

# DRAINAGE LETTER FOR STERLING RANCH SKETCH PLAN AMENDMENT #4

Prepared for: CLASSIC SRJ LAND, LLC 2138 FLYING HORSE CLUB DRIVE COLORADO SPRINGS CO 80921 (719) 592-9333

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Job No. 1183.70

PCD Project No. SKP241



## **DRAINAGE LETTER FOR** STERLING RANCH SKETCH PLAN AMENDMENT #4

#### **ENGINEER'S STATEMENT:**

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

37155	10/16/2024	
Marc A. Whorton Colorado P.E. #37155	Date	

	MINING.	
· · · · · · · · · · · · · · · · · · ·	OPER'S STATEMENT: loper, have read and will comply with all of plan.	l of the requirements specified in this
Business Name:	CLASSIC SRJ LAND, LLE	
Ву:	LAREN J. M	LORECAND
Title:	VICE PRESIDENT	
Address:	2138 Flying Horse Club Drive	
	Colorado Springs, CO 80921	
	e with the requirements of the Drainage g Criteria Manual and Land Developmer	Criteria Manual, Volumes 1 and 2, El Paso It Code as amended.
		11/14/2024
Joshua Palmer, P.E County Engineer, /	ECM Administrator	Date
Conditions:		



## DRAINAGE LETTER FOR STERLING RANCH SKETCH PLAN AMENDMENT #4

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# DRAINAGE LETTER FOR STERLING RANCH SKETCH PLAN AMENDMENT #4

#### **PURPOSE**

The purpose of this Drainage Letter is to address all necessary MDDP level design accommodations based on the latest Sterling Ranch Sketch Plan Amendment #4 related to onsite and off-site drainage patterns and drainage improvements required to minimize impacts to the adjacent properties.

#### **GENERAL DESCRIPTION**

The Sterling Ranch Sketch Plan totals 1,444 acres of Planned Unit Development to be built in multiple phases, located in Sections 27, 28, 33 and 34, Township 12 South and Section 4, Township 13 South, range 65 west of the sixth principal meridian. The site is bounded on the north and east by undeveloped land (existing residential properties), to the south by existing platted 5-ac. residential lots (Pawnee Rancheros) and Woodmen Heights developments and to the west by Vollmer Road. The site is in the upper portion of the Sand Creek Drainage Basin. The proposed Sketch Plan Amendment only affects the residential land-use density of the extreme southeast corner of the property covering about 208 acres. (See Appendix)

The existing ground cover is sparse vegetation and open space, typical of Colorado rolling range land condition. In general, the site slopes from north to south within the existing natural drainageways at grades of 1%-4%. The average soil condition reflects Hydrologic Group "A" (Columbine gravelly sandy loam) and (Blakeland loamy sand) as determined by the "Web Soil Survey of El Paso County Area," prepared by the Natural Resources Conservation Service (see map in Appendix). Type A soils were used to determine the pre-development conditions however, Type B soils are utilized for developed site conditions as significant import is anticipated for this portion of the development.



#### FLOODPLAIN STATEMENT

No portion of the proposed Sketch Plan Amendment area is located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Number 08041C0535G with effective date of December 7, 2018 (See Appendix).

#### **EXISTING DRAINAGE CONDITIONS**

The existing conditions remain unchanged from what was described in the MDDP.

#### PROPOSED DRAINAGE CONDITIONS

The proposed basins remain unchanged from the MDDP, except for the following:

Basins SCE-6, SCE-9 and SCE-11 (3.8 ac., 4.0 ac. and 5.8 ac. respectively) are basins along the extreme eastern edge of the Sterling Ranch property. These basins are anticipated to be a buffer corridor between the future 4-lane arterial (Banning Lewis Parkway extension) and the adjacent rural properties. These areas and land uses proposed with this Sketch Plan Amendment are unchanged and remain consistent with the MDDP.

**Basin SCE-7** is a 44.9 ac. on-site basin that was also originally planned for residential uses ranging from 3-8 du/ac. The Sketch Plan Amendment proposes a residential use with a density range of 5-8 du/ac. While the overall density was slightly increased, the original MDDP used a CN number of 89 for this original basin, which for the Type "A" soils accounts for commercial use. Whereas, residential use at 8 du/ac. has a CN number of 77 for Type "A" soils. (Ref. Table 6-10 in DCM Vol. 1 update) Thus, even with a slight overall residential density increase, this basin remains consistent with the MDDP and ultimately may even has less flows than anticipated. The proposed Pond FSD-E4 will be sized appropriately with future reports.



Basin SCE-8 is a 25.5 ac. on-site basin that was originally planned for Mixed Use Commercial/ Multi-family up to 25 du/ac. The Sketch Plan Amendment proposes the same land use but only 22.0 ac. for this area. The original MDDP used a CN number of 92 for this basin, which for even Type "B" soils accounts for Commercial Use. (Ref. Table 6-10 in DCM Vol. 1 update) Thus, with the 3.5 ac. less land use proposed for this area, this basin will then remain consistent with the MDDP and ultimately will likely even have less flows than anticipated. The proposed Pond FSD-E5 will be sized appropriately with future reports.

**Basin SCE-10** is a 174.3 ac. on-site basin that was originally planned for Residential (3-5 du/ac.), Residential (2 du/ac.), 5 ac. park, 10 ac. Elementary School and 5 ac. Utility Parcel (MVEA substation). The Sketch Plan Amendment proposes the same 5 ac. park, 5 ac. Utility Parcel and Residential (2 du/ac.) along the south boundary. No Elementary School is proposed in this area as Classic Homes is in discussions with D49 about moving the school site off Sterling Ranch property further to the east. An additional 2.5 ac. Utility Parcel is proposed adjacent to the MVEA substation for a lift station site. The residential component proposed includes an 18.0 ac. (5-8 du/ac.) parcel with the rest of the property being residential (3-5 du/ac.). The two ponds FSD-E6 and Pond-E7 are included within this residential (3-5 du/ac.). The original MDDP used a CN number of 83 for this entire basin, which for the Type "A" soils accounts for Industrial/Commercial Use. (Ref. Table 6-10 in DCM Vol. 1 update) Thus, with the removal of the 10 ac. school site and the introduction of the 18 ac. 5-8 du/ac. residential use, this basin will remain consistent with the MDDP.

#### **DRAINAGE CONDITION COMPARISON**

Based on the proposed Sketch Plan Amendment land use areas described above and the CN numbers utilized in the original MDDP, these basins and proposed ponds within them remain consistent with the MDDP.



DRAINAGE DESIGN CRITERIA

Hydrologic calculations were performed using the City of Colorado Springs/El Paso County

Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted

Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage

Criteria Manual as revised in May 2014. Runoff Coefficients are based on the imperviousness of

the particular land use and the hydrologic soil type in accordance with Table 6-6 and 6-10. The

average rainfall intensity, by recurrence interval found in the Intensity-Duration-Frequency (IDF)

curves in Figure 6-5.

**SUMMARY** 

The proposed Sketch Plan Amendment remains consistent with the Sterling Ranch MDDP. The

developer for this area will be responsible for design and installation of all required full spectrum

detention facilities and any downstream conveyance facilities. Any such facilities will be

constructed as development occurs. The development of the proposed site does not significantly

impact any downstream facility or property to an extent greater than that which currently exists

in the pre-development conditions. All drainage facilities within this report were sized according

to the latest El Paso County Drainage Criteria requirements.

PREPARED BY:

Classic Consulting Engineers & Surveyors, LLC

Marc A. Whorton, P.E.

Project Manager

maw/118370/SKPAmend Letter.doc



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#### REFERENCES

- 1. City of Colorado Springs/County of El Paso Drainage Criteria Manual as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014.
- 2. "Urban Storm Drainage Criteria Manual Volume 1, 2 & 3" Urban Drainage and Flood Control District, dated January 2016.
- 3. "Sand Creek Drainage Basin Planning Study," Kiowa Engineering Corporation, dated March 1996.
- 4. "2018 Sterling Ranch MDDP", M&S Civil Consultants, Inc., June 2018
- 5. "Final Drainage Report for Retreat at TimberRidge Filing No. 1", Classic Consulting, approved November, 2020.
- 6. "Final Drainage Report for Retreat at TimberRidge Filing No. 2", Classic Consulting, approved September 2022
- 7. "Final Drainage Report for Retreat at TimberRidge Filing No. 3", Classic Consulting, dated December 2022
- 8. "Final Design Report for Sand Creek Restoration", JR Engineering, LLC, dated June 2023
- 9. "Drainage Letter for Sterling Ranch Road and Briargate Pkwy. Interim Plan", prepared by JR Engineering, LLC, dated June 2023
- 10. "Master Development Drainage Plan Amendment for Sterling Ranch", prepared by JR Engineering, LLC, dated July 2023
- 11. "Sterling Ranch MDDP Amendment No. 2 & Preliminary Drainage Report for Sterling Ranch East Preliminary Plan No. 1", prepared by Classic Consulting, approved January 2023
- 12. "Preliminary Drainage Report for Sterling Ranch East Filing No. 5 Preliminary Plan", prepared by Classic Consulting, approved January 2024

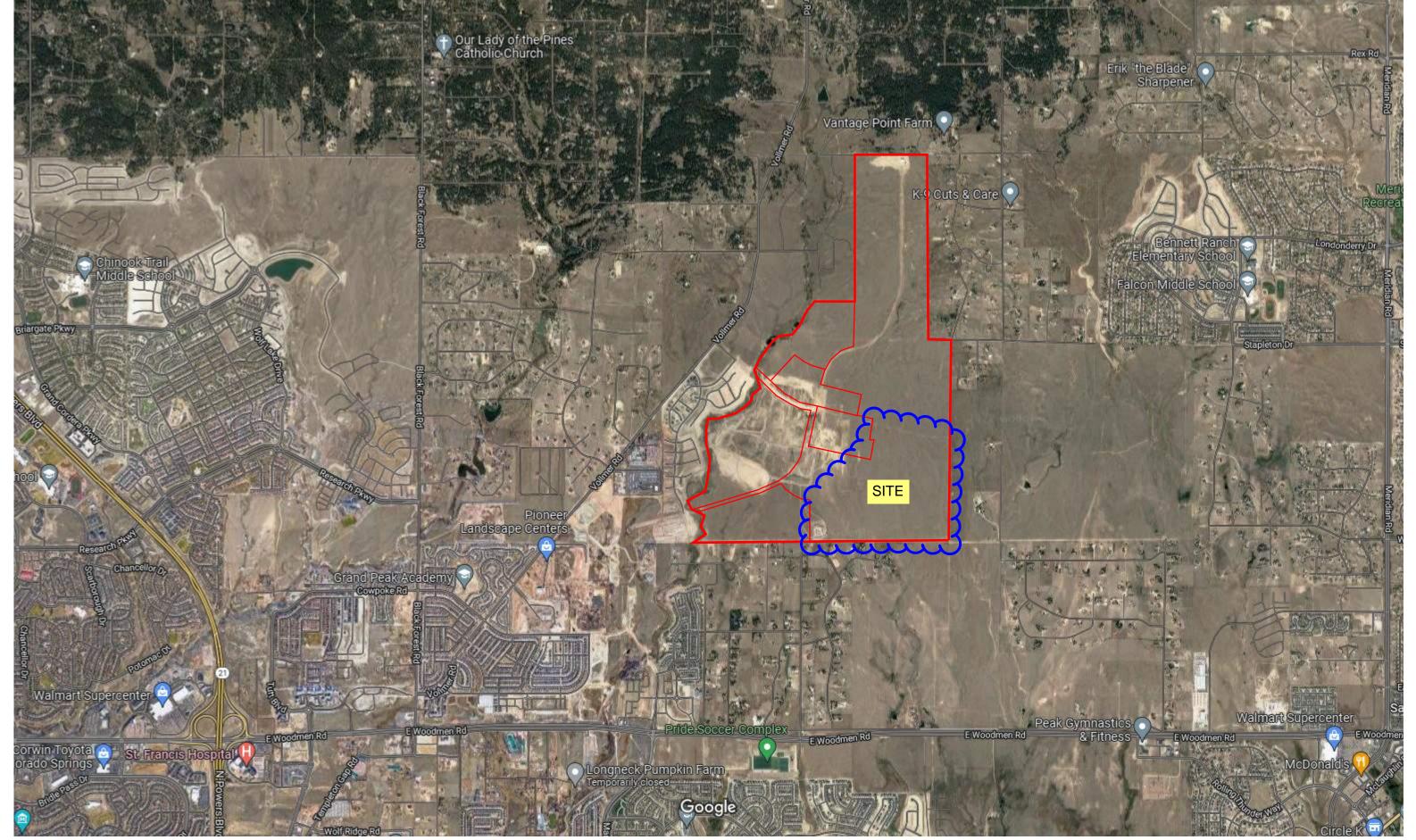


#### **APPENDIX**



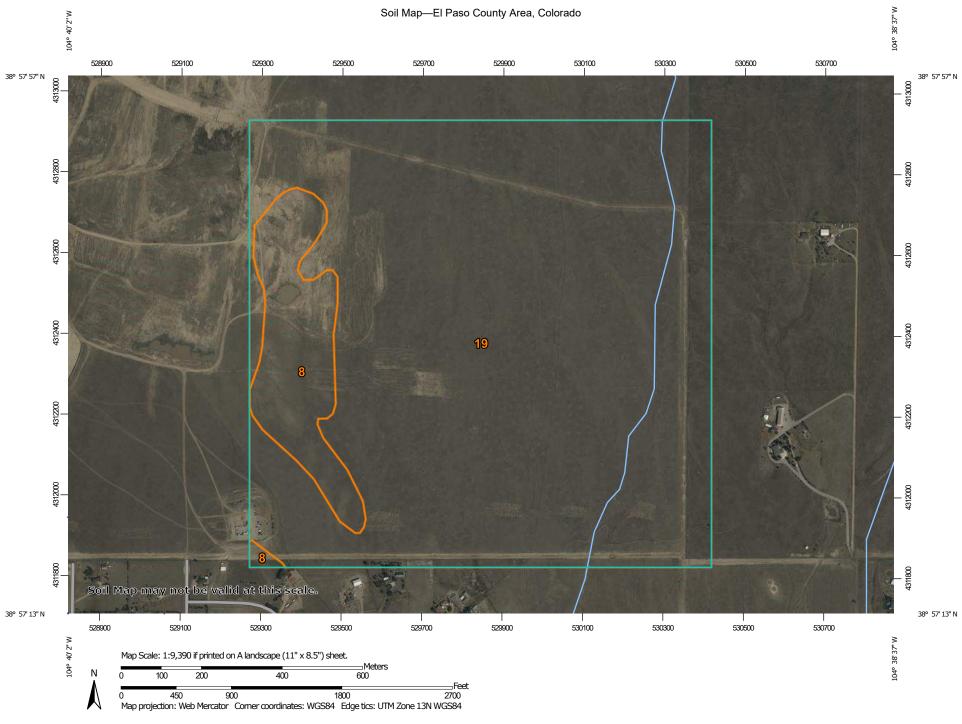
#### **VICINITY MAP**





**SOILS MAP (S.C.S SURVEY)** 





#### MAP LEGEND

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Water Features

Transportation

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Background

Spoil Area

Stony Spot

Wet Spot

Other

Rails

**US Routes** 

Major Roads

Local Roads

Very Stony Spot

Special Line Features

Streams and Canals

Interstate Highways

Aerial Photography

#### Area of Interest (AOI)

Area of Interest (AOI)

#### Soils

Soil Map Unit Polygons



Soil Map Unit Points

#### Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Nock Outcrop

Saline Spot

sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24.000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado Survey Area Data: Version 21, Aug 24, 2023

Soil map units are labeled (as space allows) for map scales 1:50.000 or larger.

Date(s) aerial images were photographed: Aug 19, 2018—May 26, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## **Map Unit Legend**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI			
8	Blakeland loamy sand, 1 to 9 percent slopes	31.6	10.0%			
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	283.9	90.0%			
Totals for Area of Interest		315.5	100.0%			

### El Paso County Area, Colorado

#### 8—Blakeland loamy sand, 1 to 9 percent slopes

#### **Map Unit Setting**

National map unit symbol: 369v Elevation: 4,600 to 5,800 feet

Mean annual precipitation: 14 to 16 inches Mean annual air temperature: 46 to 48 degrees F

Frost-free period: 125 to 145 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Blakeland and similar soils: 98 percent

Minor components: 2 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

#### **Description of Blakeland**

#### Setting

Landform: Hills, flats

Landform position (three-dimensional): Side slope, talf

Down-slope shape: Linear Across-slope shape: Linear

Parent material: Alluvium derived from sedimentary rock and/or

eolian deposits derived from sedimentary rock

#### Typical profile

A - 0 to 11 inches: loamy sand AC - 11 to 27 inches: loamy sand

C - 27 to 60 inches: sand

#### **Properties and qualities**

Slope: 1 to 9 percent

Depth to restrictive feature: More than 80 inches Drainage class: Somewhat excessively drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): High to

very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Calcium carbonate, maximum content: 5 percent

Available water supply, 0 to 60 inches: Low (about 4.5 inches)

#### Interpretive groups

Land capability classification (irrigated): 3e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

Ecological site: R049XB210CO - Sandy Foothill

Hydric soil rating: No

#### **Minor Components**

#### Other soils

Percent of map unit: 1 percent Hydric soil rating: No

#### **Pleasant**

Percent of map unit: 1 percent Landform: Depressions Hydric soil rating: Yes

#### **Data Source Information**

Soil Survey Area: El Paso County Area, Colorado Survey Area Data: Version 21, Aug 24, 2023

### El Paso County Area, Colorado

#### 19—Columbine gravelly sandy loam, 0 to 3 percent slopes

#### **Map Unit Setting**

National map unit symbol: 367p Elevation: 6,500 to 7,300 feet

Mean annual precipitation: 14 to 16 inches Mean annual air temperature: 46 to 50 degrees F

Frost-free period: 125 to 145 days

Farmland classification: Not prime farmland

#### **Map Unit Composition**

Columbine and similar soils: 97 percent

Minor components: 3 percent

Estimates are based on observations, descriptions, and transects of

the mapunit.

#### **Description of Columbine**

#### Setting

Landform: Flood plains, fan terraces, fans

Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium

#### Typical profile

A - 0 to 14 inches: gravelly sandy loam
C - 14 to 60 inches: very gravelly loamy sand

#### **Properties and qualities**

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained Runoff class: Very low

Capacity of the most limiting layer to transmit water (Ksat): High to

very high (5.95 to 19.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None Frequency of ponding: None

Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

#### Interpretive groups

Land capability classification (irrigated): 4e Land capability classification (nonirrigated): 6e

Hydrologic Soil Group: A

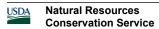
Ecological site: R049XY214CO - Gravelly Foothill

Hydric soil rating: No

#### **Minor Components**

#### Fluvaquentic haplaquolls

Percent of map unit: 1 percent



Landform: Swales Hydric soil rating: Yes

#### Other soils

Percent of map unit: 1 percent Hydric soil rating: No

#### **Pleasant**

Percent of map unit: 1 percent Landform: Depressions Hydric soil rating: Yes

#### **Data Source Information**

Soil Survey Area: El Paso County Area, Colorado Survey Area Data: Version 21, Aug 24, 2023

F.E.M.A. MAP



#### NOTES TO USERS

use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage tources of small size. The community map repository should be consulted for ossible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summay of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-flood elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly. lood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1986 (NAVD88). Users of this FIRM should be ware that coastal flood elevations are also provided in the Summary of Sillwaternary of Sillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations table should be used for constructions and/or floodplain management jurposes when they are higher than the elevations shown on this Film. hown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolate between cross sections. The floodways were based on hydraulic considerations will be consideration and the considerations will be consideration and control and considerations will and other pertinent floodway data are provided in the Flood Insurance Study repo

Certain areas not in Special Flood Hazard Areas may be protected by **flood contro structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The horizontal datum was NADB3, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of his FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum** of 1988 (NAVD88). These flood elevations must be compared to structure and or 1988 (NAVD88) are to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North-American Vertical Datum of 1988, vest the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services NOAA, N/NGS12 National Geodetic Survey SSMC-3, #9202 1315 East-West Highway Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the Nationa Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

Base Map information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, and Anderson Consulting Engineers, Inc. These data are current as of 2008.

This map reflects more detailed and up-to-date stream channel configurations and floodplain delimeations than showe shown on the previous FRIM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodpain. his map reflects more detailed and up-to-date stream channel configurations and and may appear outside of the floodolain.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate ommunity officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panets; community map repository addresses; and a lusting of Communities table containing National Flood insurance Program detect each community as well as a listing of the panets on which each community is

Contact FEMA Map Service Center (MSC) visithe FEMA Map Information eXchange (FMMS) 1-877-338-5827 for information on available products associated with this FIRMI. Available products may include prevously issued Letters of Map Change, Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9820 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Floo Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) ( visit the FEMA website at http://www.fema.gov/business/nflp.

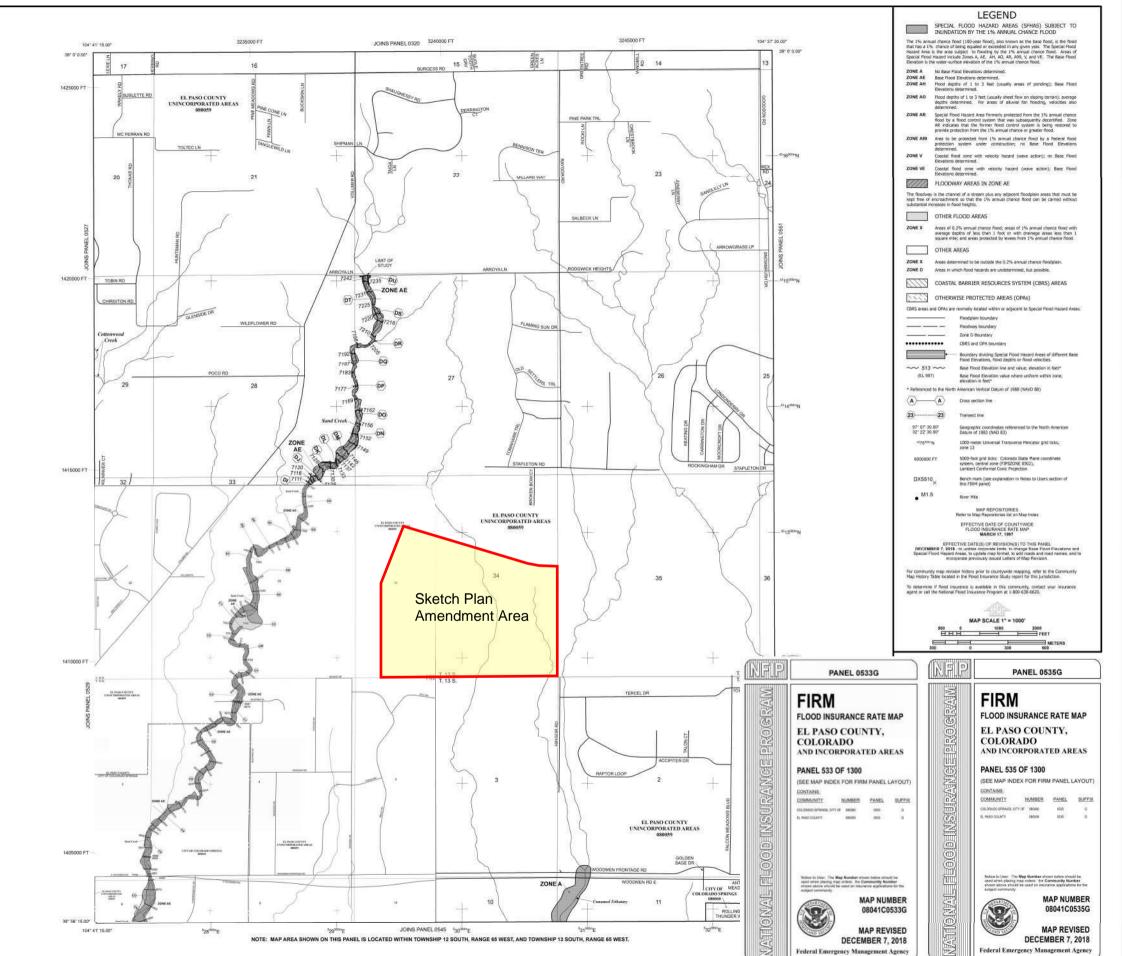
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

Panel Location Map

This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency

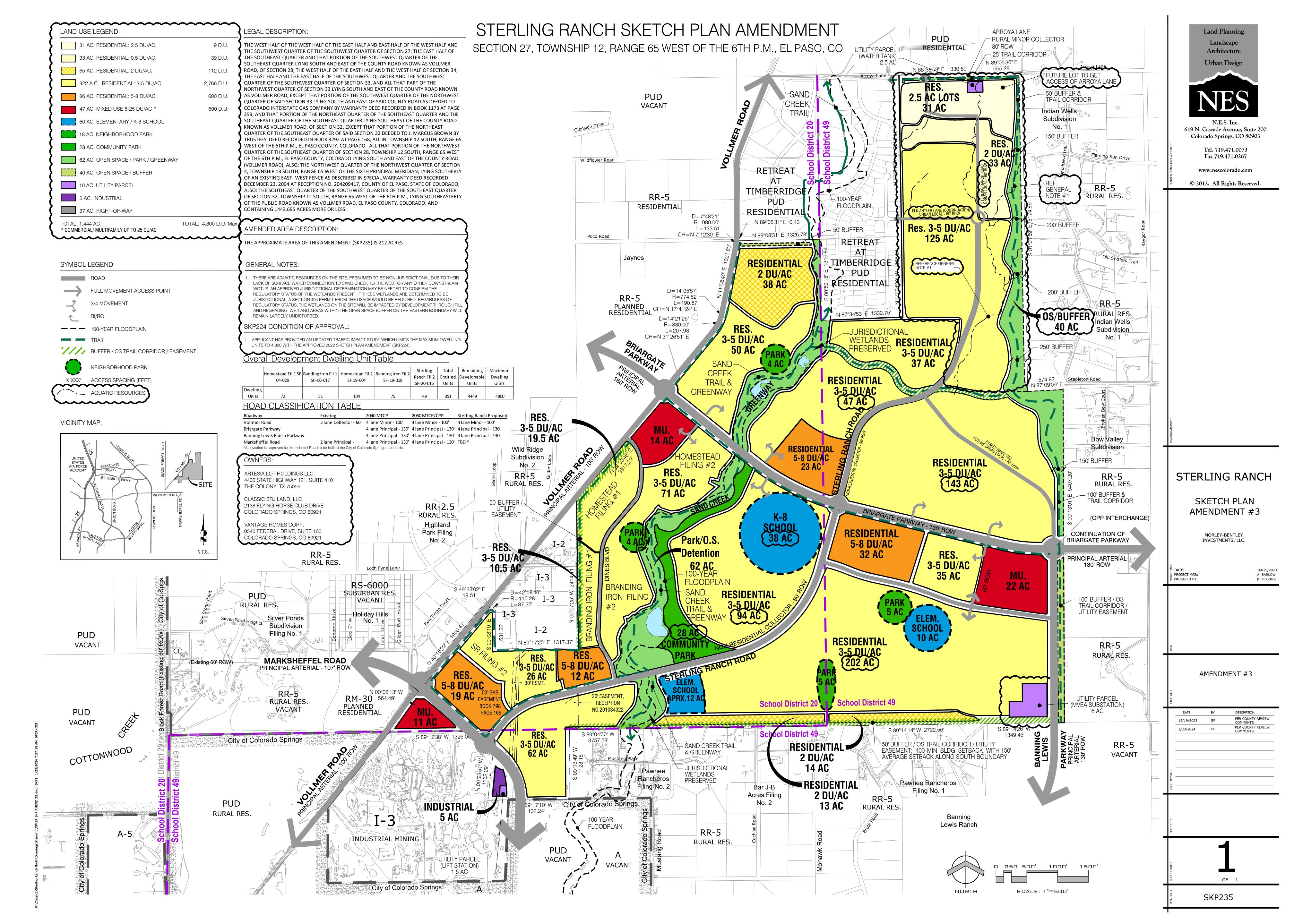


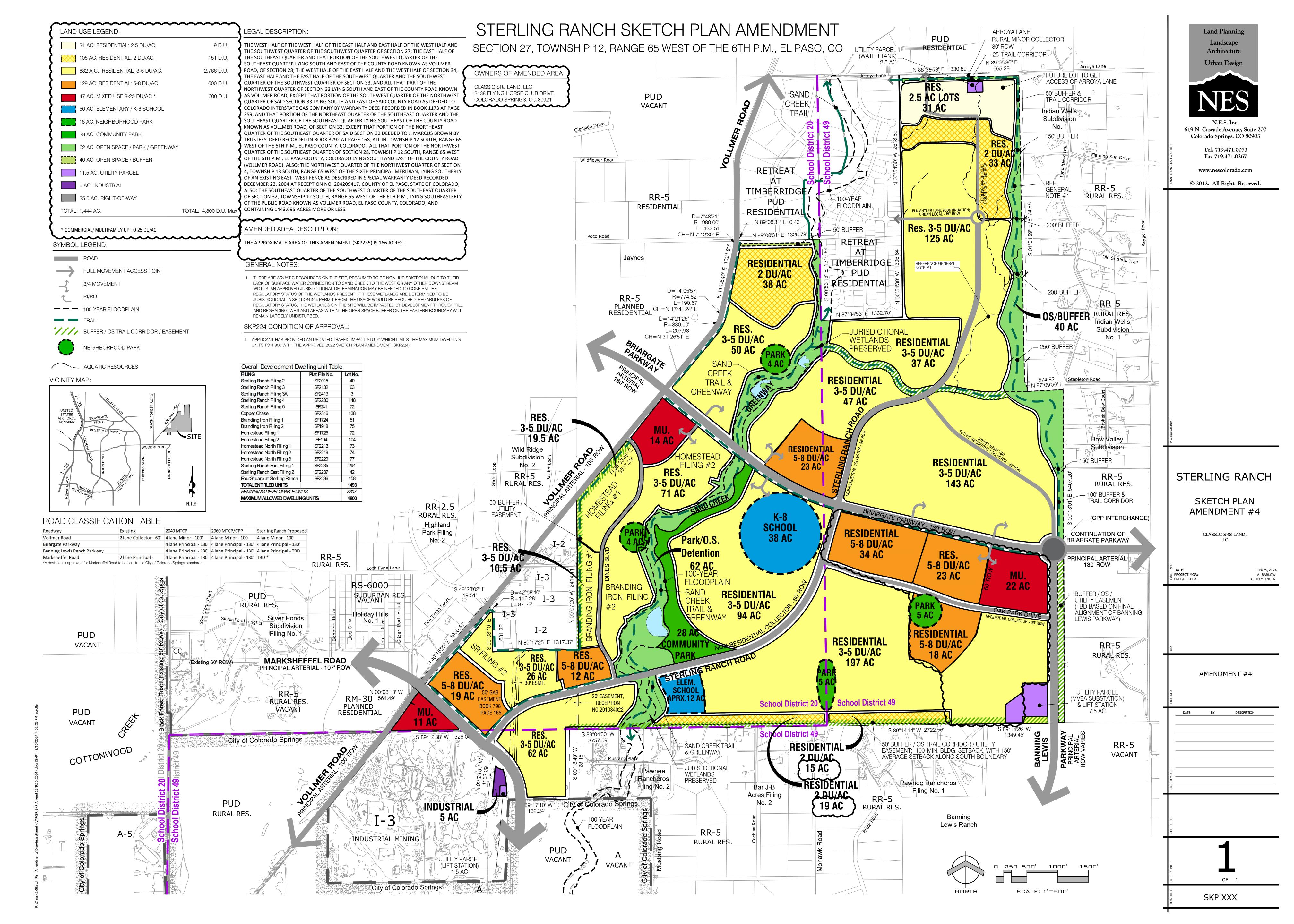
Additional Flood Hazard information and resources are available from local communities and the Colorad Water Conservation Board



## **SKETCH PLAN DOCUMENTS**

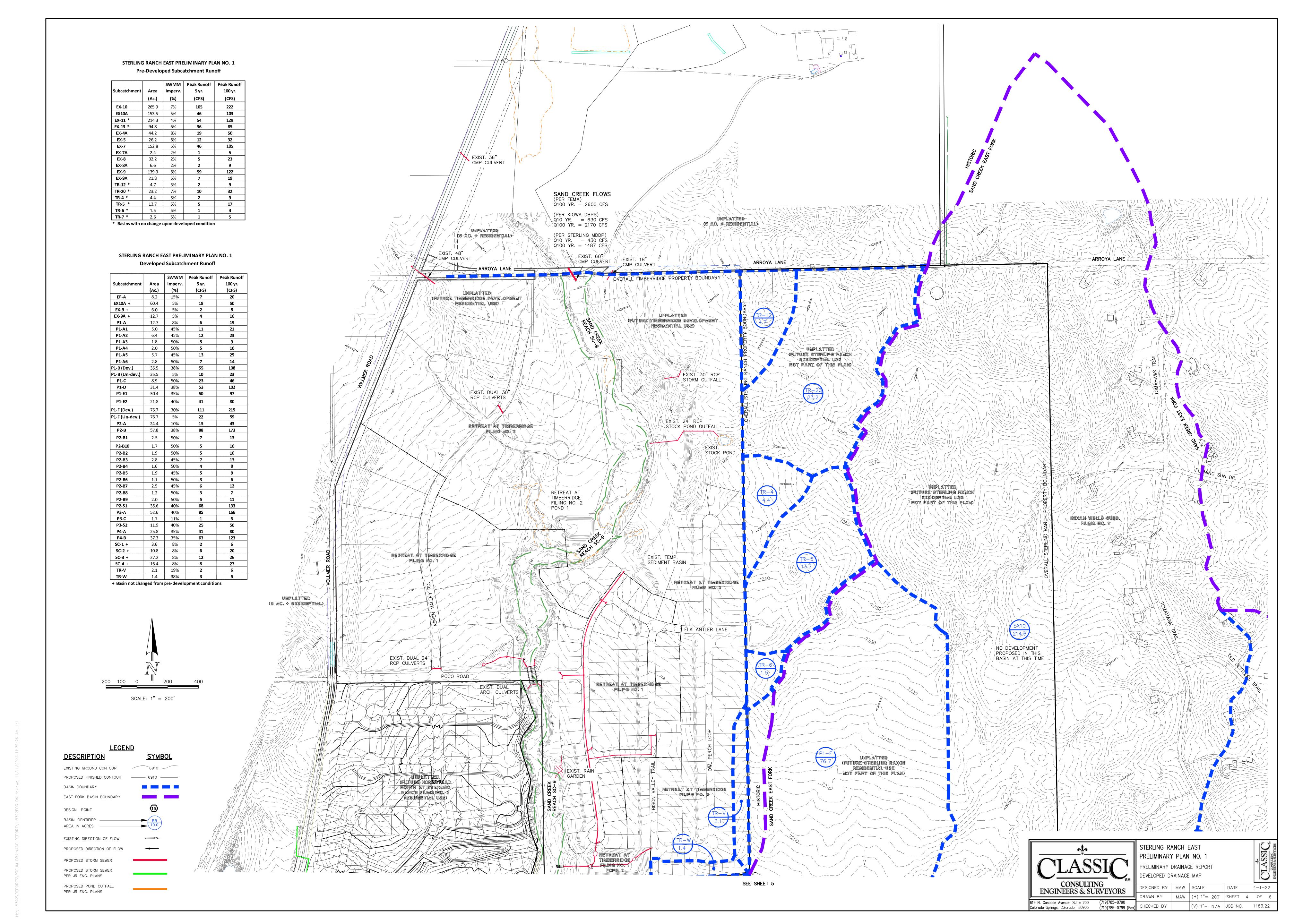


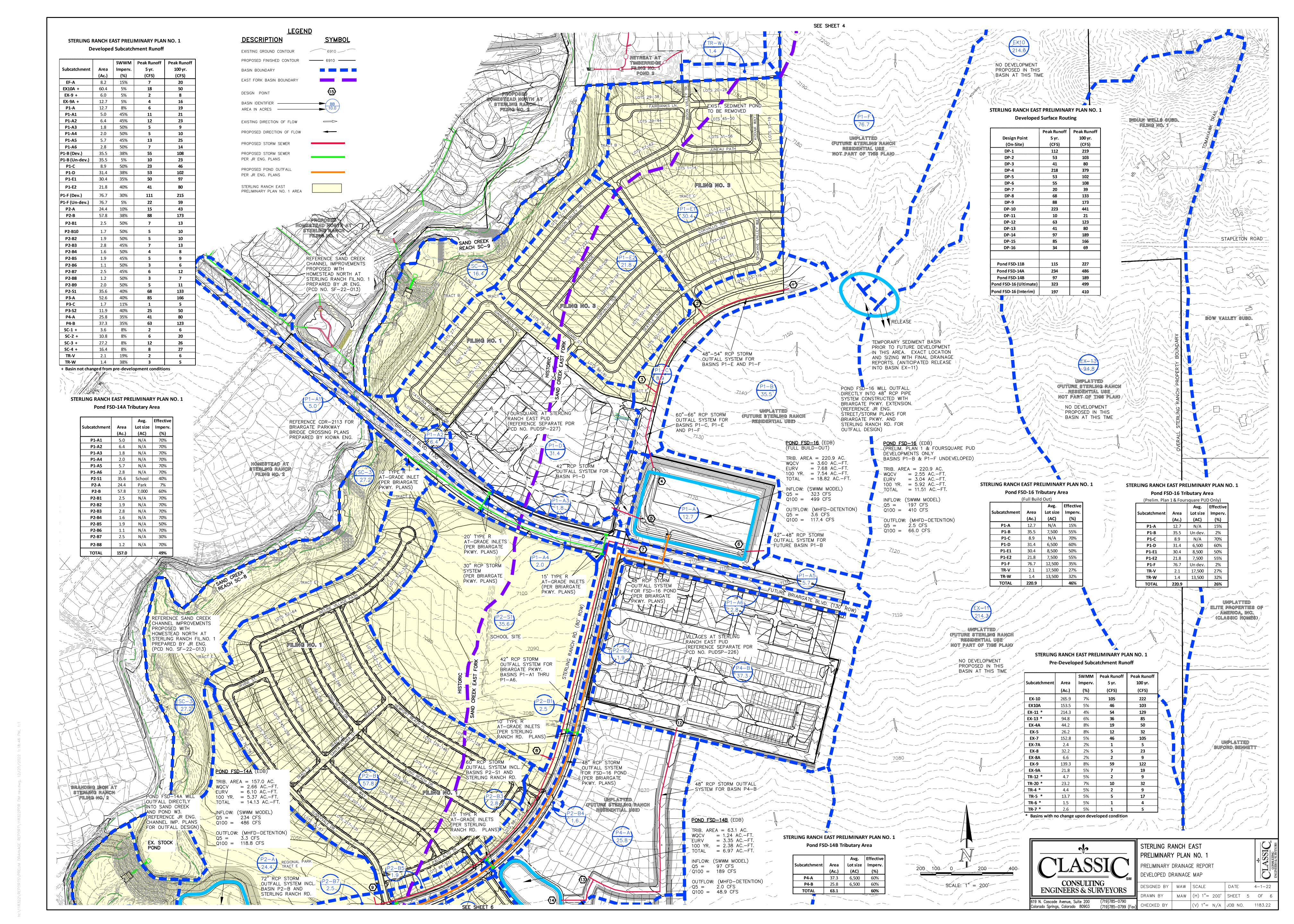


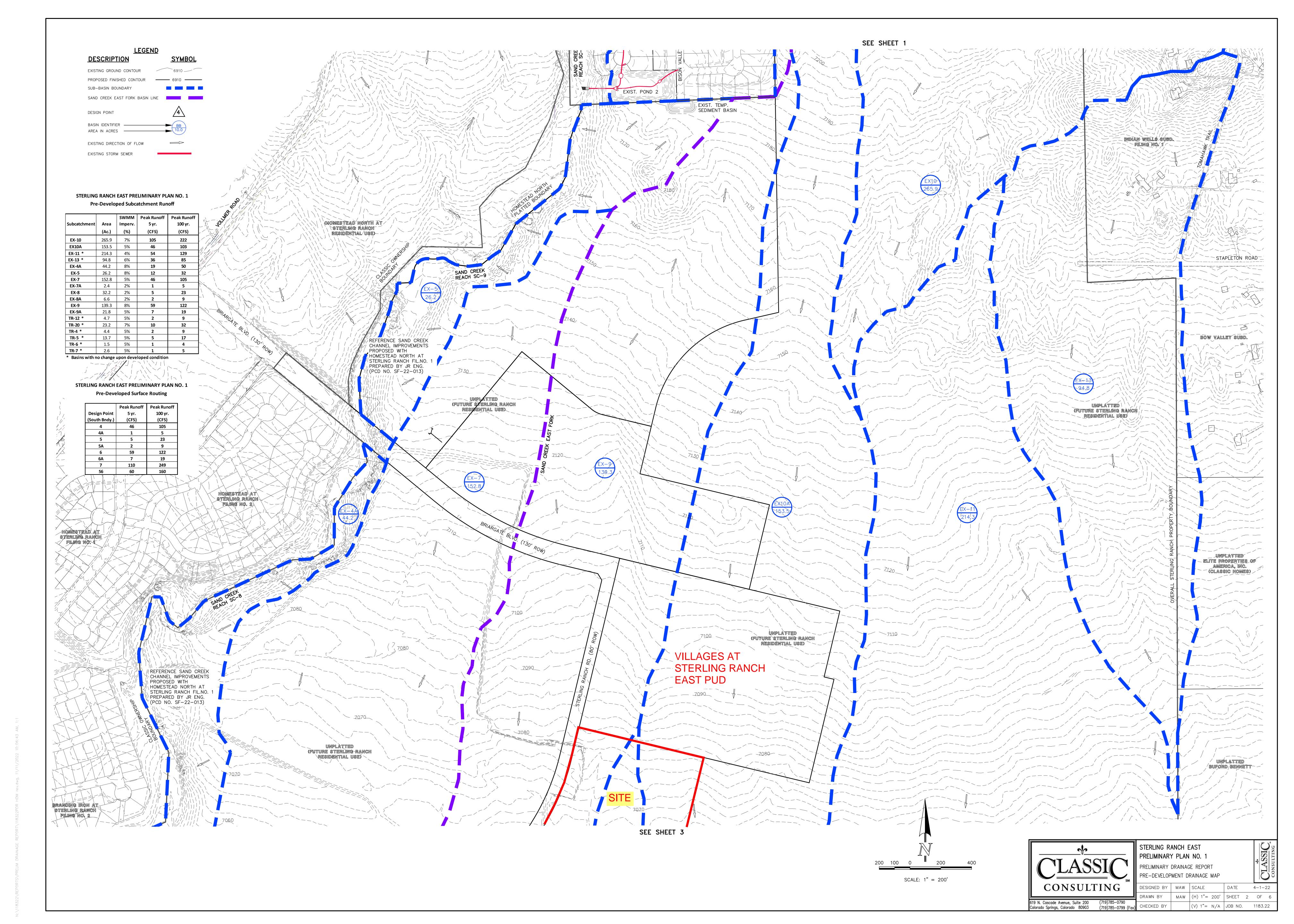


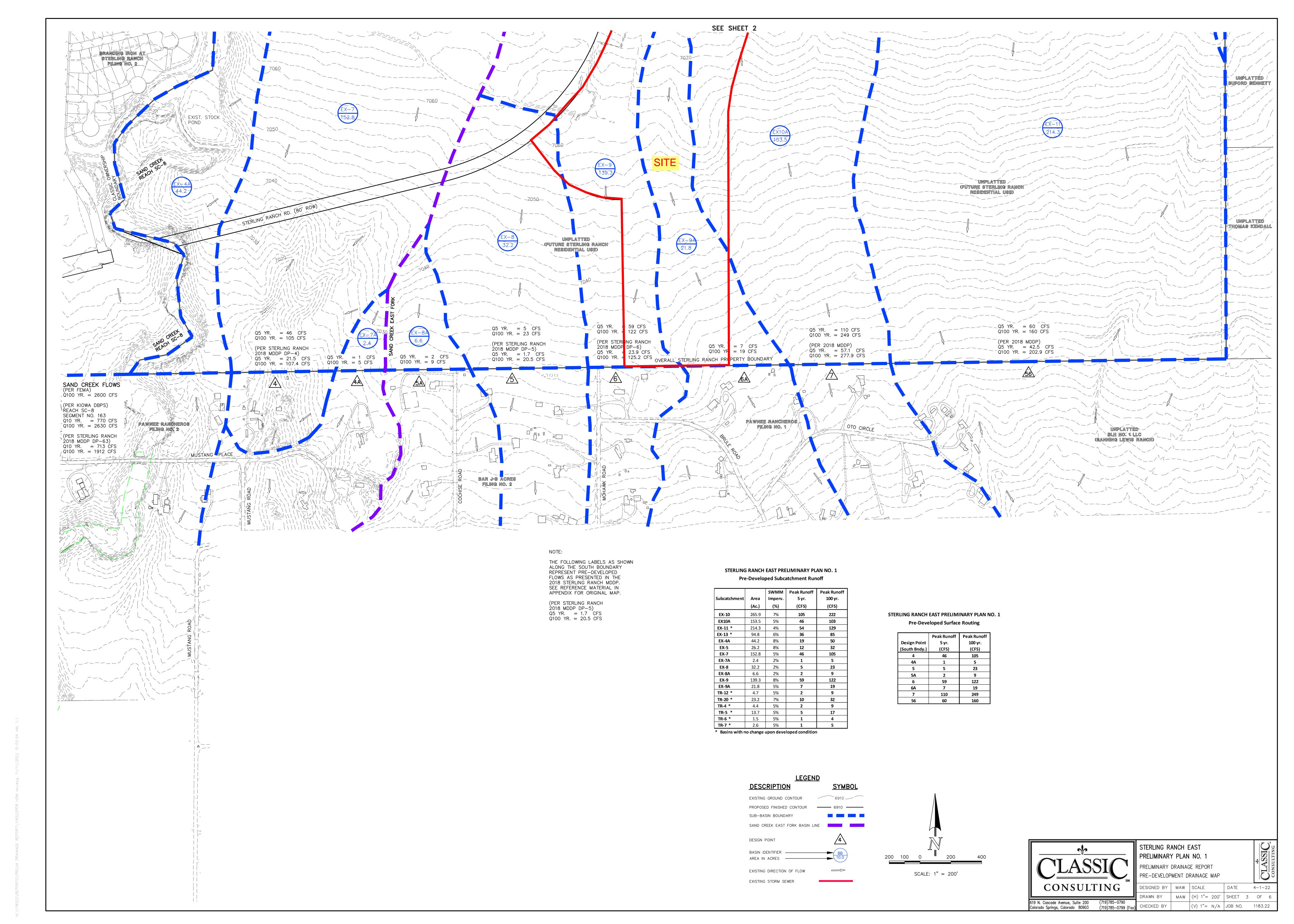
#### **REPORT REFERENCES**

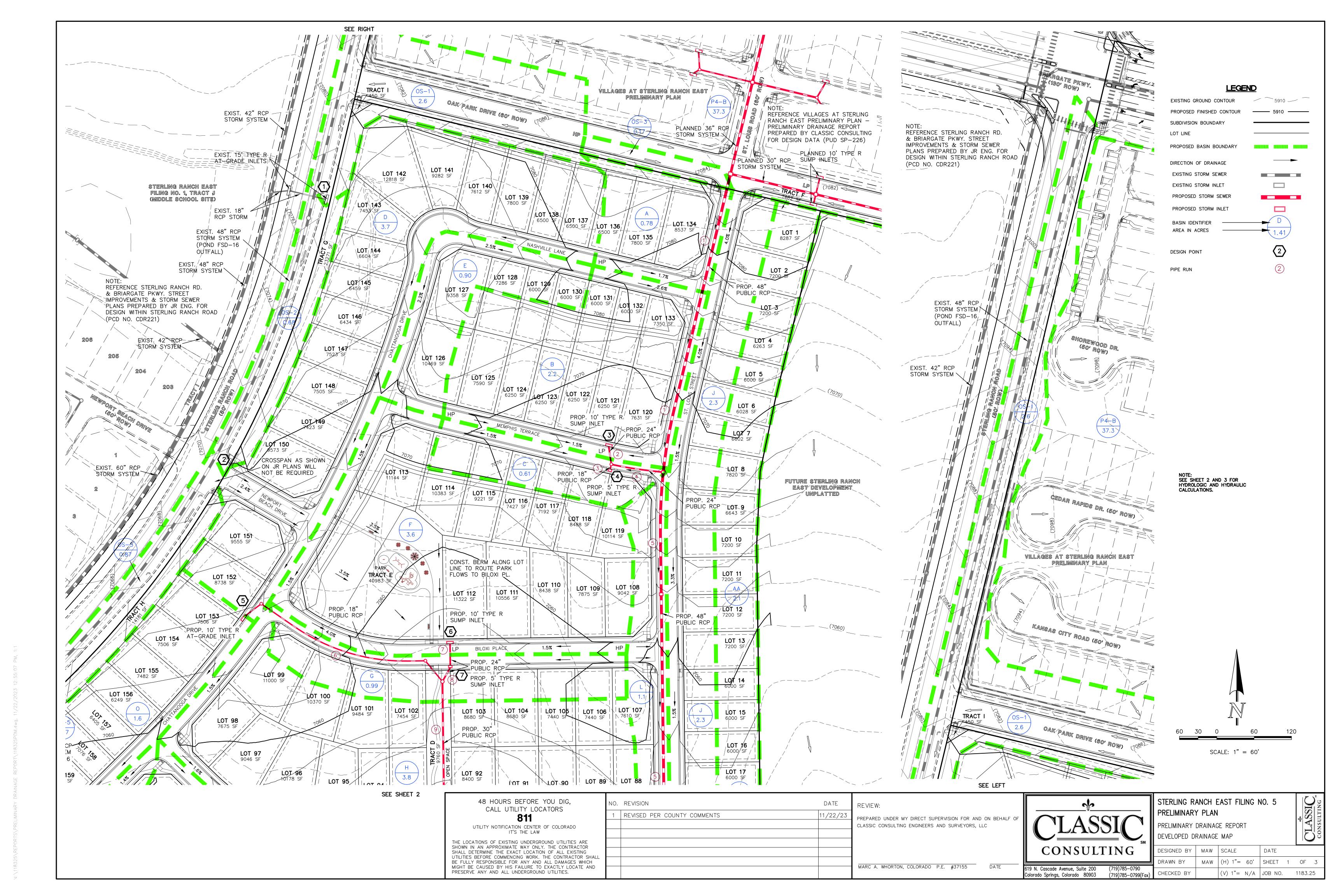


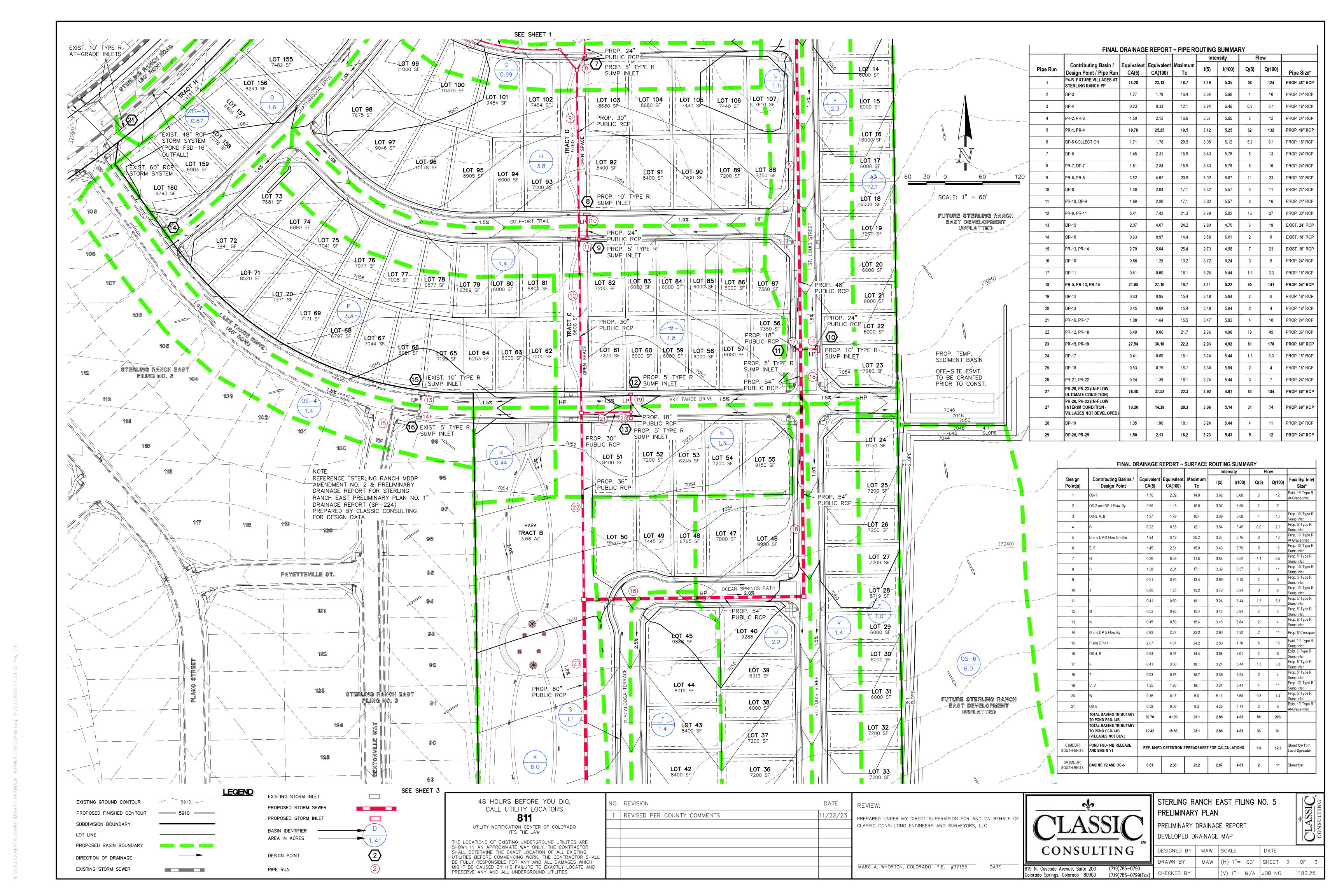


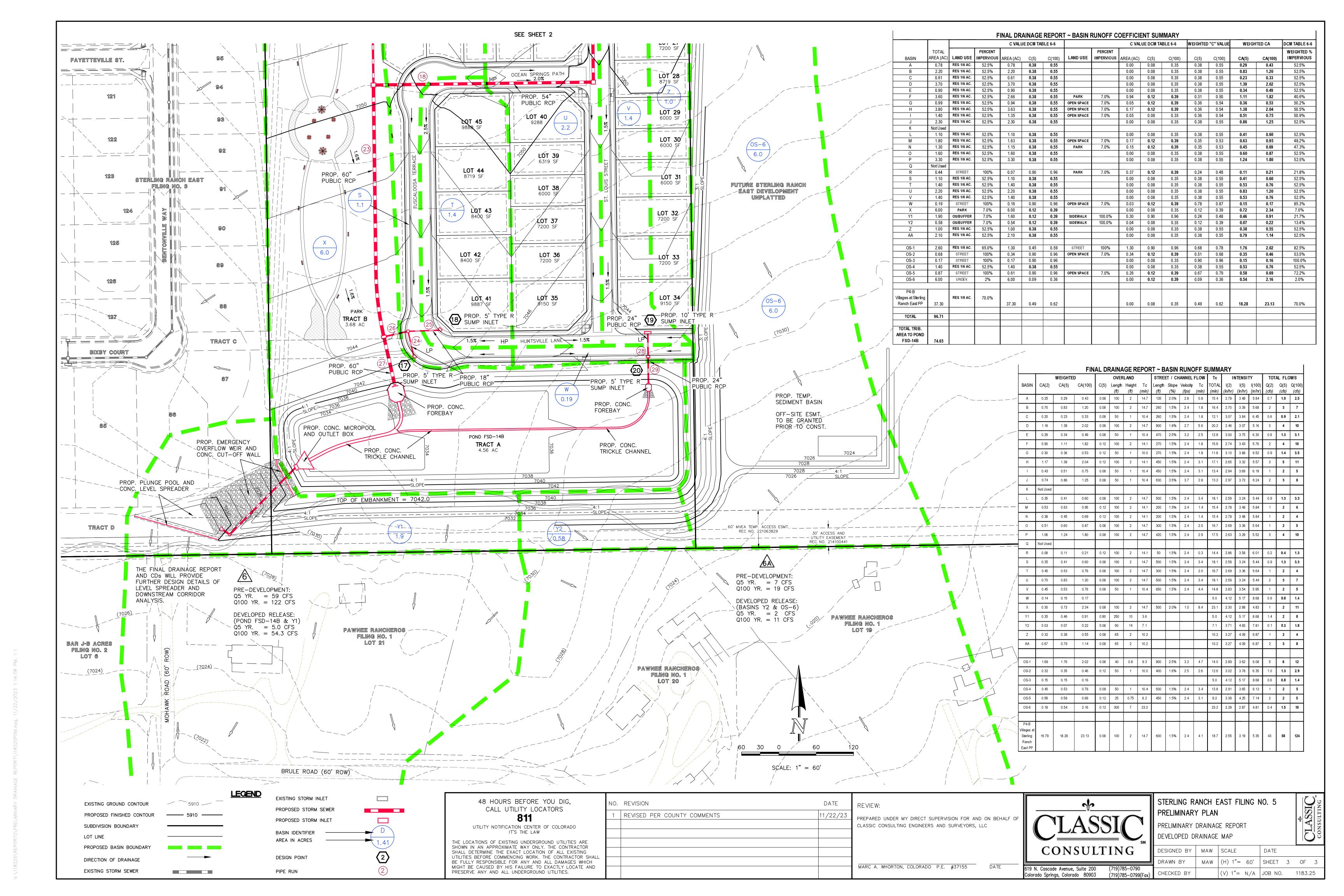


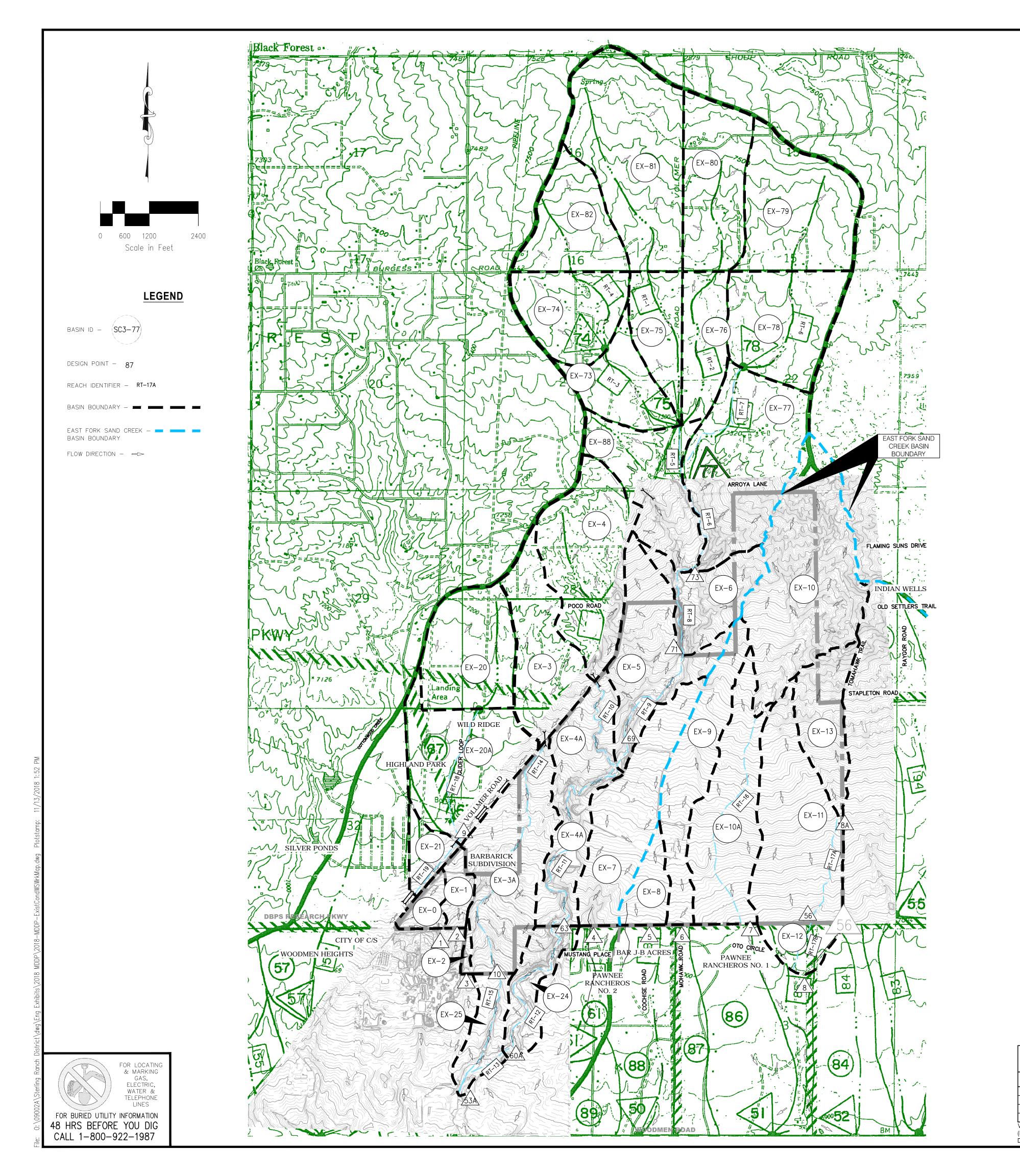












BASIN SUMMARY												
BASIN	CN	AREA (acres)	AREA (sq mi)	Q <sub>2</sub> (CFS)	Q <sub>5</sub> (cfs)	Q <sub>10</sub> (CFS)	Q <sub>25</sub> (cFs)	Q <sub>50</sub> (CFS)	Q <sub>100</sub> (cfs)			
EX-0	62	23.8	0.037	5.0	8.2	13.0	19.6	25.7	32.2			
EX-1	62	25.7	0.040	4.8	7.9	12.4	18.7	24.5	30.9			
EX-2	62	5.5	0.009	1.1	1.8	2.8	4.3	5.6	7.1			
EX-3	62	136.8	0.214	22.0	36.4	57.6	86.9	114.0	143.1			
EX-3A	61	188.1	0.294	28.3	47.4	75.7	115.1	152.2	192.6			
EX-4	62	192.0	0.300	30.1	49.9	79.1	119.5	157.0	197.3			
EX-4A	62	151.5	0.237	24.7	40.8	64.4	97.0	127.2	160.1			
EX-5	62	153.9	0.240	24.2	40.0	63.4	95.9	125.9	158.2			
EX-6	62	90.2	0.141	15.3	25.5	40.1	60.7	79.9	100.5			
EX-7	56	165.0	0.258	11.6	21.5	37.5	60.9	83.1	107.4			
EX-8	45	42.0	0.066	0.5	1.7	4.5	9.4	14.5	20.5			
EX-9	54	131.9	0.206	12.2	23.9	43.1	70.9	97.0	125.2			
EX-10	60	270.7	0.423	32.7	56.0	91.1	140.1	185.9	236.1			
EX-10A	41	179.3	0.280	0.6	2.2	7.3	17.4	29.1	43.1			
EX-11	43	209.3	0.327	18.0	29.8	47.7	73.4	98.3	126.1			
EX-12	51	39.5	0.062	2.2	5.1	10.1	17.7	25.1	33.3			
EX-13	55	89.3	0.139	7.7	15.2	27.1	44.2	60.5	78.4			
EX-20	62	143.4	0.224	25.4	42.1	66.7	100.7	132.3	166.2			
EX-20A	64	179.7	0.281	32.2	51.9	80.5	119.8	155.9	194.6			
EX-21	65	33.3	0.052	8.6	13.5	20.7	30.5	39.4	49.0			
EX-24	59	63.1	0.099	9.5	16.6	27.5	42.9	57.4	73.0			
EX-25	43	54.4	0.085	0.3	1.5	4.8	10.7	17.2	25.1			
EX-73	63	90.0	0.141	16.4	26.4	41.3	62.1	81.3	102.0			
EX-74	63	119.7	0.187	22.3	36.5	57.3	85.9	112.3	140.7			
EX-75	63	79.3	0.124	13.1	21.5	33.7	50.5	66.1	82.8			
EX-76	63	86.4	0.135	14.2	23.1	36.4	54.6	71.4	89.6			
EX-77	62	230.6	0.360	34.7	56.9	90.6	137.5	180.9	227.7			
EX-78	63	155.6	0.243	28.1	45.3	70.6	106.2	139.1	174.5			
EX-79	63	189.0	0.295	34.9	57.0	89.5	134.3	175.6	220.1			
EX-80	63	147.7	0.231	27.3	44.3	69.6	104.5	136.8	171.4			
EX-81	62	262.9	0.411	42.6	70.2	111.0	167.4	219.6	275.7			
EX-82	62	117.8	0.184	20.0	33.2	52.8	80.0	105.1	132.3			
EX-88	62	139.2	0.217	22.2	36.7	58.0	87.6	115.0	144.4			

	DESIGN POINT SUMMARY (PEAK FLOW)												
DESIGN POINT	AREA (sq mi)	Q <sub>2</sub> (CFS)	Q <sub>5</sub> (CFS)	Q <sub>10</sub> (cfs)	Q 25 (CFS)	Q50 (CFS)	Q <sub>100</sub> (cfs)	LOCATION					
DP-74	0.371	39.3	65.3	104.8	158.9	209.1	262.8						
DP-75	1.413	141.2	235.1	376.6	566.6	750.9	950.5						
DP-78	0.538	59.7	98.4	154.0	232.6	306.2	385.3						
DP-73	2.528	225.9	380.7	618.0	957.0	1260.4	1582.3						
DP-71	2.669	229.3	388.9	629.7	978.8	1277.3	1637.9	STERLING RANCH NORTHERN BNDRY					
DP-69	3.209	253.0	434.8	707.7	1100.0	1453.3	1870.4						
DP-63	3.446	251.4	430.7	713.1	1113.2	1496.2	1911.5	STERLING RANCH SOUTHERN BNDRY					
DP-10	0.508	36.5	56.0	106.4	162.9	220.6	287.2	COLORADO SPRINGS/EL PASO BNDRY					
DP-9A	0.557	55.3	94.3	150.3	227.7	299.5	380.5	VOLLMER/TAHITI DRIVE					
DP-9	0.505	52.8	88.8	142.1	214.2	281.0	351.4	VOLLMER/LOCHWINNOCH LN					
DP-8A	0.139	7.7	15.2	27.1	44.2	60.5	78.4	D/S STERLING RANCH EASTERN BNDRY					
DP-8	0.528	24.2	45.1	77.8	124.4	169.5	220.9	D/S STERLING RANCH SOUTHERN BNDRY					
DP-7	0.703	32.4	57.1	97.3	156.1	213.8	277.9	STERLING RANCH SOUTHERN BNDRY					
DP-6	0.206	12.2	23.9	43.1	70.9	97.0	125.2	STERLING RANCH SOUTHERN BNDRY					
DP-5	0.066	0.5	1.7	4.5	9.4	14.5	20.5	STERLING RANCH SOUTHERN BNDRY					
DP-4	0.258	11.6	21.5	37.5	60.9	83.1	107.4	STERLING RANCH SOUTHERN BNDRY					
DP-3	0.009	1.1	1.8	2.8	4.3	5.6	7.1	STERLING RANCH SOUTHERN BNDRY					
DP-2	0.040	4.8	7.9	12.4	18.7	24.5	30.9	STERLING RANCH SOUTHERN BNDRY					
DP-1	0.037	5.0	8.2	13.0	19.6	25.7	32.2	STERLING RANCH SOUTHERN BNDRY					
DP-60A	3.545	247.7	430.2	707.1	1113.0	1496.6	1913.5	FUTURE MARKSHEFFEL X-ING					
DP-56	0.466	23.2	42.5	71.9	115.6	157.4	202.9	STERLING RANCH SOUTHERN BNDRY					
DP-53A	4.138	262.1	454.0	763.2	1196.5	1609.8	2061.5	SAND CREEK AND POND 3					

			DES	IGN PO	INT SU	MMARY	(VOL	JME)
DESIGN POINT	AREA (sq mi)	V <sub>2</sub> (AC-FT)	V <sub>5</sub> (AC-FT)	V <sub>10</sub> (AC-FT)	V <sub>25</sub> (AC-FT)	V <sub>50</sub> (AC-FT)	V <sub>100</sub> (AC-FT)	LOCATION
DP-74	0.371	5.9	9.0	13.6	19.8	25.5	31.6	
DP-75	1.413	22.7	34.5	51.7	75.4	97.1	120.5	
DP-78	0.538	8.9	13.5	20.1	29.3	37.7	46.7	
DP-73	2.528	40.4	61.5	92.1	134.3	173.1	214.9	
DP-71	2.669	42.5	64.9	97.1	141.6	182.5	226.6	STERLING RANCH NORTHERN BNDRY
DP-69	3.209	50.7	77.4	116.1	169.4	218.6	271.4	
DP-63	3.446	54.1	82.5	123.8	180.8	233.3	289.9	STERLING RANCH SOUTHERN BNDRY
DP-10	0.508	7.6	11.7	17.6	25.8	33.4	41.6	COLORADO SPRINGS/EL PASO BNDRY
DP-9A	0.557	9.3	14.1	21.1	30.7	39.4	48.8	VOLLMER/TAHITI DRIVE
DP-9	0.505	8.4	12.7	19.0	27.6	35.5	44.0	VOLLMER/LOCHWINNOCH LN
DP-8A	0.139	1.3	2.1	3.4	5.2	7.0	8.9	D/S STERLING RANCH EASTERN BNDRY
DP-8	0.528	4.4	7.0	11.1	16.8	22.3	28.4	D/S STERLING RANCH SOUTHERN BNDRY
DP-7	0.703	6.1	10.0	15.9	24.3	32.4	41.3	STERLING RANCH SOUTHERN BNDRY
DP-6	0.206	2.4	4.0	6.3	9.6	12.7	16.0	STERLING RANCH SOUTHERN BNDRY
DP-5	0.066	0.2	0.4	0.8	1.4	1.9	2.6	STERLING RANCH SOUTHERN BNDRY
DP-4	0.258	2.6	4.2	6.7	10.2	13.5	17.2	STERLING RANCH SOUTHERN BNDRY
DP-3	0.009	0.1	0.2	0.3	0.5	0.6	0.8	STERLING RANCH SOUTHERN BNDRY
DP-2	0.040	0.6	0.9	1.4	2.1	2.7	3.4	STERLING RANCH SOUTHERN BNDRY
DP-1	0.037	0.6	0.9	1.3	1.9	2.5	3.1	STERLING RANCH SOUTHERN BNDRY
DP-60A	3.545	55.3	84.4	126.4	184.8	238.5	296.6	FUTURE MARKSHEFFEL X-ING
DP-56	0.466	4.0	6.3	9.9	14.9	19.8	25.1	SAND CREEK AND POND 3
DP-53A	4.138	63.0	96.4	144.7	211.8	273.9	340.9	SAND CREEK AND POND 3

EFSC DBPS DESIGN POINT SUMMARY (PEAK FLOW)											
DBPS DESIGN POINT	AREA (sq mi)	Q <sub>10</sub> (cFs)	Q <sub>100</sub> (cfs)								
DP-50	0.32	47.0	195.7								
DP-51 (BASIN 86)	0.33	17.7	74.1								
DP-52	1.67	80.5	456.5								
DD	0.70	0.7.6	0.0.5.0								

CIVIL CONSULTANTS, INC.

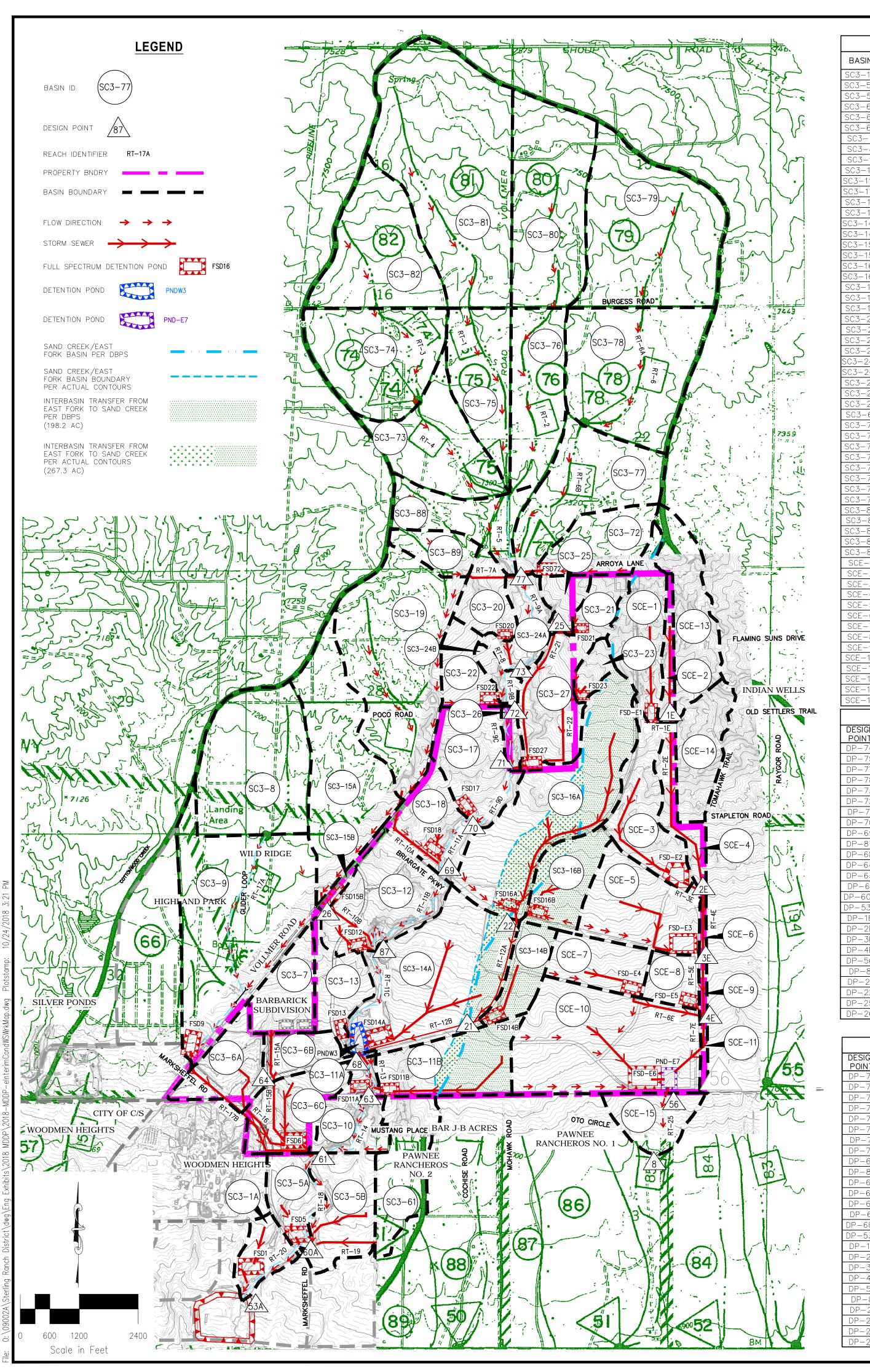
20 BOULDER CRESCENT, SUITE 110 COLORADO SPRINGS, CO 80903 PHONE: 719.955.5485

2018 STERLING RANCH MDDP EXISTING HYDROLOGIC CONDITIONS MAP

PROJECT NO. 09-002 | FILE: \dwg\Eng Exhibits\2018-MDDP-ExistCondWSWrkMap.dwg DATE: 08-22-18 DESIGNED BY: DLM DLM HORIZ: NTS DRAWN BY: DM1 CHECKED BY: VAS VERT: NTS

DP-56 0.79 63.6 265.0

Values reported from SCDBPS
(DP 50, 51, 52 Not analyzed as a part of this study)
DBPS Reach 85(Basin91)=Q10=28.8cfs Q100=115.2cfs



BASIN SUMMARY												
BASIN	CN	AREA (ACRES)	AREA (SQ MI)	Q <sub>2</sub> (CFS)	Q5 (CFS)	Q <sub>10</sub> (cfs)	Q 25 (CFS)	Q <sub>50</sub> (cfs)	Q <sub>100</sub> (cfs)			
SC3-1A	73	27.8	0.044	16.3	23.3	33.0	45.8	57.1	68.9			
SC3-5A	84	39.1	0.061	40.6	53.7	71.0	92.4	110.6	129.1			
SC3-5B	81	63.0	0.098	53.8	73.0	98.5	130.8	158.6	187.0			
SC3-6A	88	49.3	0.077	61.4	79.3	102.2	130.1	153.6	177.1			
SC3-6B	85	30.9	0.048	32.9	43.4	57.0	73.9	88.2	102.7			
SC3-6C	82	58.0	0.091	53.9	72.5	97.1	128.0	154.5	181.5			
SC3-7	88	45.7	0.071	54.0	69.9	90.3	115.2	136.2	157.2			
SC3-8	62	143.4	0.224	25.4	42.1	66.7	100.7	132.3	166.2			
SC3-9	66	217.4	0.340	45.8	71.5	108.6	158.9	204.9	254.0			
SC3-10	63	36.0	0.056	7.6	12.3	19.4	29.1	38.0	47.7			
SC3-11A	70	10.7	0.017	5.3	7.8	11.3	15.9	20.0	24.3			
SC3-11B	80	76.6	0.120	59.4	81.3	110.8	148.1	180.5	213.7			
SC3-12	81	88.2	0.138	77.8	105.6	142.5	189.1	229.1	270.0			
SC3-13	85	41.0	0.064	43.9	57.8	76.0	98.5	117.6	136.9			
C3-14A	79 77	164.9	0.258	127.6	175.4	239.8	321.9	393.2	466.3			
SC3-14B SC3-15A		34.7	0.054	24.6 21.3	34.3 35.5	47.4 56.3	64.2 85.3	79.0	94.1			
SC3-15A SC3-15B	62 87	139.7	0.218	10.8				112.1	141.0 31.9			
SC3-13B SC3-16A	<u> 74</u>	7.9	0.012	84.4	14.0 120.4	18.2 170.0	23.3	27.6 292.2	351.8			
SC3-16A SC3-16B		50.7	0.203	39.0	53.7	73.6	99.0	121.1	143.8			
SC3-10B	7 <u></u>	70.6	0.079	41.8	59.6	75.6 85.2	119.0	149.1	180.6			
SC3-17	81	53.8	0.084	49.3	67.1	91.0	121.2	147.3	174.0			
SC3-19	62	184.0	0.287	28.8	47.7	75.7	114.4	150.2	188.8			
SC3-20	65	34.2	0.053	9.9	15.5	23.8	35.1	45.5	56.6			
SC3-21	66	23.3	0.036	7.0	10.8	16.3	23.7	30.4	37.5			
SC3-22	65	33.9	0.053	9.4	14.8	22.5	32.9	42.5	52.6			
SC3-23	67	14.5	0.023	5.5	8.3	12.4	18.0	23.0	28.4			
C3-24A	65	35.7	0.056	13.0	20.4	31.1	45.7	59.0	73.2			
C3-24B	65	12.2	0.019	3.4	5.3	8.1	11.8	15.2	18.9			
SC3-25	66	19.0	0.030	5.8	8.9	13.4	19.5	25.1	31.0			
SC3-26	63	10.0	0.016	2.5	4.0	6.2	9.2	12.1	15.1			
SC3-27	71	70.0	0.109	35.1	51.2	73.8	103.7	130.3	158.3			
SC3-61	63	65.5	0.102	13.7	22.0	34.4	51.6	67.6	84.8			
SC3-72	64	56.2	0.088	12.8	20.2	31.4	46.7	60.9	76.0			
SC3-73	63	90.0	0.141	16.4	26.4	41.3	62.1	81.3	102.0			
SC3-74	63	119.7	0.187	22.3	36.5	57.3	85.9	112.3	140.7			
SC3-75	63	79.3	0.124	13.1	21.5	33.7	50.5	66.1	82.8			
SC3-76	63	86.4	0.135	14.2	23.1	36.4	54.6	71.4	89.6			
SC3-77	62	106.9	0.167	16.6	27.6	43.8	66.2	87.0	109.4			
SC3-78	63	155.6	0.243	28.1	45.3	70.6	106.2	139.1	174.5			
SC3-79	63	189.0	0.295	34.9	57.0	89.5	134.3	175.6	220.1			
SC3-80	63	147.7	0.231	27.3	44.3	69.6	104.5	136.8	171.4			
SC3-81	62	262.9	0.411	42.6	70.2	111.0	167.4	219.6	275.7			
SC3-82	62	117.8	0.184	20.0	33.2	52.8	80.0	105.1	132.3			
SC3-88 SC3-89	62 62	60.2 27.5	0.094	10.5 6.1	17.4 10	27.6 15.7	41.8 23.6	54.9	69.0 38.6			
SCE-1	65	64.4	0.043	23.3	35.9	53.8	79.1	30.8 102.4	127.4			
SCE-2	64	15.0	0.023	4.4	7.0	10.8	15.9	20.7	25.7			
SCE-3	70	67.5	0.023	30.6	45.2	65.9	93.3	118.0	143.9			
SCE-4	70	29.5	0.103	13.3	19.6	28.6	40.6	257.8	62.6			
SCE-5	87	85.5	0.134	100.4	130.6	169.6	217.4	257.8	298.4			
SCE-6	64	3.8	0.006	1.6	2.5	3.7	5.4	7.0	8.6			
SCE-7	89	44.9	0.070	58.9	75.5	96.6	122.2	143.7	165.2			
SCE-8	92	25.5	0.040	38.6	48.4	60.7	75.4	87.7	99.9			
SCE-9	64	4.0	0.006	1.5	2.4	3.6	5.3	6.8	8.5			
SCE-10	83	174.3	0.272	7.6	189.4	19.4	29.1	398.9	467.5			
SCE-11	64	5.8	0.009	2.3	3.6	5.5	8.0	10.3	12.8			
SCE-13	63	78.6	0.123	19.6	31.3	48.7	73.1	95.7	120.0			
SCE-14	63	52.5	0.082	13.2	21.2	33.3	49.9	65.2	81.7			

				DESIG	IOP NE	NT SUM	MARY	
DESIGN POINT	AREA (sq mi)	Q <sub>2</sub> (CFS)	Q <sub>5</sub> (CFS)	Q <sub>10</sub> (cfs)	Q <sub>25</sub> (CFS)	Q <sub>50</sub> (cfs)	Q <sub>100</sub> (cfs)	LOCATION
DP-74	0.371	39.3	65.3	104.8	158.9	209.1	262.8	
DP-75	1.413	141.2	235.1	376.6	566.6	750.9	950.5	
DP-77	2.343	209.9	351.9	580.6	886.6	1168.4	1467.7	ARROYA LANE X-ING
DP-78	0.538	59.7	98.4	154.0	232.6	306.2	385.3	
DP-73	2.471	207.5	354.3	588.5	897.1	1187.2	1506.7	
DP-72	2.543	206.2	352.5	586.7	897.2	1195.3	1518.6	POCO ROAD X-ING
DP-71	2.757	205.9	349.3	610.5	932.4	1226.9	1612.2	STERLING RANCH NORTHERN BNDRY
DP-70	2.867	205.3	349.8	614.0	940.1	1260.6	1636.7	
DP-69	3.238	212.7	366.6	653.7	1010.6	1364.1	1775.7	BRIARGATE PARKWAY X-ING
DP-87	3.594	216.9	374.6	681.9	1072.1	1471.5	1905.9	
DP-68	4.312	214.6	374.5	714.9	1187.6	1674.9	2204.1	UPSTREAM OF POND W3
DP-64	0.119	85.9	112.1	145.9	187.5	222.6	258.0	
DP-63	4.449	154.4	201.0	375.7	815.9	1112.1	1385.1	STERLING RANCH SOUTHERN BNDRY
DP-61	5.356	156.6	223.9	428.0	928.2	1287.3	1620.1	COLORADO SPRINGS/EL PASO BNDRY
DP-60A	5.617	161.6	224.8	439.1	950.4	1320.5	1661.8	MARKSHEFFEL X-ING
DP-53A	5.661	161.6	225.7	441.8	951.1	1326.0	1668.9	SAND CREEK AND POND 3
DP-1E	0.247	23.9	38.3	70.1	132.8	173.0	220.9	
DP-2E	0.486	48.9	76.8	123.0	228.7	319.7	419.4	
DP-3E	0.626	48.5	75.7	122.2	271.1	387.1	500.1	
DP-4E	0.745	48.1	76.2	122.4	286.9	407.3	534.8	
DP-56	1.017	23.1	35.3	71.5	108.3	152.1	196.4	NEAR SE PROP CORNER
DP-8	1.079	24.1	37.2	73.5	111.3	155.4	200.7	BELOW SE PROP CORNER
DP-21	0.396	0.6	8.8	17.8	57.1	116.8	174.9	
DP-22	0.342	0.6	8.8	17.6	56.8	105.1	156.4	
DP-25	0.066	5.9	9.1	16.3	35.1	46.4	58.2	
DP-26	0.012	0.1	1.1	3.2	7.3	9.5	12.0	

	DESIGN POINT SUMMARY ( VOLUME)													
DESIGN POINT	AREA (sq mi)	V <sub>2</sub> (AC-FT)	V <sub>5</sub> (AC-FT)	V <sub>10</sub> (AC-FT)	V <sub>25</sub> (AC-FT)	V <sub>50</sub> (AC-FT)	V <sub>100</sub> (AC-FT)	LOCATION						
DP-74	0.371	5.9	9.0	13.6	19.8	25.5	31.6							
DP-75	1.413	22.7	34.5	51.7	75.4	97.1	120.5							
DP-77	2.343	37.7	57.4	85.9	125.1	161.1	199.9	ARROYA LANE X-ING						
DP-78	0.538	8.9	13.5	20.1	29.3	37.7	46.7							
DP-73	2.471	40.0	60.8	91.0	132.5	170.7	211.7							
DP-72	2.543	41.3	62.9	94.0	136.8	176.2	218.5	POCO ROAD X-ING						
DP-71	2.757	46.3	70.0	104.3	151.3	194.5	240.8	STERLING RANCH NORTHERN BNDRY						
DP-70	2.867	49.5	74.5	110.6	160.1	205.4	254.0							
DP-69	3.238	57.5	86.1	127.4	183.8	235.3	290.6	BRIARGATE PARKWAY X-ING						
DP-87	3.594	66.5	98.9	145.6	209.1	267.1	329.1							
DP-68	4.312	81.8	123.7	183.9	264.9	338.0	415.8	UPSTREAM OF POND W3						
DP-64	0.119	7.0	9.1	11.8	15.2	18.1	21.1							
DP-63	4.449	85.6	129.5	192.3	276.7	352.8	433.5	STERLING RANCH SOUTHERN BNDRY						
DP-61	5.356	103.7	157.8	235.1	338.4	431.3	529.8	COLORADO SPRINGS/EL PASO BNDRY						
DP-60A	5.617	111.0	168.6	250.4	359.5	457.7	561.5	MARKSHEFFEL X-ING						
DP-53A	5.661	112.0	170.0	252.6	362.6	461.7	566.5	SAND CREEK AND POND 3						
DP-1E	0.247	3.1	5.2	8.4	12.7	16.6	20.9							
DP-2E	0.480	6.1	10.4	16.9	25.7	33.7	42.2							
DP-3E	0.620	7.0	13.7	23.4	36.1	47.4	59.3							
DP-4E	0.736	7.6	15.6	27.2	43.0	57.2	72.0							
DP-56	1.017	7.7	16.1	28.6	51.3	71.7	92.9	NEAR SE PROP CORNER						
DP-8	1.079	8.0	16.7	26.6	53.0	74.0	95.9	BELOW SE PROP CORNER						
DP-21	0.396	6.3	11.3	18.3	27.5	35.6	44.0							
DP-22	0.736	6.3	10.7	16.7	24.6	31.5	38.7							
DP-25	1.017	1.3	1.9	2.8	4.1	5.2	6.4							
DP-26	1.079	0.7	0.9	1.2	1.5	1.8	2.1							

							WATER QUALITY & DETENTION POND SUMMARY						
WATER QUAL	ITY & D	ETENT	ION PO	ND SU	MMARY	7	FSD16B	IY & D	EIENII	UN PU	וחפ מעו	WWAKY	
FSD1	1 -	1 -			T = 0		STORM EVENT (YR)	2	5	10	25	50	100
STORM EVENT (YR) PEAK INFLOW (CFS)	16.3	5 23.3	10 33.0	25 45.8	50 57.1	100 68.9	PEAK INFLOW (CFS)	39.0	53.7	73.6	99.0	121.1	143.8
ALLOWABLE RELEASE (CFS)	0.1	1.7	3.3	10.9	17.5	25.5	ALLOWABLE RELEASE (CFS)  MODELED RELEASE (CFS)	0.0	0.4	0.7	8.3 7.9	17.2 17.2	28.2 28.1
MODELED RELEASE (CFS)	0.1	1.6	3.2	10.9	17.4	25.4	STORED VOLUME (AC-FT)	3.0	3.9	5.1	5.1	5.3	5.8
STORED VOLUME (AC-FT)	2.4	2.6	3.0	3.6	1.9	2.2	o review receive (real ray)	0.0	0.0		1 0.1	0.0	1 0.0
5005							FSD17						
FSD5 STORM EVENT (YR)	2	5	10	25	50	100	STORM EVENT (YR)	2	5	10	25	50	100
PEAK INFLOW (CFS)	40.6	53.7	71.0	92.4	110.6	129.1	PEAK INFLOW (CFS) ALLOWABLE RELEASE (CFS)	41.8 0.7	59.6 11.1	85.2 22.5	119.0 52.0	149.1 67.2	180.6 86.3
ALLOWABLE RELEASE (CFS)	0.1	1.4	2.6	11.3	19.8	30.2	MODELED RELEASE (CFS)	0.7	8.4	22.3	52.0	67.2	86.1
MODELED RELEASE (CFS)	0.1	1.4	2.6	11.2	19.7	30.1	STORED VOLUME (AC-FT)	2.6	2.6	2.8	3.4	4.0	4.7
STORED VOLUME (AC-FT)	3.0	3.2	3.8	4.1	4.7	5.2			I.			I.	·
FSD6							FSD18			,			T
STORM EVENT (YR)	1 2	5	10	25	50	100	STORM EVENT (YR)	2	5	10	25	50	100
PEAK INFLOW (CFS)	196.5	258.5	339.1	438.7	523.3	608.6	PEAK INFLOW (CFS)  ALLOWABLE RELEASE (CFS)	49.3 0.6	67.1 9.2	91.0 18.4	121.2 42.2	147.3 54.6	174.0 69.9
ALLOWABLE RELEASE (CFS)	0.5	7.6	14.6	58.4	99.6	149.7	MODELED RELEASE (CFS)	0.6	6.3	18.4	42.2	54.6	69.6
MODELED RELEASE (CFS)	0.5	7.5	14.5	58.2	99.6	149.6	STORED VOLUME (AC-FT)	3.2	3.2	3.4	4.0	4.7	5.3
STORED VOLUME (AC-FT)	15.5	16.4	18.7	20.8	23.3	26.0							
FSD9							FSD20 STORM EVENT (YR)	2	5	10	25	50	100
STORM EVENT (YR)	2	5	10	25	50	100	PEAK INFLOW (CFS)	∠ 9.9	15.5	23.8	35.1	45.5	56.6
PEAK INFLOW (CFS)	64.6	105.6	169.5	252.3	327.1	410.1	ALLOWABLE RELEASE (CFS)	0.4	5.5	11.1	25.7	33.2	42.5
ALLOWABLE RELEASE (CFS)	1.7	24.9	49.8	141.1	207.2	290.0	MODELED RELEASE (CFS)	0.4	2.8	10.9	25.7	33.0	42.4
MODELED RELEASE (CFS) STORED VOLUME (AC-FT)	1.7 8.7	24.9	49.8	141.1	207.0	289.9	STORED VOLUME (AC-FT)	0.7	0.8	0.8	0.9	1.0	1.2
, , ,	0./	8.7	9.6	10.8	12.3	13.8	FSD21						
FSD11A STORM EVENT (YR)	2	5	10	25	50	100	STORM EVENT (YR)	2	5	10	25	50	100
PEAK INFLOW (CFS)	5.3	7.8	11.3	15.9	20.0	24.3	PEAK INFLOW (CFS)	7.0	10.8	16.3	23.7	30.4	37.5
ALLOWABLE RELEASE (CFS)		1.6	3.2	7.5	9.7	12.4	ALLOWABLE RELEASE (CFS)	0.3	4.0	8.0	18.3	23.7	30.3
MODELED RELEASE (CFS)	0.2	0.9	3.0	7.5	9.7	12.3	MODELED RELEASE (CFS)	0.3	3.3	8.0	18.3	23.7	30.1
STORED VOLUME (AC-FT)	0.3	0.3	0.4	0.4	0.5	0.6	STORED VOLUME (AC-FT)	0.5	0.5	0.5	0.6	0.7	0.8
FSD11B							FSD22						
STORM EVENT (YR)	2	5	10	25	50	100	STORM EVENT (YR)	2	5	10	25	50	100
PEAK INFLOW (CFS)	59.4	81.3	110.8	148.1	180.5	213.7	PEAK INFLOW (CFS)	9.4	14.8	22.5	32.9	42.5	52.6
ALLOWABLE RELEASE (CFS)	0.3	4.5	8.7	29.6	47.7	69.6	ALLOWABLE RELEASE (CFS)	0.4	5.8	11.5	26.5	34.3	43.9
MODELED RELEASE (CFS)	0.3	4.5	8.6	29.5	47.7	69.5	MODELED RELEASE (CFS) STORED VOLUME (AC-FT)	0.4	5.8 0.6	11.4 0.7	26.5 0.8	34.3 0.9	43.8 1.0
STORED VOLUME (AC-FT)	4.8	4.9	5.5	6.4	7.3	8.2	STORED VOLUME (ACTI)	0.0		0.7	0.0	0.9	1.0
FSD12							FSD23						
STORM EVENT (YR)	2	5	10	25	50	100	STORM EVENT (YR)	2	5	10	25	50	100
PEAK INFLOW (CFS)	77.8	105.6	142.5	189.1	229.1	270.0	PEAK INFLOW (CFS)  ALLOWABLE RELEASE (CFS)	5.5 0.2	8.3 2.4	12.4 4.9	18.0 11.2	23.0 14.5	28.4 18.6
ALLOWABLE RELEASE (CFS) MODELED RELEASE (CFS)	0.9	13.2 9.0	26.7 26.7	62.0 61.9	80.2 80.1	103.2	MODELED RELEASE (CFS)	0.2	2.4	4.9	11.2	14.5	18.6
STORED VOLUME (AC-FT)	5.2	5.5	5.8	6.7	7.8	8.9	STORED VOLUME (AC-FT)	0.3	0.3	0.4	0.4	0.5	0.6
, ,	-1			•	•								
FSD13		T =	1 40	T 05	T = 0	1 400	FSD27				1		
STORM EVENT (YR) PEAK INFLOW (CFS)	43.9	5 57.8	10 76.0	25 98.5	50 117.6	100 136.9	STORM EVENT (YR) PEAK INFLOW (CFS)	2 38.8	5 57.6	10 84.1	25 119.7	50 159.2	100 206.3
ALLOWABLE RELEASE (CFS)	0.4	6.1	12.3	28.6	37.0	47.6	ALLOWABLE RELEASE (CFS)	1.4	21.1	42.4	97.8	126.4	161.9
MODELED RELEASE (CFS)	0.4	4.2	12.3	28.6	36.9	47.2	MODELED RELEASE (CFS)	1.4	18.4	42.3	97.7	126.2	161.9
STORED VOLUME (AC-FT)	3.1	3.1	3.3	3.8	4.4	5.0	STORED VOLUME (AC-FT)	2.7	2.8	2.9	3.2	3.7	4.2
FSD14A							FSD72						
STORM EVENT (YR)	2	5	10	25	50	100	STORM EVENT (YR)	2	5	10	25	50	100
PEAK INFLOW (CFS)	127.6	175.4	239.8	321.9	393.2	466.3	PEAK INFLOW (CFS)	12.8	20.2	31.4	46.7	60.9	76.0
ALLOWABLE RELEASE (CFS) MODELED RELEASE (CFS)	0.5	7.5 7.5	14.4 14.4	56.2 56.2	95.2 95.1	142.4 142.2	ALLOWABLE RELEASE (CFS)	0.6	9.6	19.3	44.4	57.4	73.4
STORED VOLUME (AC-FT)	9.9	10.6	11.9	13.5	15.3	17.3	MODELED RELEASE (CFS)  STORED VOLUME (AC-FT)	0.6	9.3	19.2 1.1	44.4	57.4	73.4 1.3
`	,		,-			·	PNDW3						
FSD14B		<del>-</del>					STORM EVENT (YR)	2	5	10	25	50	100
STORM EVENT (YR) PEAK INFLOW (CFS)	24.6	5 34.3	10 47.4	25 64.2	50 79.0	100 94.1	PEAK INFLOW (CFS)	214.6	374.5	714.9	1187.6	1674.9	2204.1
ALLOWABLE RELEASE (CFS)		0.3	0.5	5.7	11.8	19.3	MODELED RELEASE (CFS)	154.3	200.3	366.8	799.9	1085.6	1350.6
MODELED RELEASE (CFS)	0.0	0.3	0.5	4.5	11.8	19.3	STORED VOLUME (AC-FT)	2.8	9.5	26.3	41.2	57.2	78.2
STORED VOLUME (AC-FT)	1.9	2.5	3.3	3.5	3.5	3.8	FSD-E1		F	1.0		F.O.	100
[ CONTED]							STORM EVENT (YR) PEAK INFLOW (CFS)	23.3	5 35.9	10 53.8	25 79.1	50 102.4	100 127.4
FSD15B STORM EVENT (YR)	2	5	10	25	50	100	ALLOWABLE RELEASE (CFS)	0.7	11.0	22.1	50.9	65.7	84.1
PEAK INFLOW (CFS)	10.8	14.0	18.2	23.3	27.6	31.9	MODELED RELEASE (CFS)	0.7	5.4	19.9	48.9	62.8	84.0
ALLOWABLE RELEASE (CFS)	0.1	1.6	3.2	7.3	9.5	12.0	STORED VOLUME (AC-FT)	1.3	1.3	1.5	1.8	2.1	2.5
MODELED RELEASE (CFS)	0.1	1.1	3.2	7.3	9.5	12.0	FSD-E2		_				400
STORED VOLUME (AC-FT)	0.6	0.6	0.7	0.8	0.9	1.0	STORM EVENT (YR) PEAK INFLOW (CFS)	2 30.6	5 45.2	10 65.9	25 93.3	50 118.0	100 143.9
FSD16A							ALLOWABLE RELEASE (CFS)	0.6	9.5	19.2	45.5	59.8	77.6
STORM EVENT (YR)	2	5	10	25	50	100	MODELED RELEASE (CFS)	0.6	3.2	18.5	41.3	58.5	74.7
PEAK INFLOW (CFS)	84.4	120.4	170.0	234.8	292.2	351.8	STORED VOLUME (AC-FT)	2.1	2.3	2.4	2.8	3.3	3.8
ALLOWABLE RELEASE (CFS)  MODELED RELEASE (CFS)	0.6	8.8 8.8	17.3 17.3	56.2 56.2	88.4 88.3	128.3 128.3	FSD-E3						
STORED VOLUME (AC-FT)	7.6	7.7	8.9	10.4	12.1	13.8	STORM EVENT (YR)	2	5	10	25	50	100
	<b>A</b> • • • • •						PEAK INFLOW (CFS)  ALLOWABLE RELEASE (CFS)	100.4	130.6 13.2	169.6 26.5	217.4 61.6	257.8 79.8	298.4 102.6
	SAND	CREE	K FLOV	V			MODELED RELEASE (CFS)	1.0	6.8	25.7	56.0	79.8	101.3
	COMP	ARISON	N CHAR	<b>T</b>			STORED VOLUME (AC-FT)	7.0	7.2	7.7	8.9	10.1	11.4
DESIGN	AREA	Q100 (CFS)	DESCRI	PTION	$\dashv$		FSD-E4						
POINT DP-77	(SQ MI)			CONDITION	$\dashv$		STORM EVENT (YR)	2	5	10	25	50	100
			SAND CRE		<del>'</del>		PEAK INFLOW (CFS)	58.9	75.5	96.6	122.2	143.7	165.2
i l		2600	FFA		$\dashv$		ALLOWABLE RELEASE (CFS)	0.3	4.4	8.8	23.0	32.2	43.7

DP-	63 4.44	1385	PROPC	PROPOSED CONDITION							
	4.3	3 2630	SAND	CREEK D	BPS						
		2600		FEMA							
DP-6	<b>5.6</b> 6	51 1662	PROPC	SED CONE	NOITIC						
	5.3	8 3295	SAND	CREEK D	BPS						
EFSC DBPS DESIGN POINT SUMMARY (PEAK FLOW)											
DBPS DESIGN POINT	AREA (sq mi)	Q10 (CFS) (EXIST)	Q100 (CFS) (EXIST)	AREA (sq mi)	Q10 (CFS) (PROP)	Q100 (CFS) (PROP)					
DP-50	0.32	47.0	195.7	0.32	146.7	370.3					
DP-51 (BASIN 86)	0.33	17.7	74.1	0.33	110.0	233.5					
DP-52	1.67	80.5	456.5	1.67	1207.9	2123.0					

Values reported from SCDBPS, (DP 50, 51, 52 Not analyzed as a part of this study) DBPS Reach 85(Basin91)=Q10=28.8cfs Q100=115.2cfs / Q10=345.7cfs Q100=588.9cfs (EXISTING) (PROPOSED)



20 BOULDER CRESCEN COLORADO SPRINGS, PHONE: 719.955.5485

	STORW EVERT (TIV)	_	J	10		50	100			
	PEAK INFLOW (CFS)	141.6	189.4	252.5	331.4	398.9	467.5			
ALLOWABLE RELEASE (CFS)		0.2	1.9	3.2	37.4	77.3	125.6			
100	MODELED RELEASE (CFS)	0.2	0.9	3.2	18.3	64.1	123.3			
100 FS) OP)	STORED VOLUME (AC-FT)	13.0	17.0	21.9	22.2	22.6	23.7			
0.3	PND-E7									
3.5	I 3 I ( I \		5	10	25	50	100			
3.0	PEAK INFLOW (CFS)	46.5	75.4	121.2	285.2	402.4	548.0			
8.2	MODELED RELEASE (CFS)	23.1	35.3	71.5	108.3	152.1	196.4			
	STORED VOLUME (AC-FT)	1.0	1.8	4.6	10.5	17.9	28.0			
ENT, SUITE 110 S, CO 80903	2018 STERLING RANCH MDDP									
	DEVELOPED HYDROLOGIC CONDITIONS MAP									

PROJECT NO. **09-002** | FILE: \dwg\Eng Exhibits\2018-MDDP-PROPCOND.dwg

HORIZ: 1"=2400'

VERT: 1"=2400'

DATE: 10-21-2018

DM2

STORED VOLUME (AC-FT) 4.2 4.3 4.7 5.4 6.2 6.9

MODELED RELEASE (CFS) | 0.9 | 2.8 | 8.7 | 21.9

STORED VOLUME (AC-FT) 3.0 3.7 4.4 4.8

FSD-E5

FSD-E6

MODELED RELEASE (CFS)

DESIGNED BY: JD

CHECKED BY: VAS

DRAWN BY:

## **DRAINAGE MAP**



