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HILGARTWILSON
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WASTEWATER MASTER PLAN

FOR

SECTION 23 IMPROVEMENTS

GOODYEAR, ARIZONA

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WASTEWATER MASTER PLAN

SECTION 23 IMPROVEMENTS

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1.0 INTRODUCTION

1.1 Project Location

Section 23 Improvements (the Project) is located near the southeast corner of Camelback Road and Citrus Road in Goodyear, Arizona. It consists of approximately 634 acres and includes nearly all of Section 23, Township 2 North, Range 2 West of the Gila and Salt River Meridian. The property is bounded by Camelback Road on the north, Indian School Road on the south, Citrus Road on the west, and Cotton Lane on the east. Figure 1 in Appendix A provides a vicinity map for the Project.

1.2 General Description

The Project is planned for single family residential (SFR), commercial, and industrial land uses. The Project site is currently undeveloped agricultural land. The site and surrounding area generally slope to the southeast at approximately 0.6 percent. The Project is located within the City of Goodyear wastewater service area.

1.3 Purpose of Report

The purpose of this Wastewater Master Plan is to identify and evaluate the proposed wastewater system infrastructure for serving the Project in accordance with Chapter 6 of the *Engineering Design Standards and Policies Manual* (City of Goodyear, 2017). This Wastewater Master Plan discusses the existing wastewater infrastructure within the Project vicinity and identifies anticipated average daily wastewater flows and peak flows for all contributing parcels. It also identifies anticipated sewer line sizes and alignments, anticipated lift station location and sizing, anticipated force main alignment, and presents results from a hydraulic model of the proposed wastewater infrastructure. This Wastewater Master Plan satisfies the zoning stipulation done for Abel Ranch in Section 1.4.ii of City of Goodyear Ordinance No. 2018-1395.

1.4 Previous Studies

In May of 2017, HILGARTWILSON, LLC. prepared the *Master Wastewater Report for Abel Ranch*. The HILGARTWILSON 2017 report anticipated wastewater demands and the necessary wastewater infrastructure to serve the Project based on previous lot layouts and roadway alignments. This Master Wastewater Report provides updated wastewater demands and identifies proposed onsite wastewater infrastructure based on current anticipated lot counts, lot layout, and roadway alignments.

In August of 2008, RBF Consulting completed the *Section 23 Sewer System Special Public Improvements Cost Recovery Agreement* (RBF, 2008) as part of the Resolution of Intention No. 08-1279 within the City of Goodyear. This agreement mapped out a cost sharing wastewater infrastructure solution for the properties within Section 23, Township 2 North Range 3 West. The agreement consisted of sewer alignments, sewer infrastructure costs, and the division of costs between the participating properties.

2.0 DESIGN CRITERIA

2.1 City of Goodyear Design Criteria

The proposed wastewater system infrastructure for Abel Ranch has been prepared and evaluated in general accordance with the design criteria provided in Chapter 6 of the *Engineering Design Standards and Policies Manual* (City of Goodyear, 2017). A summary of the design criteria is provided in Table 1 below.

TABLE 1
WASTEWATER SYSTEM DESIGN CRITERIA

Category		Value	Unit
Average Daily Flow			
	Residential (< 2 DU/ac)	160	gpd/DU
	Residential (2-4 DU/ac)	144	gpd/DU
	Regional Commercial	1,087	gpd/acre
	Light Industrial	815	gpd/acre
Peaking Factor			
	Peak Flow (sewer lines > 12-inches)	2.89	x Average Daily Flow
Peaking Capacity			
	8-inch to 12-inch sewer mains (residential sewer mains only)	1,000	gpd/DU (flowing full)
System Layout			
	Minimum Sewer Depth of Cover – Private	4.0	ft
	Minimum Sewer Depth of Cover – Public	6.0	ft
	Minimum Sewer Depth of Cover Accepted by City for Abel Ranch (PVC SDR26 Pipe When Less than 6.0' of Cover)	5.0	ft
	Minimum Pipe Diameter	8	inches
	Maximum Manhole Spacing (dia. 8" to 15")	400	ft
	Manhole Invert Drop (> 30° direction change)	0.1'	Drop across manhole
	Manhole Invert Drop (60° – 90° direction change)	0.2'	Drop across manhole
Minimum Pipe Slopes			
	8-inch	0.0033	ft/ft
	10-inch	0.0025	ft/ft
	12-inch	0.0031	ft/ft
	15-inch	0.0023	ft/ft
	18-inch	0.0018	ft/ft
System Performance			
	Manning's Roughness Coefficient (n)	0.013	
	Minimum Full Flow Velocity ≤ 10" sewer	2.0	fps
	Minimum Full Flow Velocity > 10" sewer	2.5	fps
	Maximum Velocity ≤ 10" sewer	9.0	fps
	Maximum Velocity > 10" sewer	10.0	fps
	Sewer Capacity Ratio (d/D, max at peak flow)[2]	0.65	

3.0 WASTEWATER FLOWS

3.1 Land Use

The Project will consist of approximately 561 dwelling units, 227.5 acres of commercial land uses, and 119.6 acres of industrial land uses. Table 2 below summarizes the anticipated land uses and residential densities for the Project.

TABLE 2
LAND USE AND DENSITY

Parcel	Land Use	Gross Area	Dwelling Units	Density
		(ac)	(DU)	(DU/ac)
Abel Ranch	SFR	217.4	438	2.7
	SFR (Large Lot)		13	0.2
Ham Talaverde, LLC.	SFR	44.1	110	2.5
Gar-Cor, LLC.	Regional Commercial	11.8	-	-
Southwest Next	Regional Commercial	19.8	-	-
NBA Commercial	Regional Commercial	16.1	-	-
Via West C&C, LLC.	General Commercial	17.8	-	-
303 & Camelback, LLC.	Regional Commercial	15.4	-	-
Liberty Property LP	Light Industrial	110.3	-	-
RADOS Properties (A)	Regional Commercial	55.4	-	-
RADOS Properties (B)	Regional Commercial	91.2	-	-
CK5 Investments, LLC.	Light Industrial	2.2	-	-
Arizona Water Company	Light Industrial	1.2	-	-
Fetters, LLC.	Light Industrial	1.7	-	-
City of Goodyear	Light Industrial	4.2	-	-
GRAND TOTAL:		605.2	561	-

3.2 Wastewater Flow Calculations

Anticipated wastewater flows for the Project have been calculated in accordance with the design criteria listed in Table 1 and the land uses shown in Table 2. A summary of the total wastewater flows for the Project are presented in Table 3 below. Table B.1 and B.2 in Appendix B presents more detailed wastewater flow calculations for the Project.

TABLE 3
WASTEWATER FLOW SUMMARY

Parcel	Average Daily Flow		Peak Flow[1]		Peak Capacity[2]	
	gpd	gpm	gpd	gpm	gpd	gpm
GRAVITY SEWER SOLUTION PARCELS						
Abel Ranch	63,072	43.8	182,278	126.6	438,000	304.2
Ham Talaverde, LLC.	15,840	11.0	45,778	31.8	110,000	76.4
Gar-Cor, LLC.	12,827	8.9	37,069	25.7	37,069	25.7
Southwest Next	21,523	14.9	62,200	43.2	62,200	43.2
NBA Commercial	17,501	12.2	50,577	35.1	50,577	35.1
Gravity Sewer Subtotal:	130,762	90.8	377,902	262.4	697,846	484.6
LIFT STATION & FORCE MAIN SOLUTION PARCELS						
Abel Ranch (Large Lots)	2,080	1.4	6,011	4.2	13,000	9.0
Via West C&C, LLC.	19,349	13.4	55,917	38.8	55,917	38.8
303 & Camelback, LLC.	16,740	11.6	48,378	33.6	48,378	33.6
Liberty Property LP	89,895	62.4	259,795	180.4	259,795	180.4
RADOS Properties (A)	60,220	41.8	174,035	120.9	174,035	120.9
RADOS Properties (B)	99,134	68.8	286,498	199.0	286,498	199.0
CK5 Investments, LLC.	1,793	1.2	5,182	3.6	5,182	3.6
Arizona Water Company	978	0.7	2,826	2.0	2,826	2.0
Fetters, LLC.	1,386	1.0	4,004	2.8	4,004	2.8
City of Goodyear	3,423	2.4	9,892	6.9	9,892	6.9
Lift Station Subtotal:	294,997	204.9	852,540	592.0	859,529	596.9
Grand Total:	425,759	295.7	1,230,442	854.5	1,557,375	1,081.5

Notes:
1. Peak Flow represents pipes larger than 12-inches in diameter. Peaking factor for both residential and commercial use is 2.89.
2. Peak Capacity represents pipes 12-inches and smaller in diameter. Peaking factor for residential use is 1,000 gpd/DU and peaking factor for commercial use is 2.89.

4.0 WASTEWATER SYSTEM INFRASTRUCTURE

4.1 Existing Wastewater System Infrastructure

Existing wastewater infrastructure immediately adjacent to the Project includes a 12-inch sewer main and a 24-inch regional sewer main along Citrus Road. The 12-inch sewer main is owned and operated by the City of Goodyear and begins at Campbell Avenue. It conveys flows from a portion of the Sedella community, located west of the Project, south along Citrus Road. It upsizes to 18-inches at Indian School Road and continues south along Citrus Road. The 24-inch regional sewer main is owned by a consortium of developments known as the Northwest Group and wastewater flows through the 24-inch sewer main are routed to Liberty Utilities' Palm Valley Water Reclamation Facility for treatment. The existing wastewater system infrastructure can be seen on Figure 3 in Appendix A.

4.2 Existing Cost Recovery Agreement for Section 23 Improvements

In August of 2008, RBF Consulting completed the *Section 23 Sewer System Special Public Improvements Cost Recovery Agreement* (RBF, 2008) as part of the Resolution of Intention No. 08-1279 within the City of Goodyear. This agreement mapped out a cost sharing wastewater infrastructure solution for the properties within Section 23, Township 2 North Range 3 West. The agreement consisted of sewer alignments, sewer infrastructure costs, and the division of costs between the participating properties. Since the time of the cost recovery agreement, some ownership of properties has changed and alternative wastewater solutions have been presented to the City. Based on these changes, section 1.4 of the City of Goodyear Ordinance No. 2018-1395 states that an alternative wastewater solution for Section 23 must be provided in order to terminate the existing Resolution of Intention No. 08-1279.

4.3 Proposed Wastewater System Improvements

As shown in Figure 3 of Appendix A, 438 SFR units within Abel Ranch will be served by an internal network of 8-inch gravity sewer lines that will route flows to the existing City of Goodyear 12-inch sewer main in Citrus Road and the existing 18-inch stub provided at the intersection of Citrus Road and Indian School Road. Similarly, the GAR-COR property north of Abel Ranch will also flow by gravity to Citrus Road through an 8-inch stub-out provided within Abel Ranch. This 8-inch stub-out is placed at a sufficient depth to sewer the offsite area through the onsite wastewater system. Ham Talaverde will flow directly to the existing 12-inch sewer main in Citrus Road. The Southwest Next and the NBA Commercial piece at the northeast corner of Indian School Road and Citrus Road will gravity flow to the 18-inch sewer main just south of the intersection of Indian School Road and Citrus Road. The inverts at the tie-in manholes along Citrus Road were obtained from a survey study performed by HILGARTWILSON in August of 2017, from as-builts of the *Sedella Phase 1 Infrastructure Water & Sewer Plans*, prepared by RBF Consulting and approved in March 2007, as well as as-builts for the *Citrus Road Sanitary Sewer* done by Dibble Engineering and Kiewit for the City of Goodyear as approved January 7, 2009.

The remaining properties within the eastern and southern portion of Section 23, including the 13 large acre lots in Abel Ranch, will gravity flow through 8-inch, 10-inch, and 12-inch sewer mains to a proposed lift station located at the southeast corner of the Rados-A property. This lift station site location is the same location set forth in the *Section 23 Sewer System Special Public Improvements Cost Recovery Agreement* (RBF, 2008). A 6-inch force main will route flows to the easternmost manhole of the NBA Commercial gravity sewer main to ultimately be conveyed through a proposed 12-inch and 15-inch sewer main to the 18-inch sewer main in Citrus Road south of Indian School Road. The tie-in invert for the 18-inch sewer main in Citrus Road is taken from the *Citrus Road Sanitary Sewer – Project No. WW0604* (Dibble Engineering, 2009). This invert has been adjusted to reflect the HILGARTWILSON NAVD88 vertical survey datum used in the aforementioned August 2017 survey. The gravity collection system serving Southwest Next and NBA Commercial and the gravity collection system serving the 13 large acre lots in Abel Ranch, Via West, 303 & Camelback, Liberty Properties, Rados Properties, CK5, Arizona Water Company, Fetters, and the City of Goodyear parcels is conceptual and subject to change based on future site layouts.

Due to the topography across Section 23, an analysis was completed to identify a potential gravity wastewater solution that could serve the majority of the Project using existing City sewer infrastructure along Citrus Road. This analysis found that the majority of the gravity sewer alignments shown within the Abel Ranch community on Figure 2 in Appendix A can be installed in accordance with the City of Goodyear design criteria, including a minimum slope of 0.0033 ft/ft and a minimum depth of cover of 6 feet. However, a depth of cover of 5 feet will need to be implemented in some areas to allow for a gravity solution with minimum slope of 0.0033 ft/ft through all 8-inch pipes. The city indicated that a waiver be processed and pipe material shall be PVC SDR 26 when there is less than 6.0 feet of cover. This waiver was approved by the City on September 9, 2018 and is attached in Appendix C for reference.

As shown in Figure 3 in Appendix A, one tie-in location along the existing 12-inch sewer main in Citrus Road and one tie in location along the 18-inch sewer main in Citrus Road will be utilized to convey flows from the Project to the City of Goodyear wastewater system. Outfall #1 (OF-1) will tie into existing manhole #118 along the 12-inch sewer main at Campbell Avenue and Citrus Road. The proposed 8-inch sewer main traversing Citrus Road will need to cross under the existing 24-inch Liberty Utilities sewer main in Citrus Road. Clearance from the crown of the proposed 8-inch sewer main to the invert of the existing 24-inch Liberty Utilities sewer main has been calculated at 3.07 feet. Outfall #2 will tie into an existing 18-inch sewer stub at the intersection of Citrus Road and Indian School Road where the City owned 12-inch sewer main upsizes to 18-inches. The proposed 18-inch sewer main traversing Citrus Road will need to cross under the existing 24-inch Liberty Utilities sewer main. Clearance from the invert of the existing 24-inch Liberty Utilities sewer main to the crown of the proposed 18-inch sewer main is 2.35 feet. Existing sewer alignments and invert elevations for the existing sewer mains were taken from as-builts of the Sedella Phase 1 Infrastructure Water & Sewer Plans, prepared by RBF Consulting and approved in March 2007, as-builts of the *Litchfield Park Services Company: Regional Sanitary Sewer Line – Camelback Road to Mcdowell Road* (Wood, Patel & Associates Inc., 2005), as well as as-builts of the *Citrus Road Sanitary Sewer* (Dibble Engineering, 2007). Final clearances between the existing and proposed sewer mains may vary and will be determined during preliminary and final design. A 12-inch sewer main will also tie into this proposed 18-inch sewer main along Indian School Road to serve the Southwest Next, NBA Commercial, and convey flows from the proposed lift station and force main.

4.4 Easements

For the properties utilizing the lift station and force main to convey flows to existing City infrastructure, multiple easement agreements will need to be in place to facilitate the properties upstream of the proposed collection mains. Table 4 below outlines the properties that will need easements and which properties will need to grant easements. Similarly, agreements on roadway alignments through the southeastern portion of the Project will be required to facilitate the larger diameter 10-inch and 12-inch trunk main. Easements between property owners will be set forth in future agreements. Easement widths for all sewer mains will be as required per the City of Goodyear.

TABLE 4 EASEMENTS	
Property Requiring Easement	Properties to Grant Easement
NBA Commercial	Southwest Next
Abel Ranch (Large Lots)	Liberty Properties, LLC.
Via West, LLC.	Liberty Properties, LLC.
303 & Camelback, LLC.	Liberty Properties, LLC.
City of Goodyear Parcels	Rados Properties (Rados B)
Fetters, LLC.	Rados Properties (Rados B) or City of Goodyear
AZ Water Company	Rados Properties (Rados B) or City of Goodyear and Fetters, LLC.
CK5 Investments, LLC.	Rados Properties (Rados B) or City of Goodyear, Fetters, LLC., and AZ Water Company

4.5 Wastewater Treatment

Per the *City of Goodyear 2016 Integrated Water Master Plan* (Carollo, 2016), The Project is located within the 157th Avenue Sewer Basin of WPA-2 and will be served by the 157th Avenue Wastewater Treatment Plant (WWTP). The 157th Avenue WWTP has an existing capacity of 6.0 MGD and a planned build-out capacity of 15.0 MGD. Excerpts from the *City of Goodyear 2016 Integrated Water Master Plan* (Carollo, 2016) are provided in Appendix C for reference.

4.6 Wastewater System Phasing

It is anticipated that the Project will be developed in multiple phases. The wastewater system infrastructure will also be constructed in phases as required to serve each phase of development. For any given phase, the downstream sewer mains required to serve that phase will be constructed at the same time as said phase. Furthermore, the downstream sewer mains that are installed will be sized for build-out conditions. The phasing for Section 23 has not yet been finalized, and therefore, is not shown on Figure 2 or 3.

5.0 PROPOSED LIFT STATION & FORCE MAIN

5.1 General Lift Station Design

The information provided in Sections 5.1, 5.2, 5.3, and 5.4 is for master planning purposes only. Detailed wet well and force main criteria and design will be provided at the preliminary and final design stages.

It is anticipated that a proposed lift station and force main will be needed to lift flows from the gravity collection system serving the 13 large acre lots in Abel Ranch, Via West, 303 & Camelback, Liberty Properties, Rados Properties, CK5, Arizona Water Company, Fetters, and the City of Goodyear parcels to the easternmost manhole serving the NBA Commercial and Southwest Next properties. The 12-inch sewer invert at the lift station is anticipated to be approximately 1051.30-feet. At a wet well diameter of 8-feet, the approximate depth of the wet well is anticipated to be 36.92-

feet below the existing grade elevation of 1080.80-feet. A 6-inch force main will route flows south and west a distance of approximately 1,450 feet to outfall into a receiving manhole along a proposed 12-inch sewer main at the southeast corner of the NBA Commercial property.

In the *City of Goodyear 2016 Integrated Water Master Plan* (Carollo, 2016), the proposed lift station for Section 23 was situated at the far southeast corner of the Section. In this Master Plan, the lift station location has been moved to a central location at the southern portion of the Section and reflects the same location found in the *Section 23 Sewer System Special Public Improvements Cost Recovery Agreement* (RBF, 2008). Upon approval of the changes, the City will need to update their next Master Plan to reflect the approved proposed lift station location change.

In the previous *Section 23 Sewer System Special Public Improvements Cost Recovery Agreement* (RBF, 2008), the cost sharing solution included all upstream and downstream sewer infrastructure as well as the lift station and force main. This Wastewater Master Plan proposes a cost sharing agreement that includes the lift station, force main, gravity sewer infrastructure downstream of the lift station, and the sewer trunk main immediately upstream from the lift station, which serves multiple properties. Tie-ins, stub-outs, and infrastructure for properties needing to traverse other properties to ultimately convey flows to the lift station will be through separate, private agreements and are not considered in this cost analysis. Easements, however, will need to be provided regardless and detailed easement information can be found in Section 4.4 of this report.

Figure 2 in Appendix A provides the location of the previously proposed City of Goodyear lift station location as well as the current proposed lift station location. Figure 3 in Appendix A provides the location of the currently proposed lift station and force main alignment.

5.2 Lift Station Design

The wet well will consist of an 8-foot diameter circular wet well with above ground piping for the valves, pressure transmitters, flow meter, and air valve. The wet well shall be composed of precast reinforced concrete units and meet ASTM C-478 standards. The wet well will be equipped with two submersible pumps and associated piping, valves, accessories, and equipment. The proposed wet well depth will accommodate, at minimum, the volume required by Arizona Administrative Code (R18-9 AAC, 2017):

$$V = QT/4$$

where: V is the storage volume in gallons

T is the cycle time in minutes

Q is the flow capacity of the pumps in gallons per minute

Based on a cycle time of 10 minutes and a pump design flow of 592 gpm per pump (pump flow at the high head condition for the system), the minimum required operating volume for the wet well is 1,480.10 gallons. The corresponding band height for the minimum required operating volume is 3.94-ft. As a result, an operating band height of 4.00-ft was selected for the wet well. This band height

results in an operating volume of 1,504 gallons. The storage volume of the wet well is 1,880 gallons. The elevation of the wet well floor will be 1,044.22-ft, with a ground elevation of 1,080.80 -ft and a rim elevation of 1,081.13-ft, resulting in a total wet well depth, from rim to invert, of 36.92-ft. The pumps off, lead pump on, and lag pump on levels will be set at 1,045.80-ft, 1,049.80-ft, and 1,050.30-ft, respectively. The high level alarm will be set at the same elevation as the lag pump on and the high-high level alarm will be set at 1,050.80-ft, which is 0.50-ft below the invert of the 12-inch gravity inlet pipe. The low level alarm will be set at 1,045.30-ft, which is 1.08-ft above the bottom of the wet well and 0.50-ft below the pumps off level. Detailed lift station calculations for the Project can be found in Appendix D.

The information provided above is for planning purposes only. Detailed wet well criteria, wet well level controls, and ultimate elevation information will be provided at the preliminary and final design stages.

5.3 Force Main Design

The Project will consist of two 6-inch pressure class 350 D.I.P. force mains to convey flow from the pumps, up the wet well, and through the above ground valves. The two 6-inch force mains will continue as dual 6-inch pressure class 350 D.I.P. force mains to convey wastewater flows from the lift station site to a proposed onsite receiving manhole located along the southern boundary of the NBA Commercial property. The proposed section of dual 6-inch force main will be approximately 1,450 feet in length.

At a design flow rate of 592 gpm, the velocity within the proposed 6-inch force mains will be approximately 5.9 feet per second (fps), with an anticipated head loss gradient of 20.66-ft/1,000-ft using a Hazen-Williams coefficient (C-value) of 130. Total dynamic losses (friction losses and minor losess) at a pumping rate of 592 gpm across the system is 39.60-ft using a Hazen Williams coefficient of 130. However, for purposes of design, C-values of 110, 130, and 150 were used for calculating the system curves. The discharge elevation of the force main will be approximately 1077.52-ft at the receiving manhole just south of the NBA Commercial property. Detailed force main calculations for the Project can be found in Appendix D.

The information provided above is for planning purposes only. Detailed force main criteria will be provided at the preliminary and final design stages.

5.4 Lift Station Phasing

It is anticipated that the lift station will be phased as development within the Project progresses. Phase accommodations will be provided through the reconfiguration of the wet well's operating band maintaining cycle times of approximately 10 minutes and sewage retention times of less than 30 minutes. Detailed lift station phasing information will be provided at the preliminary and final design stages.

6.0 HYDRAULIC MODEL AND RESULTS

6.1 Overview

The proposed wastewater collection system was modeled using Bentley SewerCAD V8i by Bentley Systems, Inc. The wastewater flows shown in Table 3 were distributed to individual manholes throughout the collection system to provide an accurate representation of average daily flows and peak flows within the system. The wastewater loading for each unit is generally applied to the next upstream manhole in order to account for flows that enter the system at multiple points within a pipe segment, thus ensuring that the entire pipe segment has sufficient capacity to convey the anticipated flow.

6.2 Design Methodology (Gravity to Citrus Road)

The gravity collection system serving Abel Ranch, Gar-Cor, and the Ham Talaverde property shown in Figure 3 in Appendix A is based on existing ground elevations and is designed to meet the design criteria, including drops across manholes, as specified in Table 1 and as discussed in Section 4.2. To maximize the area that can be served by gravity, cover requirements along sewer mains were designed at 5.0 feet instead of the standard 6.0 feet identified in the City of Goodyear design criteria. Pipes were designed to have a peak capacity of not less than 1,000 gpd/DU for 8-inch to 12-inch sewer mains when flowing full. Pipes labeled CO-1 through CO-199 and manholes labeled MH-1 through MH-199 are associated with the gravity sewer only collection system encompassing Abel Ranch, Gar-Cor, and Ham Talaverde.

The finished grade in a portion of the east and north of Abel Ranch will need to be raised in order to facilitate the necessary slope and cover requirements for the sewer mains. The required additional fill ranges from approximately 0.20 feet to 2.85 feet. Actual fill and finished grade elevations required will be determined in the preliminary and final design phases of the property.

6.3 Design Methodology (Gravity to Proposed Lift Station)

The gravity collection system serving Southwest Next and NBA Commercial and the gravity collection system serving the 13 large acre lots in Abel Ranch, Via West, 303 & Camelback, Liberty Properties, Rados Properties, CK5, Arizona Water Company, Fetters, and the City of Goodyear parcels shown in Figure 3 in Appendix A is based on existing ground elevations and is designed to meet the design criteria, including drops across manholes, as specified in Table 1 and as discussed in Section 4.2. Conservative modifications have been made to the system design as site layouts, street alignments, and grading have not been performed for the properties. These modifications include 0.1-foot drops across all manholes, 0.2-foot drops across all manholes with receiving angles greater than 30 degrees, and a minimum of 7-feet of cover over all pipes. Pipes labeled CO-300 through CO-399 and manholes labeled MH-300 through MH-399 are associated with the gravity sewer collection system encompassing Southwest Next and NBA Commercial and receiving flows from the proposed force main. Pipes labeled CO-500 through CO-599 and manholes labeled MH-500 through MH-599 are associated with the gravity sewer to lift station collection system encompassing Via West, 303 & Camelback, Liberty Properties,

Rados Properties, CK5, Arizona Water Company, Fetters, and the City of Goodyear parcels.

6.4 Model Results

The hydraulic model results show that the proposed wastewater collection systems for the Project will adequately convey the projected flows from the Project to their respective outfalls. Detailed hydraulic model results for the collection systems are included in Appendix E. As shown in the peak flow results, all proposed gravity sewer mains in Abel Ranch can convey a peak capacity of at least 1,000 gpd/DU for residential lots and a peak flow of 2.89 times the average daily flow for commercial parcels. All proposed gravity sewer mains serving commercial and industrial properties can convey a peak flow of 2.89 times the average daily flow. Maximum velocities in all pipes are below 9.0 fps. Table B.2 in Appendix B presents detailed wastewater flow calculations for the Project by their corresponding outfall.

As previously noted, once the existing 12-inch sewer main reaches Indian School Road, it upsizes to 18-inches. Per the *Citrus Road Sanitary Sewer – Project No. WW0604* (Dibble Engineering, 2009) as-built construction documents, the minimum slope of the existing 18-inch sewer is 0.0033 ft/ft. The total average daily flow and peak daily flow anticipated to flow through the existing 18-inch sewer main from both the Project and the Sedella development west of the Project is 938,519 gpd and 2,712,320 gpd, respectively. The anticipated depth/Diameter (d/D) for the existing 18-inch sewer main is 61.3%. Because the d/D ratio is less than that required by the City (65%, see Table 1), it is understood that the existing 18-inch offsite sewer main has sufficient capacity to convey the projected flows from both the Project as well as the existing Sedella development. Table B.3 in Appendix B provides detailed calculations for the existing 18-inch offsite sewer capacity.

7.0 CONCLUSIONS

- This Master Wastewater Report provides the locations and sizes of the proposed wastewater collection system infrastructure to convey flows from Section 23, Township 2 North, Range 2 West to the existing 12-inch and 18-inch sewer mains in Citrus Road. The western and northwest portion of Section 23 will flow to the existing 12-inch sewer main through gravity while the eastern, northeastern, and southern portion will gravity flow to a lift station that will ultimately convey flows through a proposed force main and downstream 12-inch, 15-inch, and 18-inch gravity sewer mains to the existing 18-inch sewer main in Citrus Road.
- The proposed wastewater collection system consists of a network of 8-inch, 10-inch, 12-inch, 15-inch, and 18-inch gravity sewer mains and a 6-inch force main that generally route wastewater flows to the west. The proposed system generally meets the City of Goodyear design criteria outlined in Table 1 and discussed in Section 4.2 of this report.
- The projected total average daily flow and peak flow generated by the Project is 425,759 gpd (295.7 gpm) and 1,230,442 gpd (854.5 gpm), respectively. Peak capacity is projected to be 1,557,375 gpd (1,081.5 gpm).
- The existing 18-inch sewer main in Citrus Road has sufficient capacity to convey flows from both the Project and the Sedella development west of the Project with a d/D of 61.3%.

8.0 REFERENCES

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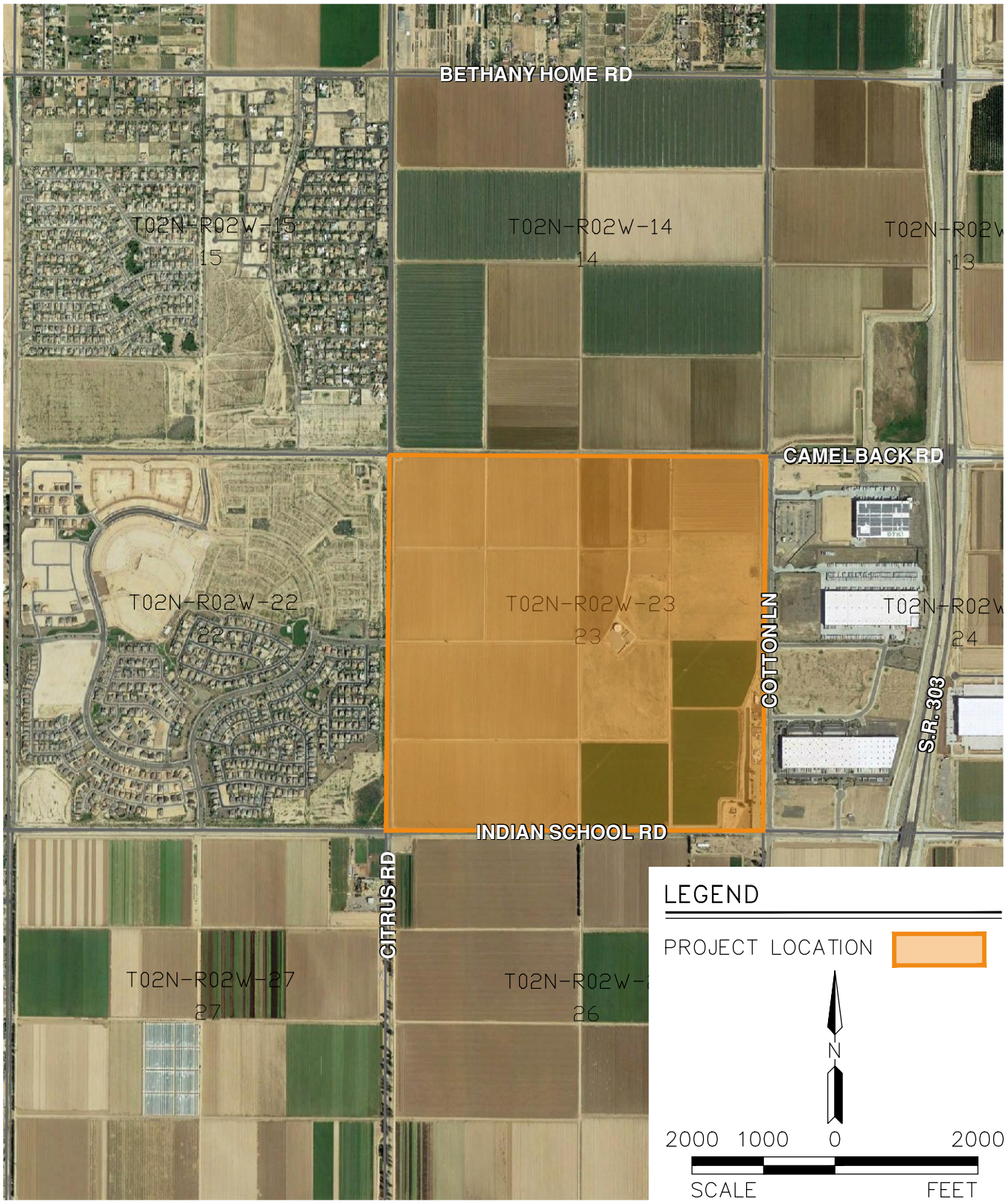
APPENDIX A

FIGURES



PROJ.NO.:	1838
DATE:	OCT 2018
SCALE:	1" = 2000'
DRAWN BY:	MAJ
CHECKED BY:	MI

SECTION 23 IMPROVEMENTS WASTEWATER MASTER PLAN

SEC CITRUS RD & CAMELBACK RD
GOODYEAR, ARIZONA

FIG 1: VICINITY MAP

HILGARTWILSON
2141 E. HIGHLAND AVE., STE. 250
PHOENIX, AZ 85016
P: 602.490.0535 / F: 602.368.2436

LEGEND

PROPERTY BOUNDARY

GRAVITY VS LIFT STATION SERVICE DEMARCATION

LIFT STATION

N

600 300 0 600 1200

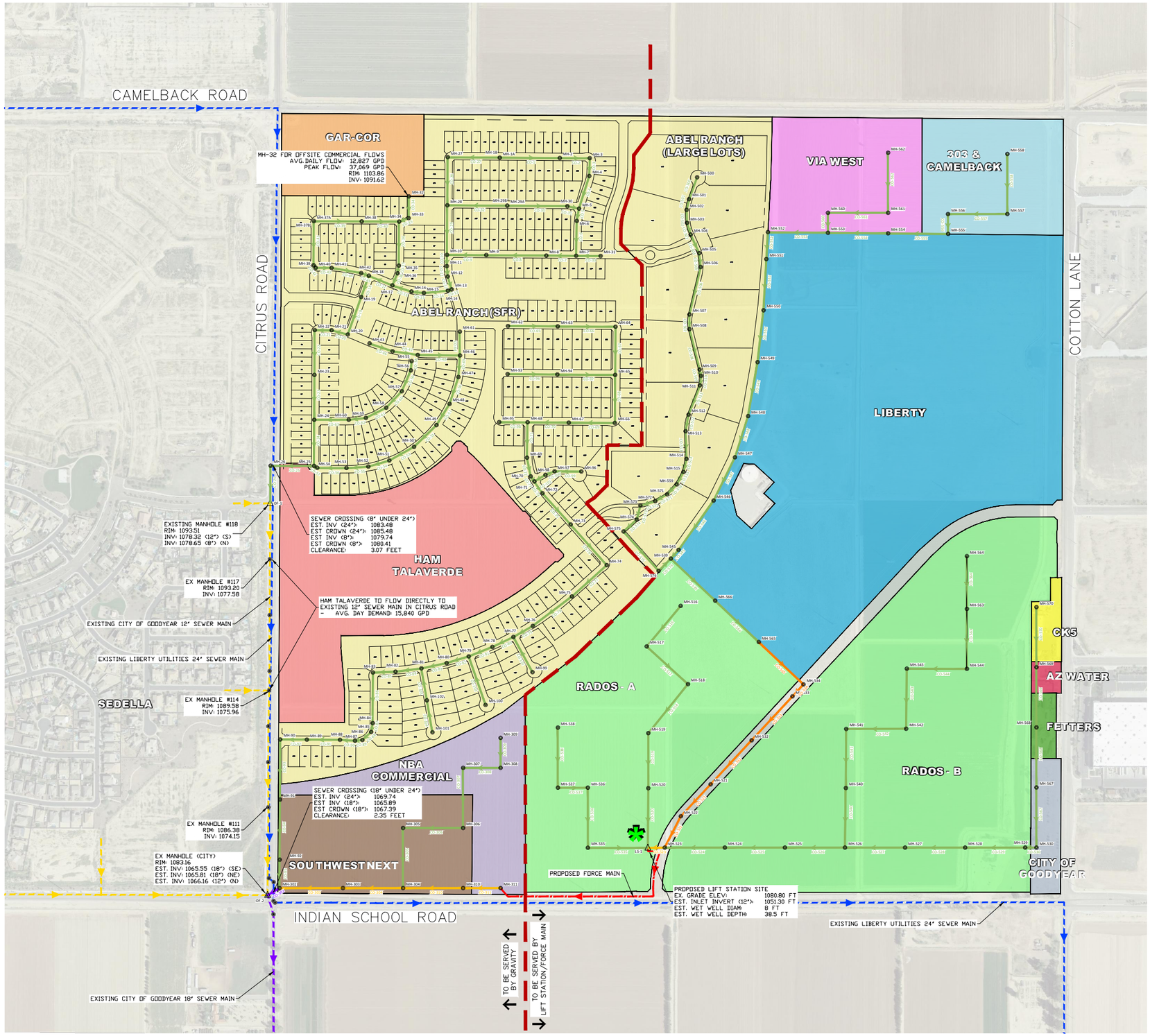
SCALE FEET

HILGARTWILSON
2141 E. HIGHLAND AVE., STE. 250
PHOENIX, AZ 85016
P: 602.490.0535 / F: 602.368.2436

SECTION 23 IMPROVEMENTS WASTEWATER MASTER PLAN
NEC CITRUS RD & INDIAN SCHOOL RD
GOODYEAR, ARIZONA

FIG 2: DEVELOPMENT MAP

PROJ. NO.: 1838
DATE: MAR 2019
SCALE: 1" = 600'
DRAWN BY: MAJ
CHECKED BY: MI



LEGEND

- PROPERTY BOUNDARY
- GRAVITY VS LIFT STATION SERVICE DEMARCATION
- PROPOSED FORCE MAIN
- PROPOSED GRAVITY MAIN
- EXISTING GRAVITY MAIN
- PROPOSED SEWER MANHOLE
- PROPOSED OUTFALL
- PROPOSED LIFT STATION

COLOR CODING LEGEND
CONDUIT: DIAMETER (IN)

- = 8.0
- = 10.0
- = 12.0
- = 15.0
- = 18.0
- = 24.0

NOTES

1) LAND USE PLAN FOR ABEL RANCH PROVIDED BY ANDERSONBARON (11/22/2017).
2) SEWER ALIGNMENTS SERVING AND BEING SERVED BY THE PROPOSED LIFT STATION ARE CONCEPTUAL AND SUBJECT TO CHANGE.

N

700 350 0 700
SCALE FEET

HILGARTWILSON
2141 E. HIGHLAND AVE., STE.250
PHOENIX, AZ 85016
P: 602.490.0535 / F: 602.368.2436

SECTION 23 IMPROVEMENTS WASTEWATER MASTER PLAN
SEC CAMELBACK ROAD & CITRUS ROAD
GOODYEAR, ARIZONA

FIG 3: WASTEWATER SYSTEM IMPROVEMENTS

PROJ.#	1838
DATE:	MAY 2019
SCALE:	1"=700'
DRAWN BY:	MAJ
CHECKED BY:	MI

Table B.1 - Wastewater Flow Calculations

Section 23 Improvements Master Plan

Goodyear, Arizona

March 2019

HILGARTWILSON

Calculated By: MAJ

Checked By: MI

Parcel	Land Use / Zoning	Gross Area	Commercial Area	Industrial Area	Dwelling Units	Density	Average Daily Flow		Peak Flow[2]		Peak Capacity[3]	
		(ac)	(ac)	(ac)		(DU/ac)	(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)
GRAVITY SEWER PARCELS												
Abel Ranch	SFR	160.8	-	-	438	2.7	63,072	43.8	182,278	126.6	438,000	304.2
Ham Talaverde, LLC.	SFR	44.1	-	-	110	2.5	15,840	11.0	45,778	31.8	110,000	76.4
Gar-Cor, LLC.	Regional Commercial	11.8	11.8	-	-	-	12,827	8.9	37,069	25.7	37,069	25.7
Southwest Next	Regional Commercial	19.8	19.8	-	-	-	21,523	14.9	62,200	43.2	62,200	43.2
NBA Commercial	Regional Commercial	16.1	16.1	-	-	-	17,501	12.2	50,577	35.1	50,577	35.1
GRAVITY SEWER PARCELS SUBTOTAL:		252.6	47.7	0.0	548	-	130,762	90.8	377,902	262.4	697,846	484.6
LIFT STATION ONLY PARCELS												
Abel Ranch (Large Lots)	SFR (Large Lots)	53.2	-	-	13	0.2	2,080	1.4	6,011	4.2	13,000	9.0
Via West C&C, LLC.	General Commercial	17.8	17.8	-	-	-	19,349	13.4	55,917	38.8	55,917	38.8
303 & Camelback, LLC.	Regional Commercial	15.4	15.4	-	-	-	16,740	11.6	48,378	33.6	48,378	33.6
Liberty Property LP	Light Industrial	110.3	-	110.3	-	-	89,895	62.4	259,795	180.4	259,795	180.4
RADOS Properties (A)	Regional Commercial	55.4	55.4	-	-	-	60,220	41.8	174,035	120.9	174,035	120.9
RADOS Properties (B)	Regional Commercial	91.2	91.2	-	-	-	99,134	68.8	286,498	199.0	286,498	199.0
CK5 Investments, LLC.	Light Industrial	2.2	-	2.2	-	-	1,793	1.2	5,182	3.6	5,182	3.6
Arizona Water Company	Light Industrial	1.2	-	1.2	-	-	978	0.7	2,826	2.0	2,826	2.0
Fetters, LLC.	Light Industrial	1.7	-	1.7	-	-	1,386	1.0	4,004	2.8	4,004	2.8
City of Goodyear	Light Industrial	4.2	-	4.2	-	-	3,423	2.4	9,892	6.9	9,892	6.9
LIFT STATION PARCELS SUBTOTAL:		352.6	179.8	119.6	13	-	294,997	204.9	852,540	592.0	859,529	596.9
GRAND TOTAL:		605.2	227.5	119.6	561	-	425,759	295.7	1,230,442	854.5	1,557,375	1,081.5

Notes:

1. Design criteria based on Chapter 6 of the *Engineering Design Standards and Policies Manual* (City of Goodyear, 2017).
2. Peak Flow represents pipes larger than 12-inches in diameter. Peaking factor for both residential and commercial use is 2.89.
3. Peak Capacity represents pipes 12-inches and smaller in diameter. Peaking factor for residential use is 1,000 gpd/DU and peaking factor for commercial/industrial use is 2.89.

Flow Factors:

Residential (< 2 DU/ac):	160	gallons/dwelling unit/day
Residential (2-4 DU/ac):	144	gallons/dwelling unit/day
Regional Commercial:	1,087	gallons/acre/day
Light Industrial:	815	gallons/acre/day

Peaking Factors:

Peak Flow:	2.89	x Average Daily Flow	
Peak Capacity (8 to 12-inch sewer lines):	1,000	gallons/dwelling unit/day	(not less than when flowing full)

Table B.2 - Wastewater Flow Calculations by Outfall

Section 23 Improvements Master Plan

Goodyear, Arizona

March 2019

HILGARTWILSON

Calculated By: MAJ

Checked By: MI

Parcel	Land Use / Zoning	Commercial Area	Industrial Area	Dwelling Units	Average Daily Flow		Peak Flow[2]		Peak Capacity[3]	
		(ac)	(ac)		(gpd)	(gpm)	(gpd)	(gpm)	(gpd)	(gpm)
OUTFALL 1 (OF-1)										
Abel Ranch	SFR	-	-	263	37,872	26.3	109,450	76.0	263,000	182.6
Gar-Cor, LLC.	Regional Commercial	11.8	-	-	12,827	8.9	37,069	25.7	37,069	25.7
OUTFALL 1 (OF-1) SUBTOTAL:		11.8	0.0	263	50,699	35.2	146,519	101.7	300,069	208.4
LIFT STATION 1 (LS-1)[5]										
Abel Ranch (Large Lots)	SFR (Large Lots)	-	-	13	2,080	1.4	6,011	4.2	13,000	9.0
Via West C&C, LLC.	General Commercial	17.8	-	-	19,349	13.4	55,917	38.8	55,917	38.8
303 & Camelback, LLC.	Regional Commercial	15.4	-	-	16,740	11.6	48,378	33.6	48,378	33.6
Liberty Property LP	Light Industrial	-	110.3	-	89,895	62.4	259,795	180.4	259,795	180.4
RADOS Properties (A)	Regional Commercial	55.4	-	-	60,220	41.8	174,035	120.9	174,035	120.9
RADOS Properties (B)	Regional Commercial	91.2	-	-	99,134	68.8	286,498	199.0	286,498	199.0
CK5 Investments, LLC.	Light Industrial	-	2.2	-	1,793	1.2	5,182	3.6	5,182	3.6
Arizona Water Company	Light Industrial	-	1.2	-	978	0.7	2,826	2.0	2,826	2.0
Fetters, LLC.	Light Industrial	-	1.7	-	1,386	1.0	4,004	2.8	4,004	2.8
City of Goodyear	Light Industrial	-	4.2	-	3,423	2.4	9,892	6.9	9,892	6.9
LIFT STATION PARCELS SUBTOTAL[4]:		179.8	119.6	13	294,997	204.9	852,540	592.0	859,529	596.9
OUTFALL 2 (OF-2)										
Lift Station 1 (LS-1) Parcels		179.8	119.6	13	294,997	204.9	852,540	592.0	859,529	596.9
Abel Ranch	SFR	-	-	175	25,200	17.5	72,828	50.6	175,000	121.5
Southwest Next	Regional Commercial	19.8	-	-	21,523	14.9	62,200	43.2	62,200	43.2
NBA Commercial	Regional Commercial	16.1	-	-	17,501	12.2	50,577	35.1	50,577	35.1
OUTFALL 3 (OF-3) SUBTOTAL:		215.7	119.6	188	359,220	249.5	1,038,146	720.9	1,147,306	796.7
PROPERTIES TO DIRECT FLOW TO EXISTING SEWER INFRASTRUCTURE										
Ham Talaverde, LLC.	SFR	-	-	110	15,840	11.0	45,778	31.8	110,000	76.4
OTHER SUBTOTAL:		0.0	0.0	110	15,840	11.0	45,778	31.8	110,000	76.4
GRAND TOTAL[5]:		227.5	119.6	561	425,759	295.7	1,230,442	854.5	1,557,375	1081.5

Notes:

1. Design criteria based on Chapter 6 of the *Engineering Design Standards and Policies Manual* (City of Goodyear, 2017).
2. Peak Flow represents pipes larger than 12-inches in diameter. Peaking factor for both residential and commercial use is 2.89.
3. Peak Capacity represents pipes 12-inches and smaller in diameter. Peaking factor for residential use is 1,000 gpd/DU and peaking factor for commercial/industrial use is 2.89.
4. Lift Station (LS-1) subtotals DO NOT get added to the Grand Total as these flows ultimately outfall to Outfall 3 (OF-3).

Flow Factors:

Residential (< 2 DU/ac):	160	gallons/dwelling unit/day
Residential (2-4 DU/ac):	144	gallons/dwelling unit/day
Regional Commercial:	1,087	gallons/acre/day
Light Industrial:	815	gallons/acre/day

Peaking Factors:

Peak Flow:	2.89	x Average Daily Flow	
Peak Capacity (8 to 12-inch sewer lines):	1,000	gallons/dwelling unit/day	(not less than when flowing full)

APPENDIX B

TABLES

Table B.3 - Offsite Sewer Capacity

Project: Section 23 Improvements Wastewater Master Plan
Prepared By: Matthew Jessop
March, 2019
Scenario: Total Flow From Site to Existing 18" Sewer

HILGARTWILSON
ENGINEER | PLAN | SURVEY | MANAGE

Sedella Development[2]:	512,760	gallons/day
Section 23 Improvements:	425,759	gallons/day
Total Average Day Flow:	938,519	gpd
Peaking Factor:	2.89	
Total Peak Flow:	2,712,320	gpd

Pipe Parameters:

Sewer Diameter (D):	18	in.
Manning's n-value (n):	0.013	
Minimum Slope (S)[1]:	0.0033	ft/ft
Hydraulic Radius (R):	0.421	ft (part full pipe)
Hydraulic Radius (R):	0.375	ft (full pipe; R=D/4)

Manning's Equation: V = (1.486/n) * R^(2/3) * S^(1/2)

Velocity (V, part full pipe):	3.70	fps
Velocity (V, full pipe):	3.42	fps
Depth/Diameter (d/D):	61.3%	
% Capacity (Flow/Capacity, Q/Q_{full}):	69.4%	

Q = (1.49/n) * A * R^(2/3) * S^(1/2)

Pipe Capacity (Full Flow):	6.05	cfs
	3,910,552	gpd
Capacity (Excess Design):	1,197,966	gpd

Depth/Diameter (d/D) is less than 65% under peak flow conditions, therefore adequate capacity is available.

Notes:

1) Minimum slope in existing 18-inch sewer main in Citrus Road from Indian School Road to McDowell Road is 0.0033 ft/ft per the *Citrus Road Sanitary Sewer – Project No. WW0604* (Dibble Engineering, 2009) as-built construction documents.
2) Sedella development average daily flows taken from the *Wastewater Master Plan for Sedella* (RBF Consulting, 2005).

APPENDIX C

EXCERPTS FROM

HILGARTWILSON Requested Waiver for Reduced Cover in Abel Ranch (May, 2018)

City of Goodyear 2016 Integrated Water Master Plan (

ENGINEERING DEPARTMENT
14455 W. Van Buren Street, Suite D101, Goodyear, Arizona 85338
Phone: (623) 882-3110

Request for Waiver

Applicant Information:

Name: MARK IPSON P.E. Phone: 602-490-0535

Address: 2141 E. HIGHLAND AVE, STE 250 City: PHOENIX State: AZ

e-mail: MIPSON@HILGARTWILSON.COM

Name of Development: ABEL RANCH HTE #: 18-200-0002

Describe the Waiver Request:

1. **Cite what City of Goodyear Engineering Design Standard and Policy Manual (EDS&PM) section that you would like waived or modified.**
2. **Describe why the waiver is requested.**
3. **Describe the proposed recommendation.**
4. **Provide justification for the waiver. Attach relevant information that may be needed for City staff to review and evaluate the request. Relevant information may include, but is not limited to, citing other federal, state, and local standards, or previous studies.**
5. **Discuss the impacts of granting the waiver. Include items like risk, safety, user disruption, user benefit, constructability, and maintenance.**
6. **Describe alternatives to granting the waiver.**

Registered Professional Engineer (Civil) CERTIFICATE NO 50462 MARK K. IPSON Date Signed 3-29-18 ARIZONA U.S.A. Expires 12-31-2019

Professional Engineer's Seal

Mark K

Applicant

3-29-18

Date

City Response

Waiver Approved ✓ Waiver Denied _____

Comments: _____

City Engineer

9/18/18

Date

Note: Please submit the waiver to the Engineering Department through the assigned reviewer.

HILGARTWILSON
ENGINEER | PLAN | SURVEY | MANAGE

May 2, 2018

Alex Lestinsky
City of Goodyear
195 North 145th Avenue
Goodyear, Arizona 85338

Registered Professional Engineer (Civil)
CERTIFICATE NO.
53637
ZACH
HILGART
Date Signed 5-2-18
ARIZONA U.S.A.
Expires 6/30/2018

RE: Abel Ranch
Rezone Case No. 18-200-00002
Request for Waiver – Sewer Cover

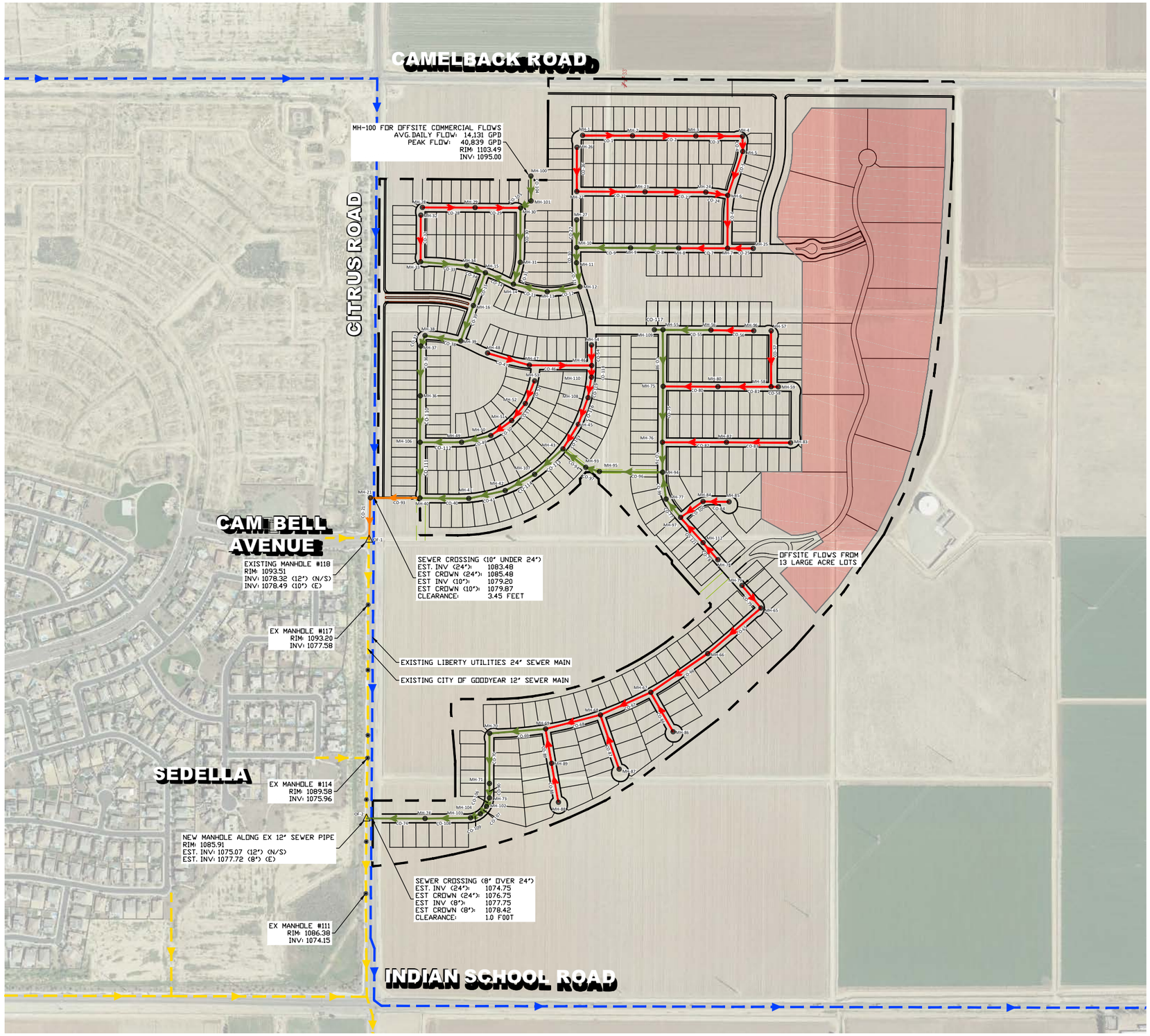
Dear Alex:

HILGARTWILSON is working on a rezone for Abel Ranch (the Project). The Project is located at the northeast corner of Citrus Road and Indian School Road within the City of Goodyear, Arizona (City).

This Request for Waiver (Request) pertains to the permissible sewer cover within the Project. Specifically, we request the City allow the minimum sewer cover to be reduced to 5-feet (from the typical minimum 6-feet listed in the City's EDS&PM Section 6.3.1.F.2). The anticipated locations are depicted on the attached exhibit. This reduction will allow the Project to be served by a gravity sewer solution while still maintaining minimum sewer slopes and velocities found in the City's EDS&PM Section 6.3.1.B. Per previous discussions with the City, at locations where the sewer cover is less than 6-feet, SDR-26 PVC sewer pipe will be used. Additionally, minimum required cover and separation requirements pertaining to all other utilities including water lines will be met. The requested reduction in minimal sewer depth will benefit the end user by providing substantial cost savings by using a gravity sewer solution in lieu of a costly lift station and force main. The reduction also results in limited maintenance as the pipe hydraulics will still meet minimum City standards and will eliminate the need for future operation and maintenance of a lift station. If the waiver is not granted, a lift station would be needed, or, to maintain a gravity solution, sewer slopes would have to be reduced below the City's standard and manhole drops would have to be eliminated. Accordingly, we believe that this Request meets the intent of the City's design standards.

Respectfully Submitted,

Zach Hilgart, P.E.
Principal\Senior Project Manager
HILGARTWILSON, LLC



LEGEND

- PROJECT BOUNDARY
- PROPOSED GRAVITY MAIN
- EXISTING GRAVITY MAIN
- PROPOSED SEWER MANHOLE
- PROPOSED OUTFALL
- LARGE ACRE LOTS TO BE SERVED BY ALTERNATIVE SOLUTION AS APPROVED BY THE CITY

EXISTING SEWER TRUNK MAINS

- CITY OF GOODYEAR
- LIBERTY UTILIITIES

COLOR CODING LEGEND
CONDUIT: DIAMETER (IN)

- = 8.0 (COVER 6'+)
- = 8.0 (COVER 5'-6')
- = 10.0
- = 12.0
- = 24.0

NOTES

1) LAND USE PLAN PROVIDED BY ANDERSONBARON (11/22/2017).

N

600 300 0 600

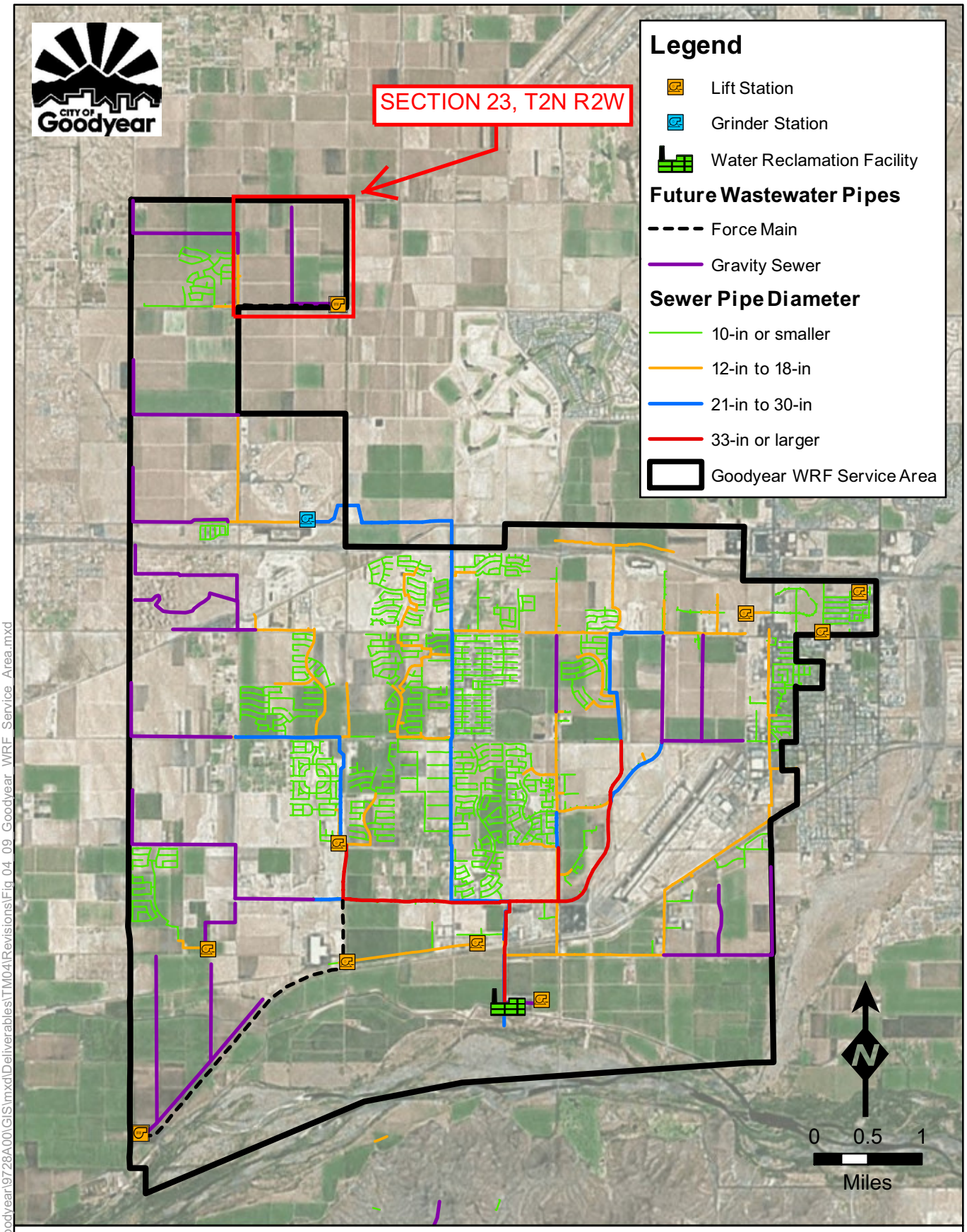
SCALE FEET

HILGARTWILSON
2141 E. HIGHLAND AVE., STE. 250
PHOENIX, AZ 85016
P: 602.490.0535/ F: 602.368.2436

ABEL RANCH
SEC CAMELBACK ROAD & CITRUS ROAD
GOODYEAR, ARIZONA

FIG 2: WASTEWATER SYSTEM IMPROVEMENTS

PROJ.#	1838
DATE:	MAR 2018
SCALE:	1"=600'
DRAWN BY:	RG
CHECKED BY:	ZH



BUILDOUT GOODYEAR WRF SERVICE AREA INFRASTRUCTURE

FIGURE 4.9

CITY OF GOODYEAR

2016 INTEGRATED WATER MASTER PLAN

Date: May 02, 2016
File Path: M:\Client\Goodyear\9728A00\GIS\mxd\Deliverables\TM04\Revisions\Fig_04_09_Goodyear_WRF_Service_Area.mxd

The location of future treatment facilities shown in Figure 4.11 is based on the locations identified in the MAG 208 plan. The actual location of treatment facilities will need to be based on actual development plans, which are as yet, largely undefined for WPA 5. It is recommended that the capacity of future water reclamation facilities be maximized in order for the City to benefit from potential cost savings due to economies of scale that occur with regional facilities. This may result in one or two water reclamation facilities serving the Sonoran Valley rather than three.

4.7.9 Compliance with MAG 208 Plan

The MAG 208 Water Quality Management Plan identifies six WRFs in the Goodyear Service Area that would serve customers in WPAs 2 - 4. An amendment to the MAG 208 Plan identifies an additional four WRFs that would ultimately serve customers in WPA 5. Table 4.18 summarizes these facilities, their proposed capacities and the WPA they would serve.

Table 4.18 Goodyear Water Reclamation Facilities Identified in the MAG 208 Water Quality Management Plan
2016 Integrated Water Master Plan
City of Goodyear

WRF	Ultimate Capacity (mgd) [1]	IWMP Flow Projection (mgd) [2]	Water Planning Area
Goodyear (157th)	15.0	12.8	WPA 2
Corgett	2.0	2.5	WPA 3
Rainbow Valley	6.0	5.7	WPA 3/4
Pecos	8.0	9.1	WPA 4
Waterman Wash	10.0	11.9	WPA 4
Estrella [2]	2.7	2.6	WPA 5
SLWRF	4.75	10.9	WPA 5
SRWRF	24		WPA 5
S23WRF	0.6		WPA 5
S28WRF	0.6		WPA 5

Notes:
(1) From MAG 208 Water Quality Management Plan
(2) Projected flows based on full development of service area (Entitlement Levels 1 - 4)
Not explicitly defined in the MAG 208 Plan

In general the planned capacity of the WRFs is close to the projected future flows for each service basin. Given the level of accuracy possible with flow projections and uncertainties associated with future growth, no action is recommended to adjust the capacities of the

APPENDIX D

LIFT STATION AND FORCE MAIN CALCULATIONS

Client:	City of Goodyear	Calculated By:	MAJ	Date:	3/15/19
Project:	Section 23 Wastewater Master Plan	Checked By:	MI	Date:	3/28/19
Detail:	Pump Station Hydraulic Calculations	Reviewed By:	MI	Date:	3/28/19
				Revision #:	0

1.0 Purpose/Objective

These calculations are used to determine the head losses in the pumping system described below. The head losses are then used to select a pump.

Pump System: Lift Station Pumps

Pump Type: Horizontal End Suction (Submersible)

Pump From: Section 23 Wastewater Lift Station

Pump To: Receiving manhole offsite

Description: Two Submersible pumps in wet well
Two 6-inch Pressure Class 350 DIP force mains

2.0 Procedure

A. Determine the static head
- Determine the minimum, normal, and maximum water surface elevation on the suction side and on the discharge side.
- Determine the required delivery pressure.

B. Determine the dynamic head
- Using an assumed flow and pipe diameter, determine the velocity through the system.
- Use the calculated velocity to determine the velocity head.
- Use the calculated velocity head and the sum of the minor loss K-values to determine the minor losses.
- Use the assumed flow, pipe diameter, pipe length, and appropriate Hazen-Williams C-factor (based on the pipe material) to determine the friction losses.
- Add the minor losses to the friction losses.

C. Determine the Total Dynamic Head (TDH) by adding the static head to the dynamic head.

D. Determine the NPSHa for the pumping system.
- Look up the atmospheric pressure and the vapor pressure for the assumed impeller elevation (vapor pressure will vary depending on temperature of the fluid).
- Determine the static head on the pump.
- Determine the dynamic head losses (minor and friction) on the suction side of the pump.
- Calculate the NPSHa by adding the atmospheric pressure to the static head on the pump and subtracting the suction losses and the vapor pressure.

3.0 References/Data Sources

A. Water Resources Engineering, Larry W. Mays, 2005 edition, Pages 61-66, 419-437.

B. Cameron Hydraulic Data, ed. C.C. Heald, 19th edition., Section 3.

4.0 Calculations

A. Determine the static head

Normal Head = Normal Discharge WSE - Normal Suction WSE + Delivery Pressure Requirements

High Head = Maximum Discharge WSE - Minimum Suction WSE + Delivery Pressure Requirements

Low Head = Minimum Discharge WSE - Maximum Suction WSE + Delivery Pressure Requirements

B. Determine the dynamic head

- Determine the velocity.

Where:
v = velocity (ft/s)
Q = flow (ft^3/s)
A = area (ft^2)
d = pipe diameter (ft)

$$v = Q / A = \frac{Q}{\pi d^2 / 4}$$

- Determine the velocity head.

Where:
vh = velocity head (ft)
v = velocity (ft/s)
g = gravity constant (ft/s^2)

$$v\ h = \frac{v^2}{2\ g}$$

- Determine the minor losses.

Where:
h_m = minor head losses (ft)
k = fitting loss coefficient
vh = velocity head (ft)

$$h_m = \left(\sum k\right) \times vh$$

- Determine the friction losses.

Where:
h_l = friction head losses (ft)
L = length of pipe (ft)
d = pipe diameter (ft)
Q = flow (ft^3/s)
C = Hazen-Williams friction factor

$$h_l = 4.73\left(\frac{L}{d^{4.87}}\right)\left(\frac{Q}{C}\right)^{1.85}$$

C. Determine the Total Dynamic Head (TDH) by adding the static head to the dynamic head.

D. Determine the NPSHa for the pumping system.

- Look up the atmospheric pressure and the vapor pressure for the assumed impeller elevation (vapor pressure will vary depending on temperature of the fluid).

- Determine the static head on the pump.

Static head on the pump = Minimum Suction Water Surface Elevation - Impeller Elevation

- Determine the dynamic head losses (minor and friction) on the suction side of the pump. See steps and equations outlined in step B above.

- Calculate the NPSHa by adding the atmospheric pressure to the static head on the pump and subtracting the suction losses and the vapor pressure.

Lift Station Design Calculations (Buildout)

Section 23 Improvements Master Plan

Goodyear, Arizona
March 2019

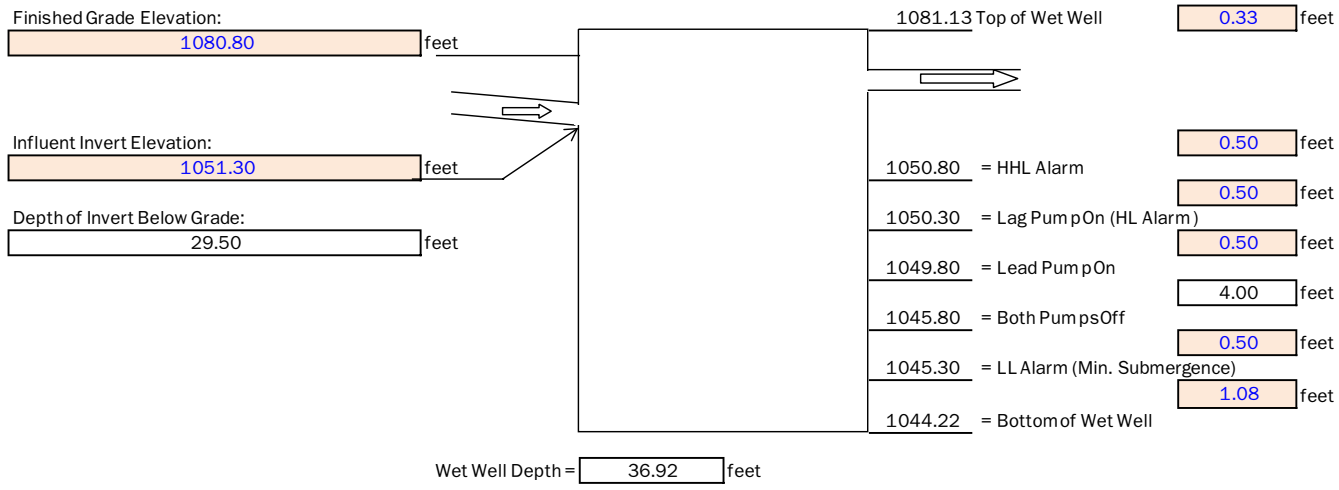
Calculated By: MAJ
Checked By: MI

1.0 Lift Station Flows (Ultimate Build-Out)

1.01 Average Flow	294,997	gpd	=	204.9 gpm
1.02 Peak Factor	2.89			
1.03 Peak Flow	852,540	gpd	=	592.0 gpm
1.04 Design Pumping Rate	592.0	gpm		
1.05 Target Cycle Time	10	minutes		

2.0 Wet Well

6.01 Wet Well Diameter	8.00	feet	
6.02 Wet Well Area	50.27	feet	
6.03 Volume per Vertical Linear Feet	376.04	gallons/vertical foot	
6.04 Required Wet Well Operating Volume	1,480.10	gallons	Note: V = QT/4
6.05 Corresponding Operating Band Height	3.94	feet	
6.06 Selected Operating Band Height	4.00	feet	
6.07 Wet Well Levels:			



Wet Well Depth = 36.92 feet

6.08 Wet Well Operating Volume Provided	1,504	gallons
6.09 Wet Well Storage Volume Provided	1,880	gallons

3.0 Pump Cycling (Ultimate Build-out)

	1/2 Average Day	Average Day	1/2 of Pumping Rate
3.01 Operating Volume (to Lead Pump On)	1,504.14 gallons	1,504.14 gallons	1,504.14 gallons
3.02 Influent Flow Rate	102.4 gpm	204.9 gpm	296.0 gpm
3.03 Time to Fill	14.7 minutes	7.3 minutes	5.1 minutes
3.04 Time to Drain	3.1 minutes	3.9 minutes	5.1 minutes
3.05 Total Cycle Time	17.8 minutes	11.2 minutes	10.2 minutes
3.06 Maximum Cycles Per Hour	3 cycles	5 cycles	6 cycles

3.07 Time to Drain Total Wet Well Storage Volume	3.2	minutes
3.08 Retention Times of greater than	30	minutes
will be experienced at influent flows less than	55.3	gpm

Client:	**City of Goodyear**	**Calculated By:**	**MAJ**	**Date:**	**3/15/19**	**Revision#:**	**0**
Project:	**Section 23 Wastewater Master Plan**	**Checked By:**	**MI**	**Date:**	**3/28/19**		
Detail:	**Pump Station Hydraulic Calculations**	**Reviewed By:**	**MI**	**Date:**	**3/28/19**		
	System Calculations at Build-out						

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Static Head:

Minimum Suction Water Surface Elevation (ft) =	1045.80
Normal Suction Water Surface Elevation (ft) =	1049.80
Maximum Suction Water Surface Elevation (ft) =	1050.30
Minimum Discharge Water Surface Elevation (ft) =	1077.02
Normal Discharge Water Surface Elevation (ft) =	1077.52
Maximum Discharge Water Surface Elevation (ft) =	1078.19
~~Delivery Pressure Requirement (psi)~~ =	~~0~~

NPSHa Calculations:

Impeller Elevation (ft) =	1044.50
Atmospheric Pressure (ft) =	32.64
Static Head on Pump Suction (ft) =	1.3
Suction Losses (ft) =	3.9
Vapor Pressure (ft) =	0.84
NPSHa (ft) =	29.2
Max Allowable NPSHr (ft) =	26.2

Liquid Properties:

Liquid =	Water
Temperature (°F) =	70
Kinematic Viscosity (ft²/s) =	1.059E-05
Vapor Pressure (ft) =	0.84
Specific Gravity =	1

System Curve Summaries (used to plot system curves)

Dynamic Head Loss Multiplier = 1

Normal Head (Buildout)

Static Head (ft) = 27.7

StoneHaven Pump On

Flow (gpm)	Total Head (ft)
0	27.7
197	32.7
395	46.2
592	67.4
789	95.8
987	131.4

High Head (Buildout)

Static Head (ft) = 32.4

StoneHaven Pump On

Flow (gpm)	Total Head (ft)
0	32.4
197	38.9
395	56.2
592	83.3
789	119.8
987	165.2

Low Head (Buildout)

Static Head (ft) = 26.7

StoneHaven Pump On

Flow (gpm)	Total Head (ft)
0	26.7
197	30.8
395	41.8
592	59.1
789	82.5
987	111.7

Type of Fitting	Entrance	Increaser	Check Valve	Air Release Valve	Flowmeter	90s	45s	22.5s	Plug Valve	Run of Wye / Tee	Exit
K-Value	0.5	0.15	2	1	0.5	0.4	0.2	0.1	1	0.25	1
Pump Exit at 4"	1	1									
6-inch Discharge Piping			1			4			1	1	
6-inch Force Main				2	1	3	4		1	2	1

Notes:
Pump Exit at 4"
6" DIP force main from pump exit to the 6" DIP force main
6" DIP force main to the onsite receiving manhole

System Operation

StoneHaven Pump On

Number of Pumps = 1

Pipe Section	Flow Through Pipe: Flow (mgd)	Flow (gpm)	Flow (cfs)	Internal Pipe Diameter (inches)	Velocity (ft/s)	Velocity Head (feet)	K-Values											Sum of Ks	Minor Loss (feet)	Friction Losses (feet): Length of Pipe (feet)	Hazen - Williams C-Values 110	130	150	Total Dynamic Loss (feet): Hazen - Williams C-Values 110	130	150
Pump Exit at 4"	0.3	197	0.44	4.15	4.7	0.34	0.5	0.15	0	0	0	0	0	0	0	0	0	0.7	0.2	1	0.0	0.0	0.0			
6-inch Discharge Piping	0.3	197	0.44	6.40	2.0	0.06	0	0	2	0	0	1.6	0	0	1	0.25	0	4.9	0.3	50.0	0.2	0.1	0.1			
6-inch Force Main	0.3	197	0.44	6.40	2.0	0.06	0	0	0	2	0.5	1.2	0.8	0	1	0.5	1	7.0	0.4	1450.0	5.4	3.9	3.0	6.5	5.0	4.1
Pump Exit at 4"	0.6	395	0.88	4.2	9.4	1.36	0.5	0.15										0.7	0.9	1	0.1	0.1	0.1			
6-inch Discharge Piping	0.6	395	0.88	6.4	3.9	0.24			2			1.6			1	0.25		4.9	1.2	50.0	0.7	0.5	0.4			
6-inch Force Main	0.6	395	0.88	6.4	3.9	0.24				2	0.5	1.2	0.8		1	0.5	1	7.0	1.7	1450.0	19.3	14.2	10.9	23.8	18.5	15.1
Pump Exit at 4"	0.9	592	1.32	4.2	14.0	3.06	0.5	0.15										0.7	2.0	1	0.2	0.2	0.1			
6-inch Discharge Piping	0.9	592	1.32	6.4	5.9	0.54			2			1.6			1	0.25		4.9	2.6	50.0	1.4	1.0	0.8			
6-inch Force Main	0.9	592	1.32	6.4	5.9	0.54				2	0.5	1.2	0.8		1	0.5	1	7.0	3.8	1450.0	40.9	30.0	23.0	50.9	39.6	32.4
Pump Exit at 4"	1.1	789	1.76	4.2	18.7	5.44	0.5	0.15										0.7	3.5	1	0.4	0.3	0.2			
6-inch Discharge Piping	1.1	789	1.76	6.4	7.9	0.96			2			1.6			1	0.25		4.9	4.7	50.0	2.4	1.8	1.4			
6-inch Force Main	1.1	789	1.76	6.4	7.9	0.96				2	0.5	1.2	0.8		1	0.5	1	7.0	6.7	1450.0	69.6	51.1	39.2	87.4	68.1	55.8
Pump Exit at 4"	1.4	987	2.20	4.2	23.4	8.51	0.5	0.15										0.7	5.5	1	0.6	0.4	0.3			
6-inch Discharge Piping	1.4	987	2.20	6.4	9.8	1.50			2			1.6			1	0.25		4.9	7.3	50.0	3.6	2.7	2.0			
6-inch Force Main	1.4	987	2.20	6.4	9.8	1.50				2	0.5	1.2	0.8		1	0.5	1	7.0	10.5	1450.0	105.2	77.3	59.3	132.8	103.7	85.0

Client: City of Goodyear
Project: 1838 - Section23 Wastewater Master Plan
Detail: System Curve

Calculated By: MAJ Date: 3/15/2019
Checked By: MI Date: 3/28/2019
Reviewed By: MI Date: 3/28/2019

Revision #: --

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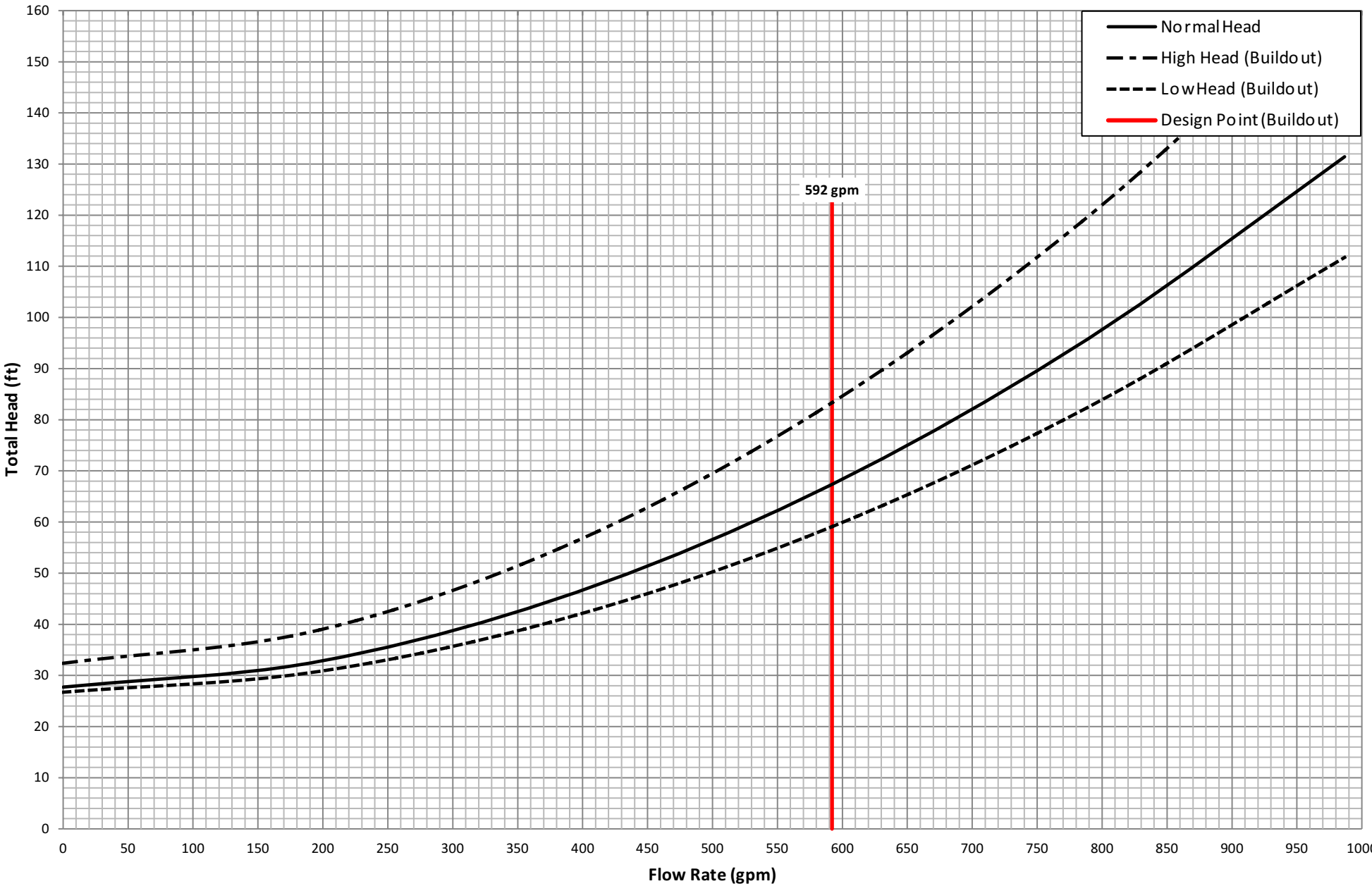

APPENDIX E

HYDRAULIC MODEL RESULTS

AVERAGE DAILY FLOW

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-1	8.0	400.0	0.013	0.0033	MH-1A	1,097.00	6.94	MH-2	1,095.68	6.32	2,016	0.50	0.4	448,636	4.9	448,636
CO-2	8.0	200.0	0.013	0.0033	MH-2	1,095.68	6.32	MH-3	1,095.02	6.00	2,736	0.55	0.6	448,636	5.6	448,636
CO-3	8.0	118.3	0.013	0.0033	MH-3	1,094.82	6.20	MH-4	1,094.43	7.55	3,024	0.56	0.7	448,981	5.9	448,981
CO-4	8.0	227.3	0.013	0.0033	MH-4	1,094.43	7.55	MH-5	1,093.68	7.36	3,600	0.59	0.8	448,905	6.4	448,905
CO-5	8.0	82.9	0.013	0.0033	MH-5	1,093.68	7.36	MH-6	1,093.41	7.27	5,760	0.69	1.3	448,718	7.9	448,718
CO-6	8.0	232.9	0.013	0.0033	MH-6	1,093.41	7.27	MH-7	1,092.64	6.74	6,192	0.71	1.4	448,665	8.2	448,665
CO-7	8.0	198.7	0.013	0.0033	MH-7	1,092.44	6.94	MH-8	1,091.78	7.75	7,488	0.75	1.7	448,738	9.0	448,738
CO-8	8.0	400.0	0.013	0.0033	MH-8	1,091.78	7.75	MH-9	1,090.46	8.47	9,072	0.79	2.0	448,636	9.8	448,636
CO-9	8.0	261.5	0.013	0.0033	MH-9	1,090.46	8.47	MH-10	1,089.60	10.84	9,648	0.80	2.2	448,480	10.1	448,480
CO-10	8.0	74.7	0.013	0.0033	MH-10	1,089.40	11.04	MH-11	1,089.15	10.57	14,256	0.91	3.2	449,089	12.2	449,089
CO-11	8.0	69.1	0.013	0.0033	MH-11	1,089.15	10.57	MH-12	1,088.92	10.31	14,400	0.91	3.2	448,931	12.3	448,931
CO-12	8.0	90.8	0.013	0.0033	MH-12	1,088.92	10.31	MH-13	1,088.62	9.99	14,544	0.91	3.2	448,412	12.3	448,412
CO-13	8.0	27.0	0.013	0.0033	MH-13	1,088.42	10.19	MH-14	1,088.33	10.20	14,544	0.91	3.2	448,384	12.3	448,384
CO-14	8.0	161.2	0.013	0.0033	MH-14	1,088.33	10.20	MH-15	1,087.80	12.77	14,976	0.92	3.3	448,931	12.5	448,931
CO-15	8.0	83.2	0.013	0.0033	MH-15	1,087.80	12.77	MH-16	1,087.53	14.09	15,120	0.92	3.4	448,718	12.6	448,718
CO-16	8.0	133.2	0.013	0.0033	MH-16	1,087.53	14.09	MH-17	1,087.09	14.75	15,552	0.93	3.5	449,198	12.7	449,198
CO-17	8.0	169.6	0.013	0.0033	MH-17	1,087.09	14.75	MH-18	1,086.53	14.96	32,987	1.16	7.4	448,636	18.4	448,636
CO-18	8.0	150.0	0.013	0.0033	MH-18	1,086.33	15.16	MH-19	1,085.83	14.23	35,579	1.19	7.9	448,636	19.0	448,636
CO-19	8.0	265.0	0.013	0.0041	MH-19	1,085.83	14.23	MH-20	1,084.76	13.71	35,579	1.28	7.2	497,414	18.1	497,414
CO-20	8.0	111.2	0.013	0.0033	MH-20	1,084.76	13.71	MH-21	1,084.39	15.04	35,867	1.19	8.0	449,064	19.1	449,064
CO-21	8.0	112.8	0.013	0.0033	MH-21	1,084.39	15.04	MH-22	1,084.02	16.59	36,155	1.19	8.1	448,696	19.2	448,696
CO-22	8.0	298.5	0.013	0.0033	MH-22	1,083.82	16.79	MH-23	1,082.83	16.63	37,595	1.21	8.4	448,477	19.6	448,477
CO-23	8.0	298.5	0.013	0.0033	MH-23	1,082.83	16.63	MH-24	1,081.84	16.51	39,035	1.22	8.7	448,704	19.9	448,704
CO-24	8.0	307.5	0.013	0.0033	MH-24	1,081.84	16.51	MH-25	1,080.83	17.98	43,211	1.26	9.6	449,056	21.0	449,056
CO-25	8.0	289.1	0.013	0.0033	MH-25	1,080.63	18.18	MH-26	1,079.68	13.66	50,699	1.32	11.3	448,707	22.7	448,707
CO-26	8.0	249.8	0.013	0.0033	MH-26	1,079.48	13.86	OF-1	1,078.65	14.27	50,699	1.32	11.3	448,636	22.7	448,636
CO-27	8.0	346.7	0.013	0.0179	MH-1B	1,097.94	6.00	MH-27	1,091.74	12.65	1,584	0.84	0.2	1,043,501	2.9	1,043,501
CO-28	8.0	320.0	0.013	0.0033	MH-27	1,091.54	12.85	MH-28	1,090.49	12.48	2,160	0.51	0.5	448,636	5.0	448,636
CO-29	8.0	330.0	0.013	0.0033	MH-28	1,090.49	12.48	MH-10	1,089.40	11.04	4,320	0.63	1.0	448,636	7.0	448,636
CO-30	8.0	400.0	0.013	0.0033	MH-29A	1,097.14	6.00	MH-30	1,095.82	5.73	1,728	0.48	0.4	448,636	4.5	448,636
CO-31	8.0	79.0	0.013	0.0245	MH-30	1,095.82	5.73	MH-5	1,093.88	7.16	2,016	1.00	0.2	1,222,261	3.0	1,222,261
CO-32	8.0	399.6	0.013	0.0161	MH-29B	1,097.14	6.00	MH-28	1,090.69	12.28	1,728	0.82	0.2	991,715	3.1	991,715
CO-33	8.0	163.1	0.013	0.0033	MH-31	1,093.18	5.22	MH-7	1,092.64	6.74	432	0.32	0.1	448,678	2.3	448,678
CO-34	8.0	144.5	0.013	0.0033	MH-32	1,091.62	11.58	MH-33	1,091.14	11.97	12,827	0.88	2.9	449,485	11.6	449,485
CO-35	8.0	67.7	0.013	0.0033	MH-33	1,091.04	12.07	MH-34	1,090.82	11.21	12,827	0.88	2.9	448,236	11.6	448,236
CO-36	8.0	293.3	0.013	0.0033	MH-34	1,090.62	11.41	MH-35	1,089.65	12.88	17,003	0.95	3.8	448,891	13.3	448,891
CO-37	8.0	51.6	0.013	0.0033	MH-35	1,089.65	12.88	MH-36	1,089.48	12.84	17,147	0.96	3.8	449,159	13.3	449,159
CO-38	8.0	87.6	0.013	0.0249	MH-36	1,089.48	12.84	MH-17	1,087.29	14.55	17,291	1.95	1.4	1,232,302	8.3	1,232,302
CO-39	8.0	318.6	0.013	0.0033	MH-37A	1,098.50	6.00	MH-38	1,097.45	5.88	1,584	0.47	0.4	448,700	4.3	448,700

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-40	8.0	250.0	0.013	0.0265	MH-38	1,097.45	5.88	MH-34	1,090.82	11.21	3,024	1.16	0.2	1,271,623	3.6	1,271,623
CO-41	8.0	293.8	0.013	0.0033	MH-37B	1,098.50	6.00	MH-39	1,097.53	5.69	864	0.39	0.2	448,590	3.2	448,590
CO-42	8.0	21.1	0.013	0.0033	MH-39	1,097.43	5.79	MH-40	1,097.36	5.87	864	0.39	0.2	450,896	3.2	450,896
CO-43	8.0	106.7	0.013	0.0033	MH-40	1,097.26	5.97	MH-41	1,096.91	6.62	1,296	0.44	0.3	448,572	3.9	448,572
CO-44	8.0	199.8	0.013	0.0033	MH-41	1,096.91	6.62	MH-42	1,096.25	5.87	2,304	0.52	0.5	448,636	5.2	448,636
CO-45	8.0	54.4	0.013	0.1800	MH-42	1,096.25	5.87	MH-18	1,086.53	14.96	2,592	2.11	0.1	3,313,396	2.2	3,313,396
CO-46	8.0	161.5	0.013	0.0033	MH-43	1,087.59	9.68	MH-44	1,087.06	10.87	432	0.32	0.1	449,353	2.3	449,353
CO-47	8.0	169.6	0.013	0.0033	MH-44	1,087.06	10.87	MH-45	1,086.50	12.34	720	0.36	0.2	448,636	3.0	448,636
CO-48	8.0	281.2	0.013	0.0033	MH-45	1,086.50	12.34	MH-46	1,085.57	12.94	1,440	0.45	0.3	448,805	4.2	448,805
CO-49	8.0	144.4	0.013	0.0033	MH-46	1,085.37	13.14	MH-47	1,084.89	13.37	2,304	0.52	0.5	449,013	5.2	449,013
CO-50	8.0	187.5	0.013	0.0033	MH-47	1,084.89	13.37	MH-48	1,084.27	12.14	3,168	0.57	0.7	449,326	6.0	449,326
CO-51	8.0	166.9	0.013	0.0033	MH-48	1,084.27	12.14	MH-49	1,083.72	11.05	3,888	0.61	0.9	448,595	6.6	448,595
CO-52	8.0	208.0	0.013	0.0033	MH-49	1,083.72	11.05	MH-50	1,083.04	12.65	4,320	0.63	1.0	448,505	7.0	448,505
CO-53	8.0	187.5	0.013	0.0033	MH-50	1,083.04	12.65	MH-51	1,082.42	14.11	5,328	0.67	1.2	449,326	7.7	449,326
CO-54	8.0	146.3	0.013	0.0033	MH-51	1,082.42	14.11	MH-52	1,081.94	15.23	5,904	0.70	1.3	449,194	8.0	449,194
CO-55	8.0	145.9	0.013	0.0033	MH-52	1,081.94	15.23	MH-53	1,081.45	16.29	6,624	0.72	1.5	448,729	8.5	448,729
CO-56	8.0	194.2	0.013	0.0033	MH-53	1,081.45	16.29	MH-54	1,080.81	18.04	7,488	0.75	1.7	448,566	9.0	448,566
CO-57	8.0	25.3	0.013	0.0034	MH-54	1,080.81	18.04	MH-25	1,080.73	18.08	7,488	0.75	1.7	452,696	8.9	452,696
CO-58	8.0	61.7	0.013	0.0033	MH-55	1,092.81	6.00	MH-56	1,092.60	6.77	288	0.28	0.1	449,074	1.9	449,074
CO-59	8.0	151.1	0.013	0.0033	MH-56	1,092.60	6.77	MH-57	1,092.11	7.43	1,008	0.40	0.2	448,501	3.5	448,501
CO-60	8.0	151.1	0.013	0.0033	MH-57	1,092.11	7.43	MH-58	1,091.61	7.30	1,440	0.45	0.3	448,951	4.2	448,951
CO-61	8.0	151.1	0.013	0.0033	MH-58	1,091.61	7.30	MH-59	1,091.11	7.16	2,160	0.51	0.5	448,501	5.0	448,501
CO-62	8.0	115.6	0.013	0.0033	MH-59	1,091.11	7.16	MH-60	1,090.73	6.93	2,592	0.54	0.6	448,753	5.5	448,753
CO-63	8.0	229.6	0.013	0.0386	MH-60	1,090.73	6.93	MH-24	1,081.84	16.51	3,312	1.36	0.2	1,534,718	3.5	1,534,718
CO-64	8.0	158.0	0.013	0.0412	MH-61	1,091.88	6.00	MH-46	1,085.37	13.14	288	0.64	0.0	1,584,890	1.1	1,584,890
CO-65	8.0	332.0	0.013	0.0059	MH-62	1,091.69	6.00	MH-63	1,089.74	8.96	1,440	0.55	0.2	599,296	3.6	599,296
CO-66	8.0	385.0	0.013	0.0033	MH-63	1,089.74	8.96	MH-64	1,088.47	8.66	3,168	0.57	0.7	448,724	6.0	448,724
CO-67	8.0	320.0	0.013	0.0033	MH-64	1,088.27	8.86	MH-65	1,087.21	11.21	3,888	0.61	0.9	448,636	6.6	448,636
CO-68	8.0	320.0	0.013	0.0033	MH-65	1,087.21	11.21	MH-66	1,086.16	10.85	7,920	0.76	1.8	448,636	9.3	448,636
CO-69	8.0	306.9	0.013	0.0033	MH-66	1,085.96	11.05	MH-67	1,084.94	10.49	9,216	0.79	2.1	448,614	9.9	448,614
CO-70	8.0	275.0	0.013	0.0033	MH-67	1,084.94	10.49	MH-68	1,084.04	10.30	10,368	0.82	2.3	448,760	10.5	448,760
CO-71	8.0	235.7	0.013	0.0033	MH-68	1,083.84	10.50	MH-69	1,083.06	10.80	11,232	0.84	2.5	448,694	10.9	448,694
CO-72	8.0	127.0	0.013	0.0033	MH-69	1,083.06	10.80	MH-70	1,082.64	12.28	11,520	0.85	2.6	448,582	11.0	448,582
CO-73	8.0	41.7	0.013	0.0033	MH-70	1,082.64	12.28	MH-71	1,082.50	12.37	11,520	0.85	2.6	449,283	11.0	449,283
CO-74	8.0	95.1	0.013	0.0033	MH-71	1,082.50	12.37	MH-72	1,082.18	12.20	12,816	0.88	2.9	448,994	11.6	448,994
CO-75	8.0	279.8	0.013	0.0033	MH-72	1,082.18	12.20	MH-73	1,081.26	12.03	13,968	0.90	3.1	448,636	12.1	448,636
CO-76	8.0	361.7	0.013	0.0033	MH-73	1,081.26	12.03	MH-74	1,080.07	12.08	14,688	0.91	3.3	448,711	12.4	448,711
CO-77	8.0	312.4	0.013	0.0033	MH-74	1,079.87	12.28	MH-75	1,078.83	13.13	15,696	0.93	3.5	448,941	12.8	448,941
CO-78	8.0	325.0	0.013	0.0033	MH-75	1,078.83	13.13	MH-76	1,077.76	12.30	16,848	0.95	3.8	448,531	13.2	448,531

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-79	8.0	148.5	0.013	0.0033	MH-76	1,077.76	12.30	MH-77	1,077.27	12.20	17,136	0.96	3.8	448,773	13.3	448,773
CO-80	8.0	155.2	0.013	0.0033	MH-77	1,077.27	12.20	MH-78	1,076.76	13.24	18,432	0.98	4.1	448,855	13.9	448,855
CO-81	8.0	169.6	0.013	0.0033	MH-78	1,076.76	13.24	MH-79	1,076.20	14.37	18,720	0.98	4.2	448,636	13.9	448,636
CO-82	8.0	153.7	0.013	0.0033	MH-79	1,076.20	14.37	MH-80	1,075.69	14.01	20,304	1.00	4.5	448,548	14.5	448,548
CO-83	8.0	172.2	0.013	0.0033	MH-80	1,075.69	14.01	MH-81	1,075.12	13.87	20,592	1.01	4.6	448,794	14.6	448,794
CO-84	8.0	173.9	0.013	0.0033	MH-81	1,075.12	13.87	MH-82	1,074.55	15.13	22,464	1.04	5.0	448,558	15.2	448,558
CO-85	8.0	150.3	0.013	0.0033	MH-82	1,074.55	15.13	MH-83	1,074.05	14.45	22,752	1.04	5.1	449,089	15.3	449,089
CO-86	8.0	337.6	0.013	0.0033	MH-83	1,073.85	14.65	MH-84	1,072.74	14.28	24,048	1.06	5.4	448,757	15.7	448,757
CO-87	8.0	58.7	0.013	0.0033	MH-84	1,072.74	14.28	MH-85	1,072.54	14.27	24,192	1.06	5.4	448,981	15.8	448,981
CO-88	8.0	79.0	0.013	0.0033	MH-85	1,072.44	14.37	MH-86	1,072.18	14.21	24,336	1.06	5.4	448,033	15.8	448,033
CO-89	8.0	49.2	0.013	0.0033	MH-86	1,072.08	14.31	MH-87	1,071.92	14.45	24,336	1.06	5.4	450,436	15.8	450,436
CO-90	8.0	100.5	0.013	0.0033	MH-87	1,071.92	14.45	MH-88	1,071.59	15.29	24,480	1.06	5.4	449,315	15.9	449,315
CO-91	8.0	220.6	0.013	0.0033	MH-88	1,071.59	15.29	MH-89	1,070.86	17.12	24,912	1.07	5.6	448,851	16.0	448,851
CO-92	8.0	177.1	0.013	0.0033	MH-89	1,070.86	17.12	MH-90	1,070.27	17.35	25,200	1.07	5.6	448,598	16.1	448,598
CO-93	8.0	400.0	0.013	0.0033	MH-90	1,070.07	17.55	MH-91	1,068.75	16.98	25,200	1.07	5.6	448,636	16.1	448,636
CO-94	8.0	400.0	0.013	0.0033	MH-91	1,068.75	16.98	MH-92	1,067.43	17.90	25,200	1.07	5.6	448,636	16.1	448,636
CO-95	8.0	189.3	0.013	0.0033	MH-92	1,067.43	17.90	MH-302	1,066.81	16.35	25,200	1.07	5.6	449,103	16.1	449,103
CO-96	8.0	332.0	0.013	0.0089	MH-93	1,091.62	6.00	MH-94	1,088.68	11.40	1,440	0.65	0.2	735,173	3.3	735,173
CO-97	8.0	385.0	0.013	0.0033	MH-94	1,088.68	11.40	MH-65	1,087.41	11.01	3,168	0.57	0.7	448,548	6.0	448,548
CO-98	8.0	188.5	0.013	0.0033	MH-95	1,084.66	11.85	MH-68	1,084.04	10.30	720	0.36	0.2	449,214	3.0	449,214
CO-99	8.0	179.1	0.013	0.0033	MH-96	1,088.24	6.00	MH-97	1,087.65	7.36	720	0.36	0.2	448,750	3.0	448,750
CO-100	8.0	65.4	0.013	0.0033	MH-97	1,087.65	7.36	MH-98	1,087.43	7.80	864	0.39	0.2	450,202	3.2	450,202
CO-101	8.0	85.8	0.013	0.0551	MH-98	1,087.43	7.80	MH-71	1,082.70	12.17	1,008	1.09	0.1	1,832,517	1.8	1,832,517
CO-102	8.0	266.3	0.013	0.0214	MH-99	1,083.17	6.00	MH-77	1,077.47	12.00	1,008	0.79	0.1	1,143,230	2.2	1,143,230
CO-103	8.0	342.4	0.013	0.0212	MH-100	1,083.66	6.00	MH-79	1,076.40	14.17	1,296	0.84	0.1	1,138,104	2.5	1,138,104
CO-104	8.0	216.0	0.013	0.0033	MH-101	1,081.32	6.01	MH-102	1,080.61	7.69	720	0.36	0.2	448,699	3.0	448,699
CO-105	8.0	216.0	0.013	0.0245	MH-102	1,080.61	7.69	MH-81	1,075.32	13.67	1,584	0.94	0.1	1,221,726	2.7	1,221,726
CO-302	18.0	91.3	0.013	0.0018	MH-302	1,065.97	16.35	OF-2	1,065.81	18.60	359,220	1.72	16.5	2,179,958	23.8	2,881,985
CO-303	12.0	422.5	0.013	0.0080	MH-303	1,069.86	12.24	MH-302	1,066.47	16.35	334,020	2.99	21.4	1,560,599	27.2	2,063,170
CO-304	12.0	400.0	0.013	0.0031	MH-304	1,071.20	10.43	MH-303	1,069.96	12.14	328,639	2.11	33.9	969,730	34.5	1,282,020
CO-305	8.0	400.0	0.013	0.0033	MH-305	1,073.65	10.07	MH-304	1,072.33	9.63	23,887	1.06	7.0	339,352	15.7	448,636
CO-306	8.0	400.0	0.013	0.0033	MH-306	1,075.17	8.18	MH-305	1,073.85	9.87	18,506	0.98	5.5	339,352	13.9	448,636
CO-307	8.0	400.0	0.013	0.0033	MH-307	1,076.69	8.50	MH-306	1,075.37	7.98	13,126	0.88	3.9	339,352	11.8	448,636
CO-308	8.0	250.0	0.013	0.0033	MH-308	1,077.72	7.20	MH-307	1,076.89	8.30	8,750	0.78	2.6	339,352	9.7	448,636
CO-309	8.0	200.0	0.013	0.0056	MH-309	1,079.03	7.00	MH-308	1,077.92	7.00	4,375	0.76	1.0	440,158	6.2	581,905
CO-310	12.0	400.0	0.013	0.0031	MH-310	1,072.64	8.19	MH-304	1,071.40	10.23	299,372	2.06	30.9	969,730	32.9	1,282,020
CO-311	12.0	250.0	0.013	0.0031	MH-311	1,073.52	7.00	MH-310	1,072.74	8.09	299,372	2.06	30.9	969,730	32.9	1,282,020
CO-500	8.0	155.1	0.013	0.0033	MH-500	1,086.81	7.01	MH-501	1,086.30	7.51	320	0.28	0.1	339,518	2.1	448,855
CO-501	8.0	73.2	0.013	0.0033	MH-501	1,086.30	7.51	MH-502	1,086.05	7.81	320	0.28	0.1	339,422	2.1	448,729

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-502	8.0	85.8	0.013	0.0033	MH-502	1,086.05	7.81	MH-503	1,085.77	8.70	320	0.28	0.1	339,472	2.1	448,794
CO-503	8.0	82.4	0.013	0.0033	MH-503	1,085.77	8.70	MH-504	1,085.50	9.07	640	0.35	0.2	340,229	2.8	449,795
CO-504	8.0	136.0	0.013	0.0033	MH-504	1,085.50	9.07	MH-505	1,085.05	6.72	640	0.35	0.2	339,428	2.8	448,736
CO-505	8.0	92.7	0.013	0.0033	MH-505	1,085.05	6.72	MH-506	1,084.74	8.25	640	0.35	0.2	339,407	2.8	448,709
CO-506	8.0	324.9	0.013	0.0033	MH-506	1,084.74	8.25	MH-507	1,083.67	10.63	960	0.40	0.3	339,273	3.4	448,531
CO-507	8.0	98.0	0.013	0.0033	MH-507	1,083.67	10.63	MH-508	1,083.35	11.06	960	0.40	0.3	339,667	3.4	449,052
CO-508	8.0	276.8	0.013	0.0033	MH-508	1,083.35	11.06	MH-509	1,082.43	11.18	1,280	0.44	0.4	339,333	3.9	448,611
CO-509	8.0	43.3	0.013	0.0033	MH-509	1,082.43	11.18	MH-510	1,082.29	11.06	1,280	0.44	0.4	340,665	3.9	450,372
CO-510	8.0	63.0	0.013	0.0033	MH-510	1,082.29	11.06	MH-511	1,082.08	11.31	1,280	0.44	0.4	339,434	3.9	448,744
CO-511	8.0	210.2	0.013	0.0033	MH-511	1,082.08	11.31	MH-512	1,081.39	12.10	1,440	0.45	0.4	339,352	4.2	448,636
CO-512	8.0	111.5	0.013	0.0033	MH-512	1,081.39	12.10	MH-513	1,081.02	12.26	1,440	0.45	0.4	340,139	4.2	449,676
CO-513	8.0	184.2	0.013	0.0033	MH-513	1,081.02	12.26	MH-514	1,080.41	12.06	1,760	0.48	0.5	339,576	4.5	448,931
CO-514	8.0	89.0	0.013	0.0033	MH-514	1,080.41	12.06	MH-515	1,080.12	12.01	1,760	0.48	0.5	339,525	4.5	448,865
CO-515	8.0	94.4	0.013	0.0033	MH-515	1,080.12	12.01	MH-559	1,079.81	12.27	1,760	0.48	0.5	339,789	4.5	449,214
CO-516	8.0	351.6	0.013	0.0033	MH-516	1,079.33	7.00	MH-517	1,078.17	7.98	6,022	0.70	1.8	339,352	8.1	448,636
CO-517	8.0	372.0	0.013	0.0033	MH-517	1,077.97	8.18	MH-518	1,076.75	7.79	12,044	0.86	3.5	339,352	11.3	448,636
CO-518	8.0	419.9	0.013	0.0033	MH-518	1,076.55	7.99	MH-519	1,075.16	7.92	18,066	0.97	5.3	339,352	13.7	448,636
CO-519	8.0	366.6	0.013	0.0033	MH-519	1,074.96	8.12	MH-520	1,073.75	7.85	24,088	1.06	7.1	339,352	15.7	448,636
CO-520	8.0	396.5	0.013	0.0033	MH-520	1,073.65	7.95	LS-1	1,072.34	7.79	30,110	1.13	8.9	339,352	17.5	448,636
CO-521	10.0	290.7	0.013	0.0025	MH-521	1,053.43	26.15	MH-522	1,052.70	26.93	128,063	1.52	23.9	535,538	28.8	708,001
CO-522	10.0	234.0	0.013	0.0025	MH-522	1,052.60	27.03	MH-523	1,052.01	27.33	128,063	1.52	23.9	535,538	28.8	708,001
CO-523	12.0	112.6	0.013	0.0031	MH-523	1,051.65	27.53	LS-1	1,051.30	28.51	240,799	1.94	24.8	969,730	29.4	1,282,020
CO-524	8.0	400.0	0.013	0.0033	MH-524	1,054.54	22.74	MH-523	1,053.22	26.28	112,736	1.65	33.2	339,352	34.2	448,636
CO-525	8.0	400.0	0.013	0.0033	MH-525	1,055.96	20.06	MH-524	1,054.64	22.64	104,475	1.62	30.8	339,352	32.8	448,636
CO-526	8.0	400.0	0.013	0.0033	MH-526	1,057.38	16.97	MH-525	1,056.06	19.96	96,213	1.58	28.4	339,352	31.5	448,636
CO-527	8.0	400.0	0.013	0.0033	MH-527	1,058.80	14.09	MH-526	1,057.48	16.87	30,124	1.13	8.9	339,352	17.5	448,636
CO-528	8.0	400.0	0.013	0.0033	MH-528	1,060.22	11.30	MH-527	1,058.90	13.99	21,863	1.03	6.4	339,352	15.0	448,636
CO-529	8.0	400.0	0.013	0.0033	MH-529	1,061.64	8.05	MH-528	1,060.32	11.20	13,601	0.89	4.0	339,352	12.0	448,636
CO-530	8.0	74.5	0.013	0.0033	MH-530	1,061.99	7.60	MH-529	1,061.74	7.95	7,579	0.75	2.2	339,352	9.0	448,636
CO-532	10.0	400.0	0.013	0.0025	MH-532	1,054.53	25.18	MH-521	1,053.53	26.05	128,063	1.52	23.9	535,538	28.8	708,001
CO-533	10.0	400.0	0.013	0.0025	MH-533	1,055.63	23.41	MH-532	1,054.63	25.08	128,063	1.52	23.9	535,538	28.8	708,001
CO-534	10.0	107.8	0.013	0.0025	MH-534	1,056.10	23.40	MH-533	1,055.83	23.21	128,063	1.52	23.9	535,538	28.8	708,001
CO-535	8.0	400.0	0.013	0.0033	MH-535	1,073.88	7.59	LS-1	1,072.56	7.57	24,088	1.06	7.1	339,352	15.7	448,636
CO-536	8.0	400.0	0.013	0.0033	MH-536	1,075.40	7.29	MH-535	1,074.08	7.39	18,066	0.97	5.3	339,352	13.7	448,636
CO-537	8.0	200.0	0.013	0.0033	MH-537	1,076.26	7.20	MH-536	1,075.60	7.09	12,044	0.86	3.5	339,352	11.3	448,636
CO-538	8.0	400.0	0.013	0.0054	MH-538	1,078.62	7.00	MH-537	1,076.46	7.00	6,022	0.82	1.4	434,116	7.2	573,918
CO-539	8.0	406.9	0.013	0.0033	MH-539	1,060.35	27.55	MH-566	1,059.01	26.32	83,116	1.52	24.5	339,352	29.2	448,636
CO-540	8.0	395.7	0.013	0.0033	MH-540	1,062.02	14.00	MH-526	1,060.71	13.64	57,828	1.37	17.0	339,352	24.3	448,636
CO-541	8.0	393.6	0.013	0.0033	MH-541	1,063.42	14.36	MH-540	1,062.12	13.90	49,567	1.31	14.6	339,352	22.4	448,636

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-542	8.0	398.9	0.013	0.0033	MH-542	1,064.94	10.14	MH-541	1,063.62	14.16	41,306	1.24	12.2	339,352	20.5	448,636
CO-543	8.0	400.5	0.013	0.0033	MH-543	1,066.46	9.60	MH-542	1,065.14	9.94	33,045	1.16	9.7	339,352	18.4	448,636
CO-544	8.0	399.7	0.013	0.0033	MH-544	1,067.98	7.20	MH-543	1,066.66	9.40	24,784	1.07	7.3	339,352	16.0	448,636
CO-545	8.0	78.2	0.013	0.0033	MH-545	1,060.81	26.99	MH-539	1,060.55	27.35	81,036	1.51	23.9	339,352	28.7	448,636
CO-546	8.0	401.8	0.013	0.0033	MH-546	1,062.24	24.16	MH-545	1,060.91	26.89	81,036	1.51	23.9	339,352	28.7	448,636
CO-547	8.0	321.7	0.013	0.0033	MH-547	1,063.40	23.48	MH-546	1,062.34	24.06	81,036	1.51	23.9	339,352	28.7	448,636
CO-548	8.0	287.7	0.013	0.0033	MH-548	1,064.45	23.16	MH-547	1,063.50	23.38	36,088	1.19	10.6	339,352	19.2	448,636
CO-549	8.0	364.9	0.013	0.0033	MH-549	1,065.75	22.76	MH-548	1,064.55	23.06	36,088	1.19	10.6	339,352	19.2	448,636
CO-550	8.0	346.8	0.013	0.0033	MH-550	1,067.00	22.00	MH-549	1,065.85	22.66	36,088	1.19	10.6	339,352	19.2	448,636
CO-551	8.0	341.0	0.013	0.0033	MH-551	1,068.22	21.05	MH-550	1,067.10	21.90	36,088	1.19	10.6	339,352	19.2	448,636
CO-552	8.0	179.9	0.013	0.0033	MH-552	1,068.92	21.09	MH-551	1,068.32	20.95	36,088	1.19	10.6	339,352	19.2	448,636
CO-553	8.0	400.0	0.013	0.0033	MH-553	1,070.44	17.57	MH-552	1,069.12	20.89	36,088	1.19	10.6	339,352	19.2	448,636
CO-554	8.0	400.0	0.013	0.0033	MH-554	1,071.96	13.95	MH-553	1,070.64	17.37	16,740	0.95	4.9	339,352	13.2	448,636
CO-555	8.0	400.0	0.013	0.0033	MH-555	1,073.38	10.87	MH-554	1,072.06	13.85	16,740	0.95	4.9	339,352	13.2	448,636
CO-556	8.0	132.7	0.013	0.0033	MH-556	1,074.02	10.50	MH-555	1,073.58	10.67	16,740	0.95	4.9	339,352	13.2	448,636
CO-557	8.0	395.3	0.013	0.0033	MH-557	1,075.52	7.42	MH-556	1,074.22	10.30	16,740	0.95	4.9	339,352	13.2	448,636
CO-558	8.0	400.0	0.013	0.0033	MH-558	1,077.04	7.00	MH-557	1,075.72	7.22	16,740	0.95	4.9	339,352	13.2	448,636
CO-559	8.0	90.7	0.013	0.0033	MH-559	1,079.81	12.27	MH-571	1,079.51	12.11	2,080	0.51	0.6	339,747	4.9	449,159
CO-560	8.0	133.0	0.013	0.0033	MH-553	1,076.89	11.12	MH-560	1,077.33	11.05	19,349	0.99	5.7	339,352	14.1	448,636
CO-561	8.0	400.0	0.013	0.0033	MH-560	1,077.53	10.85	MH-561	1,078.85	7.29	19,349	0.99	5.7	339,352	14.1	448,636
CO-562	8.0	400.0	0.013	0.0033	MH-561	1,079.05	7.09	MH-562	1,080.37	7.00	19,349	0.99	5.7	339,352	14.1	448,636
CO-563	8.0	400.0	0.013	0.0046	MH-563	1,070.01	7.89	MH-544	1,068.18	7.00	16,522	1.06	4.1	400,002	12.1	528,817
CO-564	8.0	350.0	0.013	0.0033	MH-564	1,071.26	7.00	MH-563	1,070.11	7.79	8,261	0.76	2.4	339,352	9.5	448,636
CO-565	10.0	410.3	0.013	0.0025	MH-565	1,057.32	25.66	MH-534	1,056.30	23.20	128,063	1.52	23.9	535,538	28.8	708,001
CO-566	8.0	400.0	0.013	0.0033	MH-566	1,058.91	26.42	MH-565	1,057.59	25.56	83,116	1.52	24.5	339,352	29.2	448,636
CO-567	8.0	400.0	0.013	0.0033	MH-567	1,063.51	8.20	MH-530	1,062.19	7.40	5,868	0.70	1.7	339,352	8.0	448,636
CO-568	8.0	400.0	0.013	0.0033	MH-568	1,064.93	7.63	MH-567	1,063.61	8.10	4,157	0.62	1.2	339,352	6.8	448,636
CO-569	8.0	400.0	0.013	0.0033	MH-569	1,066.35	7.28	MH-568	1,065.03	7.53	2,771	0.55	0.8	339,352	5.6	448,636
CO-570	8.0	400.0	0.013	0.0033	MH-570	1,067.77	7.00	MH-569	1,066.45	7.18	1,793	0.48	0.5	339,352	4.6	448,636
CO-571	8.0	92.2	0.013	0.0033	MH-571	1,079.51	12.11	MH-572	1,079.20	12.28	2,080	0.51	0.6	339,576	4.9	448,931
CO-572	8.0	103.0	0.013	0.0033	MH-572	1,079.20	12.28	MH-573	1,078.86	13.46	2,080	0.51	0.6	339,402	4.9	448,702
CO-573	8.0	96.6	0.013	0.0033	MH-573	1,078.76	13.56	MH-574	1,078.44	13.77	2,080	0.51	0.6	339,299	4.9	448,566
CO-574	8.0	118.0	0.013	0.0033	MH-574	1,078.34	13.87	MH-575	1,077.95	14.89	2,080	0.51	0.6	339,178	4.9	448,406
CO-575	8.0	352.1	0.013	0.0033	MH-575	1,077.75	15.09	MH-576	1,076.59	11.08	2,080	0.51	0.6	339,410	4.9	448,713
CO-576	8.0	115.2	0.013	0.0033	MH-576	1,076.39	11.28	MH-539	1,076.01	11.89	2,080	0.51	0.6	339,576	4.9	448,931

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-1A	1,104.61	1,097.00	7.61	2,016	1,097.04	1,097.04
MH-1B	1,104.61	1,097.94	6.67	1,584	1,097.96	1,097.96
MH-2	1,102.67	1,095.68	6.99	2,736	1,095.72	1,095.72
MH-3	1,101.69	1,094.82	6.87	3,024	1,094.86	1,094.86
MH-4	1,102.65	1,094.43	8.21	3,600	1,094.48	1,094.48
MH-5	1,101.71	1,093.68	8.03	5,760	1,093.74	1,093.74
MH-6	1,101.35	1,093.41	7.94	6,192	1,093.46	1,093.46
MH-7	1,100.05	1,092.44	7.61	7,488	1,092.50	1,092.50
MH-8	1,100.20	1,091.78	8.42	9,072	1,091.85	1,091.85
MH-9	1,099.60	1,090.46	9.13	9,648	1,090.53	1,090.53
MH-10	1,101.10	1,089.40	11.70	14,256	1,089.48	1,089.48
MH-11	1,100.39	1,089.15	11.24	14,400	1,089.23	1,089.23
MH-12	1,099.90	1,088.92	10.97	14,544	1,089.01	1,089.01
MH-13	1,099.28	1,088.42	10.86	14,544	1,088.51	1,088.51
MH-14	1,099.20	1,088.33	10.87	14,976	1,088.42	1,088.42
MH-15	1,101.24	1,087.80	13.44	15,120	1,087.89	1,087.89
MH-16	1,102.28	1,087.53	14.75	15,552	1,087.61	1,087.61
MH-17	1,102.50	1,087.09	15.41	32,987	1,087.21	1,087.21
MH-18	1,102.16	1,086.33	15.83	35,579	1,086.45	1,086.45
MH-19	1,100.73	1,085.83	14.90	35,579	1,085.95	1,085.95
MH-20	1,099.13	1,084.76	14.37	35,867	1,084.88	1,084.88
MH-21	1,100.09	1,084.39	15.70	36,155	1,084.52	1,084.52
MH-22	1,101.27	1,083.82	17.45	37,595	1,083.95	1,083.95
MH-23	1,100.13	1,082.83	17.30	39,035	1,082.96	1,082.96
MH-24	1,099.02	1,081.84	17.18	43,211	1,081.98	1,081.98
MH-25	1,099.47	1,080.63	18.84	50,699	1,080.78	1,080.78
MH-26	1,094.00	1,079.48	14.53	50,699	1,079.63	1,079.63
MH-27	1,105.06	1,091.54	13.52	2,160	1,091.58	1,091.58
MH-28	1,103.63	1,090.49	13.15	4,320	1,090.53	1,090.53
MH-29A	1,103.81	1,097.14	6.67	1,728	1,097.17	1,097.17
MH-29B	1,103.81	1,097.14	6.67	1,728	1,097.16	1,097.16
MH-30	1,102.21	1,095.82	6.39	2,016	1,095.84	1,095.84
MH-31	1,099.07	1,093.18	5.89	432	1,093.19	1,093.19
MH-32	1,103.86	1,091.62	12.24	12,827	1,091.70	1,091.70
MH-33	1,103.78	1,091.04	12.74	12,827	1,091.12	1,091.12
MH-34	1,102.69	1,090.62	12.07	17,003	1,090.71	1,090.71
MH-35	1,103.20	1,089.65	13.54	17,147	1,089.74	1,089.74
MH-36	1,102.98	1,089.48	13.50	17,291	1,089.55	1,089.55
MH-37A	1,105.17	1,098.50	6.67	1,584	1,098.53	1,098.53
MH-37B	1,105.17	1,098.50	6.67	864	1,098.52	1,098.52
MH-38	1,103.99	1,097.45	6.55	3,024	1,097.48	1,097.48
MH-39	1,103.89	1,097.43	6.46	864	1,097.45	1,097.45
MH-40	1,103.90	1,097.26	6.64	1,296	1,097.29	1,097.29
MH-41	1,104.19	1,096.91	7.29	2,304	1,096.94	1,096.94
MH-42	1,102.78	1,096.25	6.54	2,592	1,096.28	1,096.28
MH-43	1,097.94	1,087.59	10.35	432	1,087.61	1,087.61
MH-44	1,098.60	1,087.06	11.54	720	1,087.08	1,087.08
MH-45	1,099.51	1,086.50	13.01	1,440	1,086.52	1,086.52

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-46	1,099.18	1,085.37	13.81	2,304	1,085.40	1,085.40
MH-47	1,098.93	1,084.89	14.03	3,168	1,084.93	1,084.93
MH-48	1,097.08	1,084.27	12.81	3,888	1,084.32	1,084.32
MH-49	1,095.44	1,083.72	11.72	4,320	1,083.77	1,083.77
MH-50	1,096.36	1,083.04	13.32	5,328	1,083.09	1,083.09
MH-51	1,097.19	1,082.42	14.77	5,904	1,082.47	1,082.47
MH-52	1,097.84	1,081.94	15.90	6,624	1,081.99	1,081.99
MH-53	1,098.41	1,081.45	16.96	7,488	1,081.51	1,081.51
MH-54	1,099.52	1,080.81	18.71	7,488	1,080.87	1,080.87
MH-55	1,099.48	1,092.81	6.67	288	1,092.82	1,092.82
MH-56	1,100.04	1,092.60	7.44	1,008	1,092.63	1,092.63
MH-57	1,100.21	1,092.11	8.10	1,440	1,092.13	1,092.13
MH-58	1,099.57	1,091.61	7.96	2,160	1,091.64	1,091.64
MH-59	1,098.93	1,091.11	7.83	2,592	1,091.15	1,091.15
MH-60	1,098.32	1,090.73	7.60	3,312	1,090.76	1,090.76
MH-61	1,098.55	1,091.88	6.67	288	1,091.89	1,091.89
MH-62	1,098.36	1,091.69	6.67	1,440	1,091.72	1,091.72
MH-63	1,099.37	1,089.74	9.63	3,168	1,089.78	1,089.78
MH-64	1,097.79	1,088.27	9.53	3,888	1,088.31	1,088.31
MH-65	1,099.09	1,087.21	11.88	7,920	1,087.27	1,087.27
MH-66	1,097.67	1,085.96	11.72	9,216	1,086.02	1,086.02
MH-67	1,096.10	1,084.94	11.16	10,368	1,085.01	1,085.01
MH-68	1,095.00	1,083.84	11.17	11,232	1,083.91	1,083.91
MH-69	1,094.53	1,083.06	11.47	11,520	1,083.13	1,083.13
MH-70	1,095.58	1,082.64	12.95	11,520	1,082.71	1,082.71
MH-71	1,095.54	1,082.50	13.04	12,816	1,082.58	1,082.58
MH-72	1,095.05	1,082.18	12.87	13,968	1,082.26	1,082.26
MH-73	1,093.96	1,081.26	12.70	14,688	1,081.34	1,081.34
MH-74	1,092.81	1,079.87	12.94	15,696	1,079.95	1,079.95
MH-75	1,092.63	1,078.83	13.80	16,848	1,078.92	1,078.92
MH-76	1,090.73	1,077.76	12.96	17,136	1,077.85	1,077.85
MH-77	1,090.14	1,077.27	12.87	18,432	1,077.36	1,077.36
MH-78	1,090.67	1,076.76	13.91	18,720	1,076.85	1,076.85
MH-79	1,091.23	1,076.20	15.04	20,304	1,076.29	1,076.29
MH-80	1,090.36	1,075.69	14.67	20,592	1,075.79	1,075.79
MH-81	1,089.66	1,075.12	14.54	22,464	1,075.22	1,075.22
MH-82	1,090.34	1,074.55	15.80	22,752	1,074.65	1,074.65
MH-83	1,089.16	1,073.85	15.31	24,048	1,073.96	1,073.96
MH-84	1,087.68	1,072.74	14.95	24,192	1,072.84	1,072.84
MH-85	1,087.47	1,072.44	15.03	24,336	1,072.55	1,072.55
MH-86	1,087.06	1,072.08	14.98	24,336	1,072.19	1,072.19
MH-87	1,087.04	1,071.92	15.12	24,480	1,072.02	1,072.02
MH-88	1,087.54	1,071.59	15.95	24,912	1,071.69	1,071.69
MH-89	1,088.64	1,070.86	17.78	25,200	1,070.96	1,070.96
MH-90	1,088.29	1,070.07	18.21	25,200	1,070.18	1,070.18
MH-91	1,086.40	1,068.75	17.65	25,200	1,068.86	1,068.86
MH-92	1,086.00	1,067.43	18.57	25,200	1,067.54	1,067.54
MH-93	1,098.29	1,091.62	6.67	1,440	1,091.65	1,091.65

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-94	1,100.74	1,088.68	12.06	3,168	1,088.72	1,088.72
MH-95	1,097.18	1,084.66	12.52	720	1,084.68	1,084.68
MH-96	1,094.91	1,088.24	6.67	720	1,088.26	1,088.26
MH-97	1,095.68	1,087.65	8.03	864	1,087.67	1,087.67
MH-98	1,095.90	1,087.43	8.46	1,008	1,087.45	1,087.45
MH-99	1,089.84	1,083.17	6.67	1,008	1,083.19	1,083.19
MH-100	1,090.33	1,083.66	6.67	1,296	1,083.68	1,083.68
MH-101	1,087.99	1,081.32	6.67	720	1,081.34	1,081.34
MH-102	1,088.97	1,080.61	8.36	1,584	1,080.63	1,080.63
MH-302	1,083.83	1,065.97	17.85	359,220	1,066.33	1,066.33
MH-303	1,083.11	1,069.86	13.24	334,020	1,070.16	1,070.16
MH-304	1,082.63	1,071.20	11.43	328,639	1,071.55	1,071.55
MH-305	1,084.39	1,073.65	10.73	23,887	1,073.76	1,073.76
MH-306	1,084.02	1,075.17	8.85	18,506	1,075.27	1,075.27
MH-307	1,085.86	1,076.69	9.17	13,126	1,076.77	1,076.77
MH-308	1,085.58	1,077.72	7.87	8,750	1,077.78	1,077.78
MH-309	1,086.69	1,079.03	7.67	4,375	1,079.07	1,079.07
MH-310	1,081.83	1,072.64	9.19	299,372	1,072.97	1,072.97
MH-311	1,081.52	1,073.52	8.00	299,372	1,073.85	1,073.85
MH-500	1,094.48	1,086.81	7.67	320	1,086.82	1,086.82
MH-501	1,094.48	1,086.30	8.18	320	1,086.31	1,086.31
MH-502	1,094.53	1,086.05	8.48	320	1,086.07	1,086.07
MH-503	1,095.14	1,085.77	9.37	640	1,085.79	1,085.79
MH-504	1,095.24	1,085.50	9.74	640	1,085.52	1,085.52
MH-505	1,092.43	1,085.05	7.38	640	1,085.07	1,085.07
MH-506	1,093.66	1,084.74	8.92	960	1,084.76	1,084.76
MH-507	1,094.97	1,083.67	11.30	960	1,083.69	1,083.69
MH-508	1,095.07	1,083.35	11.73	1,280	1,083.37	1,083.37
MH-509	1,094.28	1,082.43	11.84	1,280	1,082.46	1,082.46
MH-510	1,094.02	1,082.29	11.73	1,280	1,082.32	1,082.32
MH-511	1,094.06	1,082.08	11.98	1,440	1,082.11	1,082.11
MH-512	1,094.15	1,081.39	12.76	1,440	1,081.42	1,081.42
MH-513	1,093.94	1,081.02	12.92	1,760	1,081.05	1,081.05
MH-514	1,093.14	1,080.41	12.73	1,760	1,080.44	1,080.44
MH-515	1,092.80	1,080.12	12.68	1,760	1,080.15	1,080.15
MH-516	1,087.00	1,079.33	7.67	6,022	1,079.39	1,079.39
MH-517	1,086.82	1,077.97	8.85	12,044	1,078.05	1,078.05
MH-518	1,085.20	1,076.55	8.66	18,066	1,076.64	1,076.64
MH-519	1,083.75	1,074.96	8.79	24,088	1,075.06	1,075.06
MH-520	1,082.27	1,073.65	8.62	30,110	1,073.77	1,073.77
MH-521	1,080.41	1,053.43	26.98	128,063	1,053.67	1,053.67
MH-522	1,080.47	1,052.60	27.87	128,063	1,052.84	1,052.84
MH-523	1,080.17	1,051.65	28.53	240,799	1,051.94	1,051.94
MH-524	1,077.96	1,054.54	23.41	112,736	1,054.77	1,054.77
MH-525	1,076.69	1,055.96	20.73	104,475	1,056.18	1,056.18
MH-526	1,075.02	1,057.38	17.64	96,213	1,057.59	1,057.59
MH-527	1,073.56	1,058.80	14.76	30,124	1,058.92	1,058.92
MH-528	1,072.19	1,060.22	11.97	21,863	1,060.32	1,060.32

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-529	1,070.36	1,061.64	8.72	13,601	1,061.72	1,061.72
MH-530	1,070.25	1,061.99	8.26	7,579	1,062.05	1,062.05
MH-532	1,080.54	1,054.53	26.02	128,063	1,054.77	1,054.77
MH-533	1,079.87	1,055.63	24.24	128,063	1,055.87	1,055.87
MH-534	1,080.33	1,056.10	24.23	128,063	1,056.34	1,056.34
MH-535	1,082.14	1,073.88	8.26	24,088	1,073.99	1,073.99
MH-536	1,083.36	1,075.40	7.96	18,066	1,075.49	1,075.49
MH-537	1,084.13	1,076.26	7.87	12,044	1,076.34	1,076.34
MH-538	1,086.29	1,078.62	7.67	6,022	1,078.67	1,078.67
MH-539	1,088.57	1,060.35	28.22	83,116	1,060.55	1,060.55
MH-540	1,076.69	1,062.02	14.67	57,828	1,062.18	1,062.18
MH-541	1,078.44	1,063.42	15.03	49,567	1,063.57	1,063.57
MH-542	1,075.74	1,064.94	10.80	41,306	1,065.07	1,065.07
MH-543	1,076.72	1,066.46	10.27	33,045	1,066.58	1,066.58
MH-544	1,075.84	1,067.98	7.87	24,784	1,068.08	1,068.08
MH-545	1,088.47	1,060.81	27.66	81,036	1,061.00	1,061.00
MH-546	1,087.07	1,062.24	24.83	81,036	1,062.43	1,062.43
MH-547	1,087.55	1,063.40	24.15	81,036	1,063.59	1,063.59
MH-548	1,088.28	1,064.45	23.83	36,088	1,064.58	1,064.58
MH-549	1,089.18	1,065.75	23.43	36,088	1,065.88	1,065.88
MH-550	1,089.67	1,067.00	22.67	36,088	1,067.13	1,067.13
MH-551	1,089.94	1,068.22	21.72	36,088	1,068.35	1,068.35
MH-552	1,090.67	1,068.92	21.75	36,088	1,069.05	1,069.05
MH-553	1,088.67	1,070.44	18.23	36,088	1,070.57	1,070.57
MH-554	1,086.58	1,071.96	14.62	16,740	1,072.05	1,072.05
MH-555	1,084.92	1,073.38	11.54	16,740	1,073.47	1,073.47
MH-556	1,085.18	1,074.02	11.16	16,740	1,074.10	1,074.10
MH-557	1,083.61	1,075.52	8.09	16,740	1,075.61	1,075.61
MH-558	1,084.71	1,077.04	7.67	16,740	1,077.13	1,077.13
MH-559	1,092.74	1,079.81	12.93	2,080	1,079.84	1,079.84
MH-560	1,089.04	1,077.33	11.71	19,349	1,077.42	1,077.42
MH-561	1,086.80	1,078.85	7.96	19,349	1,078.94	1,078.94
MH-562	1,088.03	1,080.37	7.67	19,349	1,080.46	1,080.46
MH-563	1,078.56	1,070.01	8.55	16,522	1,070.09	1,070.09
MH-564	1,078.93	1,071.26	7.67	8,261	1,071.33	1,071.33
MH-565	1,083.81	1,057.32	26.49	128,063	1,057.56	1,057.56
MH-566	1,085.99	1,058.91	27.09	83,116	1,059.10	1,059.10
MH-567	1,072.37	1,063.51	8.87	5,868	1,063.56	1,063.56
MH-568	1,073.22	1,064.93	8.30	4,157	1,064.97	1,064.97
MH-569	1,074.30	1,066.35	7.95	2,771	1,066.39	1,066.39
MH-570	1,075.44	1,067.77	7.67	1,793	1,067.80	1,067.80
MH-571	1,092.28	1,079.51	12.78	2,080	1,079.54	1,079.54
MH-572	1,092.15	1,079.20	12.94	2,080	1,079.23	1,079.23
MH-573	1,092.99	1,078.76	14.23	2,080	1,078.79	1,078.79
MH-574	1,092.87	1,078.34	14.53	2,080	1,078.37	1,078.37
MH-575	1,093.50	1,077.75	15.75	2,080	1,077.79	1,077.79
MH-576	1,088.33	1,076.39	11.94	2,080	1,076.42	1,076.42

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Hydraulic Grade (ft)	Flow (Total Out) (gpd)
LS-1	1,080.80	1,051.30	1,072.65	294,997
OF-1	1,093.59	1,078.65	1,078.78	50,699
OF-2	1,085.91	1,065.81	1,066.09	359,220

PEAK FLOW
(PEAKING FACTOR = 2.89)

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-1	8.0	400.0	0.013	0.0033	MH-1A	1,097.00	6.94	MH-2	1,095.68	6.32	5,826	0.70	1.3	448,636	8.0	448,636
CO-2	8.0	200.0	0.013	0.0033	MH-2	1,095.68	6.32	MH-3	1,095.02	6.00	7,907	0.76	1.8	448,636	9.2	448,636
CO-3	8.0	118.3	0.013	0.0033	MH-3	1,094.82	6.20	MH-4	1,094.43	7.55	8,739	0.78	1.9	448,981	9.7	448,981
CO-4	8.0	227.3	0.013	0.0033	MH-4	1,094.43	7.55	MH-5	1,093.68	7.36	10,404	0.82	2.3	448,905	10.5	448,905
CO-5	8.0	82.9	0.013	0.0033	MH-5	1,093.68	7.36	MH-6	1,093.41	7.27	16,646	0.95	3.7	448,718	13.2	448,718
CO-6	8.0	232.9	0.013	0.0033	MH-6	1,093.41	7.27	MH-7	1,092.64	6.74	17,895	0.97	4.0	448,665	13.6	448,665
CO-7	8.0	198.7	0.013	0.0033	MH-7	1,092.44	6.94	MH-8	1,091.78	7.75	21,640	1.03	4.8	448,738	14.9	448,738
CO-8	8.0	400.0	0.013	0.0033	MH-8	1,091.78	7.75	MH-9	1,090.46	8.47	26,218	1.09	5.8	448,636	16.4	448,636
CO-9	8.0	261.5	0.013	0.0033	MH-9	1,090.46	8.47	MH-10	1,089.60	10.84	27,883	1.11	6.2	448,480	16.9	448,480
CO-10	8.0	74.7	0.013	0.0033	MH-10	1,089.40	11.04	MH-11	1,089.15	10.57	41,200	1.24	9.2	449,089	20.5	449,089
CO-11	8.0	69.1	0.013	0.0033	MH-11	1,089.15	10.57	MH-12	1,088.92	10.31	41,616	1.24	9.3	448,931	20.6	448,931
CO-12	8.0	90.8	0.013	0.0033	MH-12	1,088.92	10.31	MH-13	1,088.62	9.99	42,032	1.25	9.4	448,412	20.7	448,412
CO-13	8.0	27.0	0.013	0.0033	MH-13	1,088.42	10.19	MH-14	1,088.33	10.20	42,032	1.25	9.4	448,384	20.7	448,384
CO-14	8.0	161.2	0.013	0.0033	MH-14	1,088.33	10.20	MH-15	1,087.80	12.77	43,281	1.26	9.6	448,931	21.0	448,931
CO-15	8.0	83.2	0.013	0.0033	MH-15	1,087.80	12.77	MH-16	1,087.53	14.09	43,697	1.26	9.7	448,718	21.1	448,718
CO-16	8.0	133.2	0.013	0.0033	MH-16	1,087.53	14.09	MH-17	1,087.09	14.75	44,945	1.27	10.0	449,198	21.4	449,198
CO-17	8.0	169.6	0.013	0.0033	MH-17	1,087.09	14.75	MH-18	1,086.53	14.96	95,331	1.58	21.2	448,636	31.3	448,636
CO-18	8.0	150.0	0.013	0.0033	MH-18	1,086.33	15.16	MH-19	1,085.83	14.23	102,822	1.61	22.9	448,636	32.5	448,636
CO-19	8.0	265.0	0.013	0.0041	MH-19	1,085.83	14.23	MH-20	1,084.76	13.71	102,822	1.74	20.7	497,414	30.9	497,414
CO-20	8.0	111.2	0.013	0.0033	MH-20	1,084.76	13.71	MH-21	1,084.39	15.04	103,654	1.62	23.1	449,064	32.7	449,064
CO-21	8.0	112.8	0.013	0.0033	MH-21	1,084.39	15.04	MH-22	1,084.02	16.59	104,487	1.62	23.3	448,696	32.8	448,696
CO-22	8.0	298.5	0.013	0.0033	MH-22	1,083.82	16.79	MH-23	1,082.83	16.63	108,648	1.64	24.2	448,477	33.5	448,477
CO-23	8.0	298.5	0.013	0.0033	MH-23	1,082.83	16.63	MH-24	1,081.84	16.51	112,810	1.65	25.1	448,704	34.2	448,704
CO-24	8.0	307.5	0.013	0.0033	MH-24	1,081.84	16.51	MH-25	1,080.83	17.98	124,879	1.70	27.8	449,056	36.1	449,056
CO-25	8.0	289.1	0.013	0.0033	MH-25	1,080.63	18.18	MH-26	1,079.68	13.66	146,519	1.78	32.7	448,707	39.4	448,707
CO-26	8.0	249.8	0.013	0.0033	MH-26	1,079.48	13.86	OF-1	1,078.65	14.27	146,519	1.78	32.7	448,636	39.4	448,636
CO-27	8.0	346.7	0.013	0.0179	MH-1B	1,097.94	6.00	MH-27	1,091.74	12.65	4,578	1.17	0.4	1,043,501	4.8	1,043,501
CO-28	8.0	320.0	0.013	0.0033	MH-27	1,091.54	12.85	MH-28	1,090.49	12.48	6,242	0.71	1.4	448,636	8.2	448,636
CO-29	8.0	330.0	0.013	0.0033	MH-28	1,090.49	12.48	MH-10	1,089.40	11.04	12,485	0.87	2.8	448,636	11.5	448,636
CO-30	8.0	400.0	0.013	0.0033	MH-29A	1,097.14	6.00	MH-30	1,095.82	5.73	4,994	0.66	1.1	448,636	7.5	448,636
CO-31	8.0	79.0	0.013	0.0245	MH-30	1,095.82	5.73	MH-5	1,093.88	7.16	5,826	1.39	0.5	1,222,261	5.0	1,222,261
CO-32	8.0	399.6	0.013	0.0161	MH-29B	1,097.14	6.00	MH-28	1,090.69	12.28	4,994	1.14	0.5	991,715	5.1	991,715
CO-33	8.0	163.1	0.013	0.0033	MH-31	1,093.18	5.22	MH-7	1,092.64	6.74	1,248	0.43	0.3	448,678	3.9	448,678
CO-34	8.0	144.5	0.013	0.0033	MH-32	1,091.62	11.58	MH-33	1,091.14	11.97	37,069	1.20	8.2	449,485	19.4	449,485
CO-35	8.0	67.7	0.013	0.0033	MH-33	1,091.04	12.07	MH-34	1,090.82	11.21	37,069	1.20	8.3	448,236	19.5	448,236
CO-36	8.0	293.3	0.013	0.0033	MH-34	1,090.62	11.41	MH-35	1,089.65	12.88	49,138	1.31	10.9	448,891	22.3	448,891
CO-37	8.0	51.6	0.013	0.0033	MH-35	1,089.65	12.88	MH-36	1,089.48	12.84	49,554	1.31	11.0	449,159	22.4	449,159
CO-38	8.0	87.6	0.013	0.0249	MH-36	1,089.48	12.84	MH-17	1,087.29	14.55	49,970	2.67	4.1	1,232,302	13.8	1,232,302
CO-39	8.0	318.6	0.013	0.0033	MH-37A	1,098.50	6.00	MH-38	1,097.45	5.88	4,578	0.64	1.0	448,700	7.2	448,700

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-40	8.0	250.0	0.013	0.0265	MH-38	1,097.45	5.88	MH-34	1,090.82	11.21	8,739	1.61	0.7	1,271,623	5.9	1,271,623
CO-41	8.0	293.8	0.013	0.0033	MH-37B	1,098.50	6.00	MH-39	1,097.53	5.69	2,497	0.53	0.6	448,590	5.4	448,590
CO-42	8.0	21.1	0.013	0.0033	MH-39	1,097.43	5.79	MH-40	1,097.36	5.87	2,497	0.54	0.6	450,896	5.4	450,896
CO-43	8.0	106.7	0.013	0.0033	MH-40	1,097.26	5.97	MH-41	1,096.91	6.62	3,745	0.60	0.8	448,572	6.5	448,572
CO-44	8.0	199.8	0.013	0.0033	MH-41	1,096.91	6.62	MH-42	1,096.25	5.87	6,659	0.72	1.5	448,636	8.5	448,636
CO-45	8.0	54.4	0.013	0.1800	MH-42	1,096.25	5.87	MH-18	1,086.53	14.96	7,491	2.98	0.2	3,313,396	3.5	3,313,396
CO-46	8.0	161.5	0.013	0.0033	MH-43	1,087.59	9.68	MH-44	1,087.06	10.87	1,248	0.43	0.3	449,353	3.9	449,353
CO-47	8.0	169.6	0.013	0.0033	MH-44	1,087.06	10.87	MH-45	1,086.50	12.34	2,081	0.51	0.5	448,636	4.9	448,636
CO-48	8.0	281.2	0.013	0.0033	MH-45	1,086.50	12.34	MH-46	1,085.57	12.94	4,162	0.62	0.9	448,805	6.8	448,805
CO-49	8.0	144.4	0.013	0.0033	MH-46	1,085.37	13.14	MH-47	1,084.89	13.37	6,659	0.72	1.5	449,013	8.5	449,013
CO-50	8.0	187.5	0.013	0.0033	MH-47	1,084.89	13.37	MH-48	1,084.27	12.14	9,156	0.79	2.0	449,326	9.9	449,326
CO-51	8.0	166.9	0.013	0.0033	MH-48	1,084.27	12.14	MH-49	1,083.72	11.05	11,236	0.84	2.5	448,595	10.9	448,595
CO-52	8.0	208.0	0.013	0.0033	MH-49	1,083.72	11.05	MH-50	1,083.04	12.65	12,485	0.87	2.8	448,505	11.5	448,505
CO-53	8.0	187.5	0.013	0.0033	MH-50	1,083.04	12.65	MH-51	1,082.42	14.11	15,398	0.93	3.4	449,326	12.7	449,326
CO-54	8.0	146.3	0.013	0.0033	MH-51	1,082.42	14.11	MH-52	1,081.94	15.23	17,063	0.96	3.8	449,194	13.3	449,194
CO-55	8.0	145.9	0.013	0.0033	MH-52	1,081.94	15.23	MH-53	1,081.45	16.29	19,143	0.99	4.3	448,729	14.1	448,729
CO-56	8.0	194.2	0.013	0.0033	MH-53	1,081.45	16.29	MH-54	1,080.81	18.04	21,640	1.03	4.8	448,566	14.9	448,566
CO-57	8.0	25.3	0.013	0.0034	MH-54	1,080.81	18.04	MH-25	1,080.73	18.08	21,640	1.03	4.8	452,696	14.9	452,696
CO-58	8.0	61.7	0.013	0.0033	MH-55	1,092.81	6.00	MH-56	1,092.60	6.77	832	0.38	0.2	449,074	3.2	449,074
CO-59	8.0	151.1	0.013	0.0033	MH-56	1,092.60	6.77	MH-57	1,092.11	7.43	2,913	0.56	0.6	448,501	5.8	448,501
CO-60	8.0	151.1	0.013	0.0033	MH-57	1,092.11	7.43	MH-58	1,091.61	7.30	4,162	0.62	0.9	448,951	6.8	448,951
CO-61	8.0	151.1	0.013	0.0033	MH-58	1,091.61	7.30	MH-59	1,091.11	7.16	6,242	0.71	1.4	448,501	8.2	448,501
CO-62	8.0	115.6	0.013	0.0033	MH-59	1,091.11	7.16	MH-60	1,090.73	6.93	7,491	0.75	1.7	448,753	9.0	448,753
CO-63	8.0	229.6	0.013	0.0386	MH-60	1,090.73	6.93	MH-24	1,081.84	16.51	9,572	1.89	0.6	1,534,718	5.7	1,534,718
CO-64	8.0	158.0	0.013	0.0412	MH-61	1,091.88	6.00	MH-46	1,085.37	13.14	832	0.93	0.1	1,584,890	1.8	1,584,890
CO-65	8.0	332.0	0.013	0.0059	MH-62	1,091.69	6.00	MH-63	1,089.74	8.96	4,162	0.76	0.7	599,296	6.0	599,296
CO-66	8.0	385.0	0.013	0.0033	MH-63	1,089.74	8.96	MH-64	1,088.47	8.66	9,156	0.79	2.0	448,724	9.9	448,724
CO-67	8.0	320.0	0.013	0.0033	MH-64	1,088.27	8.86	MH-65	1,087.21	11.21	11,236	0.84	2.5	448,636	10.9	448,636
CO-68	8.0	320.0	0.013	0.0033	MH-65	1,087.21	11.21	MH-66	1,086.16	10.85	22,889	1.04	5.1	448,636	15.4	448,636
CO-69	8.0	306.9	0.013	0.0033	MH-66	1,085.96	11.05	MH-67	1,084.94	10.49	26,634	1.09	5.9	448,614	16.5	448,614
CO-70	8.0	275.0	0.013	0.0033	MH-67	1,084.94	10.49	MH-68	1,084.04	10.30	29,964	1.13	6.7	448,760	17.5	448,760
CO-71	8.0	235.7	0.013	0.0033	MH-68	1,083.84	10.50	MH-69	1,083.06	10.80	32,460	1.16	7.2	448,694	18.2	448,694
CO-72	8.0	127.0	0.013	0.0033	MH-69	1,083.06	10.80	MH-70	1,082.64	12.28	33,293	1.16	7.4	448,582	18.5	448,582
CO-73	8.0	41.7	0.013	0.0033	MH-70	1,082.64	12.28	MH-71	1,082.50	12.37	33,293	1.16	7.4	449,283	18.5	449,283
CO-74	8.0	95.1	0.013	0.0033	MH-71	1,082.50	12.37	MH-72	1,082.18	12.20	37,038	1.20	8.2	448,994	19.4	448,994
CO-75	8.0	279.8	0.013	0.0033	MH-72	1,082.18	12.20	MH-73	1,081.26	12.03	40,368	1.23	9.0	448,636	20.3	448,636
CO-76	8.0	361.7	0.013	0.0033	MH-73	1,081.26	12.03	MH-74	1,080.07	12.08	42,448	1.25	9.5	448,711	20.8	448,711
CO-77	8.0	312.4	0.013	0.0033	MH-74	1,079.87	12.28	MH-75	1,078.83	13.13	45,361	1.28	10.1	448,941	21.5	448,941
CO-78	8.0	325.0	0.013	0.0033	MH-75	1,078.83	13.13	MH-76	1,077.76	12.30	48,691	1.30	10.9	448,531	22.2	448,531

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-79	8.0	148.5	0.013	0.0033	MH-76	1,077.76	12.30	MH-77	1,077.27	12.20	49,523	1.31	11.0	448,773	22.4	448,773
CO-80	8.0	155.2	0.013	0.0033	MH-77	1,077.27	12.20	MH-78	1,076.76	13.24	53,268	1.34	11.9	448,855	23.2	448,855
CO-81	8.0	169.6	0.013	0.0033	MH-78	1,076.76	13.24	MH-79	1,076.20	14.37	54,101	1.34	12.1	448,636	23.4	448,636
CO-82	8.0	153.7	0.013	0.0033	MH-79	1,076.20	14.37	MH-80	1,075.69	14.01	58,679	1.37	13.1	448,548	24.4	448,548
CO-83	8.0	172.2	0.013	0.0033	MH-80	1,075.69	14.01	MH-81	1,075.12	13.87	59,511	1.38	13.3	448,794	24.6	448,794
CO-84	8.0	173.9	0.013	0.0033	MH-81	1,075.12	13.87	MH-82	1,074.55	15.13	64,921	1.42	14.5	448,558	25.7	448,558
CO-85	8.0	150.3	0.013	0.0033	MH-82	1,074.55	15.13	MH-83	1,074.05	14.45	65,753	1.42	14.6	449,089	25.9	449,089
CO-86	8.0	337.6	0.013	0.0033	MH-83	1,073.85	14.65	MH-84	1,072.74	14.28	69,499	1.44	15.5	448,757	26.6	448,757
CO-87	8.0	58.7	0.013	0.0033	MH-84	1,072.74	14.28	MH-85	1,072.54	14.27	69,915	1.45	15.6	448,981	26.7	448,981
CO-88	8.0	79.0	0.013	0.0033	MH-85	1,072.44	14.37	MH-86	1,072.18	14.21	70,331	1.45	15.7	448,033	26.8	448,033
CO-89	8.0	49.2	0.013	0.0033	MH-86	1,072.08	14.31	MH-87	1,071.92	14.45	70,331	1.45	15.6	450,436	26.7	450,436
CO-90	8.0	100.5	0.013	0.0033	MH-87	1,071.92	14.45	MH-88	1,071.59	15.29	70,747	1.45	15.7	449,315	26.8	449,315
CO-91	8.0	220.6	0.013	0.0033	MH-88	1,071.59	15.29	MH-89	1,070.86	17.12	71,996	1.46	16.0	448,851	27.1	448,851
CO-92	8.0	177.1	0.013	0.0033	MH-89	1,070.86	17.12	MH-90	1,070.27	17.35	72,828	1.46	16.2	448,598	27.3	448,598
CO-93	8.0	400.0	0.013	0.0033	MH-90	1,070.07	17.55	MH-91	1,068.75	16.98	72,828	1.46	16.2	448,636	27.3	448,636
CO-94	8.0	400.0	0.013	0.0033	MH-91	1,068.75	16.98	MH-92	1,067.43	17.90	72,828	1.46	16.2	448,636	27.3	448,636
CO-95	8.0	189.3	0.013	0.0033	MH-92	1,067.43	17.90	MH-302	1,066.81	16.35	72,828	1.46	16.2	449,103	27.3	449,103
CO-96	8.0	332.0	0.013	0.0089	MH-93	1,091.62	6.00	MH-94	1,088.68	11.40	4,162	0.88	0.6	735,173	5.4	735,173
CO-97	8.0	385.0	0.013	0.0033	MH-94	1,088.68	11.40	MH-65	1,087.41	11.01	9,156	0.79	2.0	448,548	9.9	448,548
CO-98	8.0	188.5	0.013	0.0033	MH-95	1,084.66	11.85	MH-68	1,084.04	10.30	2,081	0.51	0.5	449,214	4.9	449,214
CO-99	8.0	179.1	0.013	0.0033	MH-96	1,088.24	6.00	MH-97	1,087.65	7.36	2,081	0.51	0.5	448,750	4.9	448,750
CO-100	8.0	65.4	0.013	0.0033	MH-97	1,087.65	7.36	MH-98	1,087.43	7.80	2,497	0.53	0.6	450,202	5.4	450,202
CO-101	8.0	85.8	0.013	0.0551	MH-98	1,087.43	7.80	MH-71	1,082.70	12.17	2,913	1.48	0.2	1,832,517	3.0	1,832,517
CO-102	8.0	266.3	0.013	0.0214	MH-99	1,083.17	6.00	MH-77	1,077.47	12.00	2,913	1.07	0.3	1,143,230	3.7	1,143,230
CO-103	8.0	342.4	0.013	0.0212	MH-100	1,083.66	6.00	MH-79	1,076.40	14.17	3,745	1.17	0.3	1,138,104	4.2	1,138,104
CO-104	8.0	216.0	0.013	0.0033	MH-101	1,081.32	6.01	MH-102	1,080.61	7.69	2,081	0.51	0.5	448,699	4.9	448,699
CO-105	8.0	216.0	0.013	0.0245	MH-102	1,080.61	7.69	MH-81	1,075.32	13.67	4,578	1.29	0.4	1,221,726	4.4	1,221,726
CO-302	18.0	91.3	0.013	0.0018	MH-302	1,065.97	16.35	OF-2	1,065.81	18.60	1,038,146	2.32	47.6	2,179,958	41.5	2,881,985
CO-303	12.0	422.5	0.013	0.0080	MH-303	1,069.86	12.24	MH-302	1,066.47	16.35	965,318	4.00	61.9	1,560,599	48.1	2,063,170
CO-304	12.0	400.0	0.013	0.0031	MH-304	1,071.20	10.43	MH-303	1,069.96	12.14	949,767	2.76	97.9	969,730	64.1	1,282,020
CO-305	8.0	400.0	0.013	0.0033	MH-305	1,073.65	10.07	MH-304	1,072.33	9.63	69,033	1.44	20.3	339,352	26.5	448,636
CO-306	8.0	400.0	0.013	0.0033	MH-306	1,075.17	8.18	MH-305	1,073.85	9.87	53,483	1.34	15.8	339,352	23.3	448,636
CO-307	8.0	400.0	0.013	0.0033	MH-307	1,076.69	8.50	MH-306	1,075.37	7.98	37,933	1.21	11.2	339,352	19.7	448,636
CO-308	8.0	250.0	0.013	0.0033	MH-308	1,077.72	7.20	MH-307	1,076.89	8.30	25,289	1.07	7.5	339,352	16.1	448,636
CO-309	8.0	200.0	0.013	0.0056	MH-309	1,079.03	7.00	MH-308	1,077.92	7.00	12,644	1.05	2.9	440,158	10.2	581,905
CO-310	12.0	400.0	0.013	0.0031	MH-310	1,072.64	8.19	MH-304	1,071.40	10.23	865,184	2.71	89.2	969,730	60.2	1,282,020
CO-311	12.0	250.0	0.013	0.0031	MH-311	1,073.52	7.00	MH-310	1,072.74	8.09	865,184	2.71	89.2	969,730	60.2	1,282,020
CO-500	8.0	155.1	0.013	0.0033	MH-500	1,086.81	7.01	MH-501	1,086.30	7.51	925	0.40	0.3	339,518	3.3	448,855
CO-501	8.0	73.2	0.013	0.0033	MH-501	1,086.30	7.51	MH-502	1,086.05	7.81	925	0.40	0.3	339,422	3.3	448,729

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-502	8.0	85.8	0.013	0.0033	MH-502	1,086.05	7.81	MH-503	1,085.77	8.70	925	0.40	0.3	339,472	3.3	448,794
CO-503	8.0	82.4	0.013	0.0033	MH-503	1,085.77	8.70	MH-504	1,085.50	9.07	1,850	0.48	0.5	340,229	4.7	449,795
CO-504	8.0	136.0	0.013	0.0033	MH-504	1,085.50	9.07	MH-505	1,085.05	6.72	1,850	0.48	0.5	339,428	4.7	448,736
CO-505	8.0	92.7	0.013	0.0033	MH-505	1,085.05	6.72	MH-506	1,084.74	8.25	1,850	0.48	0.5	339,407	4.7	448,709
CO-506	8.0	324.9	0.013	0.0033	MH-506	1,084.74	8.25	MH-507	1,083.67	10.63	2,774	0.55	0.8	339,273	5.6	448,531
CO-507	8.0	98.0	0.013	0.0033	MH-507	1,083.67	10.63	MH-508	1,083.35	11.06	2,774	0.55	0.8	339,667	5.6	449,052
CO-508	8.0	276.8	0.013	0.0033	MH-508	1,083.35	11.06	MH-509	1,082.43	11.18	3,699	0.60	1.1	339,333	6.5	448,611
CO-509	8.0	43.3	0.013	0.0033	MH-509	1,082.43	11.18	MH-510	1,082.29	11.06	3,699	0.60	1.1	340,665	6.5	450,372
CO-510	8.0	63.0	0.013	0.0033	MH-510	1,082.29	11.06	MH-511	1,082.08	11.31	3,699	0.60	1.1	339,434	6.5	448,744
CO-511	8.0	210.2	0.013	0.0033	MH-511	1,082.08	11.31	MH-512	1,081.39	12.10	4,162	0.62	1.2	339,352	6.8	448,636
CO-512	8.0	111.5	0.013	0.0033	MH-512	1,081.39	12.10	MH-513	1,081.02	12.26	4,162	0.62	1.2	340,139	6.8	449,676
CO-513	8.0	184.2	0.013	0.0033	MH-513	1,081.02	12.26	MH-514	1,080.41	12.06	5,086	0.66	1.5	339,576	7.5	448,931
CO-514	8.0	89.0	0.013	0.0033	MH-514	1,080.41	12.06	MH-515	1,080.12	12.01	5,086	0.66	1.5	339,525	7.5	448,865
CO-515	8.0	94.4	0.013	0.0033	MH-515	1,080.12	12.01	MH-559	1,079.81	12.27	5,086	0.66	1.5	339,789	7.5	449,214
CO-516	8.0	351.6	0.013	0.0033	MH-516	1,079.33	7.00	MH-517	1,078.17	7.98	17,404	0.96	5.1	339,352	13.4	448,636
CO-517	8.0	372.0	0.013	0.0033	MH-517	1,077.97	8.18	MH-518	1,076.75	7.79	34,807	1.18	10.3	339,352	18.8	448,636
CO-518	8.0	419.9	0.013	0.0033	MH-518	1,076.55	7.99	MH-519	1,075.16	7.92	52,211	1.33	15.4	339,352	23.1	448,636
CO-519	8.0	366.6	0.013	0.0033	MH-519	1,074.96	8.12	MH-520	1,073.75	7.85	69,614	1.44	20.5	339,352	26.6	448,636
CO-520	8.0	396.5	0.013	0.0033	MH-520	1,073.65	7.95	LS-1	1,072.34	7.79	87,018	1.54	25.6	339,352	29.9	448,636
CO-521	10.0	290.7	0.013	0.0025	MH-521	1,053.43	26.15	MH-522	1,052.70	26.93	370,102	2.03	69.1	535,538	51.3	708,001
CO-522	10.0	234.0	0.013	0.0025	MH-522	1,052.60	27.03	MH-523	1,052.01	27.33	370,102	2.03	69.1	535,538	51.3	708,001
CO-523	12.0	112.6	0.013	0.0031	MH-523	1,051.65	27.53	LS-1	1,051.30	28.51	695,908	2.58	71.8	969,730	52.5	1,282,020
CO-524	8.0	400.0	0.013	0.0033	MH-524	1,054.54	22.74	MH-523	1,053.22	26.28	325,807	2.17	96.0	339,352	63.2	448,636
CO-525	8.0	400.0	0.013	0.0033	MH-525	1,055.96	20.06	MH-524	1,054.64	22.64	301,932	2.13	89.0	339,352	60.1	448,636
CO-526	8.0	400.0	0.013	0.0033	MH-526	1,057.38	16.97	MH-525	1,056.06	19.96	278,057	2.09	81.9	339,352	57.0	448,636
CO-527	8.0	400.0	0.013	0.0033	MH-527	1,058.80	14.09	MH-526	1,057.48	16.87	87,058	1.54	25.7	339,352	29.9	448,636
CO-528	8.0	400.0	0.013	0.0033	MH-528	1,060.22	11.30	MH-527	1,058.90	13.99	63,183	1.40	18.6	339,352	25.4	448,636
CO-529	8.0	400.0	0.013	0.0033	MH-529	1,061.64	8.05	MH-528	1,060.32	11.20	39,308	1.22	11.6	339,352	20.0	448,636
CO-530	8.0	74.5	0.013	0.0033	MH-530	1,061.99	7.60	MH-529	1,061.74	7.95	21,905	1.03	6.5	339,352	15.0	448,636
CO-532	10.0	400.0	0.013	0.0025	MH-532	1,054.53	25.18	MH-521	1,053.53	26.05	370,102	2.03	69.1	535,538	51.3	708,001
CO-533	10.0	400.0	0.013	0.0025	MH-533	1,055.63	23.41	MH-532	1,054.63	25.08	370,102	2.03	69.1	535,538	51.3	708,001
CO-534	10.0	107.8	0.013	0.0025	MH-534	1,056.10	23.40	MH-533	1,055.83	23.21	370,102	2.03	69.1	535,538	51.3	708,001
CO-535	8.0	400.0	0.013	0.0033	MH-535	1,073.88	7.59	LS-1	1,072.56	7.57	69,614	1.44	20.5	339,352	26.6	448,636
CO-536	8.0	400.0	0.013	0.0033	MH-536	1,075.40	7.29	MH-535	1,074.08	7.39	52,211	1.33	15.4	339,352	23.1	448,636
CO-537	8.0	200.0	0.013	0.0033	MH-537	1,076.26	7.20	MH-536	1,075.60	7.09	34,807	1.18	10.3	339,352	18.8	448,636
CO-538	8.0	400.0	0.013	0.0054	MH-538	1,078.62	7.00	MH-537	1,076.46	7.00	17,404	1.14	4.0	434,116	12.0	573,918
CO-539	8.0	406.9	0.013	0.0033	MH-539	1,060.35	27.55	MH-566	1,059.01	26.32	240,204	2.02	70.8	339,352	52.1	448,636
CO-540	8.0	395.7	0.013	0.0033	MH-540	1,062.02	14.00	MH-526	1,060.71	13.64	167,124	1.84	49.2	339,352	42.3	448,636
CO-541	8.0	393.6	0.013	0.0033	MH-541	1,063.42	14.36	MH-540	1,062.12	13.90	143,249	1.77	42.2	339,352	38.8	448,636

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-542	8.0	398.9	0.013	0.0033	MH-542	1,064.94	10.14	MH-541	1,063.62	14.16	119,374	1.68	35.2	339,352	35.2	448,636
CO-543	8.0	400.5	0.013	0.0033	MH-543	1,066.46	9.60	MH-542	1,065.14	9.94	95,499	1.58	28.1	339,352	31.3	448,636
CO-544	8.0	399.7	0.013	0.0033	MH-544	1,067.98	7.20	MH-543	1,066.66	9.40	71,625	1.46	21.1	339,352	27.0	448,636
CO-545	8.0	78.2	0.013	0.0033	MH-545	1,060.81	26.99	MH-539	1,060.55	27.35	234,193	2.01	69.0	339,352	51.3	448,636
CO-546	8.0	401.8	0.013	0.0033	MH-546	1,062.24	24.16	MH-545	1,060.91	26.89	234,193	2.01	69.0	339,352	51.3	448,636
CO-547	8.0	321.7	0.013	0.0033	MH-547	1,063.40	23.48	MH-546	1,062.34	24.06	234,193	2.01	69.0	339,352	51.3	448,636
CO-548	8.0	287.7	0.013	0.0033	MH-548	1,064.45	23.16	MH-547	1,063.50	23.38	104,295	1.62	30.7	339,352	32.8	448,636
CO-549	8.0	364.9	0.013	0.0033	MH-549	1,065.75	22.76	MH-548	1,064.55	23.06	104,295	1.62	30.7	339,352	32.8	448,636
CO-550	8.0	346.8	0.013	0.0033	MH-550	1,067.00	22.00	MH-549	1,065.85	22.66	104,295	1.62	30.7	339,352	32.8	448,636
CO-551	8.0	341.0	0.013	0.0033	MH-551	1,068.22	21.05	MH-550	1,067.10	21.90	104,295	1.62	30.7	339,352	32.8	448,636
CO-552	8.0	179.9	0.013	0.0033	MH-552	1,068.92	21.09	MH-551	1,068.32	20.95	104,295	1.62	30.7	339,352	32.8	448,636
CO-553	8.0	400.0	0.013	0.0033	MH-553	1,070.44	17.57	MH-552	1,069.12	20.89	104,295	1.62	30.7	339,352	32.8	448,636
CO-554	8.0	400.0	0.013	0.0033	MH-554	1,071.96	13.95	MH-553	1,070.64	17.37	48,378	1.30	14.3	339,352	22.2	448,636
CO-555	8.0	400.0	0.013	0.0033	MH-555	1,073.38	10.87	MH-554	1,072.06	13.85	48,378	1.30	14.3	339,352	22.2	448,636
CO-556	8.0	132.7	0.013	0.0033	MH-556	1,074.02	10.50	MH-555	1,073.58	10.67	48,378	1.30	14.3	339,352	22.2	448,636
CO-557	8.0	395.3	0.013	0.0033	MH-557	1,075.52	7.42	MH-556	1,074.22	10.30	48,378	1.30	14.3	339,352	22.2	448,636
CO-558	8.0	400.0	0.013	0.0033	MH-558	1,077.04	7.00	MH-557	1,075.72	7.22	48,378	1.30	14.3	339,352	22.2	448,636
CO-559	8.0	90.7	0.013	0.0033	MH-559	1,079.81	12.27	MH-571	1,079.51	12.11	6,011	0.70	1.8	339,747	8.1	449,159
CO-560	8.0	133.0	0.013	0.0033	MH-553	1,076.89	11.12	MH-560	1,077.33	11.05	55,917	1.36	16.5	339,352	23.8	448,636
CO-561	8.0	400.0	0.013	0.0033	MH-560	1,077.53	10.85	MH-561	1,078.85	7.29	55,917	1.36	16.5	339,352	23.8	448,636
CO-562	8.0	400.0	0.013	0.0033	MH-561	1,079.05	7.09	MH-562	1,080.37	7.00	55,917	1.36	16.5	339,352	23.8	448,636
CO-563	8.0	400.0	0.013	0.0046	MH-563	1,070.01	7.89	MH-544	1,068.18	7.00	47,750	1.45	11.9	400,002	20.3	528,817
CO-564	8.0	350.0	0.013	0.0033	MH-564	1,071.26	7.00	MH-563	1,070.11	7.79	23,875	1.06	7.0	339,352	15.7	448,636
CO-565	10.0	410.3	0.013	0.0025	MH-565	1,057.32	25.66	MH-534	1,056.30	23.20	370,102	2.03	69.1	535,538	51.3	708,001
CO-566	8.0	400.0	0.013	0.0033	MH-566	1,058.91	26.42	MH-565	1,057.59	25.56	240,204	2.02	70.8	339,352	52.1	448,636
CO-567	8.0	400.0	0.013	0.0033	MH-567	1,063.51	8.20	MH-530	1,062.19	7.40	16,959	0.95	5.0	339,352	13.3	448,636
CO-568	8.0	400.0	0.013	0.0033	MH-568	1,064.93	7.63	MH-567	1,063.61	8.10	12,012	0.86	3.5	339,352	11.3	448,636
CO-569	8.0	400.0	0.013	0.0033	MH-569	1,066.35	7.28	MH-568	1,065.03	7.53	8,008	0.77	2.4	339,352	9.2	448,636
CO-570	8.0	400.0	0.013	0.0033	MH-570	1,067.77	7.00	MH-569	1,066.45	7.18	5,182	0.66	1.5	339,352	7.6	448,636
CO-571	8.0	92.2	0.013	0.0033	MH-571	1,079.51	12.11	MH-572	1,079.20	12.28	6,011	0.70	1.8	339,576	8.1	448,931
CO-572	8.0	103.0	0.013	0.0033	MH-572	1,079.20	12.28	MH-573	1,078.86	13.46	6,011	0.70	1.8	339,402	8.1	448,702
CO-573	8.0	96.6	0.013	0.0033	MH-573	1,078.76	13.56	MH-574	1,078.44	13.77	6,011	0.70	1.8	339,299	8.1	448,566
CO-574	8.0	118.0	0.013	0.0033	MH-574	1,078.34	13.87	MH-575	1,077.95	14.89	6,011	0.70	1.8	339,178	8.1	448,406
CO-575	8.0	352.1	0.013	0.0033	MH-575	1,077.75	15.09	MH-576	1,076.59	11.08	6,011	0.70	1.8	339,410	8.1	448,713
CO-576	8.0	115.2	0.013	0.0033	MH-576	1,076.39	11.28	MH-539	1,076.01	11.89	6,011	0.70	1.8	339,576	8.1	448,931

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-1A	1,104.61	1,097.00	7.61	5,826	1,097.06	1,097.06
MH-1B	1,104.61	1,097.94	6.67	4,578	1,097.98	1,097.98
MH-2	1,102.67	1,095.68	6.99	7,907	1,095.74	1,095.74
MH-3	1,101.69	1,094.82	6.87	8,739	1,094.89	1,094.89
MH-4	1,102.65	1,094.43	8.21	10,404	1,094.50	1,094.50
MH-5	1,101.71	1,093.68	8.03	16,646	1,093.77	1,093.77
MH-6	1,101.35	1,093.41	7.94	17,895	1,093.50	1,093.50
MH-7	1,100.05	1,092.44	7.61	21,640	1,092.54	1,092.54
MH-8	1,100.20	1,091.78	8.42	26,218	1,091.89	1,091.89
MH-9	1,099.60	1,090.46	9.13	27,883	1,090.58	1,090.58
MH-10	1,101.10	1,089.40	11.70	41,200	1,089.54	1,089.54
MH-11	1,100.39	1,089.15	11.24	41,616	1,089.29	1,089.29
MH-12	1,099.90	1,088.92	10.97	42,032	1,089.06	1,089.06
MH-13	1,099.28	1,088.42	10.86	42,032	1,088.56	1,088.56
MH-14	1,099.20	1,088.33	10.87	43,281	1,088.47	1,088.47
MH-15	1,101.24	1,087.80	13.44	43,697	1,087.94	1,087.94
MH-16	1,102.28	1,087.53	14.75	44,945	1,087.67	1,087.67
MH-17	1,102.50	1,087.09	15.41	95,331	1,087.30	1,087.30
MH-18	1,102.16	1,086.33	15.83	102,822	1,086.54	1,086.54
MH-19	1,100.73	1,085.83	14.90	102,822	1,086.04	1,086.04
MH-20	1,099.13	1,084.76	14.37	103,654	1,084.97	1,084.97
MH-21	1,100.09	1,084.39	15.70	104,487	1,084.61	1,084.61
MH-22	1,101.27	1,083.82	17.45	108,648	1,084.04	1,084.04
MH-23	1,100.13	1,082.83	17.30	112,810	1,083.06	1,083.06
MH-24	1,099.02	1,081.84	17.18	124,879	1,082.08	1,082.08
MH-25	1,099.47	1,080.63	18.84	146,519	1,080.89	1,080.89
MH-26	1,094.00	1,079.48	14.53	146,519	1,079.74	1,079.74
MH-27	1,105.06	1,091.54	13.52	6,242	1,091.60	1,091.60
MH-28	1,103.63	1,090.49	13.15	12,485	1,090.56	1,090.56
MH-29A	1,103.81	1,097.14	6.67	4,994	1,097.19	1,097.19
MH-29B	1,103.81	1,097.14	6.67	4,994	1,097.18	1,097.18
MH-30	1,102.21	1,095.82	6.39	5,826	1,095.86	1,095.86
MH-31	1,099.07	1,093.18	5.89	1,248	1,093.20	1,093.20
MH-32	1,103.86	1,091.62	12.24	37,069	1,091.75	1,091.75
MH-33	1,103.78	1,091.04	12.74	37,069	1,091.17	1,091.17
MH-34	1,102.69	1,090.62	12.07	49,138	1,090.77	1,090.77
MH-35	1,103.20	1,089.65	13.54	49,554	1,089.80	1,089.80
MH-36	1,102.98	1,089.48	13.50	49,970	1,089.60	1,089.60
MH-37A	1,105.17	1,098.50	6.67	4,578	1,098.55	1,098.55
MH-37B	1,105.17	1,098.50	6.67	2,497	1,098.54	1,098.54
MH-38	1,103.99	1,097.45	6.55	8,739	1,097.50	1,097.50
MH-39	1,103.89	1,097.43	6.46	2,497	1,097.47	1,097.47
MH-40	1,103.90	1,097.26	6.64	3,745	1,097.30	1,097.30
MH-41	1,104.19	1,096.91	7.29	6,659	1,096.96	1,096.96
MH-42	1,102.78	1,096.25	6.54	7,491	1,096.30	1,096.30
MH-43	1,097.94	1,087.59	10.35	1,248	1,087.62	1,087.62
MH-44	1,098.60	1,087.06	11.54	2,081	1,087.09	1,087.09
MH-45	1,099.51	1,086.50	13.01	4,162	1,086.54	1,086.54

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-46	1,099.18	1,085.37	13.81	6,659	1,085.43	1,085.43
MH-47	1,098.93	1,084.89	14.03	9,156	1,084.96	1,084.96
MH-48	1,097.08	1,084.27	12.81	11,236	1,084.35	1,084.35
MH-49	1,095.44	1,083.72	11.72	12,485	1,083.80	1,083.80
MH-50	1,096.36	1,083.04	13.32	15,398	1,083.12	1,083.12
MH-51	1,097.19	1,082.42	14.77	17,063	1,082.51	1,082.51
MH-52	1,097.84	1,081.94	15.90	19,143	1,082.03	1,082.03
MH-53	1,098.41	1,081.45	16.96	21,640	1,081.55	1,081.55
MH-54	1,099.52	1,080.81	18.71	21,640	1,080.92	1,080.92
MH-55	1,099.48	1,092.81	6.67	832	1,092.83	1,092.83
MH-56	1,100.04	1,092.60	7.44	2,913	1,092.64	1,092.64
MH-57	1,100.21	1,092.11	8.10	4,162	1,092.15	1,092.15
MH-58	1,099.57	1,091.61	7.96	6,242	1,091.66	1,091.66
MH-59	1,098.93	1,091.11	7.83	7,491	1,091.17	1,091.17
MH-60	1,098.32	1,090.73	7.60	9,572	1,090.78	1,090.78
MH-61	1,098.55	1,091.88	6.67	832	1,091.89	1,091.89
MH-62	1,098.36	1,091.69	6.67	4,162	1,091.73	1,091.73
MH-63	1,099.37	1,089.74	9.63	9,156	1,089.80	1,089.80
MH-64	1,097.79	1,088.27	9.53	11,236	1,088.34	1,088.34
MH-65	1,099.09	1,087.21	11.88	22,889	1,087.31	1,087.31
MH-66	1,097.67	1,085.96	11.72	26,634	1,086.07	1,086.07
MH-67	1,096.10	1,084.94	11.16	29,964	1,085.06	1,085.06
MH-68	1,095.00	1,083.84	11.17	32,460	1,083.96	1,083.96
MH-69	1,094.53	1,083.06	11.47	33,293	1,083.18	1,083.18
MH-70	1,095.58	1,082.64	12.95	33,293	1,082.76	1,082.76
MH-71	1,095.54	1,082.50	13.04	37,038	1,082.63	1,082.63
MH-72	1,095.05	1,082.18	12.87	40,368	1,082.32	1,082.32
MH-73	1,093.96	1,081.26	12.70	42,448	1,081.40	1,081.40
MH-74	1,092.81	1,079.87	12.94	45,361	1,080.01	1,080.01
MH-75	1,092.63	1,078.83	13.80	48,691	1,078.98	1,078.98
MH-76	1,090.73	1,077.76	12.96	49,523	1,077.91	1,077.91
MH-77	1,090.14	1,077.27	12.87	53,268	1,077.42	1,077.42
MH-78	1,090.67	1,076.76	13.91	54,101	1,076.91	1,076.91
MH-79	1,091.23	1,076.20	15.04	58,679	1,076.36	1,076.36
MH-80	1,090.36	1,075.69	14.67	59,511	1,075.85	1,075.85
MH-81	1,089.66	1,075.12	14.54	64,921	1,075.29	1,075.29
MH-82	1,090.34	1,074.55	15.80	65,753	1,074.72	1,074.72
MH-83	1,089.16	1,073.85	15.31	69,499	1,074.03	1,074.03
MH-84	1,087.68	1,072.74	14.95	69,915	1,072.91	1,072.91
MH-85	1,087.47	1,072.44	15.03	70,331	1,072.62	1,072.62
MH-86	1,087.06	1,072.08	14.98	70,331	1,072.26	1,072.26
MH-87	1,087.04	1,071.92	15.12	70,747	1,072.10	1,072.10
MH-88	1,087.54	1,071.59	15.95	71,996	1,071.77	1,071.77
MH-89	1,088.64	1,070.86	17.78	72,828	1,071.04	1,071.04
MH-90	1,088.29	1,070.07	18.21	72,828	1,070.25	1,070.25
MH-91	1,086.40	1,068.75	17.65	72,828	1,068.93	1,068.93
MH-92	1,086.00	1,067.43	18.57	72,828	1,067.61	1,067.61
MH-93	1,098.29	1,091.62	6.67	4,162	1,091.66	1,091.66

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-94	1,100.74	1,088.68	12.06	9,156	1,088.75	1,088.75
MH-95	1,097.18	1,084.66	12.52	2,081	1,084.69	1,084.69
MH-96	1,094.91	1,088.24	6.67	2,081	1,088.27	1,088.27
MH-97	1,095.68	1,087.65	8.03	2,497	1,087.68	1,087.68
MH-98	1,095.90	1,087.43	8.46	2,913	1,087.46	1,087.46
MH-99	1,089.84	1,083.17	6.67	2,913	1,083.20	1,083.20
MH-100	1,090.33	1,083.66	6.67	3,745	1,083.69	1,083.69
MH-101	1,087.99	1,081.32	6.67	2,081	1,081.35	1,081.35
MH-102	1,088.97	1,080.61	8.36	4,578	1,080.64	1,080.64
MH-302	1,083.83	1,065.97	17.85	1,038,146	1,066.59	1,066.59
MH-303	1,083.11	1,069.86	13.24	965,318	1,070.38	1,070.38
MH-304	1,082.63	1,071.20	11.43	949,767	1,071.84	1,071.84
MH-305	1,084.39	1,073.65	10.73	69,033	1,073.83	1,073.83
MH-306	1,084.02	1,075.17	8.85	53,483	1,075.33	1,075.33
MH-307	1,085.86	1,076.69	9.17	37,933	1,076.82	1,076.82
MH-308	1,085.58	1,077.72	7.87	25,289	1,077.83	1,077.83
MH-309	1,086.69	1,079.03	7.67	12,644	1,079.10	1,079.10
MH-310	1,081.83	1,072.64	9.19	865,184	1,073.24	1,073.24
MH-311	1,081.52	1,073.52	8.00	865,184	1,074.12	1,074.12
MH-500	1,094.48	1,086.81	7.67	925	1,086.83	1,086.83
MH-501	1,094.48	1,086.30	8.18	925	1,086.32	1,086.32
MH-502	1,094.53	1,086.05	8.48	925	1,086.08	1,086.08
MH-503	1,095.14	1,085.77	9.37	1,850	1,085.80	1,085.80
MH-504	1,095.24	1,085.50	9.74	1,850	1,085.53	1,085.53
MH-505	1,092.43	1,085.05	7.38	1,850	1,085.08	1,085.08
MH-506	1,093.66	1,084.74	8.92	2,774	1,084.78	1,084.78
MH-507	1,094.97	1,083.67	11.30	2,774	1,083.71	1,083.71
MH-508	1,095.07	1,083.35	11.73	3,699	1,083.39	1,083.39
MH-509	1,094.28	1,082.43	11.84	3,699	1,082.48	1,082.48
MH-510	1,094.02	1,082.29	11.73	3,699	1,082.33	1,082.33
MH-511	1,094.06	1,082.08	11.98	4,162	1,082.13	1,082.13
MH-512	1,094.15	1,081.39	12.76	4,162	1,081.43	1,081.43
MH-513	1,093.94	1,081.02	12.92	5,086	1,081.07	1,081.07
MH-514	1,093.14	1,080.41	12.73	5,086	1,080.46	1,080.46
MH-515	1,092.80	1,080.12	12.68	5,086	1,080.17	1,080.17
MH-516	1,087.00	1,079.33	7.67	17,404	1,079.42	1,079.42
MH-517	1,086.82	1,077.97	8.85	34,807	1,078.10	1,078.10
MH-518	1,085.20	1,076.55	8.66	52,211	1,076.70	1,076.70
MH-519	1,083.75	1,074.96	8.79	69,614	1,075.14	1,075.14
MH-520	1,082.27	1,073.65	8.62	87,018	1,073.85	1,073.85
MH-521	1,080.41	1,053.43	26.98	370,102	1,053.85	1,053.85
MH-522	1,080.47	1,052.60	27.87	370,102	1,053.03	1,053.03
MH-523	1,080.17	1,051.65	28.53	695,908	1,052.17	1,052.17
MH-524	1,077.96	1,054.54	23.41	325,807	1,054.97	1,054.97
MH-525	1,076.69	1,055.96	20.73	301,932	1,056.37	1,056.37
MH-526	1,075.02	1,057.38	17.64	278,057	1,057.76	1,057.76
MH-527	1,073.56	1,058.80	14.76	87,058	1,059.00	1,059.00
MH-528	1,072.19	1,060.22	11.97	63,183	1,060.39	1,060.39

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-529	1,070.36	1,061.64	8.72	39,308	1,061.78	1,061.78
MH-530	1,070.25	1,061.99	8.26	21,905	1,062.09	1,062.09
MH-532	1,080.54	1,054.53	26.02	370,102	1,054.95	1,054.95
MH-533	1,079.87	1,055.63	24.24	370,102	1,056.05	1,056.05
MH-534	1,080.33	1,056.10	24.23	370,102	1,056.52	1,056.52
MH-535	1,082.14	1,073.88	8.26	69,614	1,074.06	1,074.06
MH-536	1,083.36	1,075.40	7.96	52,211	1,075.56	1,075.56
MH-537	1,084.13	1,076.26	7.87	34,807	1,076.39	1,076.39
MH-538	1,086.29	1,078.62	7.67	17,404	1,078.70	1,078.70
MH-539	1,088.57	1,060.35	28.22	240,204	1,060.70	1,060.70
MH-540	1,076.69	1,062.02	14.67	167,124	1,062.30	1,062.30
MH-541	1,078.44	1,063.42	15.03	143,249	1,063.68	1,063.68
MH-542	1,075.74	1,064.94	10.80	119,374	1,065.17	1,065.17
MH-543	1,076.72	1,066.46	10.27	95,499	1,066.66	1,066.66
MH-544	1,075.84	1,067.98	7.87	71,625	1,068.16	1,068.16
MH-545	1,088.47	1,060.81	27.66	234,193	1,061.15	1,061.15
MH-546	1,087.07	1,062.24	24.83	234,193	1,062.58	1,062.58
MH-547	1,087.55	1,063.40	24.15	234,193	1,063.74	1,063.74
MH-548	1,088.28	1,064.45	23.83	104,295	1,064.67	1,064.67
MH-549	1,089.18	1,065.75	23.43	104,295	1,065.97	1,065.97
MH-550	1,089.67	1,067.00	22.67	104,295	1,067.22	1,067.22
MH-551	1,089.94	1,068.22	21.72	104,295	1,068.44	1,068.44
MH-552	1,090.67	1,068.92	21.75	104,295	1,069.14	1,069.14
MH-553	1,088.67	1,070.44	18.23	104,295	1,070.66	1,070.66
MH-554	1,086.58	1,071.96	14.62	48,378	1,072.11	1,072.11
MH-555	1,084.92	1,073.38	11.54	48,378	1,073.53	1,073.53
MH-556	1,085.18	1,074.02	11.16	48,378	1,074.16	1,074.16
MH-557	1,083.61	1,075.52	8.09	48,378	1,075.67	1,075.67
MH-558	1,084.71	1,077.04	7.67	48,378	1,077.19	1,077.19
MH-559	1,092.74	1,079.81	12.93	6,011	1,079.86	1,079.86
MH-560	1,089.04	1,077.33	11.71	55,917	1,077.49	1,077.49
MH-561	1,086.80	1,078.85	7.96	55,917	1,079.01	1,079.01
MH-562	1,088.03	1,080.37	7.67	55,917	1,080.53	1,080.53
MH-563	1,078.56	1,070.01	8.55	47,750	1,070.15	1,070.15
MH-564	1,078.93	1,071.26	7.67	23,875	1,071.37	1,071.37
MH-565	1,083.81	1,057.32	26.49	370,102	1,057.75	1,057.75
MH-566	1,085.99	1,058.91	27.09	240,204	1,059.26	1,059.26
MH-567	1,072.37	1,063.51	8.87	16,959	1,063.60	1,063.60
MH-568	1,073.22	1,064.93	8.30	12,012	1,065.00	1,065.00
MH-569	1,074.30	1,066.35	7.95	8,008	1,066.41	1,066.41
MH-570	1,075.44	1,067.77	7.67	5,182	1,067.82	1,067.82
MH-571	1,092.28	1,079.51	12.78	6,011	1,079.56	1,079.56
MH-572	1,092.15	1,079.20	12.94	6,011	1,079.26	1,079.26
MH-573	1,092.99	1,078.76	14.23	6,011	1,078.82	1,078.82
MH-574	1,092.87	1,078.34	14.53	6,011	1,078.40	1,078.40
MH-575	1,093.50	1,077.75	15.75	6,011	1,077.81	1,077.81
MH-576	1,088.33	1,076.39	11.94	6,011	1,076.44	1,076.44

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Hydraulic Grade (ft)	Flow (Total Out) (gpd)
LS-1	1,080.80	1,051.30	1,072.71	852,540
OF-1	1,093.59	1,078.65	1,078.87	146,519
OF-2	1,085.91	1,065.81	1,066.29	1,038,146

PEAK CAPACITY
(8-INCH TO 12-INCH SEWER MAINS)

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-1	8.0	400.0	0.013	0.0033	MH-1A	1,097.00	6.94	MH-2	1,095.68	6.32	14,000	0.90	3.1	448,636	12.1	448,636
CO-2	8.0	200.0	0.013	0.0033	MH-2	1,095.68	6.32	MH-3	1,095.02	6.00	19,000	0.98	4.2	448,636	14.1	448,636
CO-3	8.0	118.3	0.013	0.0033	MH-3	1,094.82	6.20	MH-4	1,094.43	7.55	21,000	1.02	4.7	448,981	14.7	448,981
CO-4	8.0	227.3	0.013	0.0033	MH-4	1,094.43	7.55	MH-5	1,093.68	7.36	25,000	1.07	5.6	448,905	16.0	448,905
CO-5	8.0	82.9	0.013	0.0033	MH-5	1,093.68	7.36	MH-6	1,093.41	7.27	40,000	1.23	8.9	448,718	20.2	448,718
CO-6	8.0	232.9	0.013	0.0033	MH-6	1,093.41	7.27	MH-7	1,092.64	6.74	43,000	1.26	9.6	448,665	20.9	448,665
CO-7	8.0	198.7	0.013	0.0033	MH-7	1,092.44	6.94	MH-8	1,091.78	7.75	52,000	1.33	11.6	448,738	23.0	448,738
CO-8	8.0	400.0	0.013	0.0033	MH-8	1,091.78	7.75	MH-9	1,090.46	8.47	63,000	1.40	14.0	448,636	25.3	448,636
CO-9	8.0	261.5	0.013	0.0033	MH-9	1,090.46	8.47	MH-10	1,089.60	10.84	67,000	1.43	14.9	448,480	26.1	448,480
CO-10	8.0	74.7	0.013	0.0033	MH-10	1,089.40	11.04	MH-11	1,089.15	10.57	99,000	1.60	22.0	449,089	31.9	449,089
CO-11	8.0	69.1	0.013	0.0033	MH-11	1,089.15	10.57	MH-12	1,088.92	10.31	100,000	1.60	22.3	448,931	32.0	448,931
CO-12	8.0	90.8	0.013	0.0033	MH-12	1,088.92	10.31	MH-13	1,088.62	9.99	101,000	1.61	22.5	448,412	32.2	448,412
CO-13	8.0	27.0	0.013	0.0033	MH-13	1,088.42	10.19	MH-14	1,088.33	10.20	101,000	1.61	22.5	448,384	32.2	448,384
CO-14	8.0	161.2	0.013	0.0033	MH-14	1,088.33	10.20	MH-15	1,087.80	12.77	104,000	1.62	23.2	448,931	32.7	448,931
CO-15	8.0	83.2	0.013	0.0033	MH-15	1,087.80	12.77	MH-16	1,087.53	14.09	105,000	1.62	23.4	448,718	32.9	448,718
CO-16	8.0	133.2	0.013	0.0033	MH-16	1,087.53	14.09	MH-17	1,087.09	14.75	108,000	1.64	24.0	449,198	33.4	449,198
CO-17	8.0	169.6	0.013	0.0033	MH-17	1,087.09	14.75	MH-18	1,086.53	14.96	177,069	1.87	39.5	448,636	43.6	448,636
CO-18	8.0	150.0	0.013	0.0033	MH-18	1,086.33	15.16	MH-19	1,085.83	14.23	195,069	1.92	43.5	448,636	46.1	448,636
CO-19	8.0	265.0	0.013	0.0041	MH-19	1,085.83	14.23	MH-20	1,084.76	13.71	195,069	2.07	39.2	497,414	43.5	497,414
CO-20	8.0	111.2	0.013	0.0033	MH-20	1,084.76	13.71	MH-21	1,084.39	15.04	197,069	1.93	43.9	449,064	46.3	449,064
CO-21	8.0	112.8	0.013	0.0033	MH-21	1,084.39	15.04	MH-22	1,084.02	16.59	199,069	1.93	44.4	448,696	46.6	448,696
CO-22	8.0	298.5	0.013	0.0033	MH-22	1,083.82	16.79	MH-23	1,082.83	16.63	209,069	1.95	46.6	448,477	48.0	448,477
CO-23	8.0	298.5	0.013	0.0033	MH-23	1,082.83	16.63	MH-24	1,081.84	16.51	219,069	1.98	48.8	448,704	49.3	448,704
CO-24	8.0	307.5	0.013	0.0033	MH-24	1,081.84	16.51	MH-25	1,080.83	17.98	248,069	2.04	55.2	449,056	53.1	449,056
CO-25	8.0	289.1	0.013	0.0033	MH-25	1,080.63	18.18	MH-26	1,079.68	13.66	300,069	2.13	66.9	448,707	59.8	448,707
CO-26	8.0	249.8	0.013	0.0033	MH-26	1,079.48	13.86	OF-1	1,078.65	14.27	300,069	2.13	66.9	448,636	59.8	448,636
CO-27	8.0	346.7	0.013	0.0179	MH-1B	1,097.94	6.00	MH-27	1,091.74	12.65	11,000	1.50	1.1	1,043,501	7.3	1,043,501
CO-28	8.0	320.0	0.013	0.0033	MH-27	1,091.54	12.85	MH-28	1,090.49	12.48	15,000	0.92	3.3	448,636	12.5	448,636
CO-29	8.0	330.0	0.013	0.0033	MH-28	1,090.49	12.48	MH-10	1,089.40	11.04	30,000	1.13	6.7	448,636	17.5	448,636
CO-30	8.0	400.0	0.013	0.0033	MH-29A	1,097.14	6.00	MH-30	1,095.82	5.73	12,000	0.86	2.7	448,636	11.3	448,636
CO-31	8.0	79.0	0.013	0.0245	MH-30	1,095.82	5.73	MH-5	1,093.88	7.16	14,000	1.80	1.1	1,222,261	7.5	1,222,261
CO-32	8.0	399.6	0.013	0.0161	MH-29B	1,097.14	6.00	MH-28	1,090.69	12.28	12,000	1.49	1.2	991,715	7.8	991,715
CO-33	8.0	163.1	0.013	0.0033	MH-31	1,093.18	5.22	MH-7	1,092.64	6.74	3,000	0.56	0.7	448,678	5.9	448,678
CO-34	8.0	144.5	0.013	0.0033	MH-32	1,091.62	11.58	MH-33	1,091.14	11.97	37,069	1.20	8.2	449,485	19.4	449,485
CO-35	8.0	67.7	0.013	0.0033	MH-33	1,091.04	12.07	MH-34	1,090.82	11.21	37,069	1.20	8.3	448,236	19.5	448,236
CO-36	8.0	293.3	0.013	0.0033	MH-34	1,090.62	11.41	MH-35	1,089.65	12.88	66,069	1.42	14.7	448,891	25.9	448,891
CO-37	8.0	51.6	0.013	0.0033	MH-35	1,089.65	12.88	MH-36	1,089.48	12.84	67,069	1.43	14.9	449,159	26.1	449,159
CO-38	8.0	87.6	0.013	0.0249	MH-36	1,089.48	12.84	MH-17	1,087.29	14.55	68,069	2.93	5.5	1,232,302	16.0	1,232,302
CO-39	8.0	318.6	0.013	0.0033	MH-37A	1,098.50	6.00	MH-38	1,097.45	5.88	11,000	0.84	2.5	448,700	10.8	448,700

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-40	8.0	250.0	0.013	0.0265	MH-38	1,097.45	5.88	MH-34	1,090.82	11.21	21,000	2.11	1.7	1,271,623	8.9	1,271,623
CO-41	8.0	293.8	0.013	0.0033	MH-37B	1,098.50	6.00	MH-39	1,097.53	5.69	6,000	0.70	1.3	448,590	8.1	448,590
CO-42	8.0	21.1	0.013	0.0033	MH-39	1,097.43	5.79	MH-40	1,097.36	5.87	6,000	0.70	1.3	450,896	8.0	450,896
CO-43	8.0	106.7	0.013	0.0033	MH-40	1,097.26	5.97	MH-41	1,096.91	6.62	9,000	0.79	2.0	448,572	9.8	448,572
CO-44	8.0	199.8	0.013	0.0033	MH-41	1,096.91	6.62	MH-42	1,096.25	5.87	16,000	0.94	3.6	448,636	12.9	448,636
CO-45	8.0	54.4	0.013	0.1800	MH-42	1,096.25	5.87	MH-18	1,086.53	14.96	18,000	3.91	0.5	3,313,396	5.3	3,313,396
CO-46	8.0	161.5	0.013	0.0033	MH-43	1,087.59	9.68	MH-44	1,087.06	10.87	3,000	0.56	0.7	449,353	5.9	449,353
CO-47	8.0	169.6	0.013	0.0033	MH-44	1,087.06	10.87	MH-45	1,086.50	12.34	5,000	0.66	1.1	448,636	7.5	448,636
CO-48	8.0	281.2	0.013	0.0033	MH-45	1,086.50	12.34	MH-46	1,085.57	12.94	10,000	0.81	2.2	448,805	10.3	448,805
CO-49	8.0	144.4	0.013	0.0033	MH-46	1,085.37	13.14	MH-47	1,084.89	13.37	16,000	0.94	3.6	449,013	12.9	449,013
CO-50	8.0	187.5	0.013	0.0033	MH-47	1,084.89	13.37	MH-48	1,084.27	12.14	22,000	1.03	4.9	449,326	15.1	449,326
CO-51	8.0	166.9	0.013	0.0033	MH-48	1,084.27	12.14	MH-49	1,083.72	11.05	27,000	1.10	6.0	448,595	16.6	448,595
CO-52	8.0	208.0	0.013	0.0033	MH-49	1,083.72	11.05	MH-50	1,083.04	12.65	30,000	1.13	6.7	448,505	17.5	448,505
CO-53	8.0	187.5	0.013	0.0033	MH-50	1,083.04	12.65	MH-51	1,082.42	14.11	37,000	1.20	8.2	449,326	19.4	449,326
CO-54	8.0	146.3	0.013	0.0033	MH-51	1,082.42	14.11	MH-52	1,081.94	15.23	41,000	1.24	9.1	449,194	20.4	449,194
CO-55	8.0	145.9	0.013	0.0033	MH-52	1,081.94	15.23	MH-53	1,081.45	16.29	46,000	1.28	10.3	448,729	21.6	448,729
CO-56	8.0	194.2	0.013	0.0033	MH-53	1,081.45	16.29	MH-54	1,080.81	18.04	52,000	1.32	11.6	448,566	23.0	448,566
CO-57	8.0	25.3	0.013	0.0034	MH-54	1,080.81	18.04	MH-25	1,080.73	18.08	52,000	1.33	11.5	452,696	22.9	452,696
CO-58	8.0	61.7	0.013	0.0033	MH-55	1,092.81	6.00	MH-56	1,092.60	6.77	2,000	0.50	0.4	449,074	4.9	449,074
CO-59	8.0	151.1	0.013	0.0033	MH-56	1,092.60	6.77	MH-57	1,092.11	7.43	7,000	0.73	1.6	448,501	8.7	448,501
CO-60	8.0	151.1	0.013	0.0033	MH-57	1,092.11	7.43	MH-58	1,091.61	7.30	10,000	0.81	2.2	448,951	10.3	448,951
CO-61	8.0	151.1	0.013	0.0033	MH-58	1,091.61	7.30	MH-59	1,091.11	7.16	15,000	0.92	3.3	448,501	12.5	448,501
CO-62	8.0	115.6	0.013	0.0033	MH-59	1,091.11	7.16	MH-60	1,090.73	6.93	18,000	0.97	4.0	448,753	13.7	448,753
CO-63	8.0	229.6	0.013	0.0386	MH-60	1,090.73	6.93	MH-24	1,081.84	16.51	23,000	2.47	1.5	1,534,718	8.5	1,534,718
CO-64	8.0	158.0	0.013	0.0412	MH-61	1,091.88	6.00	MH-46	1,085.37	13.14	2,000	1.21	0.1	1,584,890	2.7	1,584,890
CO-65	8.0	332.0	0.013	0.0059	MH-62	1,091.69	6.00	MH-63	1,089.74	8.96	10,000	1.00	1.7	599,296	9.0	599,296
CO-66	8.0	385.0	0.013	0.0033	MH-63	1,089.74	8.96	MH-64	1,088.47	8.66	22,000	1.03	4.9	448,724	15.1	448,724
CO-67	8.0	320.0	0.013	0.0033	MH-64	1,088.27	8.86	MH-65	1,087.21	11.21	27,000	1.10	6.0	448,636	16.6	448,636
CO-68	8.0	320.0	0.013	0.0033	MH-65	1,087.21	11.21	MH-66	1,086.16	10.85	55,000	1.35	12.3	448,636	23.6	448,636
CO-69	8.0	306.9	0.013	0.0033	MH-66	1,085.96	11.05	MH-67	1,084.94	10.49	64,000	1.41	14.3	448,614	25.5	448,614
CO-70	8.0	275.0	0.013	0.0033	MH-67	1,084.94	10.49	MH-68	1,084.04	10.30	72,000	1.46	16.0	448,760	27.1	448,760
CO-71	8.0	235.7	0.013	0.0033	MH-68	1,083.84	10.50	MH-69	1,083.06	10.80	78,000	1.49	17.4	448,694	28.2	448,694
CO-72	8.0	127.0	0.013	0.0033	MH-69	1,083.06	10.80	MH-70	1,082.64	12.28	80,000	1.50	17.8	448,582	28.6	448,582
CO-73	8.0	41.7	0.013	0.0033	MH-70	1,082.64	12.28	MH-71	1,082.50	12.37	80,000	1.51	17.8	449,283	28.5	449,283
CO-74	8.0	95.1	0.013	0.0033	MH-71	1,082.50	12.37	MH-72	1,082.18	12.20	89,000	1.55	19.8	448,994	30.2	448,994
CO-75	8.0	279.8	0.013	0.0033	MH-72	1,082.18	12.20	MH-73	1,081.26	12.03	97,000	1.59	21.6	448,636	31.6	448,636
CO-76	8.0	361.7	0.013	0.0033	MH-73	1,081.26	12.03	MH-74	1,080.07	12.08	102,000	1.61	22.7	448,711	32.4	448,711
CO-77	8.0	312.4	0.013	0.0033	MH-74	1,079.87	12.28	MH-75	1,078.83	13.13	109,000	1.64	24.3	448,941	33.5	448,941
CO-78	8.0	325.0	0.013	0.0033	MH-75	1,078.83	13.13	MH-76	1,077.76	12.30	117,000	1.67	26.1	448,531	34.9	448,531

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-79	8.0	148.5	0.013	0.0033	MH-76	1,077.76	12.30	MH-77	1,077.27	12.20	119,000	1.68	26.5	448,773	35.2	448,773
CO-80	8.0	155.2	0.013	0.0033	MH-77	1,077.27	12.20	MH-78	1,076.76	13.24	128,000	1.72	28.5	448,855	36.5	448,855
CO-81	8.0	169.6	0.013	0.0033	MH-78	1,076.76	13.24	MH-79	1,076.20	14.37	130,000	1.72	29.0	448,636	36.8	448,636
CO-82	8.0	153.7	0.013	0.0033	MH-79	1,076.20	14.37	MH-80	1,075.69	14.01	141,000	1.76	31.4	448,548	38.5	448,548
CO-83	8.0	172.2	0.013	0.0033	MH-80	1,075.69	14.01	MH-81	1,075.12	13.87	143,000	1.77	31.9	448,794	38.8	448,794
CO-84	8.0	173.9	0.013	0.0033	MH-81	1,075.12	13.87	MH-82	1,074.55	15.13	156,000	1.81	34.8	448,558	40.7	448,558
CO-85	8.0	150.3	0.013	0.0033	MH-82	1,074.55	15.13	MH-83	1,074.05	14.45	158,000	1.82	35.2	449,089	40.9	449,089
CO-86	8.0	337.6	0.013	0.0033	MH-83	1,073.85	14.65	MH-84	1,072.74	14.28	167,000	1.84	37.2	448,757	42.2	448,757
CO-87	8.0	58.7	0.013	0.0033	MH-84	1,072.74	14.28	MH-85	1,072.54	14.27	168,000	1.85	37.4	448,981	42.4	448,981
CO-88	8.0	79.0	0.013	0.0033	MH-85	1,072.44	14.37	MH-86	1,072.18	14.21	169,000	1.85	37.7	448,033	42.6	448,033
CO-89	8.0	49.2	0.013	0.0033	MH-86	1,072.08	14.31	MH-87	1,071.92	14.45	169,000	1.85	37.5	450,436	42.4	450,436
CO-90	8.0	100.5	0.013	0.0033	MH-87	1,071.92	14.45	MH-88	1,071.59	15.29	170,000	1.85	37.8	449,315	42.6	449,315
CO-91	8.0	220.6	0.013	0.0033	MH-88	1,071.59	15.29	MH-89	1,070.86	17.12	173,000	1.86	38.5	448,851	43.1	448,851
CO-92	8.0	177.1	0.013	0.0033	MH-89	1,070.86	17.12	MH-90	1,070.27	17.35	175,000	1.87	39.0	448,598	43.3	448,598
CO-93	8.0	400.0	0.013	0.0033	MH-90	1,070.07	17.55	MH-91	1,068.75	16.98	175,000	1.87	39.0	448,636	43.3	448,636
CO-94	8.0	400.0	0.013	0.0033	MH-91	1,068.75	16.98	MH-92	1,067.43	17.90	175,000	1.87	39.0	448,636	43.3	448,636
CO-95	8.0	189.3	0.013	0.0033	MH-92	1,067.43	17.90	MH-302	1,066.81	16.35	175,000	1.87	39.0	449,103	43.3	449,103
CO-96	8.0	332.0	0.013	0.0089	MH-93	1,091.62	6.00	MH-94	1,088.68	11.40	10,000	1.15	1.4	735,173	8.1	735,173
CO-97	8.0	385.0	0.013	0.0033	MH-94	1,088.68	11.40	MH-65	1,087.41	11.01	22,000	1.03	4.9	448,548	15.1	448,548
CO-98	8.0	188.5	0.013	0.0033	MH-95	1,084.66	11.85	MH-68	1,084.04	10.30	5,000	0.66	1.1	449,214	7.5	449,214
CO-99	8.0	179.1	0.013	0.0033	MH-96	1,088.24	6.00	MH-97	1,087.65	7.36	5,000	0.66	1.1	448,750	7.5	448,750
CO-100	8.0	65.4	0.013	0.0033	MH-97	1,087.65	7.36	MH-98	1,087.43	7.80	6,000	0.70	1.3	450,202	8.1	450,202
CO-101	8.0	85.8	0.013	0.0551	MH-98	1,087.43	7.80	MH-71	1,082.70	12.17	7,000	1.95	0.4	1,832,517	4.5	1,832,517
CO-102	8.0	266.3	0.013	0.0214	MH-99	1,083.17	6.00	MH-77	1,077.47	12.00	7,000	1.40	0.6	1,143,230	5.6	1,143,230
CO-103	8.0	342.4	0.013	0.0212	MH-100	1,083.66	6.00	MH-79	1,076.40	14.17	9,000	1.50	0.8	1,138,104	6.3	1,138,104
CO-104	8.0	216.0	0.013	0.0033	MH-101	1,081.32	6.01	MH-102	1,080.61	7.69	5,000	0.66	1.1	448,699	7.5	448,699
CO-105	8.0	216.0	0.013	0.0245	MH-102	1,080.61	7.69	MH-81	1,075.32	13.67	11,000	1.67	0.9	1,221,726	6.7	1,221,726
CO-305	8.0	400.0	0.013	0.0033	MH-305	1,073.65	10.07	MH-304	1,072.33	9.63	69,033	1.44	20.3	339,352	26.5	448,636
CO-306	8.0	400.0	0.013	0.0033	MH-306	1,075.17	8.18	MH-305	1,073.85	9.87	53,483	1.34	15.8	339,352	23.3	448,636
CO-307	8.0	400.0	0.013	0.0033	MH-307	1,076.69	8.50	MH-306	1,075.37	7.98	37,933	1.21	11.2	339,352	19.7	448,636
CO-308	8.0	250.0	0.013	0.0033	MH-308	1,077.72	7.20	MH-307	1,076.89	8.30	25,289	1.07	7.5	339,352	16.1	448,636
CO-309	8.0	200.0	0.013	0.0056	MH-309	1,079.03	7.00	MH-308	1,077.92	7.00	12,644	1.05	2.9	440,158	10.2	581,905
CO-500	8.0	155.1	0.013	0.0033	MH-500	1,086.81	7.01	MH-501	1,086.30	7.51	2,000	0.50	0.6	339,518	4.9	448,855
CO-501	8.0	73.2	0.013	0.0033	MH-501	1,086.30	7.51	MH-502	1,086.05	7.81	2,000	0.50	0.6	339,422	4.9	448,729
CO-502	8.0	85.8	0.013	0.0033	MH-502	1,086.05	7.81	MH-503	1,085.77	8.70	2,000	0.50	0.6	339,472	4.9	448,794
CO-503	8.0	82.4	0.013	0.0033	MH-503	1,085.77	8.70	MH-504	1,085.50	9.07	4,000	0.61	1.2	340,229	6.7	449,795
CO-504	8.0	136.0	0.013	0.0033	MH-504	1,085.50	9.07	MH-505	1,085.05	6.72	4,000	0.61	1.2	339,428	6.7	448,736
CO-505	8.0	92.7	0.013	0.0033	MH-505	1,085.05	6.72	MH-506	1,084.74	8.25	4,000	0.61	1.2	339,407	6.7	448,709
CO-506	8.0	324.9	0.013	0.0033	MH-506	1,084.74	8.25	MH-507	1,083.67	10.63	6,000	0.70	1.8	339,273	8.1	448,531

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-507	8.0	98.0	0.013	0.0033	MH-507	1,083.67	10.63	MH-508	1,083.35	11.06	6,000	0.70	1.8	339,667	8.1	449,052
CO-508	8.0	276.8	0.013	0.0033	MH-508	1,083.35	11.06	MH-509	1,082.43	11.18	8,000	0.77	2.4	339,333	9.2	448,611
CO-509	8.0	43.3	0.013	0.0033	MH-509	1,082.43	11.18	MH-510	1,082.29	11.06	8,000	0.76	2.3	340,665	9.3	450,372
CO-510	8.0	63.0	0.013	0.0033	MH-510	1,082.29	11.06	MH-511	1,082.08	11.31	8,000	0.77	2.4	339,434	9.2	448,744
CO-511	8.0	210.2	0.013	0.0033	MH-511	1,082.08	11.31	MH-512	1,081.39	12.10	9,000	0.79	2.7	339,352	9.8	448,636
CO-512	8.0	111.5	0.013	0.0033	MH-512	1,081.39	12.10	MH-513	1,081.02	12.26	9,000	0.79	2.6	340,139	9.8	449,676
CO-513	8.0	184.2	0.013	0.0033	MH-513	1,081.02	12.26	MH-514	1,080.41	12.06	11,000	0.84	3.2	339,576	10.8	448,931
CO-514	8.0	89.0	0.013	0.0033	MH-514	1,080.41	12.06	MH-515	1,080.12	12.01	11,000	0.84	3.2	339,525	10.8	448,865
CO-515	8.0	94.4	0.013	0.0033	MH-515	1,080.12	12.01	MH-559	1,079.81	12.27	11,000	0.84	3.2	339,789	10.8	449,214
CO-516	8.0	351.6	0.013	0.0033	MH-516	1,079.33	7.00	MH-517	1,078.17	7.98	17,404	0.96	5.1	339,352	13.4	448,636
CO-517	8.0	372.0	0.013	0.0033	MH-517	1,077.97	8.18	MH-518	1,076.75	7.79	34,807	1.18	10.3	339,352	18.8	448,636
CO-518	8.0	419.9	0.013	0.0033	MH-518	1,076.55	7.99	MH-519	1,075.16	7.92	52,211	1.33	15.4	339,352	23.1	448,636
CO-519	8.0	366.6	0.013	0.0033	MH-519	1,074.96	8.12	MH-520	1,073.75	7.85	69,614	1.44	20.5	339,352	26.6	448,636
CO-520	8.0	396.5	0.013	0.0033	MH-520	1,073.65	7.95	LS-1	1,072.34	7.79	87,018	1.54	25.6	339,352	29.9	448,636
CO-521	10.0	290.7	0.013	0.0025	MH-521	1,053.43	26.15	MH-522	1,052.70	26.93	377,091	2.04	70.4	535,538	51.9	708,001
CO-522	10.0	234.0	0.013	0.0025	MH-522	1,052.60	27.03	MH-523	1,052.01	27.33	377,091	2.04	70.4	535,538	51.9	708,001
CO-524	8.0	400.0	0.013	0.0033	MH-524	1,054.54	22.74	MH-523	1,053.22	26.28	325,807	2.17	96.0	339,352	63.2	448,636
CO-525	8.0	400.0	0.013	0.0033	MH-525	1,055.96	20.06	MH-524	1,054.64	22.64	301,932	2.13	89.0	339,352	60.1	448,636
CO-526	8.0	400.0	0.013	0.0033	MH-526	1,057.38	16.97	MH-525	1,056.06	19.96	278,057	2.09	81.9	339,352	57.0	448,636
CO-527	8.0	400.0	0.013	0.0033	MH-527	1,058.80	14.09	MH-526	1,057.48	16.87	87,058	1.54	25.7	339,352	29.9	448,636
CO-528	8.0	400.0	0.013	0.0033	MH-528	1,060.22	11.30	MH-527	1,058.90	13.99	63,183	1.40	18.6	339,352	25.4	448,636
CO-529	8.0	400.0	0.013	0.0033	MH-529	1,061.64	8.05	MH-528	1,060.32	11.20	39,308	1.22	11.6	339,352	20.0	448,636
CO-530	8.0	74.5	0.013	0.0033	MH-530	1,061.99	7.60	MH-529	1,061.74	7.95	21,905	1.03	6.5	339,352	15.0	448,636
CO-532	10.0	400.0	0.013	0.0025	MH-532	1,054.53	25.18	MH-521	1,053.53	26.05	377,091	2.04	70.4	535,538	51.9	708,001
CO-533	10.0	400.0	0.013	0.0025	MH-533	1,055.63	23.41	MH-532	1,054.63	25.08	377,091	2.04	70.4	535,538	51.9	708,001
CO-534	10.0	107.8	0.013	0.0025	MH-534	1,056.10	23.40	MH-533	1,055.83	23.21	377,091	2.04	70.4	535,538	51.9	708,001
CO-535	8.0	400.0	0.013	0.0033	MH-535	1,073.88	7.59	LS-1	1,072.56	7.57	69,614	1.44	20.5	339,352	26.6	448,636
CO-536	8.0	400.0	0.013	0.0033	MH-536	1,075.40	7.29	MH-535	1,074.08	7.39	52,211	1.33	15.4	339,352	23.1	448,636
CO-537	8.0	200.0	0.013	0.0033	MH-537	1,076.26	7.20	MH-536	1,075.60	7.09	34,807	1.18	10.3	339,352	18.8	448,636
CO-538	8.0	400.0	0.013	0.0054	MH-538	1,078.62	7.00	MH-537	1,076.46	7.00	17,404	1.14	4.0	434,116	12.0	573,918
CO-539	8.0	406.9	0.013	0.0033	MH-539	1,060.35	27.55	MH-566	1,059.01	26.32	247,193	2.04	72.8	339,352	53.0	448,636
CO-540	8.0	395.7	0.013	0.0033	MH-540	1,062.02	14.00	MH-526	1,060.71	13.64	167,124	1.84	49.2	339,352	42.3	448,636
CO-541	8.0	393.6	0.013	0.0033	MH-541	1,063.42	14.36	MH-540	1,062.12	13.90	143,249	1.77	42.2	339,352	38.8	448,636
CO-542	8.0	398.9	0.013	0.0033	MH-542	1,064.94	10.14	MH-541	1,063.62	14.16	119,374	1.68	35.2	339,352	35.2	448,636
CO-543	8.0	400.5	0.013	0.0033	MH-543	1,066.46	9.60	MH-542	1,065.14	9.94	95,499	1.58	28.1	339,352	31.3	448,636
CO-544	8.0	399.7	0.013	0.0033	MH-544	1,067.98	7.20	MH-543	1,066.66	9.40	71,625	1.46	21.1	339,352	27.0	448,636
CO-545	8.0	78.2	0.013	0.0033	MH-545	1,060.81	26.99	MH-539	1,060.55	27.35	234,193	2.01	69.0	339,352	51.3	448,636
CO-546	8.0	401.8	0.013	0.0033	MH-546	1,062.24	24.16	MH-545	1,060.91	26.89	234,193	2.01	69.0	339,352	51.3	448,636
CO-547	8.0	321.7	0.013	0.0033	MH-547	1,063.40	23.48	MH-546	1,062.34	24.06	234,193	2.01	69.0	339,352	51.3	448,636

Label	Diam (in)	Length (Scaled) (ft)	Manning's n	Slope (Calculated) (ft/ft)	Start Node	Invert (Start) (ft)	Cover (Start) (ft)	Stop Node	Invert (Stop) (ft)	Cover (Stop) (ft)	Flow (gpd)	Velocity (ft/s)	Flow / Capacity (Design) (%)	Capacity (Design) (gpd)	Depth (Normal) / Diam (%)	Capacity (Full Flow) (gpd)
CO-548	8.0	287.7	0.013	0.0033	MH-548	1,064.45	23.16	MH-547	1,063.50	23.38	104,295	1.62	30.7	339,352	32.8	448,636
CO-549	8.0	364.9	0.013	0.0033	MH-549	1,065.75	22.76	MH-548	1,064.55	23.06	104,295	1.62	30.7	339,352	32.8	448,636
CO-550	8.0	346.8	0.013	0.0033	MH-550	1,067.00	22.00	MH-549	1,065.85	22.66	104,295	1.62	30.7	339,352	32.8	448,636
CO-551	8.0	341.0	0.013	0.0033	MH-551	1,068.22	21.05	MH-550	1,067.10	21.90	104,295	1.62	30.7	339,352	32.8	448,636
CO-552	8.0	179.9	0.013	0.0033	MH-552	1,068.92	21.09	MH-551	1,068.32	20.95	104,295	1.62	30.7	339,352	32.8	448,636
CO-553	8.0	400.0	0.013	0.0033	MH-553	1,070.44	17.57	MH-552	1,069.12	20.89	104,295	1.62	30.7	339,352	32.8	448,636
CO-554	8.0	400.0	0.013	0.0033	MH-554	1,071.96	13.95	MH-553	1,070.64	17.37	48,378	1.30	14.3	339,352	22.2	448,636
CO-555	8.0	400.0	0.013	0.0033	MH-555	1,073.38	10.87	MH-554	1,072.06	13.85	48,378	1.30	14.3	339,352	22.2	448,636
CO-556	8.0	132.7	0.013	0.0033	MH-556	1,074.02	10.50	MH-555	1,073.58	10.67	48,378	1.30	14.3	339,352	22.2	448,636
CO-557	8.0	395.3	0.013	0.0033	MH-557	1,075.52	7.42	MH-556	1,074.22	10.30	48,378	1.30	14.3	339,352	22.2	448,636
CO-558	8.0	400.0	0.013	0.0033	MH-558	1,077.04	7.00	MH-557	1,075.72	7.22	48,378	1.30	14.3	339,352	22.2	448,636
CO-559	8.0	90.7	0.013	0.0033	MH-559	1,079.81	12.27	MH-571	1,079.51	12.11	13,000	0.88	3.8	339,747	11.7	449,159
CO-560	8.0	133.0	0.013	0.0033	MH-553	1,076.89	11.12	MH-560	1,077.33	11.05	55,917	1.36	16.5	339,352	23.8	448,636
CO-561	8.0	400.0	0.013	0.0033	MH-560	1,077.53	10.85	MH-561	1,078.85	7.29	55,917	1.36	16.5	339,352	23.8	448,636
CO-562	8.0	400.0	0.013	0.0033	MH-561	1,079.05	7.09	MH-562	1,080.37	7.00	55,917	1.36	16.5	339,352	23.8	448,636
CO-563	8.0	400.0	0.013	0.0046	MH-563	1,070.01	7.89	MH-544	1,068.18	7.00	47,750	1.45	11.9	400,002	20.3	528,817
CO-564	8.0	350.0	0.013	0.0033	MH-564	1,071.26	7.00	MH-563	1,070.11	7.79	23,875	1.06	7.0	339,352	15.7	448,636
CO-565	10.0	410.3	0.013	0.0025	MH-565	1,057.32	25.66	MH-534	1,056.30	23.20	377,091	2.04	70.4	535,538	51.9	708,001
CO-566	8.0	400.0	0.013	0.0033	MH-566	1,058.91	26.42	MH-565	1,057.59	25.56	247,193	2.04	72.8	339,352	53.0	448,636
CO-567	8.0	400.0	0.013	0.0033	MH-567	1,063.51	8.20	MH-530	1,062.19	7.40	16,959	0.95	5.0	339,352	13.3	448,636
CO-568	8.0	400.0	0.013	0.0033	MH-568	1,064.93	7.63	MH-567	1,063.61	8.10	12,012	0.86	3.5	339,352	11.3	448,636
CO-569	8.0	400.0	0.013	0.0033	MH-569	1,066.35	7.28	MH-568	1,065.03	7.53	8,008	0.77	2.4	339,352	9.2	448,636
CO-570	8.0	400.0	0.013	0.0033	MH-570	1,067.77	7.00	MH-569	1,066.45	7.18	5,182	0.66	1.5	339,352	7.6	448,636
CO-571	8.0	92.2	0.013	0.0033	MH-571	1,079.51	12.11	MH-572	1,079.20	12.28	13,000	0.88	3.8	339,576	11.7	448,931
CO-572	8.0	103.0	0.013	0.0033	MH-572	1,079.20	12.28	MH-573	1,078.86	13.46	13,000	0.88	3.8	339,402	11.7	448,702
CO-573	8.0	96.6	0.013	0.0033	MH-573	1,078.76	13.56	MH-574	1,078.44	13.77	13,000	0.88	3.8	339,299	11.7	448,566
CO-574	8.0	118.0	0.013	0.0033	MH-574	1,078.34	13.87	MH-575	1,077.95	14.89	13,000	0.88	3.8	339,178	11.7	448,406
CO-575	8.0	352.1	0.013	0.0033	MH-575	1,077.75	15.09	MH-576	1,076.59	11.08	13,000	0.88	3.8	339,410	11.7	448,713
CO-576	8.0	115.2	0.013	0.0033	MH-576	1,076.39	11.28	MH-539	1,076.01	11.89	13,000	0.88	3.8	339,576	11.7	448,931

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-1A	1,104.61	1,097.00	7.61	14,000	1,097.08	1,097.08
MH-1B	1,104.61	1,097.94	6.67	11,000	1,098.00	1,098.00
MH-2	1,102.67	1,095.68	6.99	19,000	1,095.78	1,095.78
MH-3	1,101.69	1,094.82	6.87	21,000	1,094.92	1,094.92
MH-4	1,102.65	1,094.43	8.21	25,000	1,094.54	1,094.54
MH-5	1,101.71	1,093.68	8.03	40,000	1,093.82	1,093.82
MH-6	1,101.35	1,093.41	7.94	43,000	1,093.55	1,093.55
MH-7	1,100.05	1,092.44	7.61	52,000	1,092.59	1,092.59
MH-8	1,100.20	1,091.78	8.42	63,000	1,091.95	1,091.95
MH-9	1,099.60	1,090.46	9.13	67,000	1,090.64	1,090.64
MH-10	1,101.10	1,089.40	11.70	99,000	1,089.61	1,089.61
MH-11	1,100.39	1,089.15	11.24	100,000	1,089.36	1,089.36
MH-12	1,099.90	1,088.92	10.97	101,000	1,089.14	1,089.14
MH-13	1,099.28	1,088.42	10.86	101,000	1,088.64	1,088.64
MH-14	1,099.20	1,088.33	10.87	104,000	1,088.55	1,088.55
MH-15	1,101.24	1,087.80	13.44	105,000	1,088.02	1,088.02
MH-16	1,102.28	1,087.53	14.75	108,000	1,087.75	1,087.75
MH-17	1,102.50	1,087.09	15.41	177,069	1,087.38	1,087.38
MH-18	1,102.16	1,086.33	15.83	195,069	1,086.63	1,086.63
MH-19	1,100.73	1,085.83	14.90	195,069	1,086.12	1,086.12
MH-20	1,099.13	1,084.76	14.37	197,069	1,085.07	1,085.07
MH-21	1,100.09	1,084.39	15.70	199,069	1,084.70	1,084.70
MH-22	1,101.27	1,083.82	17.45	209,069	1,084.14	1,084.14
MH-23	1,100.13	1,082.83	17.30	219,069	1,083.16	1,083.16
MH-24	1,099.02	1,081.84	17.18	248,069	1,082.20	1,082.20
MH-25	1,099.47	1,080.63	18.84	300,069	1,081.03	1,081.03
MH-26	1,094.00	1,079.48	14.53	300,069	1,079.87	1,079.87
MH-27	1,105.06	1,091.54	13.52	15,000	1,091.63	1,091.63
MH-28	1,103.63	1,090.49	13.15	30,000	1,090.60	1,090.60
MH-29A	1,103.81	1,097.14	6.67	12,000	1,097.21	1,097.21
MH-29B	1,103.81	1,097.14	6.67	12,000	1,097.20	1,097.20
MH-30	1,102.21	1,095.82	6.39	14,000	1,095.88	1,095.88
MH-31	1,099.07	1,093.18	5.89	3,000	1,093.22	1,093.22
MH-32	1,103.86	1,091.62	12.24	37,069	1,091.75	1,091.75
MH-33	1,103.78	1,091.04	12.74	37,069	1,091.17	1,091.17
MH-34	1,102.69	1,090.62	12.07	66,069	1,090.79	1,090.79
MH-35	1,103.20	1,089.65	13.54	67,069	1,089.83	1,089.83
MH-36	1,102.98	1,089.48	13.50	68,069	1,089.63	1,089.63
MH-37A	1,105.17	1,098.50	6.67	11,000	1,098.57	1,098.57
MH-37B	1,105.17	1,098.50	6.67	6,000	1,098.55	1,098.55
MH-38	1,103.99	1,097.45	6.55	21,000	1,097.53	1,097.53
MH-39	1,103.89	1,097.43	6.46	6,000	1,097.48	1,097.48
MH-40	1,103.90	1,097.26	6.64	9,000	1,097.33	1,097.33
MH-41	1,104.19	1,096.91	7.29	16,000	1,096.99	1,096.99
MH-42	1,102.78	1,096.25	6.54	18,000	1,096.32	1,096.32
MH-43	1,097.94	1,087.59	10.35	3,000	1,087.63	1,087.63
MH-44	1,098.60	1,087.06	11.54	5,000	1,087.11	1,087.11
MH-45	1,099.51	1,086.50	13.01	10,000	1,086.57	1,086.57

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-46	1,099.18	1,085.37	13.81	16,000	1,085.46	1,085.46
MH-47	1,098.93	1,084.89	14.03	22,000	1,084.99	1,084.99
MH-48	1,097.08	1,084.27	12.81	27,000	1,084.38	1,084.38
MH-49	1,095.44	1,083.72	11.72	30,000	1,083.84	1,083.84
MH-50	1,096.36	1,083.04	13.32	37,000	1,083.17	1,083.17
MH-51	1,097.19	1,082.42	14.77	41,000	1,082.55	1,082.55
MH-52	1,097.84	1,081.94	15.90	46,000	1,082.08	1,082.08
MH-53	1,098.41	1,081.45	16.96	52,000	1,081.61	1,081.61
MH-54	1,099.52	1,080.81	18.71	52,000	1,081.03	1,081.03
MH-55	1,099.48	1,092.81	6.67	2,000	1,092.84	1,092.84
MH-56	1,100.04	1,092.60	7.44	7,000	1,092.66	1,092.66
MH-57	1,100.21	1,092.11	8.10	10,000	1,092.17	1,092.17
MH-58	1,099.57	1,091.61	7.96	15,000	1,091.69	1,091.69
MH-59	1,098.93	1,091.11	7.83	18,000	1,091.20	1,091.20
MH-60	1,098.32	1,090.73	7.60	23,000	1,090.81	1,090.81
MH-61	1,098.55	1,091.88	6.67	2,000	1,091.90	1,091.90
MH-62	1,098.36	1,091.69	6.67	10,000	1,091.75	1,091.75
MH-63	1,099.37	1,089.74	9.63	22,000	1,089.84	1,089.84
MH-64	1,097.79	1,088.27	9.53	27,000	1,088.38	1,088.38
MH-65	1,099.09	1,087.21	11.88	55,000	1,087.37	1,087.37
MH-66	1,097.67	1,085.96	11.72	64,000	1,086.13	1,086.13
MH-67	1,096.10	1,084.94	11.16	72,000	1,085.12	1,085.12
MH-68	1,095.00	1,083.84	11.17	78,000	1,084.02	1,084.02
MH-69	1,094.53	1,083.06	11.47	80,000	1,083.25	1,083.25
MH-70	1,095.58	1,082.64	12.95	80,000	1,082.83	1,082.83
MH-71	1,095.54	1,082.50	13.04	89,000	1,082.70	1,082.70
MH-72	1,095.05	1,082.18	12.87	97,000	1,082.39	1,082.39
MH-73	1,093.96	1,081.26	12.70	102,000	1,081.48	1,081.48
MH-74	1,092.81	1,079.87	12.94	109,000	1,080.09	1,080.09
MH-75	1,092.63	1,078.83	13.80	117,000	1,079.07	1,079.07
MH-76	1,090.73	1,077.76	12.96	119,000	1,078.00	1,078.00
MH-77	1,090.14	1,077.27	12.87	128,000	1,077.51	1,077.51
MH-78	1,090.67	1,076.76	13.91	130,000	1,077.00	1,077.00
MH-79	1,091.23	1,076.20	15.04	141,000	1,076.45	1,076.45
MH-80	1,090.36	1,075.69	14.67	143,000	1,075.95	1,075.95
MH-81	1,089.66	1,075.12	14.54	156,000	1,075.39	1,075.39
MH-82	1,090.34	1,074.55	15.80	158,000	1,074.82	1,074.82
MH-83	1,089.16	1,073.85	15.31	167,000	1,074.13	1,074.13
MH-84	1,087.68	1,072.74	14.95	168,000	1,073.02	1,073.02
MH-85	1,087.47	1,072.44	15.03	169,000	1,072.72	1,072.72
MH-86	1,087.06	1,072.08	14.98	169,000	1,072.36	1,072.36
MH-87	1,087.04	1,071.92	15.12	170,000	1,072.20	1,072.20
MH-88	1,087.54	1,071.59	15.95	173,000	1,071.87	1,071.87
MH-89	1,088.64	1,070.86	17.78	175,000	1,071.15	1,071.15
MH-90	1,088.29	1,070.07	18.21	175,000	1,070.36	1,070.36
MH-91	1,086.40	1,068.75	17.65	175,000	1,069.04	1,069.04
MH-92	1,086.00	1,067.43	18.57	175,000	1,067.72	1,067.72
MH-93	1,098.29	1,091.62	6.67	10,000	1,091.68	1,091.68

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-94	1,100.74	1,088.68	12.06	22,000	1,088.78	1,088.78
MH-95	1,097.18	1,084.66	12.52	5,000	1,084.71	1,084.71
MH-96	1,094.91	1,088.24	6.67	5,000	1,088.29	1,088.29
MH-97	1,095.68	1,087.65	8.03	6,000	1,087.70	1,087.70
MH-98	1,095.90	1,087.43	8.46	7,000	1,087.48	1,087.48
MH-99	1,089.84	1,083.17	6.67	7,000	1,083.22	1,083.22
MH-100	1,090.33	1,083.66	6.67	9,000	1,083.71	1,083.71
MH-101	1,087.99	1,081.32	6.67	5,000	1,081.37	1,081.37
MH-102	1,088.97	1,080.61	8.36	11,000	1,080.67	1,080.67
MH-302	1,083.83	1,065.97	17.85	1,147,306	1,066.62	1,066.62
MH-303	1,083.11	1,069.86	13.24	972,306	1,070.38	1,070.38
MH-304	1,082.63	1,071.20	11.43	956,756	1,071.85	1,071.85
MH-305	1,084.39	1,073.65	10.73	69,033	1,073.83	1,073.83
MH-306	1,084.02	1,075.17	8.85	53,483	1,075.33	1,075.33
MH-307	1,085.86	1,076.69	9.17	37,933	1,076.82	1,076.82
MH-308	1,085.58	1,077.72	7.87	25,289	1,077.83	1,077.83
MH-309	1,086.69	1,079.03	7.67	12,644	1,079.10	1,079.10
MH-310	1,081.83	1,072.64	9.19	872,173	1,073.25	1,073.25
MH-311	1,081.52	1,073.52	8.00	872,173	1,074.12	1,074.12
MH-500	1,094.48	1,086.81	7.67	2,000	1,086.84	1,086.84
MH-501	1,094.48	1,086.30	8.18	2,000	1,086.33	1,086.33
MH-502	1,094.53	1,086.05	8.48	2,000	1,086.09	1,086.09
MH-503	1,095.14	1,085.77	9.37	4,000	1,085.81	1,085.81
MH-504	1,095.24	1,085.50	9.74	4,000	1,085.54	1,085.54
MH-505	1,092.43	1,085.05	7.38	4,000	1,085.09	1,085.09
MH-506	1,093.66	1,084.74	8.92	6,000	1,084.80	1,084.80
MH-507	1,094.97	1,083.67	11.30	6,000	1,083.72	1,083.72
MH-508	1,095.07	1,083.35	11.73	8,000	1,083.41	1,083.41
MH-509	1,094.28	1,082.43	11.84	8,000	1,082.49	1,082.49
MH-510	1,094.02	1,082.29	11.73	8,000	1,082.35	1,082.35
MH-511	1,094.06	1,082.08	11.98	9,000	1,082.15	1,082.15
MH-512	1,094.15	1,081.39	12.76	9,000	1,081.45	1,081.45
MH-513	1,093.94	1,081.02	12.92	11,000	1,081.09	1,081.09
MH-514	1,093.14	1,080.41	12.73	11,000	1,080.48	1,080.48
MH-515	1,092.80	1,080.12	12.68	11,000	1,080.19	1,080.19
MH-516	1,087.00	1,079.33	7.67	17,404	1,079.42	1,079.42
MH-517	1,086.82	1,077.97	8.85	34,807	1,078.10	1,078.10
MH-518	1,085.20	1,076.55	8.66	52,211	1,076.70	1,076.70
MH-519	1,083.75	1,074.96	8.79	69,614	1,075.14	1,075.14
MH-520	1,082.27	1,073.65	8.62	87,018	1,073.85	1,073.85
MH-521	1,080.41	1,053.43	26.98	377,091	1,053.86	1,053.86
MH-522	1,080.47	1,052.60	27.87	377,091	1,053.03	1,053.03
MH-523	1,080.17	1,051.65	28.53	702,897	1,052.18	1,052.18
MH-524	1,077.96	1,054.54	23.41	325,807	1,054.97	1,054.97
MH-525	1,076.69	1,055.96	20.73	301,932	1,056.37	1,056.37
MH-526	1,075.02	1,057.38	17.64	278,057	1,057.76	1,057.76
MH-527	1,073.56	1,058.80	14.76	87,058	1,059.00	1,059.00
MH-528	1,072.19	1,060.22	11.97	63,183	1,060.39	1,060.39

Label	Elevation (Rim) (ft)	Elevation (Invert) (ft)	Depth (Structure) (ft)	Flow (Total Out) (gpd)	Hydraulic Grade Line (In) (ft)	Hydraulic Grade Line (Out) (ft)
MH-529	1,070.36	1,061.64	8.72	39,308	1,061.78	1,061.78
MH-530	1,070.25	1,061.99	8.26	21,905	1,062.09	1,062.09
MH-532	1,080.54	1,054.53	26.02	377,091	1,054.96	1,054.96
MH-533	1,079.87	1,055.63	24.24	377,091	1,056.06	1,056.06
MH-534	1,080.33	1,056.10	24.23	377,091	1,056.53	1,056.53
MH-535	1,082.14	1,073.88	8.26	69,614	1,074.06	1,074.06
MH-536	1,083.36	1,075.40	7.96	52,211	1,075.56	1,075.56
MH-537	1,084.13	1,076.26	7.87	34,807	1,076.39	1,076.39
MH-538	1,086.29	1,078.62	7.67	17,404	1,078.70	1,078.70
MH-539	1,088.57	1,060.35	28.22	247,193	1,060.70	1,060.70
MH-540	1,076.69	1,062.02	14.67	167,124	1,062.30	1,062.30
MH-541	1,078.44	1,063.42	15.03	143,249	1,063.68	1,063.68
MH-542	1,075.74	1,064.94	10.80	119,374	1,065.17	1,065.17
MH-543	1,076.72	1,066.46	10.27	95,499	1,066.66	1,066.66
MH-544	1,075.84	1,067.98	7.87	71,625	1,068.16	1,068.16
MH-545	1,088.47	1,060.81	27.66	234,193	1,061.15	1,061.15
MH-546	1,087.07	1,062.24	24.83	234,193	1,062.58	1,062.58
MH-547	1,087.55	1,063.40	24.15	234,193	1,063.74	1,063.74
MH-548	1,088.28	1,064.45	23.83	104,295	1,064.67	1,064.67
MH-549	1,089.18	1,065.75	23.43	104,295	1,065.97	1,065.97
MH-550	1,089.67	1,067.00	22.67	104,295	1,067.22	1,067.22
MH-551	1,089.94	1,068.22	21.72	104,295	1,068.44	1,068.44
MH-552	1,090.67	1,068.92	21.75	104,295	1,069.14	1,069.14
MH-553	1,088.67	1,070.44	18.23	104,295	1,070.66	1,070.66
MH-554	1,086.58	1,071.96	14.62	48,378	1,072.11	1,072.11
MH-555	1,084.92	1,073.38	11.54	48,378	1,073.53	1,073.53
MH-556	1,085.18	1,074.02	11.16	48,378	1,074.16	1,074.16
MH-557	1,083.61	1,075.52	8.09	48,378	1,075.67	1,075.67
MH-558	1,084.71	1,077.04	7.67	48,378	1,077.19	1,077.19
MH-559	1,092.74	1,079.81	12.93	13,000	1,079.89	1,079.89
MH-560	1,089.04	1,077.33	11.71	55,917	1,077.49	1,077.49
MH-561	1,086.80	1,078.85	7.96	55,917	1,079.01	1,079.01
MH-562	1,088.03	1,080.37	7.67	55,917	1,080.53	1,080.53
MH-563	1,078.56	1,070.01	8.55	47,750	1,070.15	1,070.15
MH-564	1,078.93	1,071.26	7.67	23,875	1,071.37	1,071.37
MH-565	1,083.81	1,057.32	26.49	377,091	1,057.75	1,057.75
MH-566	1,085.99	1,058.91	27.09	247,193	1,059.26	1,059.26
MH-567	1,072.37	1,063.51	8.87	16,959	1,063.60	1,063.60
MH-568	1,073.22	1,064.93	8.30	12,012	1,065.00	1,065.00
MH-569	1,074.30	1,066.35	7.95	8,008	1,066.41	1,066.41
MH-570	1,075.44	1,067.77	7.67	5,182	1,067.82	1,067.82
MH-571	1,092.28	1,079.51	12.78	13,000	1,079.58	1,079.58
MH-572	1,092.15	1,079.20	12.94	13,000	1,079.28	1,079.28
MH-573	1,092.99	1,078.76	14.23	13,000	1,078.84	1,078.84
MH-574	1,092.87	1,078.34	14.53	13,000	1,078.42	1,078.42
MH-575	1,093.50	1,077.75	15.75	13,000	1,077.83	1,077.83
MH-576	1,088.33	1,076.39	11.94	13,000	1,076.47	1,076.47

Label	Elevation (Ground) (ft)	Elevation (Invert) (ft)	Hydraulic Grade (ft)	Flow (Total Out) (gpd)
LS-1	1,080.80	1,051.30	1,072.71	859,529
OF-1	1,093.59	1,078.65	1,078.97	300,069
OF-2	1,085.91	1,065.81	1,066.31	1,147,306