FINAL UTILITY STUDY
PARKER POINTE
SOUTHEAST CORNER OF
SOUTH PARKER ROAD AND STROH ROAD

PREPARED FOR:

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JOB #2015-015

SEPTEMBER 18, 2017

ENGINEER'S STATEMENT

I hereby attest that this report for the Utility Design of, Parker Pointe, was prepared by me, or under my direct supervision, in accordance with the provisions of the Parker Water and Sanitation District (District) Standards and Specifications for the responsible parties thereof. I understand that the District does not and shall not assume liability for utility facilities designed by others.

____

Clifford D. Netuschil, P.E.
Colorado Registration No. 38138
For and on behalf of Perception Design Group, Inc.

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Section 1: GENERAL LOCATION & SITE CONDITION

1.1 Site Location

Parker Pointe, (Project / Site) is located on an unplatted parcel of situated in the southeast corner of South Parker Road and Stroh Road, Figure 1.

Locally the Site is located in moderately developed area. Commercial development is located to the west, northwest of the Site. Large Lot residential is located to the east. Open space is located to the south of the Site.

By rectangular survey coordinates the project is located in the Section 3, Township 7 South, Range 66 West of the 6th Prime Meridian, Douglas County, State of Colorado.

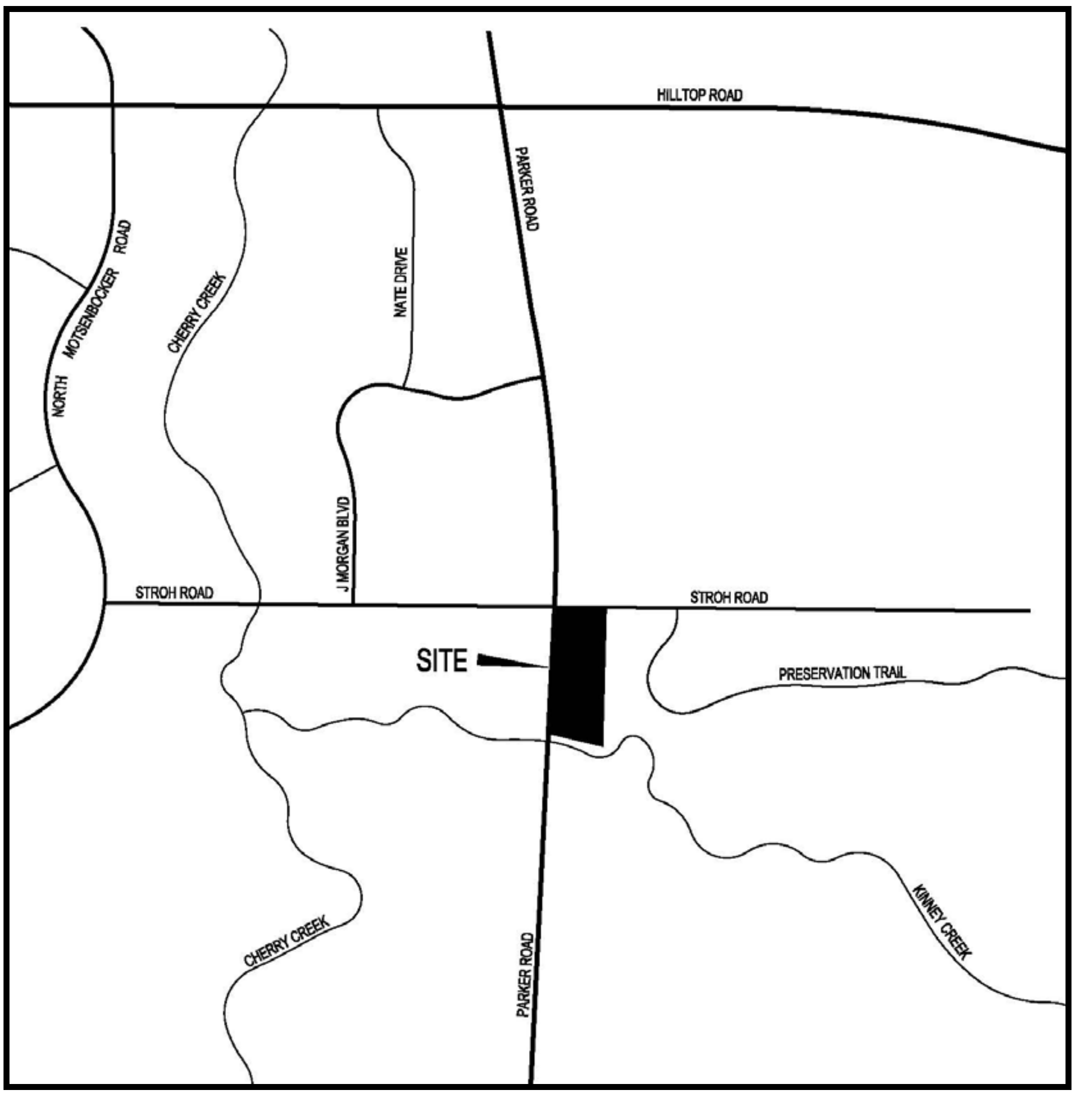


Figure 1: Vicinity Map

1.2 Description of Property

The Site is being annexed and zoned modified commercial pursuant to the Town of Parker. The Site is un-development property located in a moderately development area of the City. The Site encompasses 14.66 acres that is vacant land and adjacent to a public roadways, South Parker Road and Stroh Road to the west and north respectively.

A single story brick building is located in the northwest corner of the Site.

The Site is moderately vegetated with existing grasses, weeds.

1.3 Existing Utility Conditions

1.3.1 Existing Water

Existing 8-inch and 12-inch water main is located in Stroh Road, which parallels the Site's north boundary. The main shown on the District's utility plans for Stroh Crossing Filing No.1. The 8-inch main upsizes to a 12-inch main at the intersection of Stroh Road and Parker Road.

1.3.2 Existing Sanitary Sewer

An existing 8-inch pvc sanitary sewer is aligned along Lot 7 Reata West, which on the west side of South Parker Road, adjacent to the Site's southern boundary. The main is a gravity main that drains to the north and is aligned along Stroh Ranch Court.

Section 2: SITE UTILITY DESIGN

2.1 Proposed Development

The Project is to develop the Site as a commercial retail shopping center. Presently the Site will be subdivided into 14 lots that vary in size from 0.7 to 1.1 acres. Private access roads will be provided for site access and utility corridors for water, sanitary sewer and storm sewer. Proposed buildings are planned to be constructed on each lot for retail business.

2.1.1 Proposed Water

An 8-inch main is proposed to loop though the Site along the private drives with connection points to the existing 8-inch main located in Stroh Road. From the 8-inch main, domestic water and fire sprinkler service will be tapped and stub onto each lot. The service stubs will provide water and fire service to the future developments.

Onsite fire hydrants will also be tapped from the on-site 8-inch main.

Site irrigation will be provided from a tap off the domestic service line past the meter and backflow preventer. Onsite landscaping will be irrigated by a private irrigation system installed on site. The onsite landscaped area will privately owned and maintained by the Owner.

2.1.1.1 Water Design Regulations

The water main design for the Project has been prepared in accordance with the Distric's Master Study. System design information was provided by the District.

The site mean sea elevation (MSEL) is between 5962 to 6006.

Zone 2 static pressure = 133 psi.

Zone 2 The static hydraulic grade line = 6315 to 6324 MSEL.

Commercial Demands = 677 GPD / AC

Max Day Demand Factor = 2.5

Peak Hour Factor = 5.0

2.1.1.2 Domestic Demands

The gross site area 14.66 acres, This is the area of the site where domestic water service will be provided.

DEMAND SCENARIO	Demand (GPD)	Demand (GPM)
Average Day	9,924	6.8
Max Day	24,812	17.2
Peak Day	49,624	34.5

Table 1: **Water Demand Calculations** (Courtesy City Standards)

Pipe loss and velocity in an 8-inch PVC main are negligible for the domestic demands.

2.1.1.3 Fire Flow Demands

Fire flow for the site is calculated for lot 11 as this is largest of the building sites and will result in calculations that would satisfy the condition for the Site. The results are based on Fire Flow demand of 1,500 gpm.

Gross Bldg Area = 7,200 sqft

Construction Type = IIB

Required Fire Flow = 2,000 gpm.

Fully Sprinkled Building Fire Flow = 1,500 gpm.

Pipe Loss 8-Inch PVC Main = 48.7-feet, or 21 psi.

2.1.2 Proposed Sanitary Service

Sanitary sewer service will be provided for each lot by a single 4-inch service line. The sanitary main will be aligned with a private drive onsite. The line will drain from north south. The line will be extended west crossing under South Parker Road, and tie to existing sanitary sewer located in Lot 7 Reata West.

The sanitary sewer design for the Project has been prepared in accordance with the Districts Master Study, Sanitary Sewer Facilities.

Commercial Demands = 273 GPD / AC

Peak Factor = 3.2

2.1.2.1 Domestic Demands

The gross floor area of the office, 1,200 sqft, within Building 1-A was used to calculate the domestic demand. This is the area of the site where domestic water service will be provided.

DEMAND SCENARIO	Demand (GPD)	Demand (CFS)
Average Day Flow	4,002	0.006
Peak Day Flow	12,806	0.02

Table 2: **Sanitary Sewer Demand Calculations** (Courtesy City Standards)

Pipe capacity is negligible for the design flow. A 8-inch pvc service line at 2-percent grade will be less than 0.1-percent full. Full flow condition results in pipe velocity of 0.96 fps.

Section 3: CONCLUSION

The proposed water and sanitary sewer will operate within District standards.

References

1. *Parker Water and Sanitation District,* Parker Water & Sanitation District 2014 Water and Wastewater Master Plan. .

Appendix A: DISTRICTS FIGURES AND DATA

<u>WATER FIGURES AND TABLES</u>

PRESSURE ZONE MAP FIGURE 5-1

WATER DEMAND TABLE 5-9

HGL TABLE 5-1

PEAK FACTORS TABLE 3-4

<u>SANITARY SEWER FIGURES AND TABLES</u>

SANITARY SEWER STANDARDS TABLE 6-3

EXISTING WASTE WATER FLOW BY LAND USE TABLE 6-4 multifamily irrigation taps, and irrigated rights-of-way (ROW) and medians. These demands were distributed among the Irrigated, Single Family, Multifamily, Commercial and Public Facility land uses based on land use acreages. The Irrigated land use was assumed to be strictly irrigated parks, sodded with Kentucky Bluegrass which requires approximately 26" of irrigation per growing season (year) to produce an acceptable quality turf. (Refer to Appendix 5F for supplemental information on Kentucky Bluegrass irrigation requirements.) Based on these assumptions, an annual irrigation demand was calculated and assigned only to the Irrigated land use (parks). The Irrigated land use demand was then deducted from the total irrigation customer class demand, where the remaining customer class demand was assumed to equal the irrigation demands for the commercial and multifamily irrigation taps and irrigated ROW and medians. The remaining customer class demands were distributed among Single Family, Multifamily, Commercial, and Public Facility based on land use acreage. A summary of the existing average day demands by land use are provided in Table 5-9, "Existing Average Day Demand by Land Use." These values were used in conjunction with the various land uses, shown in Section 2, Figure 2-6, to determine model input demands.

There is no specific land use that currently exists within the PWSD service area that is similar to the City Center (High Density) land use proposed in the Ridgegate Development. This land use area is shown on Figure 2-6 in Section 2. As a result, there is no comparable water demand data available upon which to make future demand estimates. The Ridgegate developer has provided PWSD with water rights for 12,000 dwelling units (DUs); therefore, this number was used to calculate the development water demands. Based on DU projections provided by the developer for the planned Ridgegate Development presented in Section 2, Figure 2-4, water demands for the City Center area were calculated using 4,370 DUs. The remaining dwelling units (7,630 DUs) are for residential and mixed use areas outside of the City Center.

Table 5-9
Existing Average Day Demand by Land Use

Land Use Type	Demand GPD/acre
Right-of-Way	0
Commercial	677
Public Facility	677
Open Space	0
Irrigated	1,930
Single Family	2,074
Single Family Large	446
Single Family Estate	749
Single Family Rural	115
Single Family Well & Septic	0
Mutifamily	3,384

5.3.5 Modeled Scenarios and Settings

Steady-state and extended period simulations were conducted on the existing and build-out water systems, respectively. Steady state analyses were run to simulate worst case conditions within the existing system to identify system deficiencies, whereas, an extended period simulation was performed on the build-out system to size future infrastructure. A list of the modeled scenarios are provided in Table 5-10, "Modeled Scenarios." A general summary of the model settings used to execute the model

Table 5-10
Modeled Scenarios

Scenario	Condition	Simulation Type	Evaluation
Peak Hour	Existing	Steady State	Worst case operating scenario; identify system deficiencies for pressure and pipe velocities
Maximum Day + Fire Flow	Existing	Steady State	Fire flow analysis; identify system deficiencies for residual pressure, ability to supply required fire flow, pipe velocities
Maximum Day	Build-Out	Extended Period	24-hour Maximum Day diurnal curve including Peak Hour; identify pipe sizing, storage tank volumes, pump station sizing, evaluate system performance

Section 5

Water Distribution System Evaluation

5.1 Purpose of the Section

This Section describes the existing water distribution system and the improvements needed to support the build-out populations and development described in previous Sections. The improvements are based upon existing and future system analysis with a computer hydraulic model using Innovyze InfoWater® software. This Section will review the analysis results for the following key issues:

- Peak hour demands and fire flow for the existing system.
- WISE participant flows conveyed through the existing PWSD system.
- Future water distribution system piping, storage, and boost pump station requirements.
- Determination of the system improvements needed by Phase for 2020, 2025, 2035 and build-out.

This Section will touch on the future supply sources from the existing wells and the Rueter-Hess Water Purification Facility (RHWPF) currently under construction. However, a complete evaluation of the existing and future water supply sources (including wells) will be covered in detail in Section 7, "Water Supply System Evaluation." This Section will also identify the future capital projects needed to support the water distribution system growth. The costs for these improvements will be presented in Section 9, "Summary of Recommended Capital Improvements."

5.2 Description of Existing Water Distribution System

The PWSD existing water distribution system consists of three (3) main pressure zones and a multifaceted network of storage tanks, groundwater wells, booster pump stations, and transmission mains. A map of the existing water system facilities is shown in Figure 5-1, "PWSD Existing Water Distribution System." Figure 5-1 presents the major transmission mains in the system and does not include all the smaller distribution system piping within the District or the pipe diameters for clarity on the figure. The piping shown in Figure 5-1 also reflects the pipe network used in the water model. A map of the District's existing water distribution system, including all pipe sizes, is provided in Appendix 5A. A detailed description of the existing water distribution system facilities are provided in the following sections.

5.2.1 Pressure Zones

The PWSD current service area has varying topography and is centered on the middle reach of the Cherry Creek watershed basin. As a result, the PWSD system has developed into three (3) pressure zones, with Zone 1 being the lowest elevation immediately along Cherry Creek followed by Zones 2 then Zone 3 as ground elevations increase. Pressure Zones 2 and 3 are further divided into East and West portions due to the Cherry Creek Valley being located through the middle of the service area. The Zone 2 East and West portions are not directly connected hydraulically across the Cherry Creek Valley. Zone 3, however, is hydraulically connected with a 30" east-west pipeline along Stroh Road that joins the Zone 3 East and West portions. Elevation ranges and hydraulic grade lines for these pressure zones are shown in Table 5-1, "Pressure Zone Summary." The pressure zone areas are depicted on Figure 5-1.

Table 5-1
Pressure Zone Summary

Pressure Zone	Ground Elevation Range (ft)	Minimum Hydraulic Grade Line[1] (ft)	Maximum Hydraulic Grade Line (ft)
1	5,780 – 6,000	6,103.0[2]	6,128.5
2[3]	6,000 – 6,205	6,315.0	6,324.0
3	6,205 – 6,440	6,581.0	6,592.0

Notes:
[1] The minimum hydraulic grade line represents the storage tanks being approximately ½ their full depth.
[2] Based on the ½ full depths of the Butterfield Tanks.
[3] Zone 2 is separated into an East and West side and is not directly hydraulically connected.

A graphical representation of the projected average water demand provided in Table 3-3 is shown in Figure 3-3, "Historical and Forecasted Averaged Day Demands." As a comparison, a "best fit" straight line projection is shown based on the historical demands. The historical straight line projections also correlated to a single family rate of growth of 470 Du/year. It can be seen that the projected demand rises slightly above this line as would be expected due to the proposed start of the Ridgegate, Canyons and Freshfields developments along the I-25 corridor.

For water system master planning maximum day (MD) and peak hour (PH) water demands are required. While the MD demand is used to size treatment plant and storage tank capacities, PH demand is used to properly size pump stations and distribution pipelines. Peaking factors were calculated based on 2012 and 2013 water demand data. The calculated MD factor was 2.4 and the corresponding PH factor was 4.8. Since limited data was available for an extensive assessment of these factors, an MD factor of 2.5 and a PH factor of 5.0 were assumed. These factors match those used in the 2009 PWSD Water and Wastewater Master Plan.

A summary of the MP peaking factors are provided in Table 3-4, "Peaking Factors." Peak water demand projections are shown in Table 3-5, "Projected Peak Water Demands."

Table 3-4
Peaking Factors

Condition	Peaking Factor
Maximum Day (MD)	2.5
Peak Hour (PH)	5.0

3.6 Diurnal Flow Characteristics

For modeling the PWSD water distribution system and evaluating system storage requirements, an accurate diurnal flow curve is needed. A diurnal flow curve represents how the demands in the system vary during a 24-hour period. To develop this curve, data from 2012 and 2013 was used to represent the current trends in water use. Typical summer and winter diurnal curves were developed and are provided in Figure 3-4, "Summer and Winter

Figure 3-3
Historical and Forecasted Average Day Demands

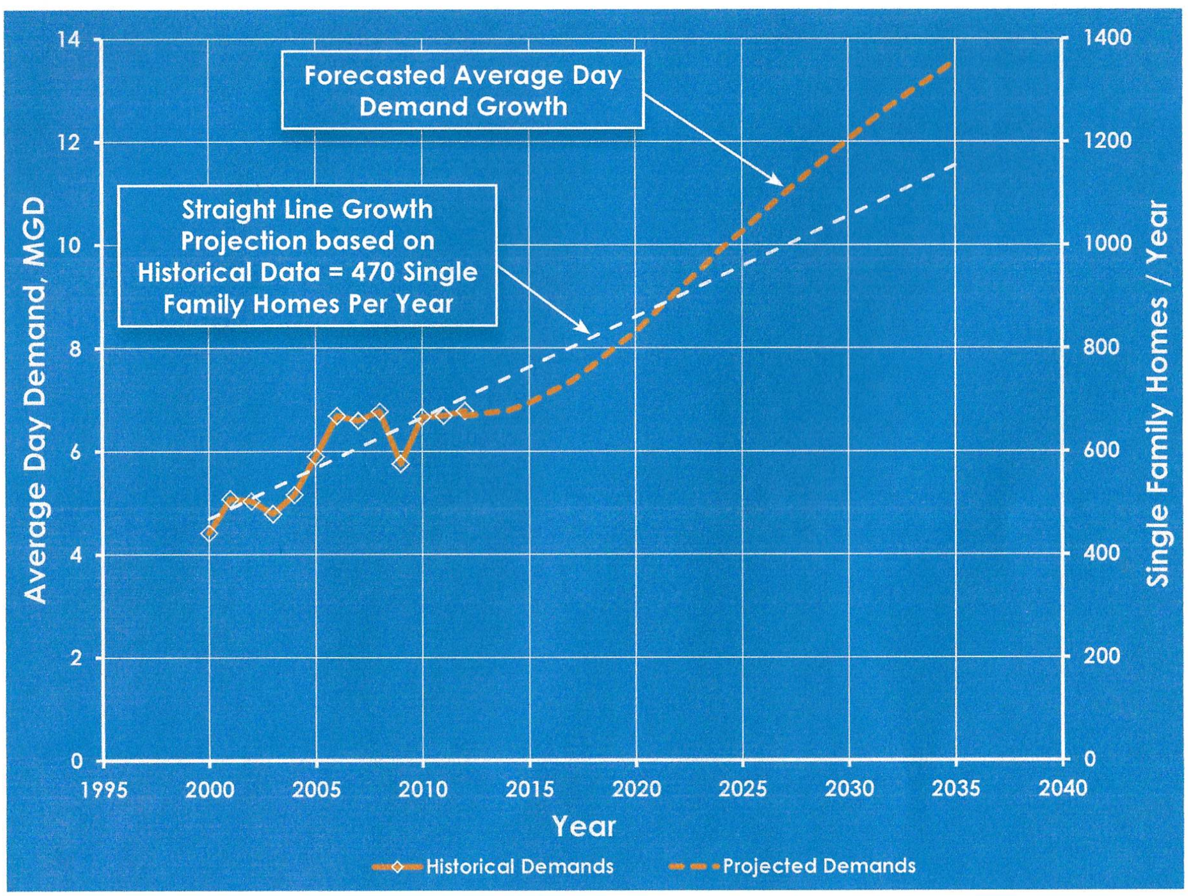


Table 6-3
Wastewater Collection System Evaluation Parameters

Parameter	Value
Flow Parameters	
Average Day Flows	Existing – 2.95 MGD
	Build-out – 8.79 MGD
Maximum Month Flows	Existing – 3.54 MGD
	Build-out – 10.55 MGD
Peak Flows (10-Year Storm Frequency)	Existing – 9.44 MGD
	Build-out – 28.13 MGD
Peaking Factor (10-Year Storm Frequency)	3.2
Base Infiltration	Included as part of the Average Day Flows
Gravity Flow Pipe Parameters	
Minimum Pipe Size	8 inch
Minimum Pipe Depth	8 feet
Manning's Roughness Coefficient[1]	0.013
Maximum Flow in Pipe[3], d/D d = depth of flow; D = pipe diameter	0.80
Maximum Pipe Velocity[1]	10 ft/s
Force Main Parameters	
Hazen-William C Factor[2]	120
Maximum Pipe Velocity During Peak Flows[2]	8 ft/s

Notes:
[1] ASCE. Manual No. 60 – Gravity Sanitary Sewer Design and Construction, 1982. (Appendix 6C)
[2] Jones, G., et al. Pumping Station Design, Third Revision, 2008. (Appendix 6C)
[3] CDPHE, WQCD. WPC-DR-1 State of Colorado Design Criteria for Domestic Wastewater Treatment Works, September 14, 2012. (Appendix 6C)

6.3.2 Software

InfoSewer® is the modeling software used to analyze the hydraulic performance of the PWSD wastewater collection system. The model includes a network of pipes, manholes and lift stations represented by wet wells, pumps, and force mains. For the purposes of this Master Plan and to determine future capital improvement needs, a skeletonized model was developed based on the pipes shown in Figure 6-1. The skeletonized model used major collector and interceptor pipelines, typically 12" diameter and larger, with some smaller 8" mains necessary for flow allocation.

6.3.3 Flow Categories

Flows in the PWSD wastewater collection system can be divided into the following three (3) categories for modeling purposes:

- **Average day (AD)** flows are the total wastewater flows generated in a year divided by the number of days in a year (365). AD flows, or base flows, are contributed to the collection system from residential, commercial, institutional, and industrial sources.
- **Base Infiltration** is groundwater entering the sewer system through defective pipe joints and cracked pipes on a continuous basis when there is not a wet weather event occurring.
- **Infiltration and Inflow (I/I)** are peak flows, or wet weather flows, that result from precipitation events. Rainfall induced wet weather infiltration is precipitation that flows through the ground before entering the sewer system through cracked pipes and defective joints. Inflow is storm water that enters the collection system through surface means such as manhole lids and leaking seals and joints in manholes. In some systems the inflow can also enter through storm or roof drain connections.

Peak flows were analyzed based on storm return frequency (or probability) and were presented in Section 4. Various rainfall frequencies were evaluated. Based on discussion and review of this analysis with PWSD, it was decided that the 10-year storm return frequency peak flows would be used for evaluating the collection system for planning and design purposes.

6.3.4 Flows by Land Use

Determining the wastewater flows by land use and drainage basin area is important for developing the model input flows and their distribution across the wastewater collection system. Wastewater flows based on land use were generated from the average daily water demand projections by customer classification presented in Section 5, Table 5-8. The water demands for Single Family, Multifamily, and Commercial classifications were multiplied by the wastewater to water GPCD ratio (69 GPCD/137 GPCD = 0.5) and normalized to equal the average day projected wastewater flows provided in Section 4, Table 4-6. Wastewater flows for the Single Family category were further apportioned to the Single Family, Single Family Large, Single Family Estate, and Single Family Rural land uses based on a weighting for lot size. Public Facilities were considered commercial uses and were assigned the same flow contributions as the Commercial land use. A summary of the existing average day wastewater flows by land use are provided in Table 6-4, "Existing Average Day Wastewater Flows by Land Use." These values were used in conjunction with the various land uses, shown in Section 2, Figure 2-6, to determine model input flows.

Table 6-4
Existing Average Day Wastewater Flows by Land Use

Land Use Type	Flow Loading GPD/Acre
Right-of-Way	0
Commercial	273
Public Facility	273
Open Space	0
Irrigated	0
Single Family	1,076
Single Family Large	430
Single Family Estate	258
Single Family Rural	65
Single Family Well & Septic	0
Multifamily	1,729

There is no specific land use that currently exists within the PWSD service area that is similar to the City Center (High Density) land use proposed in the Ridgegate Development. This land use area is shown on Figure 2-6 in Section 2. As a result, there is no comparable wastewater flow data available upon which to make future flow estimates. The Ridgegate developer has provided PWSD with water rights for 12,000 dwelling units (DUs); therefore, this number was used to calculate the development wastewater flows. Based on DU projections provided by the developer for the planned Ridgegate Development presented in Section 2, Figure 2-4, wastewater flows for the City Center area were calculated using 4,370 DUs. The remaining dwelling units (7,630 DUs) are for residential and mixed use areas outside of the City Center.

6.3.5 Modeled Scenarios and Settings

Steady state model simulations were conducted on the existing and build-out wastewater collection system. A steady state scenario was analyzed using the 10-year storm return frequency peak flows to simulate worst case conditions within the wastewater collection system for identifying existing system deficiencies and sizing future system facilities. A summary of the model scenarios are provided in Table 6-5, "Modeled Scenarios." A general summary of the model settings used to execute the model simulations are provided in Table 6-6, "Model Settings." Refer to Appendix 6D for supplemental information on the model facility settings.

6.3.6 Wastewater Flow Allocation

Wastewater flows were added to the model using the Load Allocator Module and Polygon Intersection Method within the InfoSewer® software. The Polygon Intersection Method calculated the flows between the demand polygon and the land use polygon. The demand polygon is a compilation of smaller demand polygons that are designated to the individual manhole nodes in the model. A general demand polygon was created by the Load Allocator using the basin areas provided in Figure 6-1. Manual adjustments were made to the general demand polygon so that the polygon boundaries further aligned with the development areas shown on Section 1, Figure 1-2.

Appendix B: DEMAND CALCULATIONS

WATER SYSTEM PIPE LOSS CALCULATIONS

WATER SYSTEM HGL AND PIPE SIZING CALCULATIONS

Perception design group, inc.
6901South Pierce Street,
Suite 315., Littleton, Colorado 80128
Voice 303-232-8088 Fax 303-232-5255

HEADLOSS AND PIPE SIZING

PARKER POINTE WATER LINE HEADLOSS

Pressure Pipe Loss loss = $\frac{10.44*L*Q^{1.85}}{C^{1.85}*d^{4.8655}}$

MAX DAY DEMAND

L (ft)	1200			
Q (gpm)	34.5	hf =	0.04	ft
C	130			
d (in)	8			

COEFFICIENT "C VALUE"

PVC	130
DIP	140
Copper	130

MAX DAY DEMAND + FIRE FLOW

L (ft)	1200			
Q (gpm)	1534.5	hf =	48.66	ft
C	130			
d (in)	8			

Note C value should to verified

Perception design group, inc.
6901South Pierce Street,
Suite 315., Littleton, Colorado 80128
Voice 303-232-8088 Fax 303-232-5255

PRESSURE PIPE SIZING
PARKER POINTE WATER LINE

Design: CN
Project: Parker Pointe

Design Criteria:

Maximum Velocity in Pipe (fps):	5
Maximum Velocity in Pipe MD+FF (fps):	10
Minimum Diameter (in)	8
Hazen Williams C	130
Ground Elevation at Site (ft)	6006
Minimum Pressure (psi)	133

Pipe Run	Scenario	Water Line Nodes	Flow (gpm)	Max Design Flow (gpm)	Min Pipe Diameter (in)	Pipe Diameter Used (in)	Resulting Velocity (fps)	Pipe Length (ft)	Head Loss (ft)	Total Head Loss (ft)	Ground Elevation at Site (ft)	Dynamic HGL (ft)	Resulting Pressure (psi)
P-1 to P-2	PEAK DAY	P2	34.5	34.5	1.7	8	0.2	1200	0.0	0.0	6006.0	6313.2	133.0
P-1 to P-2	PEAK DAY+FF	P2	1500	1534.5	7.9	8	9.8	1200	48.7	48.7	6006.0	6264.5	111.9

Perception design group, inc.

6901South Pierce Street,
Suite 315., Littleton, Colorado 80128
Voice 303-232-8088 Fax 303-232-5255

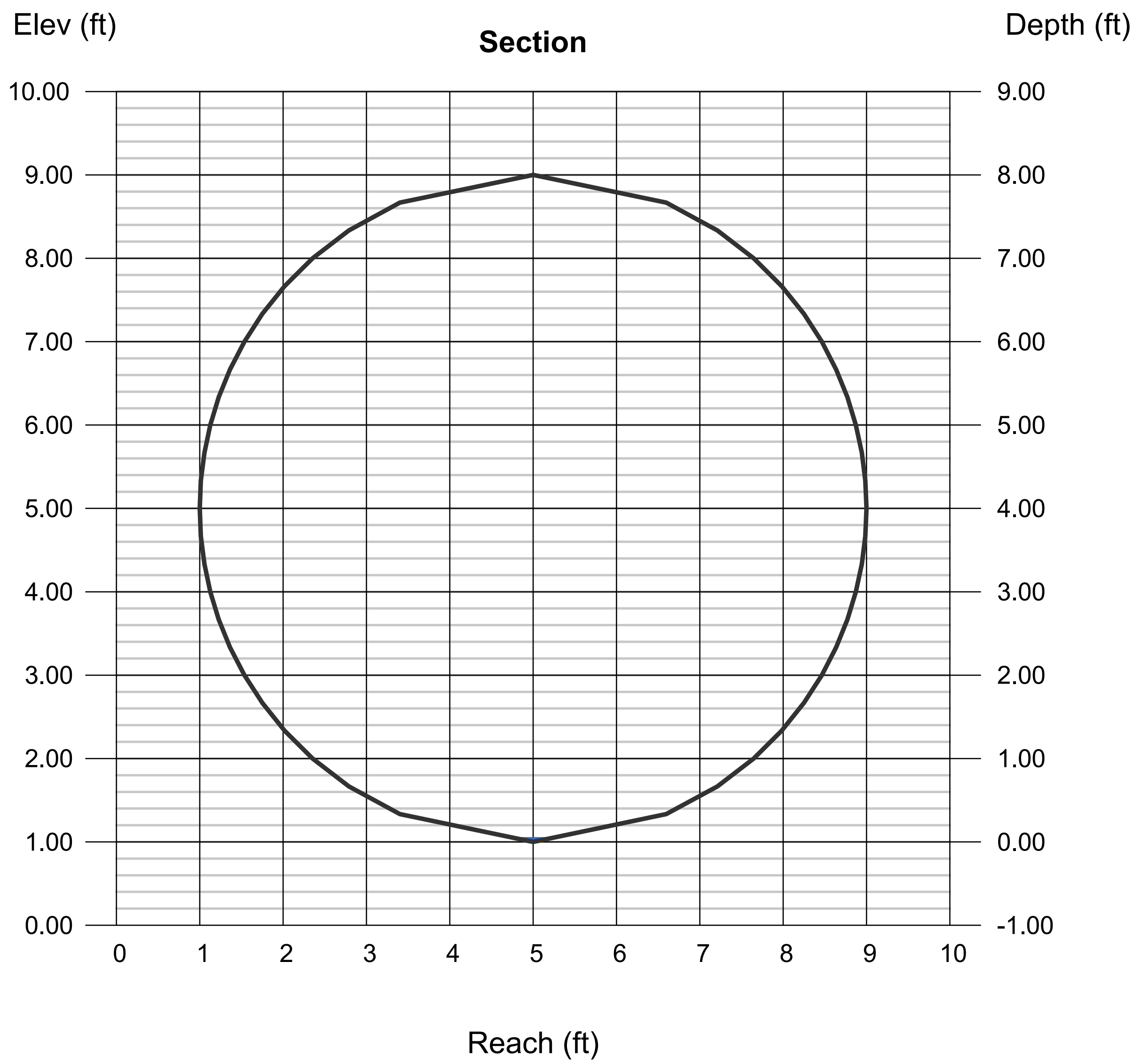
SANITARY SEWER DEMAND CALCULATIONS

Use	Occupancy (Capita)	Average Daily Sewage Flow		PEAK FACTOR	
Retail / Commercial		273	*GPD/AC*	3.2	
Development Type	Commercial				
Acres	14.66				
	GPD	CFS			
Average Flow	4002.18	0.006			
Infiltration					
Peak Flow	12806.98	0.02			

Channel Report

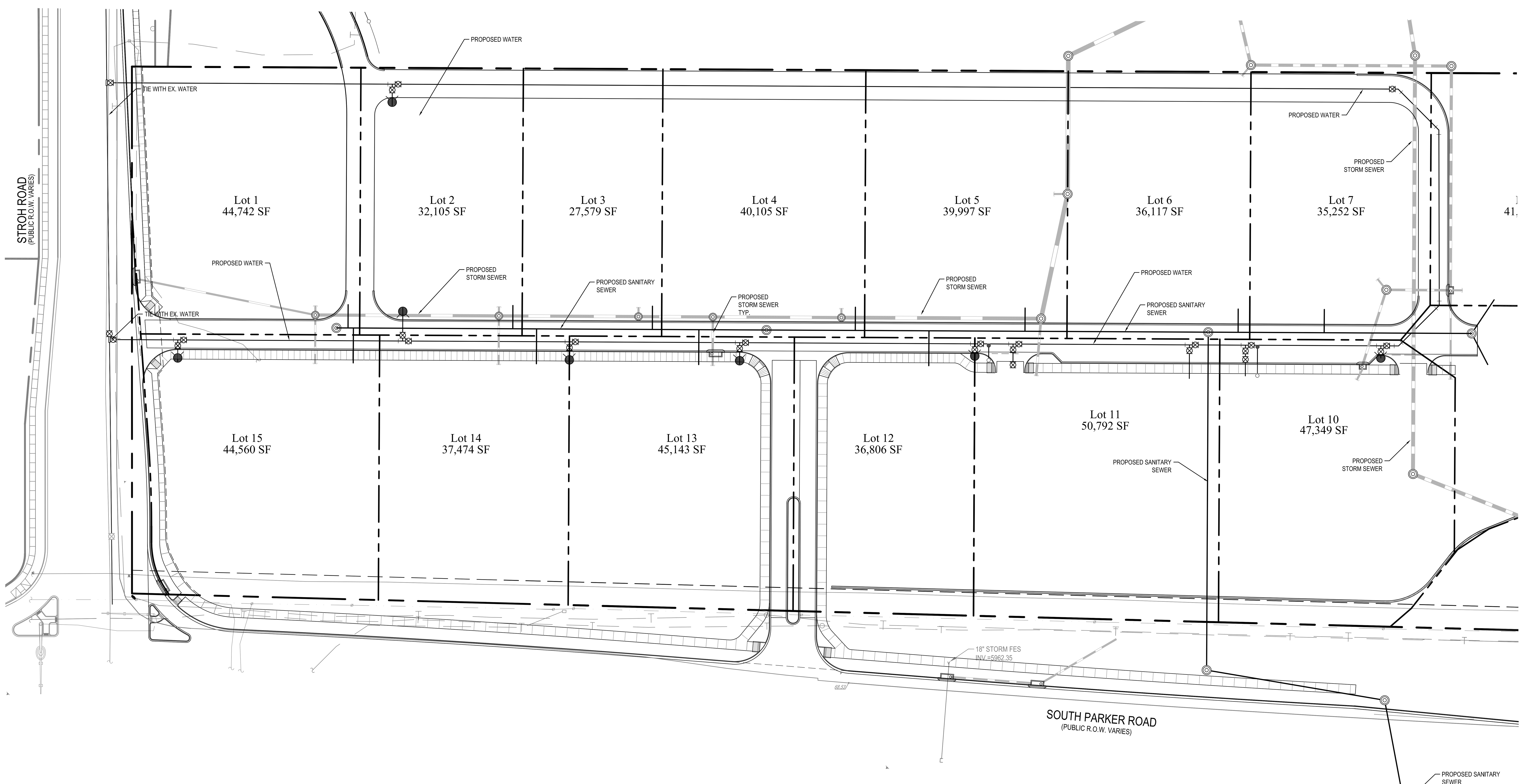
<Name>

Circular		**Highlighted**	
Diameter (ft)	= 8.00	Depth (ft)	= 0.03
		Q (cfs)	= 0.020
		Area (sqft)	= 0.02
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 0.96
Slope (%)	= 2.00	Wetted Perim (ft)	= 1.00
N-Value	= 0.009	Crit Depth, Yc (ft)	= 0.04
		Top Width (ft)	= 1.00
Calculations		EGL (ft)	= 0.04
Compute by:	Known Q		
Known Q (cfs)	= 0.02		



Appendix C: OVERALL UTILITY MAP

OVERALL UTILITY MAP



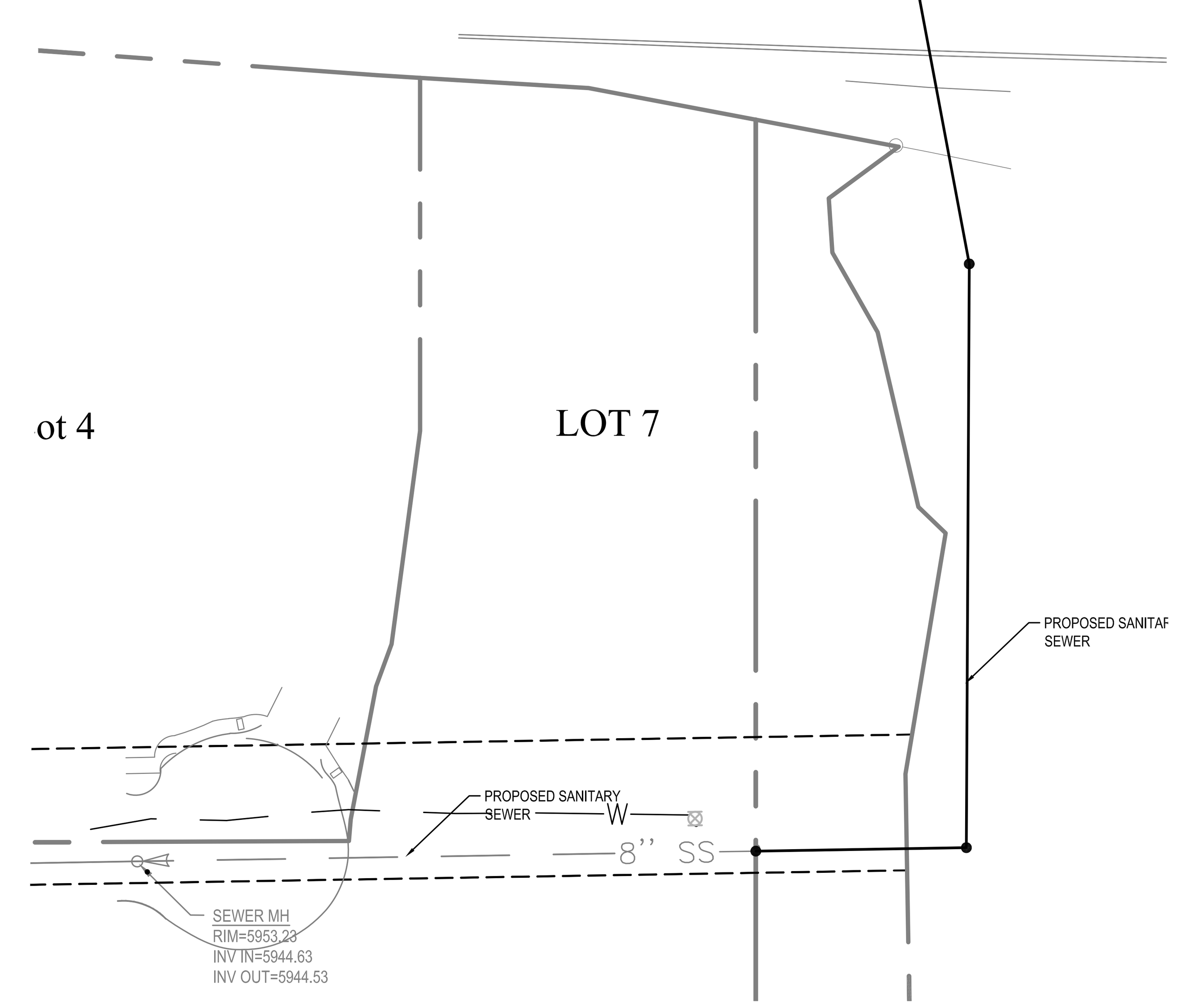
TOWN NOTE

THE PROPOSED UTILITY CONNECTION WILL REQUIRE A TOWN RIGHT-OF-WAY PERMIT PRIOR TO COMMENCING WORK. THE TOWN PREFERS CONNECTIONS TO BE BORED TO THE EXTENT POSSIBLE, AND ANY STREET CUT ALLOWED BY THE TOWN WILL BE REQUIRED TO BE PATCHED ACCORDING TO THE TOWN'S CONSTRUCTION STANDARDS AND DETAILS. THE LIMITS OF PATCHING WILL BE DETERMINED BY THE TOWN AT THE TIME OF CONSTRUCTION. THE TOWN OF PARKER DOES NOT ALLOW ROADWAY CLOSURES FOR UTILITY WORK.

ALL FIRE HYDRANTS SHALL BE INSTALLED ACCORDING TO WATER UTILITY STANDARDS. THE NUMBER AND LOCATION OF THE FIRE HYDRANTS AS SHOWN ON THE OVERALL UTILITY PLAN ARE CORRECT AS SPECIFIED BY THE TOWN OF PARKER, COMMUNITY DEVELOPMENT DEPARTMENT.

FIRE CODE OFFICIAL OR DESIGNATED REPRESENTATIVE DATE

(NOTE - UNDERGROUND FIRE LINE (UFL) SUBMITTAL DOCUMENTS MUST MEET THE REQUIREMENTS OF NFPA 24 WHEN SUBMITTING FOR REVIEW.)



CALL UTILITY NOTIFICATION CENTER OF COLORADO
1-800-922-1987
CALL 2-BUSINESS DAYS IN ADVANCE BEFORE YOU DIG, GRADE, OR EXCAVATE FOR THE MARKING OF UNDERGROUND MEMBER UTILITIES.

CAUTION: NOTICE TO CONTRACTOR THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE LOCAL UTILITY LOCATION CENTER AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATIONS OF THE UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.

LEGEND

- PROPERTY LINE
- LOT LINE
- PROPOSED EASEMENT / SETBACK
- EXISTING RIGHT-OF-WAY
- PROPOSED SAWCUT LINE
- PROPOSED CURB
- PROPOSED FLOW LINE
- PROPOSED PAN/LIP
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED WATERLINE
- EXISTING WATERLINE
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- PROPOSED WATERLINE BEND *
- PROPOSED WATERLINE TEE / CROSS *
- PROPOSED WATERLINE PLUG & CAP *
- PROPOSED GATE VALVE *
- PROPOSED WATER METER *
- PROPOSED FIRE HYDRANT *
- EXISTING / PROPOSED SANITARY MANHOLE *
- EXISTING / PROPOSED CLEAN OUT *
- UNDERGROUND UTILITY CROSSING

ABBREVIATIONS

ASSY	ASSEMBLY
BP	BOTTOM OF PIPE
ESMT	EASEMENTPS
ELEV	ELEVATION
EX	EXISTING
DIP	DUCTILE IRON PIPE
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOWLINE
FU	FUTURE
GV	GATE VALVE
INV	INVERT
KB	KICK BLOCK / THRUST BLOCK
PR	PROPOSED
PVC	POLYVINYL CHLORIDE PIPE
TP	TOP OF PIPE
W/	WITH

UTILITY NOTES

1. ALL UTILITY CONSTRUCTION SHALL CONFORM TO PARKER WATER AND SANITATION DISTRICT AND CRITERIA REFERENCE. LOCAL AGENCY INFRASTRUCTURE DESIGN AND CONSTRUCTION STANDARDS.
2. NOMINAL DEPTH OF WATER MAIN SHALL BE 4.5' FROM FINISHED GRADE TO TOP OF PIPE.
3. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE PARKER WATER AND SANITATION DISTRICT THE DISTRICT RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO ITS STANDARDS AND SPECIFICATIONS.
4. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING THE HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UTILITIES. EXISTING UTILITIES SHOWN ON THIS PLANS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME OF DESIGN AND DO NOT REFLECT A COMPLETE SURVEY OF EXISTING UTILITIES. CONTACT THE ENGINEER WITH DISCREPANCIES.
5. SAWCUT OF EXISTING STREETS SHALL BE IN CONFORMANCE WITH TOWN STANDARDS. CUTS SHALL STRAIGHT WITH CLEAN EDGES. REMOVE EXISTING CURB AND GUTTER TO NEAREST JOINT RETURN ALONG EXISTING LINE AND GRADE.
6. THE OWNER AND OR THEIR REPRESENTATIVE SHALL BE RESPONSIBLE FOR COORDINATION WITH EXISTING FRANCHISE UTILITIES TO INCLUDE COMCAST, XCEL, CENTURY LINK OR OWNERS OF EXISTING DRY UTILITY LINES.
7. EXISTING UTILITY SURFACE APPURTENANCES SHALL BE RAISED TO FINISHED GRADE, THIS INCLUDES BUT IS NOT LIMITED TO MANHOLE LIDS, VALVE COVERS.

GRAPHIC SCALE
(IN FEET)
1 inch = 50ft.

BENCHMARK

BENCHMARK: DOUGLAS COUNTY SURVEY CONTROL MONUMENT TT15A – 3" DIAMETER DOUGLAS COUNTY GIS ALUMINUM CAP AT THE NE CORNER OF STROH ROAD AND SOUTH PARKER ROAD (US HIGHWAY 83) ELEVATION: 5970.79 FEET (NAVD 1988 DATUM)

PERCEPTION DESIGN GROUP, INC.
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PREPARED UNDER THE DIRECT SUPERVISION OF
JERRY W. DAVIDSON, P.E.
COLORADO REG # 30226
FOR AND ON BEHALF OF
PERCEPTION DESIGN GROUP, INC.

REVISIONS

DATE	DESCRIPTION
02/28/18	SECOND SUBMITTAL
10/24/17	INITIAL SUBMITTAL

OVERALL UTILITY PLAN

PARKER POINTE
LOTS 1 THRU 15 AND TRACTS A AND B, PARKER POINTE FILING NO. 1
SOUTHEAST CORNER PARKER ROAD AND STROH ROAD
PARKER, COLORADO

design by: JWD
approved by: JWD
project no.: 2015-015
date: 10/01/17

SHEET
C7.10

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