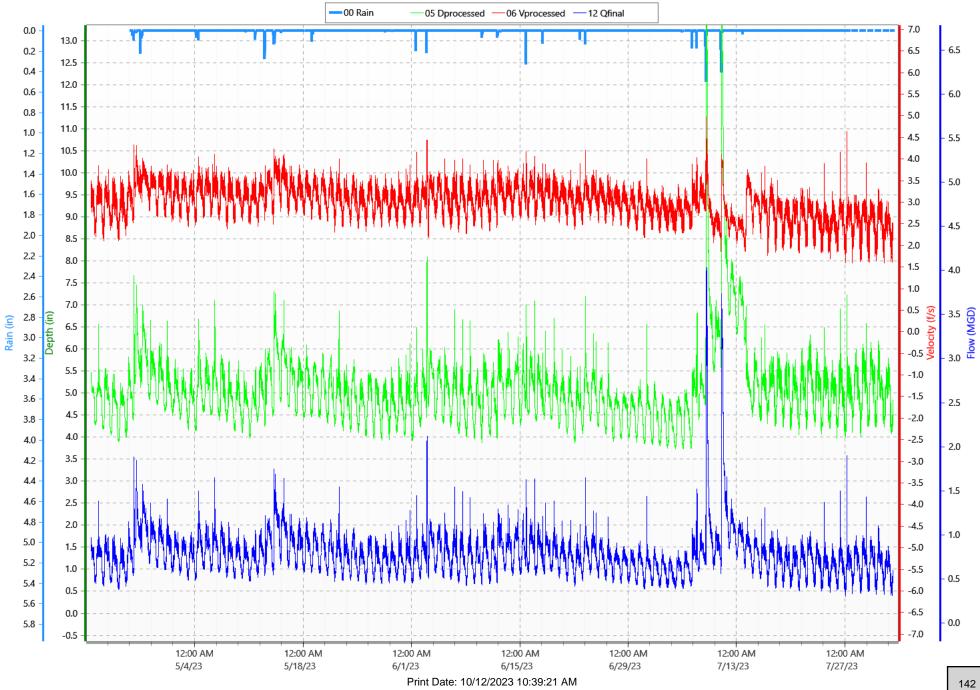
DVQ with Rain - Pipe Dia: 24.00 in.



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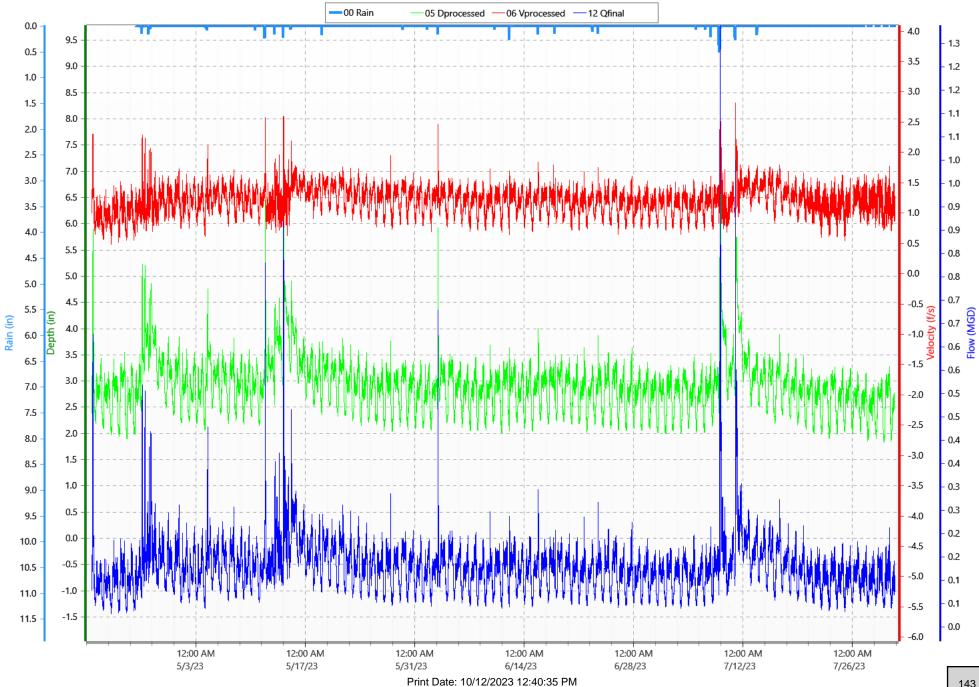
ND-09 (4/20/2023 to 8/3/2023)

DVQ with Rain - Pipe Dia: 17.00 in.



SV-01 (4/19/2023 to 8/1/2023)

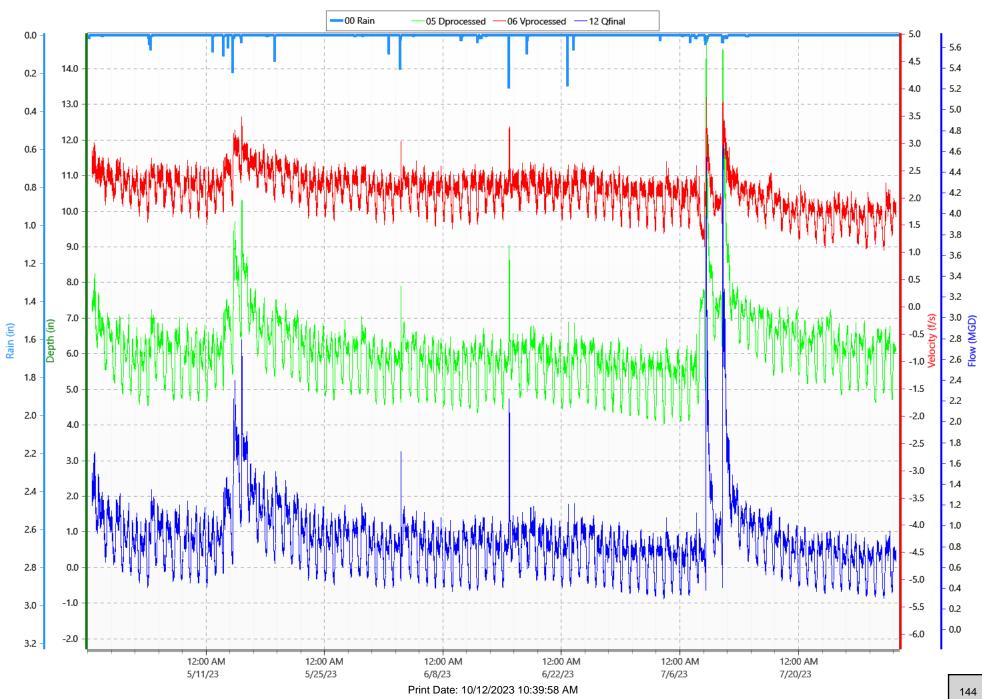
DVQ with Rain - Pipe Dia: 14.00 x 14.50 in.



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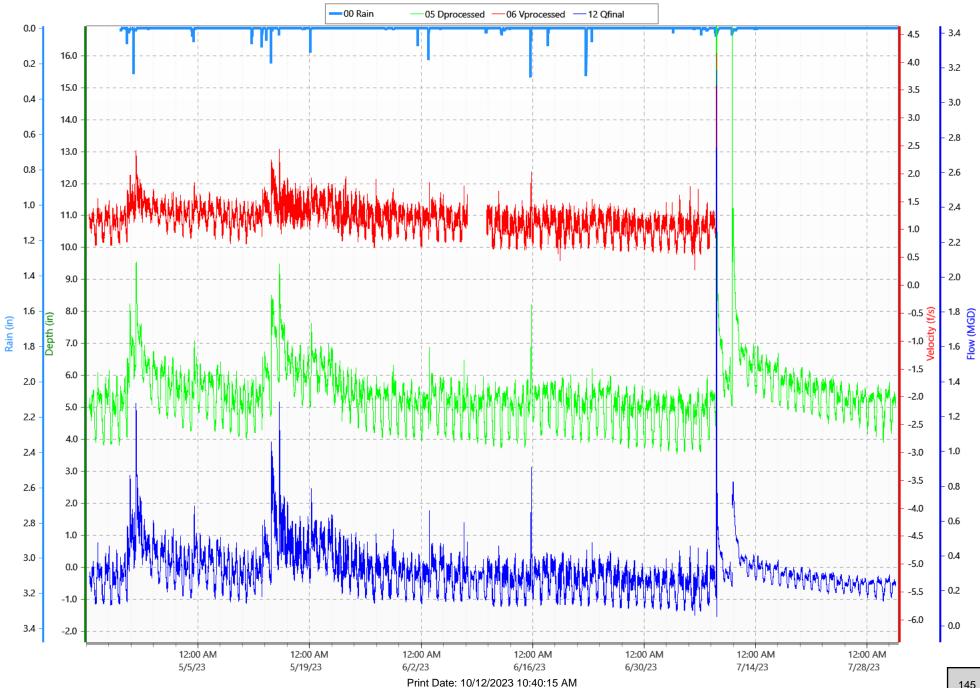
WC-30 (4/27/2023 to 8/1/2023)

DVQ with Rain - Pipe Dia: 23.00 in.



WC-31 (4/21/2023 to 8/1/2023)

DVQ with Rain - Pipe Dia: 15.00 in.



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WC-32 (4/25/2023 to 8/1/2023)

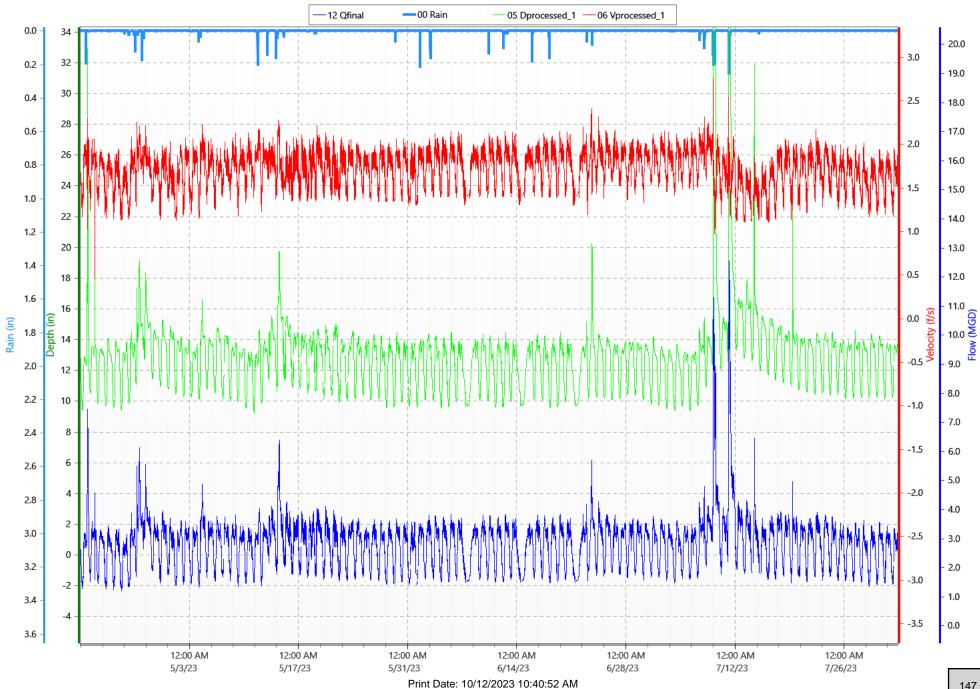
DVQ with Rain - Pipe Dia: 20.50 in.



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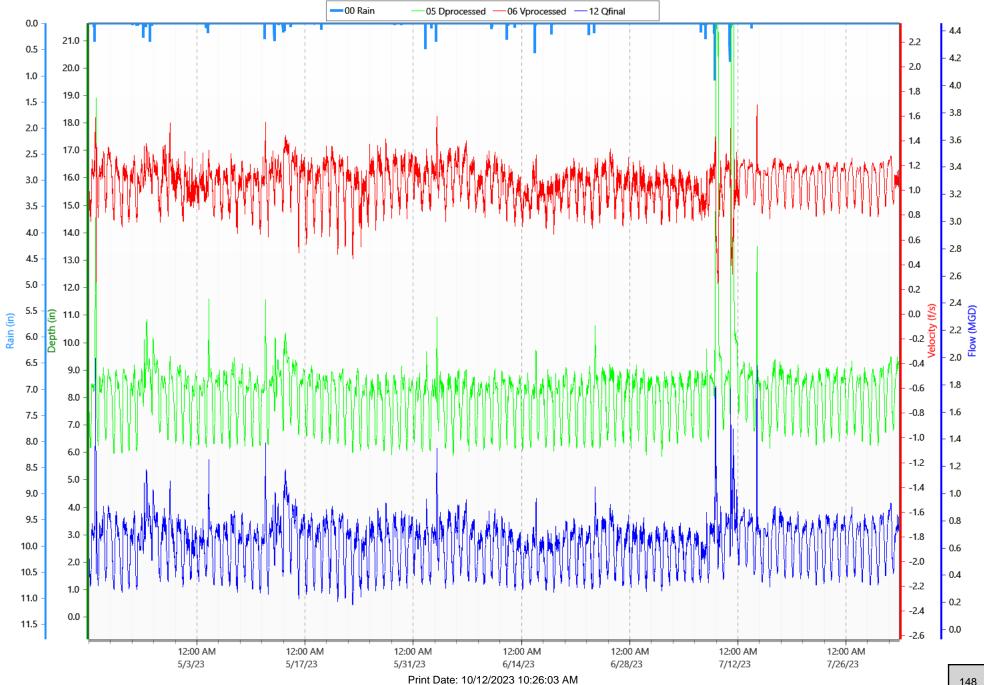
WS-01 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 41.66 in.



WS-10 (4/19/2023 to 8/2/2023)

DVQ - Pipe Dia: 23.25 in.



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WS-11 (4/19/2023 to 8/2/2023)

DVQ with Rain - Pipe Dia: 41.20 in.

