UTILITY REPORT

For

BOULDER CREEK COMMONS

5399 Kewanee Drive &
5697 South Boulder Road
County of Boulder, Colorado

November 2012

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UTILITY REPORT
BOULDER CREEK COMMONS SUBDIVISION

5399 Kewanee Drive and 5697 S. Boulder Road
Unincorporated Boulder County, Colorado

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TECHNICAL APPENDICES

EXHIBIT PLANS

1.0 INTRODUCTION

This **Utility Report** [Report] is submitted on behalf of BCC, LLC [Developer] for the proposed **Boulder Creek Commons Subdivision** and is prepared in accordance with the requirements outlined in Sections 5.02 and 6.02 of the City of Boulder's "*Design and Construction Standards*" [DCS] [1], latest edition. The purpose of this Report is to provide an analysis of the proposed utility system and demonstrate that the existing City utility infrastructure has the available capacity to support the proposed improvements without adversely impacting the surrounding service area.

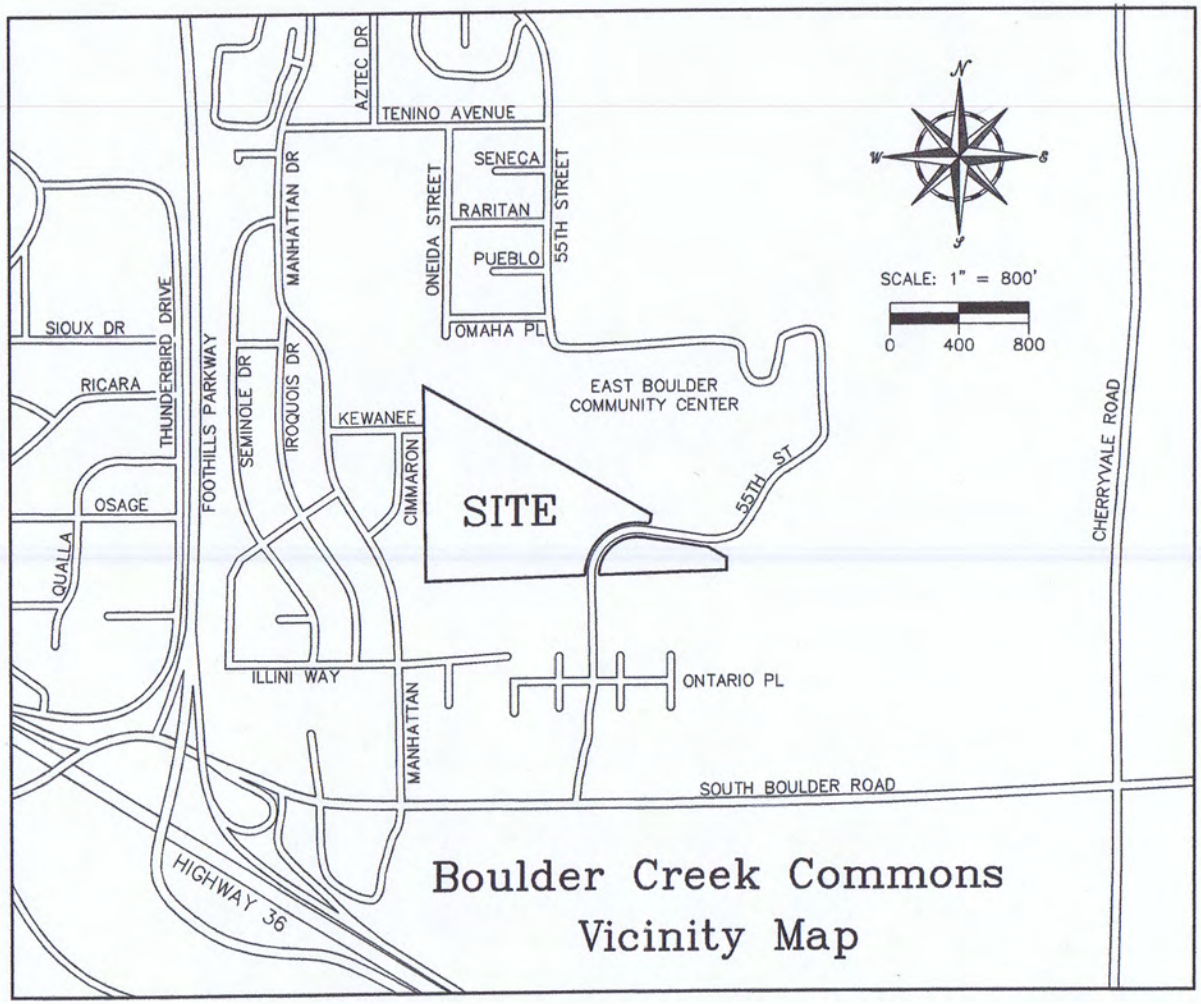
Location and Description

The proposed Boulder Creek Commons project is located just south of the East Boulder Recreation Center on 55th Street. The Keewaydin Meadows Subdivision bounds the property on the west, two estate lots in unincorporated Boulder County lie to the south, and City of Boulder Open Space is directly east. 55th Street and Kewanee Drive provide access to the property. A vicinity map is provided on the following page for reference.

The property encompasses a total of 22.17 acres. 55th Street divides the property into two parcels: the West Parcel contains19.44 acres and the East Parcel is 2.73 acres. The proposed residential development will occur on the West Parcel. The East Parcel will be reserved for environmental preservation including wetland mitigation. The property is currently in unincorporated Boulder County, and the Developer has petitioned for annexation into the City of Boulder. Unimproved agricultural land with irrigation ditches and minor agricultural buildings occupy the majority of the property.

Proposed Development

The Boulder Creek Commons project includes the development of 16.93 acres for a residential neighborhood and 2.51 acres of congregate care senior affordable housing on the West Parcel. Site improvements will include public roads, sidewalks, parks, utility infrastructure, storm water detention facilities and open space areas. The requested zoning is RL-2. The residential neighborhood includes 65 single family residential homes and 3 duplexes (6 duplex units). The congregate care senior affordable housing will be a two-story building with 50 units and associated parking. The gross proposed project density is 5.5 units per acre. The proposed development layout and supporting utility infrastructure is shown on the "*Preliminary Utility Plan – West Parcel*" [SHT C1] included in the back pocket of this Report.


AZTEC DR
TENINO AVENUE
SENECA
RARITAN
PUEBLO
OMAHA PL
ONEIDA STREET
55TH STREET
MANHATTAN DR
SIOUX DR
RICARA
THUNDERBIRD DRIVE
FOOTHILLS PARKWAY
SEMINOLE DR
IROQUOIS DR
KEWANEE
CIMMARON
EAST BOULDER
COMMUNITY CENTER
SITE
55TH ST
CHERRYVALE ROAD
OSAGE
QUALLA
ILLINI WAY
MANHATTAN
ONTARIO PL
SOUTH BOULDER ROAD
HIGHWAY 36
N
W
E
S
SCALE: 1" = 800'
0
400
800
Boulder Creek Commons
Vicinity Map

2.0 WATER SYSTEM DESIGN

The proposed Boulder Creek Commons Subdivision will connect to the existing City of Boulder water distribution system for domestic and fire suppression water supply. Two connections are proposed: at the existing 8" water main located in 55th Street and at the existing 8" CIP water main in Kewanee Drive to the west. A looped distribution system will be constructed within the subdivision. All proposed water mains are 8" PVC pipe. The single family homes and duplex units will be served by the proposed distribution system. Due to the building layout and site constraints, the proposed water service connections (domestic and fire) for the senior housing building are proposed to connect into the existing 12" water main in 55th Street. Refer to the "*Preliminary Utility Plan – West Parcel*" [SHT C1] included with this report for layout details.

Domestic Demands

For system sizing, the proposed water demands were calculated using parameters outlined in Tables 5-1 and 5-2 of the *DCS* [1]. An average of 3.2 persons per unit was used for the single family and duplex units, and an average of 2.0 persons per unit for the senior housing units. For the target market of the project, these values are higher than the actual anticipated occupancy levels, but were used in to provide a conservative analysis. Based on the overall development density of approximately 5.5 units per acre, the low-density average day demand value of 180 GPCD was used. A summary of water demands is as follows:

Design Number of Persons	328
Low Density Average Day Demand	180 GPCD
Project Average Day Demand	59,040 GPD
Max Hour Demand	12,546 Gal/Hour
Max Day Demand	301,104 GPD

Detailed calculations are provided in Appendix A for reference.

Fire Demands

For fire flow demand the worst case scenario was used, which in the case of this project would be a fire in the proposed congregate care facility. Using an approximate proposed building square footage of 54,000 square-feet and an assumed construction type of V-A, the fire code minimum fire flow is 4,250 GPM for a 4-hr duration. The building will be sprinkled, so with a code allowed 50%

fire flow reduction, the resulting design fire flow is 2,125 GPM minimum. For the EPANET model, a fire flow of 750 GPM was applied to three points near the congregate care site, representing a sprinkler system draw as well as two fire hydrants. This results in a total fire flow for modeling purposes of 2,250 GPM.

Detailed calculations are provided in Appendix A for reference.

EPANET Model

A copy of the City water model was provided by City staff to The Sanitas Group for review on 5/14/2012. Based on a review of the City model, it was determined that the closest node to the project site was #327. In order to get an accurate idea of the effects of the proposed project demands on the overall system, two additional reference points were determined in the overall City model. The first point added the average-day demand to the base demand, and the second point added the peak-day demand to the base demand. A summary of results is below:

Node #327 City Model Data			
	Project Demand	Total Demand	Pressure
City Base Demand	0	0.072112 MGD	119.06 PSI
Average Day Demand	0.05904 MGD	0.131152 MGD	118.98 Psi
Peak Day + Fire Flow	3.361 MGD	3.433 MGD	105.41 PSI

A simplified project specific EPANET model was generated, utilizing the three data points above to create supply curves at the project tie-in points. Peak-day demands were applied to the project with fire flows included to determine the worst case effects on the project. The resulting minimal system pressure was 104.66 psi at Nodes “FH5” & “7”, which are adjacent to each other. With no pressures dropping near the 20 psi minimum range during this scenario, no further analysis was necessary or performed. The reported velocities in the 8” distribution mains are below 8 fps. Additional analysis discussions and EPANET model output data is included in Appendix B for review.

3.0 WASTEWATER SYSTEM DESIGN

The project site slopes to the northwest corner, and there are currently two potential sewer connection outfall points. The first is an existing main located in Kewanee Drive. Based on a review of the existing inverts, this main is shallow and extending the main east would conflict with the proposed Dry Creek Ditch No. 2 pipe crossing and potentially conflict with the South Boulder Creek flood mitigation piping alternatives. The second, and proposed connection point, is an existing 8" PVC sewer main located in the northwest corner along the northern boundary with the East Boulder Recreation Center. This sewer main continues north under the existing park space and into Oneida Street for a short bit before turning east under Omaha Place. From there, it outfalls under Sioux Drive before connecting to the 30" collector main located east of the East Boulder Recreation Center. Based on discussions with City staff, there are no known issues with this outfall at this time.

The proposed system layout includes a network of 8" PVC sewer mains at or above the minimum of 0.5% slope allowed by the *DCS* [1]. The property has a seasonally high ground water table. In accordance with the *DCS*, ground water barriers will be provided at regular intervals along the proposed sanitary sewer mains. The proposed structures will not have basements and an underdrain system is not proposed for this project. Refer to the "*Preliminary Utility Plan – West Parcel*" [SHT C1] for layout details and "*Preliminary Utility Plan – East Parcel*" [SHT C2] for proposed manhole depths and invert information.

Wastewater loads were calculated using parameters outlined in Tables 6-1 and 6-2 of the *DCS* [1]. An average of 3.2 persons per unit was used for the single family and duplex units, and an average of 2.0 persons per unit for the senior housing units. A summary of results is as follows:

Design Persons	328
Low Density Average Day Load	100 GPCD
Project Average Day Load	22.8 GPM (0.051 CFS)
Minimum Day Load	5.7 GPM (0.012 CFS)
Peak Day Load	91.2 GPM (0.203 CFS)
Infiltration	0.72 GPM

Based on a minimum project pipe design slope of 0.5% and an 8" PVC pipe, the resulting pipe check analysis for peak-day flow is as follows:

Peak Day Flow	0.203 CFS
Slope	0.5%
Manning's N	0.013
Flow Depth	2.64 Inches
Velocity	2.01 ft/sec

During average-day flows, the pipe flow results for a design slope of 0.5% are as follows:

Average Day Flow	0.051 CFS
Slope	0.5%
Manning's N	0.013
Flow Depth	1.32 Inches
Velocity	1.36 ft/sec

Detailed calculations are included in Appendix A for reference.

4.0 DRY UTILITIES

Gas and electric service will be provided by the existing Xcel Energy distribution network in the area. Communications and cable will be provided by Century Link and Comcast. The proposed dry utility layout and associated easements were prepared with guidance from Xcel Energy. Layout details are provided on the "*Preliminary Utility Plan – West Parcel*" [SHT C1]. The project team will continue to work with dry utility providers to refine system design.

5.0 CONCLUSIONS

This Utility Report was prepared in accordance with the requirements outlined in Sections 5.02 and 6.02 of the City of Boulder's "*Design and Construction Standards*" [DCS] [1], latest edition. Existing City of Boulder utility infrastructure is currently available to the property. The Report demonstrates that the existing City utility infrastructure has the available capacity to support the proposed improvements without adversely impacting the surrounding service area. Dry utilities are readily available in the immediate project area.

6.0 REFERENCES

[1] "*Design and Construction Standards*", City of Boulder – Latest Edition

[2] "*International Fire Code*" – Latest Edition

APPENDIX A

Supporting Calculations

PROJECT INFO

- 71 RESIDENTIAL UNITS
  - → 65 SINGLE FAMILY
  - → 6 DUPLEX UNITS (3 LOTS x 2 UNITS EA.)
- 50 SENIOR CONGREGATE CARE UNITS.

⇒ TOTAL UNITS = 121 UNITS

SITE AREAS:

RESIDENTIAL AREA: 16.39 Ac
SENIOR HOUSING: 3.05 Ac.
WETLAND BANK (EAST SIDE) = 2.73 Ac
TOTAL PROPERTY: 22.17 Ac.

ZONING: RL-2 PROPOSED DENSITY: ~5.5 UNITS/ACRE ⇒ LOW-DENSITY

WATER SYSTEM DEMANDS

AVG. PERSONS PER UNIT:

→ 71 SINGLE-FAMILY/DUPLEX UNITS x 3.2 PERSONS/UNIT
= 227.2 PERSONS

⇒ 50 SENIOR (ASSUME MULTI-FAMILY) UNITS x 2.0 PERSONS/UNIT
= 100.0 PERSONS

TOTAL MAX. CAPACITY FOR DESIGN = 328 PERSONS

LOW-DENSITY AVG.-DAY DEMAND = 180 GPCD

180 GPCD x 328 PERSONS = 59,040 GPD
= 2,460 GAL/HOUR

DEMAND PEAKING FACTORS:

LOW-DENSITY: MAX/HOUR = 5.1
MAX/DAY = 5.1

PEAK DEMANDS:

MAX DAY = 59,040 GPD x 5.1 = 301,104 GPD
= 209.1 GPM. ✓

MAX HOUR = 2,460 x 5.1 = 12,546 GAL/HR
= 209.1 GPM. ✓

WASTEWATER SYSTEM LOADS

TOTAL PERSONS = 328 (SEE WATER DEMAND CALCS)

AVG. DAY LOAD = 100 GPCD

DESIGN LOAD = 32,800 GPD.
= 22.8 GPM.

AVG. DAY LOAD = 22.8 GPM. (0.051 CFS)

MINIMUM-DAY FLOW = 22.8 GPM x 0.25 (8" MAIN) = 5.7 GPM (0.012 CFS)

PEAK-DAY FLOW = 22.8 GPM x 4.0 (8" MAIN) = 91.2 GPM (0.203 CFS)

INFILTRATION: 200 GPIDM
TOTAL 8"ø MAINS = 3,440 LF
TOTAL INFILTRATION = 200 GPIDM x 8"ø x (3,440/5280) = 1,042 GPD
(0.72 GPM)

PEAK-DAY FLOW + INFILTRATION = 91.2 + 0.72 = 91.92 GPM.
(0.205 CFS)

8"ø PIPE @ 0.5% SLOPE, N = 0.013, Q = 0.205 CFS ⟹ DEPTH = 0.22 FT
VELOCITY = 2.01 FPS

FIRE-FLOW WATER DEMANDS

- MAX. PROJECT FIRE FLOW WILL BE SENIOR HOUSING BUILDING.

BLOG FOOTPRINT = ~27,000 SF x 2 LEVELS = 54,000 S.F.
DESIGN SIZE

- AT THIS TIME A BLOG CONST. TYPE OF V-A IS ASSUMED AS WORST CASE;

⟹ PER FIRE CODE: MIN. FIRE FLOW = 4,250 GPM (4-HR DURATION)

⟹ BLOG WILL BE SPRINKLED ⟹ 50% REDUCTION ALLOWED.

∴ 4,250 x 0.5 = 2,125 GPM FIRE
DESIGN FLOW (MIN.)

⟹ FOR DESIGN, THE FIRE FLOW IS DISTRIBUTED IN THE MODEL AT 3 POINTS WITH 750 GPM EACH REPRESENTING A 750 GPM SPRINKLER FLOW AND TWO (2) HYDRANTS AT 750 GPM EACH. THIS TOTALS 2,250 GPM OF FIRE FLOW (> MIN. 2,125 GPM)

APPENDIX B

EPANET Water Model Analysis

CURRENT SYSTEM EPANet REVIEW

WATER MODEL "CURRENT MODEL.NET" RECIEVED FROM CITY STAFF ON 5/14/2012 VIA E-MAIL.

CLOSEST NODE TO PROJECT SITE IS # 327

NODE #327 EXIST. INFO:

BASE DEMAND = 0.072112 MGD
ACTUAL DEMAND = 0.07 MGD
TOTAL HEAD = 5801.79
NODE ELEV. = 5327.0
PRESSURE = 119.06 PSI

FOR 2ND POINT OF REFERENCE ⇒ ADD AVG-DAY DEMAND

AVG-DAY DEMAND = 59,040 GPD (0.05904 MGD)
NEW NODE 327 BASE DEMAND = 0.131152 MGD
NEW PRESSURE: 118.98 PSI

FOR 3RD POINT OF REFERENCE ⇒ PEAK DAY + FIRE FLOW ADDED TO BASE

MAX-DAY + FIRE = 2,334 GPM = 3.361 MGD
NEW DEMAND = 3.433 MGD @ NODE 327
NEW PRESSURE = 105.41 PSI

∴ THESE 3 POINTS OF SUPPLY REFERENCE WERE USED IN THE SITE DESIGN MODEL PUMP CURVES AT THE LOCATION OF CONNECTIONS TO EXISTING WATERLINES. SEE PROJECT SPECIFIC EPANet MODEL FOR DETAILS. BASE MODEL DEMANDS REMOVED. (0.072112 MGD)

PT. 1: SITE DEMAND = ∅
PRESSURE = 119.06 (275.03 FT)

PT 2: SITE DEMAND = 0.05904 MGD
PRESSURE = 119.98 (274.84 FT)

PT 3: SITE DEMAND = 3.361 MGD
PRESSURE = 105.41 PSI (243.50 FT)

EPANET MODEL INFO

* SIMPLIFIED MODEL
  - MAIN JUNCTIONS
  - 2 CONNECTION POINTS W/ EXIST.
  - FH LOCATIONS (6" PIPE CONNECTION NOT INCL.)
  - SENIOR HOUSING FIRE SPRINKLER CONNECTION

PIPES: 8" ø
ROUGHNESS = 105
LOSS COEFF: VALUES APPLIED TO PIPES TO COUNT BENDS, GATE VALVES, ETC

MAX. DAY PLUS FIRE FLOW ANALYSIS

MAX-DAY DEMAND = 209.1 GPM
THIS WAS DISTRIBUTED ACROSS THE NETWORK AT 4 NODES:

NODE: SEN-DOM = 83.7 GPM
1 = 41.8 GPM
4 = 41.8 GPM
6 = 41.8 GPM

FIRE FLOW = 2,250 GPM
THIS WAS DISTRIBUTED ACROSS 3 NODES, THE SPRINKLER SERVICE & TWO FIRE HYDRANTS.

NODE: SEN-FIRE = 750 GPM
FH3 = 750 GPM
FH5 = 750 GPM

RESULTS:

- LOWEST PRESSURE = 104.66 PSI @ FH5 & NODE 7
  ∴ > MIN. 20 PSI SO OK.
- MAX. VELOCITY IN A PIPE IS 5.80 FPS IN LINK 3
  ∴ < 8 FPS MAX.

BOULDER CREEK COMMONS
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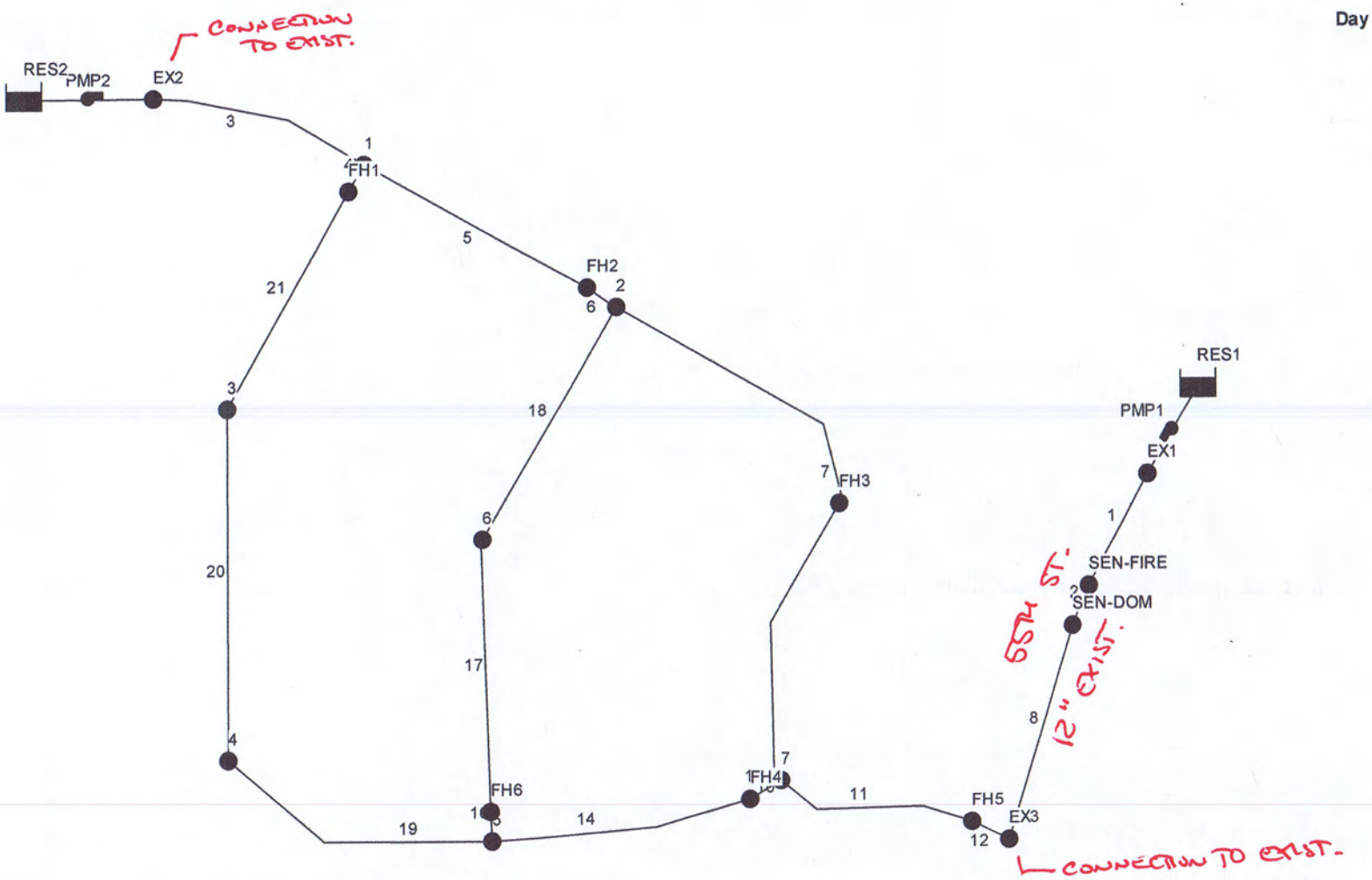
B1006 OCT. 2012

Day 1, 12:(



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PEAK-DAY + FIRE FLOW ANALYSIS

Network Table - Links

Link ID	Flow GPM	Velocity fps	Unit Headloss ft/Kft	Friction Factor
Pipe 3	909.13	5.80	25.91	0.033
Pipe 4	322.91	2.06	7.73	0.078
Pipe 5	544.42	3.47	9.59	0.034
Pipe 6	544.42	3.47	31.30	0.111
Pipe 7	457.00	2.92	6.69	0.034
Pipe 10	-293.00	1.87	2.94	0.036
Pipe 11	33.73	0.22	0.05	0.049
Pipe 12	-716.27	4.57	20.04	0.041
Pipe 13	-326.73	2.09	7.47	0.074
Pipe 14	-326.73	2.09	3.70	0.037
Pipe 16	-45.62	0.29	0.15	0.074
Pipe 17	-45.62	0.29	0.09	0.047
Pipe 18	-87.42	0.56	0.31	0.043
Pipe 19	-281.11	1.79	2.79	0.037
Pipe 20	-322.91	2.06	3.42	0.035
Pipe 21	-322.91	2.06	3.45	0.035
Pipe 1	1549.97	4.40	8.63	0.029
Pipe 2	799.97	2.27	2.52	0.032
Pipe 8	716.27	2.03	2.08	0.032
Pump PMP2	909.13	0.00	-265.46	0.000
Pump PMP1	1549.97	0.00	-256.24	0.000

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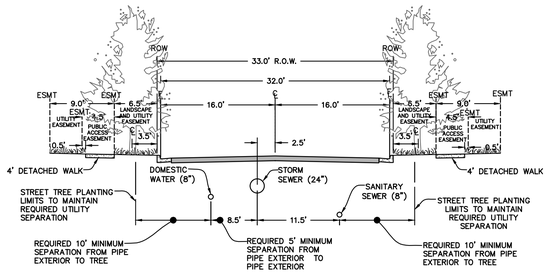
PEAK-DAY + FIRE-FLOW ANALYSIS

Network Table - Nodes

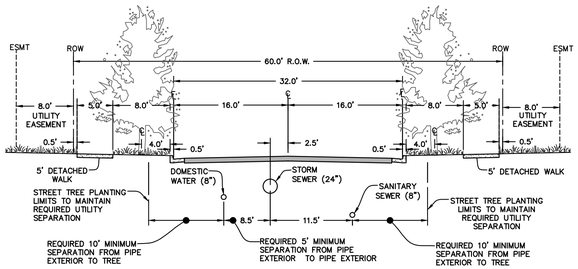
Node ID	Demand GPM	Head ft	Pressure psi	Quality
Junc EX2	0.00	5577.46	115.02	0.00
Junc 1	41.80	5568.91	108.72	0.00
Junc FH1	0.00	5568.68	108.62	0.00
Junc 5	0.00	5565.75	105.62	0.00
Junc FH6	0.00	5565.75	105.62	0.00
Junc 2	0.00	5565.87	106.97	0.00
Junc FH2	0.00	5566.18	107.10	0.00
Junc FH3	750.00	5563.69	105.16	0.00
Junc SEN-FIRE	750.00	5569.62	107.73	0.00
Junc SEN-DOM	83.70	5567.09	106.63	0.00
Junc 7	0.00	5564.55	104.66	0.00
Junc FH4	0.00	5564.70	104.73	0.00
Junc FH5	750.00	5564.53	104.66	0.00
Junc EX1	0.00	5578.24	111.03	0.00
Junc 6	41.80	5565.78	106.06	0.00
Junc 4	41.80	5566.59	105.98	0.00
Junc 3	0.00	5567.82	108.25	0.00
Junc EX3	0.00	5565.01	104.86	0.00
Resvr RES2	-909.13	5312.00	0.00	0.00
Resvr RES1	-1549.97	5322.00	0.00	0.00



TYPICAL RESIDENTIAL ACCESS STREET SECTION

(33.0' RIGHT-OF-WAY WIDTH)

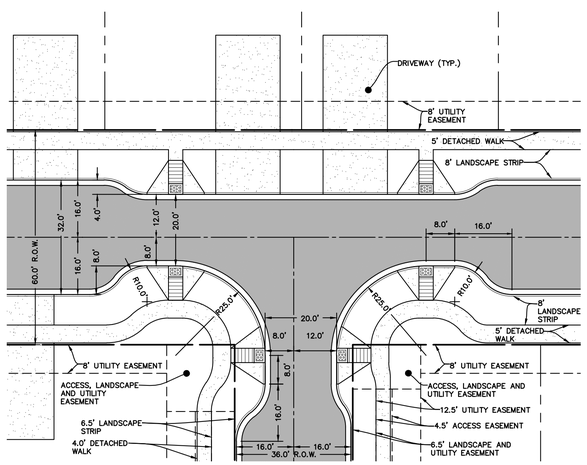
1" = 10'



TYPICAL RESIDENTIAL STREET SECTION

(60.0' RIGHT-OF-WAY WIDTH)

1" = 10'



TYPICAL INTERSECTION BULB-OUT DETAIL

1" = 20'

SANITARY SEWER MANHOLE INFORMATION

Manhole ID	Rim Elevation	Invert Out	Invert In		Invert In	
A	*5316.90*	*5301.29*	*5301.29*	*SW*	-	
1	5315.98	5303.71	5303.81	S	-	
2	5317.77	5306.46	5306.66	E	-	
3	5319.08	5308.25	5308.35	E	-	
4	5320.76	5309.65	5309.75	SE	-	
5	5321.95	5310.43	5310.53	SE	5310.63	SW
6	5323.00	5311.64	5311.74	SE	-	
7	5323.51	5312.12	5312.22	SE	5312.32	SW
8	5324.00	5312.55	5312.65	SE	-	
9	5325.19	5313.64	5313.84	SW	5313.94	NE
10	5326.08	5315.67	5315.77	S	-	
11	5326.97	5317.60	5317.70	SE	-	
12	5328.00	5318.73	5318.93	E	-	
13	5322.00	5312.38	5312.48	S	-	
14	5324.00	5314.44	-		-	
15	5324.96	5313.59	5313.69	S	-	
16	5326.66	5315.05	5315.15	S	5315.25	E,W
17	5326.00	5316.05	5316.15	NE	-	
18	5326.63	5316.41	-		-	
19	5325.40	5316.10	-		-	
20	5327.02	5315.78	-		-	
B	*5317.71*	*5310.93*	*5311.65*	*S*	*5311.41*	*E*
C	*5317.32*	*5311.78*	-		-	

STORM SEWER STRUCTURE INFORMATION

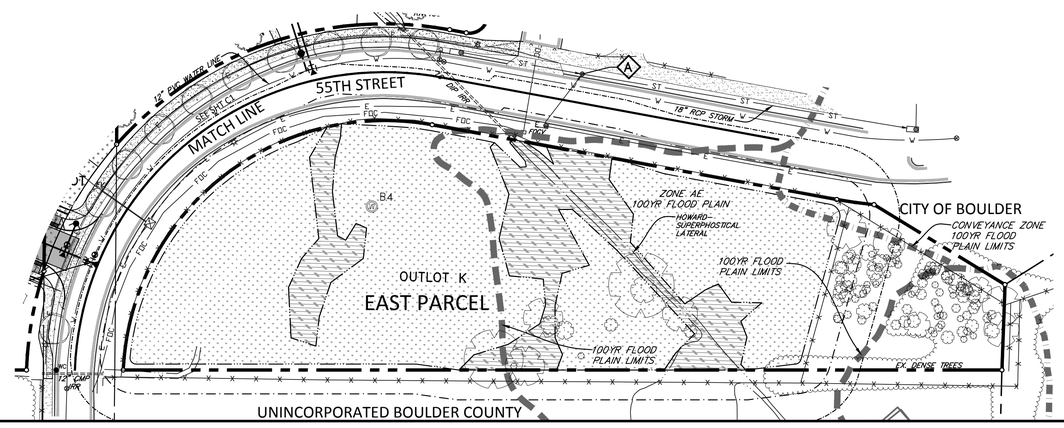
Structure ID	Rim or Grate Elevation	Invert Out	Invert In		Invert In	
1	5319.90	5316.40	5316.50	E	-	
2	5321.44	5317.34	5317.44	NE	5317.54	SE
3	5321.94	5318.00	5318.10	SE	5318.60	NW
4	5322.17	5318.40	5318.40	SE	-	
5	5323.34	5319.58	5319.58	SE	5320.08	SW
6	5323.97	5319.89	5319.89	SE	-	
7	5324.40	5320.17	5320.27	S	-	
8	5323.50	5320.47	5320.57	S	-	
9	5324.95	5320.98	5321.08	SE	-	
10	5325.11	5321.30	5321.30	SE	-	
11	5325.28	5321.87	5321.97	SW	-	
12	5321.63	5318.87	-		-	
13	5323.59	5320.37	-		-	
14	5321.00	5317.68	5317.78	SE		
A	*5324.68*	*5319.80*	*5319.90*	*S*	*5319.90*	*W*

DRY CREEK DITCH NO. 2 STRUCTURE INFORMATION

Structure ID	Rim Elevation	Invert In/Out	Invert Out		Sump
A	FES	5311.00	-		-
B	5316.79	5311.58	5314.10	W	5309.58
C	5315.66	5311.88	-		5309.88
D	5316.97	5312.45	-		5310.45
E	5318.39	5312.83	-		5310.83
F	5320.57	5315.67	-		5313.67
G	5323.34	5318.42	-		5316.42
H	Headwall	5321.00	-		-

GENERAL UTILITY NOTES

1. UTILITIES SHALL COMPLY WITH THE CITY OF BOULDER DESIGN AND CONSTRUCTION STANDARDS, LATEST EDITION THEREOF.
2. UTILITIES CONSTRUCTED IN THE SEASONAL HIGH GROUND WATER TABLE SHALL HAVE GROUND WATER BARRIERS CONSTRUCTED AT REGULAR INTERVALS WITHIN THE UTILITY TRENCH.
3. UTILITIES SHALL BE LOCATED A MINIMUM OF 10-FT AWAY FROM PROPOSED AND EXISTING TREES.
4. WATER MAINS SHALL BE 8" PVC C900 CLASS 200 PRESSURE PIPE. ALL WATER MAINS SHALL HAVE A MINIMUM FOUR AND A HALF (4-1/2) FEET MINIMUM COVER.
5. WATER SERVICES FOR SINGLE FAMILY RESIDENTIAL AND DUPLEX UNITS SHALL BE 3/4" TYPE K COPPER WITH 3/4" METERS.
6. SANITARY SEWER MAINS SHALL BE 8" SDR 35 PVC PIPE AT 0.5% MINIMUM SLOPE OR GREATER.
7. SANITARY SEWER MANHOLES LOCATED WITHIN THE 100-YEAR FLOOD PLAIN OR OTHER AREAS OF PONDING SHALL HAVE WATERTIGHT, BOLT-DOWN COVERS.
8. SANITARY SEWER SERVICES FOR SINGLE FAMILY RESIDENTIAL AND DUPLEX UNITS SHALL BE 4" SDR 35 PVC PIPE AT 2.0% MINIMUM SLOPE OR GREATER.
9. SEWER SERVICE FOR SENIOR HOUSING BUILDING SHALL BE 6" SDR 35 PVC PIPE AT 1.0% MINIMUM SLOPE OR GREATER.
10. STORM SEWER INSTALLED WITHIN THE CITY OF BOULDER RIGHT-OF-WAY OR PUBLIC UTILITY EASEMENT SHALL BE REINFORCED CONCRETE PIPE.
11. STORM SEWER SYSTEM ON THE SENIOR HOUSING LOT SHALL BE PRIVATE AND MAY BE CONSTRUCTED OF RCP, PVC, HDPE OR OTHER SIMILAR PIPE MATERIAL.
12. DRY CREEK DITCH NO. 2 PIPE SHALL BE 30" DIAMETER REINFORCED CONCRETE PIPE.
13. IMPROVEMENTS WITHIN THE DRY CREEK DITCH NO. 2 PRESCRIPTIVE EASEMENT SHALL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE DITCH COMPANY.
14. UTILITIES CROSSING THE HOWARD-SUPERPHOSTICAL DITCH SHALL BE SUBJECT TO THE REVIEW AND APPROVAL OF THE DITCH COMPANY AND/OR LATERAL OWNER.



PREPARED BY:

The Sanitas Group
1022 WILLOW PLACE
LOUISVILLE, CO 80027
303.981.9238
PROJECT CONTACT:
LESLIE R. EWY, PE

OWNER / DEVELOPER:

BCC, LLC
1526 SPRUCE STREET
SUITE 260
BOULDER, CO 80302
CONTACT:
MICHAEL BOYERS
303.949.1322

SITE REVIEW DOCUMENTS FOR:

BOULDER CREEK COMMONS

5399 KEWANEE DRIVE AND 5697 S. BOULDER ROAD
LOCATED IN THE SW¼ OF SECTION 3 AND THE SE¼ OF SECTION 4,
T1S, R70W, 6TH P.M., COUNTY OF BOULDER, STATE OF COLORADO

ISSUE	DATE
SITE REVIEW	06/18/12
RESUBMITTAL	11/05/12

DESIGNED BY:	LRE
DRAWN BY:	LRE
CHECKED BY:	TSG

DRAWING SCALE:
HORIZONTAL: 1" = 60'
VERTICAL: NONE

PRELIMINARY UTILITY PLAN EAST PARCEL

PROJECT NO. B1006

C2

SHEET: 06 OF 31

NOTES

1. GENERAL UTILITY NOTES PROVIDED ON SHEET C2.
2. SANITARY SEWER MANHOLE, STORM SEWER STRUCTURE AND DRY CREEK DITCH NO. 2 STRUCTURE INFORMATION PROVIDED ON SHEET C2.
3. REFER TO TYPICAL RESIDENTIAL STREET DETAIL PROVIDED ON SHEET C2 FOR ADDITIONAL UTILITY LAYOUT AND EASEMENTS INFORMATION.
3. REFER TO TYPICAL RESIDENTIAL ACCESS STREET DETAIL PROVIDED ON SHEET C2 FOR ADDITIONAL UTILITY LAYOUT AND EASEMENTS INFORMATION.
4. REFER TO INTERSECTION BULB-OUT DETAIL PROVIDED ON SHEET C2 FOR ADDITIONAL EASEMENT AND ROADWAY DESIGN INFORMATION.

60 30 0 60 120

SCALE: 1"=60'

LEGEND

- SUBDIVISION BOUNDARY
- PROPERTY LINE
- EASEMENT
- EX. EASEMENT
- RIGHT-OF-WAY
- EX. FENCES
- EX. STORM SEWER (ST)
- EX. SANITARY SEWER (SS)
- EX. WATER LINE (W)
- EX. NATURAL GAS LINE (G)
- EX. FIBER OPTIC LINE (FOC)
- EX. UNDERGROUND ELECTRICAL / TELEPHONE, CABLE TV LINE (E,T,CATV)
- EX. UNDERGROUND ELECTRICAL LINE (E)
- EX. UNDERGROUND TELEPHONE LINE (T)
- EX. LIGHT POLE
- EX. POWER POLE
- EX. GROUND WATER MONITORING WELL
- EX. MANHOLE
- EX. FIRE HYDRANT
- EX. WATER VALVE
- PROPOSED WATER LINE (8" PVC (TYP.))
- PROPOSED WATER VALVE
- PROPOSED TEE WITH THRUST BLOCKING
- PROPOSED HORIZONTAL BEND WITH THRUST BLOCKING
- PROPOSED FIRE HYDRANT
- PROPOSED FIRE SERVICE (F)
- PROPOSED WATER SERVICE (W)
- PROPOSED IRRIGATION SERVICE (IRR)
- PROPOSED WATER METER
- EX. TREES
- PROPOSED TREES

- PROPOSED SANITARY SEWER (8" PVC (TYP.))
- PROPOSED SANITARY SEWER SERVICE (S)
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE DESIGNATOR (1)
- PROPOSED ELECTRICAL LINE (E)
- PROPOSED GAS LINE (G)
- PROPOSED DRY UTILITIES (GAS, ELECTRIC, TELECOM) (DRY)
- PROPOSED CHANNEL/SWALE FLOWLINE
- PROPOSED BUILDING ENTRY AND EXIT
- PROPOSED IRRIGATION PIPE (30" RCP (TYP.))
- PROPOSED IRRIGATION STRUCTURE
- PROPOSED IRRIGATION STRUCTURE DESIGNATOR (A)
- PROPOSED STORM SEWER PIPE
- PROPOSED PRIVATE STORM PIPE
- PROPOSED STORM SEWER MANHOLE
- PROPOSED STORM SEWER CURB INLET
- PROPOSED STORM SEWER GRATED INLET
- PROPOSED STORM STRUCTURE DESIGNATOR (1)
- EX. WETLAND (CITY MAPPED AND CITY REGULATED)
- EX. WETLAND (CITY REGULATED)
- EX. WETLAND (UNREGULATED)
- EX. WETLAND (CITY REGULATED) WITH PROPOSED ENHANCEMENT
- PROPOSED WETLAND CREATION
- EX. INNER WETLAND BUFFER
- EX. OUTER WETLAND BUFFER
- PROPOSED INNER WETLAND BUFFER
- PROPOSED OUTER WETLAND BUFFER
- EX. 100YR FLOOD PLAIN LIMITS
- EX. CONVEYANCE ZONE LIMITS

CITY OF BOULDER
EAST BOULDER COMMUNITY PARK AND RECREATION CENTER

EAST PARCEL
SEE SHT C2

UNINCORPORATED BOULDER COUNTY

1006UP

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SITE REVIEW	06/18/12
RESUBMITTAL	11/05/12

DESIGNED BY:	LRE
DRAWN BY:	LRE
CHECKED BY:	TSG

DRAWING SCALE:
HORIZONTAL: 1" = 60'
VERTICAL: NONE

PRELIMINARY UTILITY PLAN WEST PARCEL

PROJECT NO. B1006

C1