

EPC STORMWATER REVIEW COMMENTS IN ORANGE BOXES WITH BLACK TEXT

# REVISED PRELIMINARY DRAINAGE REPORT FOR Retreat at PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN (Formerly known as Jaynes Property – SKP-225)

CCES RESPONSES

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> Job No. 1305.10 PCD File No. SP239

> > ADDED



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## PRELIMINARY DRAINAGE REPORT FOR PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN

## **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.

Marc A. Whorton Colorado P.E. #37155	Date	

#### **OWNER'S/DEVELOPER'S STATEMENT:**

I, the owner/developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name:	CLASSIC COMPANIES	
By:		
Title:		
Address:	2138 Flying Horse Club Drive	
	Colorado Springs. CO 80921	

## **EL PASO COUNTY:**

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

REVISED Joshua Palmer, P.E. *For* County Engineer, / ECM Administrator

Date

Conditions:



## PRELIMINARY DRAINAGE REPORT FOR PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN

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VICINITY MAP SOILS MAP (S.C.S. SURVEY) F.E.M.A. MAP WETLANDS JURISDICTIONAL DETERMINATION (JD) HYDROLOGIC / STORMWATER QUALITY CALCULATIONS DRAINAGE MAPS



## PRELIMINARY DRAINAGE REPORT FOR PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN

#### PURPOSE

The intent of the owner/developer is to develop the PrairieRidge Filing No. 1 Property. The purpose of this Preliminary Drainage Report, as part of the Preliminary Plan submittal, is to identify all drainage features and facilities and to estimate peak rates of stormwater runoff, from on-site and off-site sources. Also, the purpose is to outline the necessary improvements to safely route developed storm water runoff to adequate outfall facilities. The drainage improvements proposed in this report are preliminary in nature and final drainage reports are required upon any development within the property that detail the 'to be constructed' drainage systems and detention ponds.

#### **GENERAL DESCRIPTION**

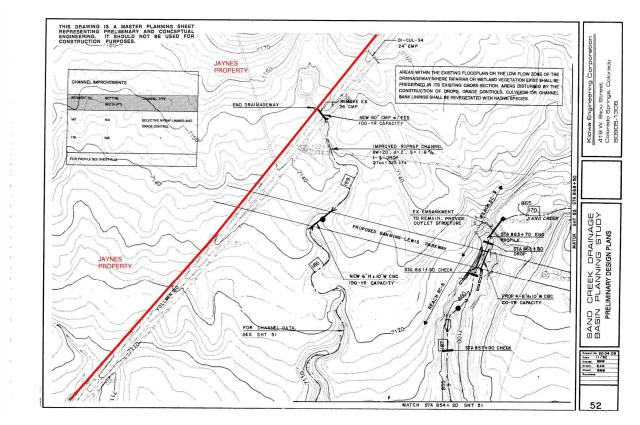
PrairieRidge Filing No. 1 Preliminary Plan covers the majority of the property in 108.89 acres, as located in a portion of sections 28 and 33, township 12 south, range 65 west of the sixth principal meridian. The site is bounded on the north by Poco Road, to the south and east by Vollmer Road and to the west by existing platted large lot residential subdivisions. The site is within the upper portion of the Sand Creek drainage basin. The proposed uses as shown on the Sketch Plan are as follows: Varying density single family residential developed as (6) 2.5-ac. rural lots, (17) 0.5-ac. urban lots, (194) RS-6000 zoned urban lots and neighborhood parks, open space/greenway buffers and detention pond. The total number of residential units proposed is 217. Roadway access will be from Vollmer Road, the proposed Briargate Parkway extension with only the (6) 2.5-ac. rural lots accessed from Poco Road.

The average soil condition reflects Hydrologic Group "B" (Pring coarse sandy loam) as determined by the "Soil Survey of El Paso County Area," prepared by the Soil Conservation Service (see map in Appendix).



## **EXISTING DRAINAGE CONDITIONS**

This property is located in the upper reaches of the Sand Creek Basin. Existing conditions in this basin are largely rolling hills vegetated with native grasses, yucca and sparse pine trees on the northwestern portion of the site with natural ravines and swales with little to no trees on the south portion of the property. Existing slopes range from 20% to 2% across the site. The entire property generally drains in a southerly direction through numerous natural ravines created from the off-site flows north of Poco Road. This property is not specifically discussed in the Sand Creek DBPS (March 1996), however, improvements along Vollmer Road to handle flows from and through the property are detailed on the following excerpt from the DBPS. The



existing culvert crossing Vollmer Road is shown to be replaced with a 60" CMP for 100-yr capacity. This improvement along with the downstream channel improvements within the Sterling Ranch property are currently being constructed as a part of the adjacent Vollmer Road improvements (CDR 21-10) and Homestead North at Sterling Ranch Filing No. 1 development (SF 22-013). These plans also include the construction of public storm sewer within Vollmer



Road to handle the anticipated developed flows from the urbanization of this stretch of the Vollmer Road corridor.

There are three major off-site basins north of Poco Road represented by EX-3, EX-4A and EX-4B. This nomenclature matches this same area as presented in the Sterling Ranch MDDP and the recently approved Jaynes Property MDDP (SKP-225). Currently there are multiple corrugated metal culverts within Poco Road allowing these off-site flows from the north to enter the site. However, a recent site investigation reports that these culverts are badly silted in with minimal flow able to be conveyed. They also appear to only be sized for the smaller storm events. As presented on the drainage map, it is recommended that El Paso County visually inspect these facilities and consider up-sizing for larger storm events based on the current basin hydrology or at a minimum clean out the current facilities to allow for better conveyance. However, no evidence of the road overtopping at these crossing locations was found. This off-site property north of Poco Road seems to be all large lot rural residential with property sizes ranging from 5acre to 35-acres. As this off-site basin stretches north it starts to get into the Black Forest north of Wildflower Road. Note: At the FDR stage an analysis of these existing culverts crossing under Poco Road will need to be provided.

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At the northern edge of the	FACILITIES WITHIN THE PUBLIC ROW	
Poco Road that is not a par	UPSTREAM OF OUR PROJECT. WE	bin
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creates the two major hatu	UPSTREAM BASINS AND ARE	pro
corner of Poco Road and Vo	ACCOMMODATING THE OFF-SITE	tha
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Poco Road. This home is pa		Jal

ome accessed from pint in Poco Road and property. Near the that also accesses Jally be abandoned

and demolished. There are existing natural ravines on both sides of this existing home site that eventually combine into one and continue to travel in a southerly direction through the site towards an on-site stock pond near Vollmer Road. There are no records or design plans for this stock pond. For this existing condition analysis this pond was removed from the project model. In the central portion of the property exists several structures with gravel driveway access directly to Vollmer Road. These structures will also eventually be abandoned and demolished



upon the proposed development. The natural ravine along the western portion of the property travels due south all the way to Vollmer Road. A few minor off-site basins (OS-1 and OS-2) from the neighboring large lot residential development to the west also drain onto the property. The entire site drains towards Vollmer Road and into the side road ditch along the west side of Vollmer. Only a very small portion of the site, represented by Basin EX-D, in the extreme northwest corner of the property sheet flows off-site.

As mentioned earlier, the stretch of Vollmer Road adjacent to the property is planned for widening improvements along with the Sterling Ranch development to the east (Homestead North at Sterling Ranch Filing 1). As recommended in the Final Drainage Report for this project and shown on the street and storm improvement plans for Vollmer Road, multiple storm sewer stubs will be provided for this property and the off-site properties to the north of Poco Road. Given that these facilities are currently under construction and will most likely be in place prior to the development, this report assumes these as existing facilities as described and shown on the maps. Please also reference the Appendix for the Homestead North drainage maps as reference material. Discuss what would happen if the stormwater facilities are not in place by the time this development occurs.

## THEY ARE CURRENTLY

These ravines and stock pond areas UNDER CONSTRUCTION on. These wetlands were field delineated by CORE Consultants, Inc. and provided on the drainage maps as shown. However, a Jurisdictional Determination (Action No. SPA-2022-00123) was provided by the Corps of Engineers finding that none of these wetland areas contain waters of the U.S. As such, these areas are NOT regulated by the U.S. Army Corps of Engineers under Section 404 of the Federal Clean Water Act. (See Appendix for JD) Given the non-jurisdictional status of these wetlands and the urban nature of this development, the majority of the wetlands within the urban lots will be removed with overlot grading, public roadway and utility construction. The future final drainage report(s) will better define the extent of any wetland mitigation along with possible monitoring/mitigation on the high groundwater areas.



## ADDED

Please provide EPC Project number The following descriptions represent the existing on and off-site basins and design points affecting this property:

**Design Point E1 (Q**<sub>5</sub> = **14 cfs, Q**<sub>100</sub> = **82 cfs)** consists of the approximated 77.0-acre off-site tributary area from Basin EX-4A. As mentioned earlier, this area is developed as large lot residential (lots ranging from 5-acre to 35-acre) all draining towards Poco Road and the existing 24" CMP that is silted in. These off-site flows then enter the property within one of the natural ravines and convey the flows to the south towards the existing stock pond.

**Design Point E2 (Q**<sub>5</sub> = **10 cfs, Q**<sub>100</sub> = **58 cfs)** consists of the approximated 70.0-acre off-site tributary area from Basin EX-4B. As mentioned earlier, this area is also developed as large lot residential (lots ranging from 5-acre to 35-acre) all draining towards an off-site stock pond at the northwest corner of Poco Road and Vollmer Road. Verified visually in the field, this facility appears to have an 18" CMP outlet crossing Poco Road to the south. These off-site flows then enter the property within one of the natural ravines and convey the flows to the south towards the existing stock pond.

**Design Point E3** ( $Q_5 = 1 \text{ cfs}$ ,  $Q_{100} = 7 \text{ cfs}$ ) consists of the 3.6-acre tributary area from Basins EX-A and EX-B. This on-site area drains in a southerly direction towards the side road ditch along Vollmer Road and then captured by a Type D CDOT Inlet with a 24" RCP storm outfall. These facilities are detailed in the "Homestead North at Sterling Ranch Filing No. 1" Final Drainage Report and CDs, prepared by JR Engineering, approved Sept. 2022 (SF 22-013). The location of this facility is represented by Design Point 10 within the Homestead North at Sterling Ranch Filing Ranch Filing No. 1 development ( $Q_5 = 0.8 \text{ cfs}$ ,  $Q_{100} = 6.0 \text{ cfs}$ ). (See Reference Material in Appendix) These improvements will be constructed with that development and the Vollmer Road improvements. The existing 24" CMP culvert near this location will be removed.

YES. IT IS A 24" PIPE @0.91% THAT HAS CAPACITY TO CARRY 21.6 CFS. ADDED STATEMENT Will the downstream facilities be capable of handling the newly proposed flows which are 0.2 and 1.0 cfs larger?



**Design Point E4 (** $Q_5 = 25 \text{ cfs}$ ,  $Q_{100} = 155 \text{ cfs}$ **)** consists of the 41.4-acre tributary area from on-site Basin EX-C along with the combined off-site flows from Design Points E1 and E2. These combined flows travel in the natural ravine towards the existing stock pond on-site. As mentioned earlier, this facility was removed for this existing drainage model. The total flows then travel towards Vollmer Road where they are then captured by a (Sterling Ranch designed) 6' diameter overflow Manhole with grate and a 48" RCP storm outfall into the planned Vollmer roadway widening improvements. The location of this facility is represented by Design Point 20 within the Homestead North at Sterling Ranch Filing No. 1 development ( $Q_5 = 27.1 \text{ cfs}$ ,  $Q_{100} = 190.9 \text{ cfs}$ ). (See Reference Material in Appendix)

Again, these improvements will be constructed with the Homestead North development and the Vollmer Road improvements. The existing 24" CMP culvert near this location will be removed.

**Design Point E5 (** $Q_5 = 12$  cfs,  $Q_{100} = 70$  cfs) consists of the approximated 44.3-acre off-site tributary area from Basin EX-3. As mentioned earlier, this area is developed as large lot residential (lots ranging from 5-acre to 35-acre) all draining towards Poco Road and the existing 24" CMP that is silted in. These off-site flows then enter the property within the westerly natural ravine and convey the flows to the south through the property.

**Design Point E6 (** $Q_5 = 2 \text{ cfs}$ ,  $Q_{100} = 13 \text{ cfs}$ **)** consists of the 8.3-acre tributary area from the minor on-site Basin EX-G. These pre-developed flows travel in a southerly direction towards the road side ditch along the west side of Vollmer Road. An existing CDOT Type D inlet (Sterling Ranch designed) captures these flows and routes them under Vollmer Road in a 24" RCP system. The location of the CDOT Type D Inlet facility is represented by Design Point 10 within the Homestead at Sterling Ranch Filing No. 1 development ( $Q_5 = 4.8 \text{ cfs}$ ,  $Q_{100} = 26.3 \text{ cfs}$ ). (See Reference Material in Appendix)



**Design Point E7 (** $Q_5 = 1 \text{ cfs}$ ,  $Q_{100} = 10 \text{ cfs}$ **)** consists of the 6.5-acre tributary area from the minor on-site Basin EX-H. These pre-developed flows travel in a southerly direction towards the road side ditch along the west side of Vollmer Road. An existing CDOT Type C inlet (Sterling Ranch designed) captures these flows and routes them under Vollmer Road in an 18" RCP system. The location of this CDOT Type C Inlet facility is represented by Design Point 11 within the Homestead at Sterling Ranch Filing No. 1 development ( $Q_5 = 2.2 \text{ cfs}$ ,  $Q_{100} = 12.3 \text{ cfs}$ ). (See Reference Material in Appendix)

**Design Point E8 (Q**<sub>5</sub> = 20 cfs,  $Q_{100}$  = 125 cfs) consists of the 72.4-acre tributary area from the onsite Basin EX-E, the off-site basin OS-2 (5.3 ac.) along with the flows from Design Point E5. These combined flows travel in a southerly direction within the on-site natural ravines towards the side road ditch along Vollmer Road and an existing 24" RCP culvert. This facility seems to be silted in and thus conveys little flow. Rather, the flows continue to be conveyed by the ditch in a southeasterly direction along the north side of Vollmer Road into basin EX-F.

**Design Point E9 (** $Q_5 = 20$  cfs,  $Q_{100} = 127$  cfs) consists of the 8.7-acre tributary area from the onsite Basin EX-F, the off-site basin OS-1 (2.0 ac.) along with the flows from Design Point E8. These combined flows travel in a southeasterly direction within the side road ditch along Vollmer Road to the corner of the property. At this location, within the sideroad ditch and ROW for Vollmer Road, an exist. modified 4'x14' CDOT Type D Inlet was constructed along with the Homestead at Sterling Ranch Filing No. 1 Development to capture these off-site flows. This facility has an existing 54" public RCP storm outfall that crosses Vollmer Road and passes through the Homestead at Sterling Ranch Filing No. 1 development and daylights directly into Sand Creek. The location of the CDOT Type D Inlet facility is represented by Design Point 12 within the Homestead at Sterling Ranch Filing No. 1 development ( $Q_5 = 18.9$  cfs,  $Q_{100} = 133.7$  cfs). (See Reference Material in Appendix)



**Design Point E10 (Q**<sub>5</sub> = **0.4 cfs, Q**<sub>100</sub> = **3 cfs)** consists of the 1.3-acre tributary area from the onsite Basin EX-D. This minor portion of the property sheet flows off-site into a natural ravine and then into a private stock pond on Lot 3A or Sunrise Meadow Subd. No. 2.

#### **PROPOSED DRAINAGE CONDITIONS**

Development within the proposed Preliminary Plan is planned for urban residential with associated curb, gutter, sidewalk and paved streets, other than the 6 rural 2.5-ac. lots accessed directly off the existing Poco Road (Rural Local Gravel). Overlot grading is anticipated for the majority of the development along with installation of urban services provided through the Falcon Area Water and Wastewater Authority (FAWWA). Proposed impervious areas will sheet flow across yards and landscape areas to slow runoff and increase time of concentration. This will minimize the effects of impervious areas. At design points where developed flows are greater than in the existing condition, detention facilities will be proposed providing an Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage volume with an outlet control device. Frequent and infrequent inflows are released at rates approximating undeveloped conditions. This concept provides some mitigation of increased runoff volume by releasing a portion of the increased runoff at a low rate over an extended period of time, up to 72 hours. This means that frequent storms, smaller than the 2 year event, will be reduced to very low flows near or below the sediment carrying threshold value for downstream drainage ways. Also, by incorporating an outlet structure that limits the 100-year runoff to the undeveloped condition rate, the discharge hydrograph for storms between the 2 year and the 100 year event will approximate the hydrograph for the undeveloped conditions and will help effectively mitigate the effects of development. Prior to development within this property, final drainage reports and construction plans will be required detailing the requirements and specifics of proposed facilities.



Per the Sand Creek DBPS, this area was planned for both large lot residential and single family residential. There were no recommendations for detention facilities within the area but due to current drainage criteria, detention/stormwater quality facilities are proposed. The following are preliminary design points for developed conditions with descriptions of anticipated basin areas and preliminary storm systems:

As described in the recently approved Jaynes Property MDDP and the Homestead North at Sterling Ranch Filing No. 1 FDR, the eastern portion of this proposed development and the existing rural large lots northeast of Poco Road have been accounted for in the off-site FSD Pond C, located just northeast of the intersection of Briargate Pkwy. and Wheatland Dr., constructed with the Homestead North at Sterling Ranch Filing No. 1 development. Existing storm systems within the property and stubbed across Vollmer Road will collect these flows and convey them to this facility. The following basin descriptions are tributary to this facility:

## Tributary area to Homestead North Filing No. 1 FSD Pond C

**Design Point 1 (** $Q_5 = 13 \text{ cfs}$ ,  $Q_{100} = 79 \text{ cfs}$ **)** consists of off-site flows from Basin EX-4A north of Poco Road and developed flows from Basin A. These combined flows will be collected by a 36" RCP within the public drainage easement and routed further downstream in the proposed public storm system within the roadway. **Design Point 2 (** $Q_5 = 10 \text{ cfs}$ ,  $Q_{100} = 58 \text{ cfs}$ **)** consists of off-site flows from Basin EX-4B north of Poco Road and developed flows from Basin B. These combined flows will also be collected by a 36" RCP within the public drainage easement and routed further downstream in the proposed public storm system within the roadway.

**Design Point 3 (Q**<sub>5</sub> = 4 cfs,  $Q_{100}$  = 16 cfs) consists of developed flows from Basin C1. At this location, a 10' Type R at-grade inlet will collect a portion of the flows. These collected flows will be routed further downstream via an 18" RCP. The bypass flows will then travel to DP-4. **Design** 



**Point 4 (Q**<sub>5</sub> = 2 cfs, Q<sub>100</sub> = 13 cfs) consists of developed flows from Basin C2 and the flow-by from DP-3. At this location, a 10' Type R sump inlet will completely collect these flows. **Design Point 5 (Q**<sub>5</sub> = 1.4 cfs, Q<sub>100</sub> = 4 cfs) consists of developed flows from Basin D. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is around the corner and south down Bluebell Meadow Way.

**Design Point 6 (** $Q_5 = 5 \text{ cfs}$ ,  $Q_{100} = 12 \text{ cfs}$ **)** consists of developed flows from Basin E. At this location, a 10' Type R at-grade inlet will collect a portion of the flows. These collected flows will be routed further downstream via an 18" RCP. The bypass flows will enter Basin J and then travel to DP-11. **Design Point 7 (** $Q_5 = 2.2 \text{ cfs}$ ,  $Q_{100} = 5 \text{ cfs}$ **)** consists of developed flows from Basin F. At this location, a 10' Type R at-grade inlet will collect a portion of the flows. These collected flows will be routed further downstream via an 18" RCP. The bypass flows will also enter Basin J and travel to DP-11.

**Design Point 8 (** $Q_5$  = 3 cfs,  $Q_{100}$  = 6 cfs) consists of developed flows from Basin G. At this location, a 5' Type R sump inlet will completely collect these flows. With a max. 100-yr. ponding depth of 9", the emergency overflow route is over the curb to the south and into Dines Blvd.

**Design Point 9 (** $Q_5 = 5 \text{ cfs}$ ,  $Q_{100} = 10 \text{ cfs}$ **)** consists of developed flows from Basin H. At this location, a 10' Type R sump inlet will completely collect these flows. **Design Point 10 (** $Q_5 = 1.8 \text{ cfs}$ ,  $Q_{100} = 4 \text{ cfs}$ **)** consists of developed flows from Basin I. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is over the highpoint to the east within Sunlit Prairie Place.



**Design Point 11 (** $Q_5 = 7 \text{ cfs}$ ,  $Q_{100} = 20 \text{ cfs}$ **)** consists of developed flows from Basin J and flow-by from DP-6 and DP-7. At this location, a 10' Type R sump inlet will completely collect these flows. **Design Point 12 (** $Q_5 = 3 \text{ cfs}$ ,  $Q_{100} = 5 \text{ cfs}$ **)** consists of developed flows from Basin K. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within a drainage easement. With a max. 100-yr. ponding depth of 12", the emergency overflow route is over the curb to the south and into Basin M.

**Design Point 13 (Q**<sub>5</sub> = 3 cfs, Q<sub>100</sub> = 6 cfs) consists of developed flows from the north half of Basin N. At this location, an 18" RCP storm stub is provided for that portion of the future development. **Design Point 14 (Q**<sub>5</sub> = 3 cfs, Q<sub>100</sub> = 6 cfs) consists of developed flows from the south half of Basin N. At this location, a 24" RCP storm stub is provided for that portion of the future development.

**Design Point 15 (** $Q_5 = 2 \text{ cfs}$ ,  $Q_{100} = 13 \text{ cfs}$ **)** consists of developed flows from Basin M. At this location, an existing manhole with grated lid was anticipated to and will collect these developed flows. These flows are then combined with the on-site routed storm system (48" RCP) and connected to the 48" RCP stub provided with the construction of the Vollmer Road improvements and Homestead North at Sterling Ranch Filing No. 1, as mentioned earlier. The following shows a comparison of the total developed flows leaving the site at this location and tributary to the off-site FSD Pond C:

Proposed Developed Flows:	Flows per Homestead North Fil. 1:	
Q <sub>5</sub> = 36 cfs, Q <sub>100</sub> = 158 cfs	Q <sub>5</sub> = 27.1 cfs, Q <sub>100</sub> = 190.9 cfs	

(See Appendix for Area Runoff/effective imperviousness tributary to this off-site existing facility)



**Pipe Run 24 (Q**<sub>5</sub> = **36 cfs, Q**<sub>100</sub> = **158 cfs)** represents the total developed flows tributary to the existing 48" RCP storm outfall mentioned earlier at this location, represented by Design Point 20 within the Homestead North at Sterling Ranch Filing No. 1 development ( $Q_5 = 27.1 \text{ cfs}, Q_{100} =$ 190.9 cfs). These total off-site flows, along with collected flows from the Vollmer Road improvements, then travel via an existing 60" RCP (Sterling Ranch designed) south down Vollmer then southeast down Briargate Parkway towards Pond C just north of Briargate Parkway and west of Sand Creek within the Homestead North Filin No. 1 development. (See Reference Material in Appendix) This is the maximum developed flows allowed to be released at this location and treated further downstream in Pond C with the Sterling Ranch Development. The final design for this area must follow this maximum flow and percent impervious as described in the Homestead North FDR. (See Appendix for applicable reference material) At the MDDP and PDR level of design, the total anticipated off-site flows from this property are fairly consistent with what was previously shown in the Homestead North Filing No. 1 FDR. However, the percent impervious is higher as the Homestead North FDR assumed all the off-site area as undeveloped, whereas the following chart better defines the developed imperviousness for this property. The intent of this PDR is to maintain what was previously planned for the total off-site flows and imperviousness tributary to Pond C. The final drainage report(s) for the property will better define the exact flow amounts being released along with site imperviousness based on a formalized site plan. At that time, it will be determined if additional developed property within this development will need to be routed elsewhere to remain consistent with the approved Pond C design and outlet structure.

For your reference in the final drainage report additional to demonstrating that Pond C was designed to accept the imperviousness and flows from this project, the engineer must also confirm in the Drainage Report that the existing Pond C that the site is tributary to are functioning as intended.

#### Tributary area to proposed on-site FSD Pond 1

## NOTED

**Design Point 16 (** $Q_5 = 2 \text{ cfs}$ ,  $Q_{100} = 12 \text{ cfs}$ **)** consists of off-site flows from Basin EX-3A and developed flows from Basin R. These combined flows will travel within the public drainage easement and routed further downstream towards DP 17. **Design Point 17 (** $Q_5 = 14 \text{ cfs}$ ,  $Q_{100} = 84 \text{ cfs}$ **)** consists of off-site flows from Basin EX-3 north of Poco Road, developed flows from Basin



S and then the previously described DP-16. These combined flows will then be collected by a 36" RCP within the public drainage easement and routed further downstream in the proposed public storm system within the roadway.

**Design Point 18 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 12 \text{ cfs}$ **)** consists of developed flows from Basin U. At this location, a 10' Type R sump inlet will completely collect these flows. **Design Point 19 (** $Q_5 = 1.6 \text{ cfs}$ ,  $Q_{100} = 3 \text{ cfs}$ **)** consists of developed flows from Basin V. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is around the corner and south down Foxglove Field Dr. **Pipe Run 28 (** $Q_5 = 18 \text{ cfs}$ ,  $Q_{100} = 94 \text{ cfs}$ **)** represents the total developed flows within the public 42" RCP storm system at this point.

**Design Point 20 (** $Q_5 = 7 \text{ cfs}$ ,  $Q_{100} = 17 \text{ cfs}$ **)** consists of developed flows from Basin W. At this location, a 10' Type R sump inlet will completely collect these flows. **Design Point 21 (** $Q_5 = 0.5 \text{ cfs}$ ,  $Q_{100} = 1.2 \text{ cfs}$ **)** consists of developed flows from Basin X. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is over the highpoint in the roadway and southwest down Sunlit Prairie Place. **Pipe Run 31 (** $Q_5 = 7 \text{ cfs}$ ,  $Q_{100} = 18 \text{ cfs}$ **)** represents the total developed flows within the public 30" RCP storm system at this point.

**Design Point 22 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 12 \text{ cfs}$ **)** consists of developed flows from Basin Y. At this location, a 10' Type R sump inlet will completely collect these flows. **Design Point 23 (** $Q_5 = 2 \text{ cfs}$ **,**  $Q_{100} = 6 \text{ cfs}$ **)** consists of developed flows from Basin Z. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is due south within the open space tract



towards Briargate Pkwy. **Pipe Run 35 (Q**<sub>5</sub> = 28 cfs,  $Q_{100}$  = 120 cfs) represents the total developed flows within the public 48" RCP storm system at this point.

**Design Point 24 (** $Q_5 = 2 \text{ cfs}$ ,  $Q_{100} = 8 \text{ cfs}$ **)** consists of developed flows from off-site basin OS-2A and Basin AA. At this location, a CDOT Type C sump inlet will completely collect these flows. **Design Point 25 (** $Q_5 = 1 \text{ cfs}$ ,  $Q_{100} = 6 \text{ cfs}$ **)** consists of developed flows from off-site Basin OS-2B and Basin BB. At this location, another CDOT Type C inlet will completely collect these flows. The collected flows from these sump conditions will then be routed further downstream within a private storm system within a drainage easement at the rear of these lots. With a max. 100-yr. ponding depth of 12", the emergency overflow route is due south within the associated drainage easements and then ultimate into Briargate Pkwy. **Pipe Run 37 (** $Q_5 = 3 \text{ cfs}$ ,  $Q_{100} = 13 \text{ cfs}$ **)** represents the total developed flows within the private 24" RCP storm system at this point.

**Design Point 26 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 7 \text{ cfs}$ **)** consists of developed flows from Basin EE. At this location, a 5' Type R sump inlet will completely collect these flows. **Design Point 27 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 11 \text{ cfs}$ **)** consists of developed flows from Basin FF. At this location, a 10' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is over the highpoint to the west and then west in Briargate Pkwy. **Pipe Run 41 (** $Q_5 = 7 \text{ cfs}$ , **Q**<sub>100</sub> = **16 cfs)** represents the total developed flows within the public 24" RCP storm system at this point.

**Design Point 28 (** $Q_5 = 2 \text{ cfs}$ ,  $Q_{100} = 6 \text{ cfs}$ **)** consists of developed flows from Basin CC. At this location, a 5' Type R sump inlet will completely collect these flows. **Design Point 29 (** $Q_5 = 2 \text{ cfs}$ ,  $Q_{100} = 4 \text{ cfs}$ **)** consists of developed flows from Basin DD. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is over the highpoint in the roadway and



south down Dines Blvd. **Pipe Run 45 (Q**<sub>5</sub> = **37 cfs, Q**<sub>100</sub> = **145 cfs)** represents the total developed flows within the public 48" RCP storm system at this point.

**Design Point 30 (** $Q_5 = 2 \text{ cfs}$ ,  $Q_{100} = 5 \text{ cfs}$ **)** consists of developed flows from Basin JJ. At this location, a 5' Type R sump inlet will completely collect these flows. The collected flows from this sump condition within the cul-de-sac will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is over the curb and south down Dines Blvd. **Pipe Run 47 (** $Q_5 = 39 \text{ cfs}$ ,  $Q_{100} = 147 \text{ cfs}$ **)** represents the total developed flows within the public 48" RCP storm system at this point.

**Design Point 31 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 9 \text{ cfs}$ **)** consists of developed flows from Basin KK. At this location, a 10' Type R at-grade inlet will collect a portion of the flows. These collected flows will be routed further downstream via an 18" RCP. The bypass flows will then travel to DP-32. **Design Point 32 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 10 \text{ cfs}$ **)** consists of developed flows from Basin LL and flow-by from DP-31. At this location, a 10' Type R at-grade inlet will collect a portion of the flows. These collected flows will be routed further downstream via an 18" RCP. The bypass flows from Basin LL and flow-by from DP-31. At this location, a 10' Type R at-grade inlet will collect a portion of the flows. These collected flows will be routed further downstream via an 18" RCP. The bypass flows will then travel to DP-34. **Pipe Run 51 (** $Q_5 = 44 \text{ cfs}$ ,  $Q_{100} = 156 \text{ cfs}$ **)** represents the total developed flows within the public 48" RCP storm system at this point.

**Design Point 33 (** $Q_5 = 6 \text{ cfs}$ ,  $Q_{100} = 11 \text{ cfs}$ **)** consists of developed flows from Basin NN. At this location, a 10' Type R sump inlet will completely collect these flows. **Design Point 34 (** $Q_5 = 5 \text{ cfs}$ ,  $Q_{100} = 13 \text{ cfs}$ **)** consists of developed flows from Basin MM and the flow-by from DP-32. At this location, a 10' Type R sump inlet will completely collect these flows. The collected flows from this sump condition will then be routed further downstream within a public storm system within the roadway. With a max. 100-yr. ponding depth of 12", the emergency overflow route is over the highpoint to the southeast and then southwest down Vollmer Road. **Pipe Run 56 (** $Q_5 = 56 \text{ cfs}$ , **Q**<sub>100</sub> = **185 cfs)** represents the total developed flows within the public 54" RCP storm system at this point.



**Design Point 35 (** $Q_5 = 8 cfs$ ,  $Q_{100} = 18 cfs$ **)** consists of approximately half of Basin II. Exact tributary area will be better defined with the FDR. At this location, a proposed 30" RCP storm stub will be provided to handle a portion of the future PUD development. **Design Point 36 (** $Q_5 = 8 cfs$ ,  $Q_{100} = 18 cfs$ **)** consists of the other half of Basin II. Again, the exact tributary area will be better defined with the FDR. At this location, a proposed 30" RCP storm stub the provided to handle the provided to h

**Design Point 37 (** $Q_5 = 14 \text{ cfs}$ ,  $Q_{100} = 30 \text{ cfs}$ **)** consists of the anticipated Basin O. Exact tributary area will be better defined with the FDR. At this location, a proposed 30" RCP storm stub will be provided to handle this portion of the future PUD development. **Design Point 38 (** $Q_5 = 9 \text{ cfs}$ ,  $Q_{100} = 21 \text{ cfs}$ **)** consists of the anticipated Basin P. Exact tributary area will be better defined with the FDR. At this location, a proposed 30" RCP storm stub will be provided to handle the future Commercial development. **Design Point 39 (** $Q_5 = 5 \text{ cfs}$ ,  $Q_{100} = 11 \text{ cfs}$ **)** consists of developed flows from Basin GG. At this location, a 15' Type R at-grade inlet will collect a portion of the flows. These collected flows will be routed further downstream via an 18" RCP. The bypass flows will then travel south in Vollmer Road. **Design Point 40 (** $Q_5 = 5 \text{ cfs}$ ,  $Q_{100} = 9 \text{ cfs}$ **)** consists of developed flows will then travel around the corner down Vollmer Road. **Pipe Run 62 (** $Q_5 = 28 \text{ cfs}$ ,  $Q_{100} = 61 \text{ cfs}$ **)** represents the total developed flows within the public 36" RCP storm system at this point.

**Design Point 41 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 8 \text{ cfs}$ **)** consists of developed flows from Basin OO. At this location, a 10' Type R sump inlet will completely collect these flows. The collected flows from this sump condition within the cul-de-sac will then be routed further downstream within a public storm system within the park tract. With a max. 100-yr. ponding depth of 9", the emergency overflow route is over the curb and south within the park. **Design Point 42 (** $Q_5 = 4 \text{ cfs}$ ,  $Q_{100} = 15 \text{ cfs}$ **)** consists of developed flows from off-site basin OS-2C and Basins PP, UU and TT. At this



location, a CDOT Type C sump inlet will completely collect these flows. **Design Point 43 (** $Q_5 = 1$  **cfs,**  $Q_{100} = 5$  **cfs)** consists of developed flows from off-site Basin OS-1A and Basin QQ. At this location, another CDOT Type C inlet will completely collect these flows. The collected flows from these sump conditions will then be routed further downstream within a private storm system within a drainage easement at the rear of these lots. With a max. 100-yr. ponding depth of 12", the emergency overflow route is due south within the associated drainage easements and then ultimate into the proposed pond. **Pipe Run 69 (** $Q_5 = 8$  **cfs,**  $Q_{100} = 26$  **cfs)** represents the total westerly developed flows discharging into the proposed FSD Pond 1. This outfall will include the design of the required concrete forebay. However, the final design for these facilities will be provided with the FDR. **Pipe Run 65 (** $Q_5 = 84$  **cfs,**  $Q_{100} = 244$  **cfs**) represents the total easterly developed flows discharging into the proposed FSD Pond 1. This outfall will include the design of the required concrete forebay. However, the final design for these facilities will be provided with the FDR. **Pipe Run 65 (** $Q_5 = 84$  **cfs,**  $Q_{100} = 244$  **cfs**) represents the total easterly developed flows discharging into the proposed FSD Pond 1. This outfall will include the design of the required concrete forebay. However, the final design for these facilities will also be provided with the FDR. **The following shows a comparison of the total developed flows tributary and released from the proposed FSD Pond 1 at Design Point 44, including Basin RR:** 

Proposed Developed Flows:	Flows per Jaynes MDDP:	
Q <sub>5</sub> = 93 cfs, Q <sub>100</sub> = 279 cfs	Q <sub>5</sub> = 69 cfs, Q <sub>100</sub> = 222 cfs	

(See Appendix for Area Runoff/effective imperviousness tributary to this off-site existing facility)

Proposed Release:			
Q5 = 16.4 cfs, Q100 = 126.3 cfs	5		

Prop. Release per Homestead North Fil. 1 FDR:  $Q_5 = 18.9 \text{ cfs}, Q_{100} = 133.7 \text{ cfs}$ 



#### **DETENTION FACILITIES / STORMWATER QUALITY**

Final design of this recommended facility that include planning for water quality management of storm water runoff features will be designed during final design and construction of the proposed improvements. Storm water quality measures will be utilized in order to reduce the amount of sediment, debris and pollutants that are allowed to enter Sand Creek. These features include but are not limited to Full Spectrum Extended Detention Basin Sedimentation Facilities, Sand Filter Basins, and Rain Gardens. Site Planning and design techniques should limit impervious area, minimize directly impervious area, lengthen time of travel and increase infiltration in order to decrease the rate and volume of stormwater runoff. Facilities that require detention will provide an Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage volume that will release the more frequent storms at a slower rate to help minimize the effects of development of the Jaynes Property. These measures will be taken into consideration upon final design of the individual detention facilities as well as the development of the individual land uses within the Jaynes Property.

The proposed Pond 1 is intended to provide detention and stormwater quality for nearly the entire western portion of the property, including the off-site basin EX-3 north of Poco Road and excluding Basin L (1.3 Ac.) and any area that is tributary and being treated by the off-site Pond C within the Sterling Ranch Development as described above. The total anticipated developed flows entering this facility are as follows:

(See Appendix for MHFD-Detention pond design sheets):



Pond 1 (Full Spectrum EDB)Total Tributary Acreage:144.43 ac.Total Site Impervious tributary to Pond 1:32.6%1.918 Ac.-ft. WQCV required2.946 Ac.-ft. EURV required with 4:1 max. slopes5.242 Ac.-ft. 100-yr. required storage10.106 Ac.-ft. required total11.262 Ac.-ft. providedTotal Peak In-flow:Q5 = 93 cfs, Q100 = 279 cfsPond Peak Design Release:Q5 = 16.4 cfs, Q100 = 126.3 cfsRelease per Homestead at Sterling Ranch Filing 1 (DP-12):Q5 = 18.9 cfs, Q100 = 133.7 cfs

This proposed detention facility is to be private with maintenance by the PrairieRidge Metro District with all drainage facilities within the public Right of Way to be public with maintenance by El Paso County. As mentioned previously in this report, just outside of the very southwest corner of the property, within the Vollmer Road ROW exists a (Sterling Ranch designed) 4'x14' modified CDOT Type D inlet with a 54" RCP storm outfall. This facility was planned to accept and convey treated developed flows per the "Homestead at Sterling Ranch Filing No. 1" Final Drainage Report and CDs, prepared by M&S Civil Consultants, Inc. approved Nov. 2018. It is anticipated that the proposed Pond 1 storm outfall will connect directly to this facility. These flows are then routed via the existing 54" RCP storm system (maintained by Sterling Ranch Metro. District) directly to Sand Creek.

> ADDED Provide the EPC Project Number

## DRAINAGE 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. Individual basin design used for detention/SWQ basin



sizing was calculated using the Rational Method. Runoff Coefficients are based on the imperviousness of the particular land use and the hydrologic soil type in accordance with Table 6-6. The average rainfall intensity, by recurrence interval found in the Intensity-Duration-Frequency (IDF) curves in Figure 6-5. Mile High Flood District (MHFD)-Detention spreadsheet Ver. 4.05 used for Preliminary Detention/SWQ design. (See Appendix)

The City of Colorado Springs/El Paso County DCM requires the Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainage ways, and implementing long-term source controls. The Four Step Process pertains to management of smaller, frequently occurring storm events, as opposed to larger storms for which drainage and flood control infrastructure are sized. Implementation of these four steps helps to achieve storm water permit requirements.

This site adheres to this **Four Step Process** as follows:

- Employ Runoff Reduction Practices: Proposed urban lot impervious areas (roof tops, patios, etc.) will sheet flow across landscaped yards and through open space areas to slow runoff and increase time of concentration prior to being conveyed to the proposed public streets or detention facilities. This will minimize directly connected impervious areas within the project site.
- 2. Stabilize Drainageways: The two major natural drainageways on-site within basins A, G and J will be overlot graded and urbanized with the proposed residential development. Within this development, urban street sections will be constructed along with buried storm systems to handle the developed runoff. The larger residential lots towards the north portion of these basins will be planned such to adequately accept these off-site flows within their natural corridors. The final drainage report(s) will better detail these capture methods and any required improvements to do so along with necessary hydraulic



analysis and emergency overflow routing methods per County standards. After developed flows utilize the runoff reduction practices through the front and rear yards, developed flows will travel via curb and gutter within the public streets and eventually public storm systems. These collected flows are then routed directly to the proposed extended detention basin (full-spectrum facility).

- 3. Provide Water Quality Capture Volume (WQCV): Runoff from this development will be treated through capture and slow release of the WQCV and excess urban runoff volume (EURV) in the proposed Full-Spectrum permanent Extended Detention Basin designed per current El Paso County drainage criteria.
  Are any areas anticipated to be excluded? The drainage tables indicate the large lot exclusion may be used. List all anticipated exclusions.
- 4. Consider need for Industrial and Commercial BMPs: No industrial uses are proposed within this development. However, a site-specific storm water quality and erosion control plan and narrative will be submitted along with the grading and erosion control plan. Details such as site-specific sediment and erosion control construction BMP's as well as temporary and permanent BMP's for commercial use will be detailed in this plan and narrative to protect receiving waters. Multiple temporary BMP's are anticipated based on specific phasing of the overall development. BMP's will be constructed and maintained as the development has been graded and erosion control methods employed.

## **FLOODPLAIN STATEMENT**

No portion of this site is located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Numbers 08041C0533G and 0841C0535G, effective date, December 7, 2018 (See Appendix).



#### **DRAINAGE AND BRIDGE FEES**

Any applicable fees shall be provided prior to final plat recordation of any development within this site. These fees will be calculated in the FDR(s) for County review and approval.

#### SUMMARY

The proposed PrairieRidge property development is within the Upper reach of the Sand Creek Drainage Basin. Recommendations are made within this report concerning necessary improvements that may be required as a result of development of this property. The points of storm water release from the proposed site are required to be at or below the calculated historic flow quantities. This development does not impact any downstream facility or property to an extent greater than that which currently exists in the 'historic' conditions. All drainage facilities within this report were sized according to the Drainage Criteria Manuals and the full-spectrum storm water quality requirements. Upon development of the individual parcels within the property, separate Final Drainage Reports will be required to be submitted and approved by El Paso County that details all storm systems, pond design and fee calculation.

PREPARED BY:

**Classic Consulting Engineers & Surveyors, LLC** 

Marc A. Whorton, P.E. Project Manager

maw/1305.10/130510PDR.doc



## 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 Homestead North at Sterling Ranch Filing No. 1", JR Engineering, LLC, dated June 2022
- 7. "Final Drainage Report for Homestead at Sterling Ranch Filing No. 1", M&S Civil Consultants, Inc. dated Nov. 2018
- 8. "MDDP Amendment for Sterling Ranch", JR Engineering, LLC, dated June 2022
- 9. "MDDP for Jaynes Property, Classic Consulting, dated January 18, 2023



APPENDIX



VICINITY MAP



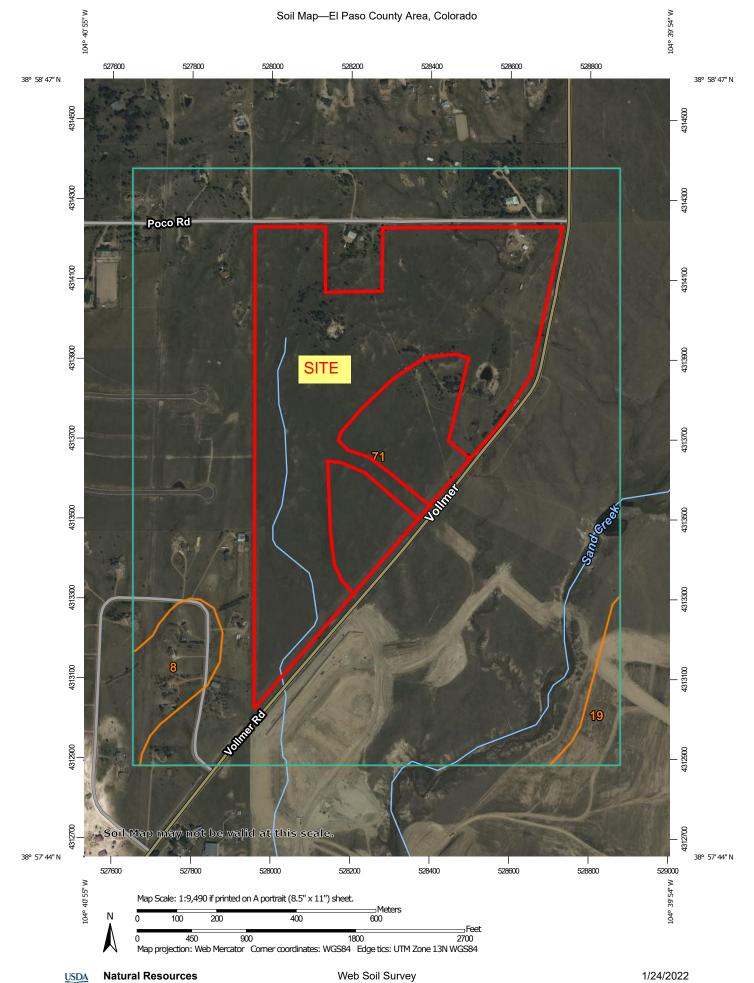


Google Maps

Imagery ©2022 CNES / Airbus, Maxar Technologies, USDA/FPAC/GEO, Map data ©2022 500 ft



SOILS MAP (S.C.S SURVEY)



MAP	LEGEND	MAP INFORMATION	
Area of Interest (AOI)         △       Area of Interest (AOI)         Soils         ○       Soil Map Unit Polygons         △       Soil Map Unit Polygons         ○       Soil Map Unit Polygons         ○       Soil Map Unit Polygons         ○       Soil Map Unit Points         ○       Borrow Pit         ○       Borrow Pit         ○       Clay Spot         ○       Closed Depression         ○       Gravel Pit	<ul> <li>Spoil Area</li> <li>Stony Spot</li> <li>Very Stony Spot</li> <li>Very Stony Spot</li> <li>Wet Spot</li> <li>Other</li> <li>Other</li> <li>Special Line Features</li> </ul> Water Features Streams and Canals Transportation Fransportation Fransportation Interstate Highways	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)	
<ul> <li>Gravelly Spot</li> <li>Landfill</li> <li>Lava Flow</li> <li>Marsh or swamp</li> <li>Mine or Quarry</li> <li>Miscellaneous Water</li> <li>Perennial Water</li> <li>Rock Outcrop</li> <li>Saline Spot</li> <li>Sandy Spot</li> <li>Severely Eroded Spot</li> <li>Sinkhole</li> <li>Slide or Slip</li> <li>Sodic Spot</li> </ul>	<ul> <li>US Routes</li> <li>Major Roads</li> <li>Local Roads</li> </ul> Background Aerial Photography	<ul> <li>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.</li> <li>This product is generated from the USDA-NRCS certified data of the version date(s) listed below.</li> <li>Soil Survey Area: El Paso County Area, Colorado Survey Area Data: Version 19, Aug 31, 2021</li> <li>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</li> <li>Date(s) aerial images were photographed: Aug 19, 2018—Ma 26, 2019</li> <li>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.</li> </ul>	



# Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	13.2	2.9%
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	7.8	1.7%
71	Pring coarse sandy loam, 3 to 8 percent slopes	433.5	95.4%
Totals for Area of Interest		454.5	100.0%



# El Paso County Area, Colorado

## 71—Pring coarse sandy loam, 3 to 8 percent slopes

#### **Map Unit Setting**

National map unit symbol: 369k Elevation: 6,800 to 7,600 feet Farmland classification: Not prime farmland

#### Map Unit Composition

Pring and similar soils: 85 percent Estimates are based on observations, descriptions, and transects of the mapunit.

#### **Description of Pring**

#### Setting

Landform: Hills Landform position (three-dimensional): Side slope Down-slope shape: Linear Across-slope shape: Linear Parent material: Arkosic alluvium derived from sedimentary rock

#### **Typical profile**

A - 0 to 14 inches: coarse sandy loam C - 14 to 60 inches: gravelly sandy loam

#### **Properties and qualities**

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 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: Low (about 6.0 inches)

#### Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 3e Hydrologic Soil Group: B Ecological site: R048AY222CO - Loamy Park Hydric soil rating: No

#### **Minor Components**

#### Pleasant

Percent of map unit: Landform: Depressions Hydric soil rating: Yes Other soils Percent of map unit: Hydric soil rating: No

# **Data Source Information**

Soil Survey Area: El Paso County Area, Colorado Survey Area Data: Version 19, Aug 31, 2021



F.E.M.A. MAP



# NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible 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 Summary 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-foot 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, flood 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 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control 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 NAD83, 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 this 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 ground elevations referenced 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, visit 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 National 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 EI 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 delineations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform 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 on this map represent the hydraulic modeling baselines that match the flood profiles 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 floodplain.

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 community 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 panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact FEMA Map Service Center (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

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

Flooding Source

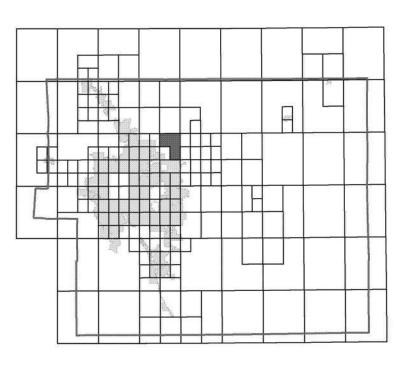
El Paso County Vertical Datum Offset Table Vertical Datum

Offset (ft)

REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY

FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

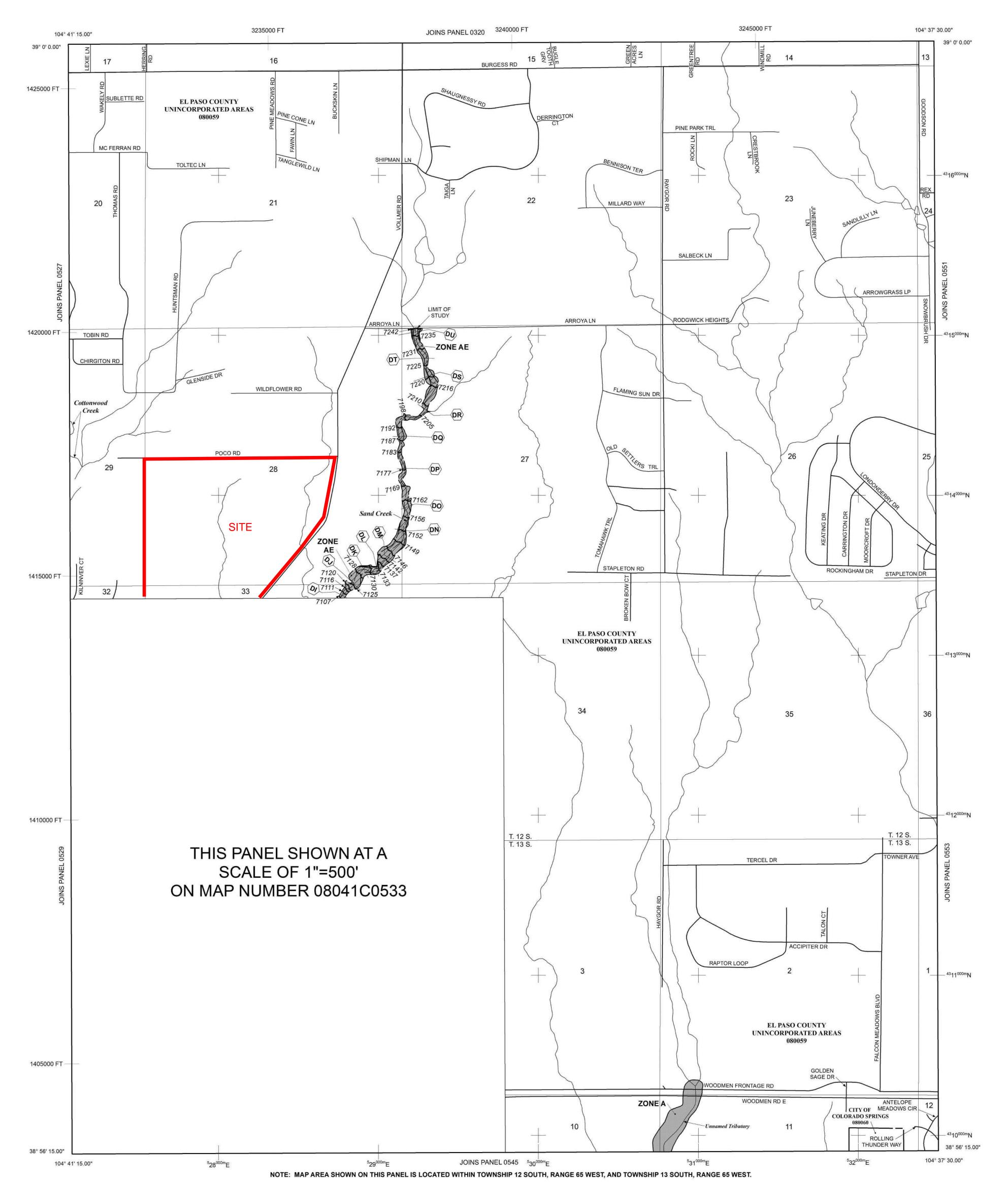
## Panel Location Map



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 (FEMA).



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



	D HAZARD AREAS (SFHAS) SUBJECT TO Y THE 1% ANNUAL CHANCE FLOOD												
that has a 1% chance of being eq	-year flood), also known as the base flood, is the flood ualed or exceeded in any given year. The Special Flood												
Special Flood Hazard include Zone	to flooding by the 1% annual chance flood. Areas of is A, AE, AH, AO, AR, A99, V, and VE. The Base Flood												
ZONE A No Base Flood Elev	ation of the 1% annual chance flood. ations determined.												
ZONE AE Base Flood Elevatio													
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	I. For areas of alluvial fan flooding, velocities also												
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AR indicates that	the former flood control system is being restored to from the 1% annual chance or greater flood.												
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kept free of encroachment so that	stream plus any adjacent floodplain areas that must be at the $1\%$ annual chance flood can be carried without												
substantial increases in flood heigh													
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average depths of	ual chance flood; areas of 1% annual chance flood with less than 1 foot or with drainage areas less than 1 reas protected by levees from 1% annual chance flood.												
OTHER AREAS	eas protected by levees from 176 annual chance hood.												
	o be outside the 0.2% annual chance floodplain.												
	o be outside the 0.2% annual chance floodplain. d hazards are undetermined, but possible.												
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS													
CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.													
Floodplain boundary Floodway boundary Floodway boundary													
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	ion in feet* an Vertical Datum of 1988 (NAVD 88)												
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# NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible 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 Summary 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-foot 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, flood 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 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control 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 NAD83, 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 this 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 ground elevations referenced 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, visit the National Geodetic Survey website a 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 National 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 EI 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 delineations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform 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 on this map represent the hydraulic modeling baselines that match the flood profiles 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 floodplain.

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 community 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 panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact FEMA Map Service Center (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

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

> El Paso County Vertical Datum Offset Table Vertical Datum

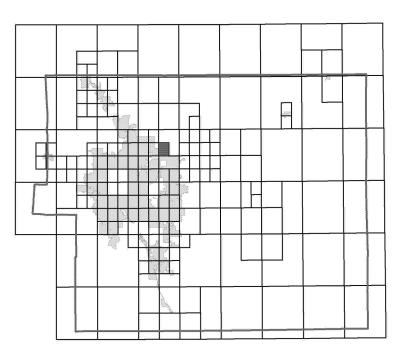
> > Offset (ft

REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY

Flooding Source

FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

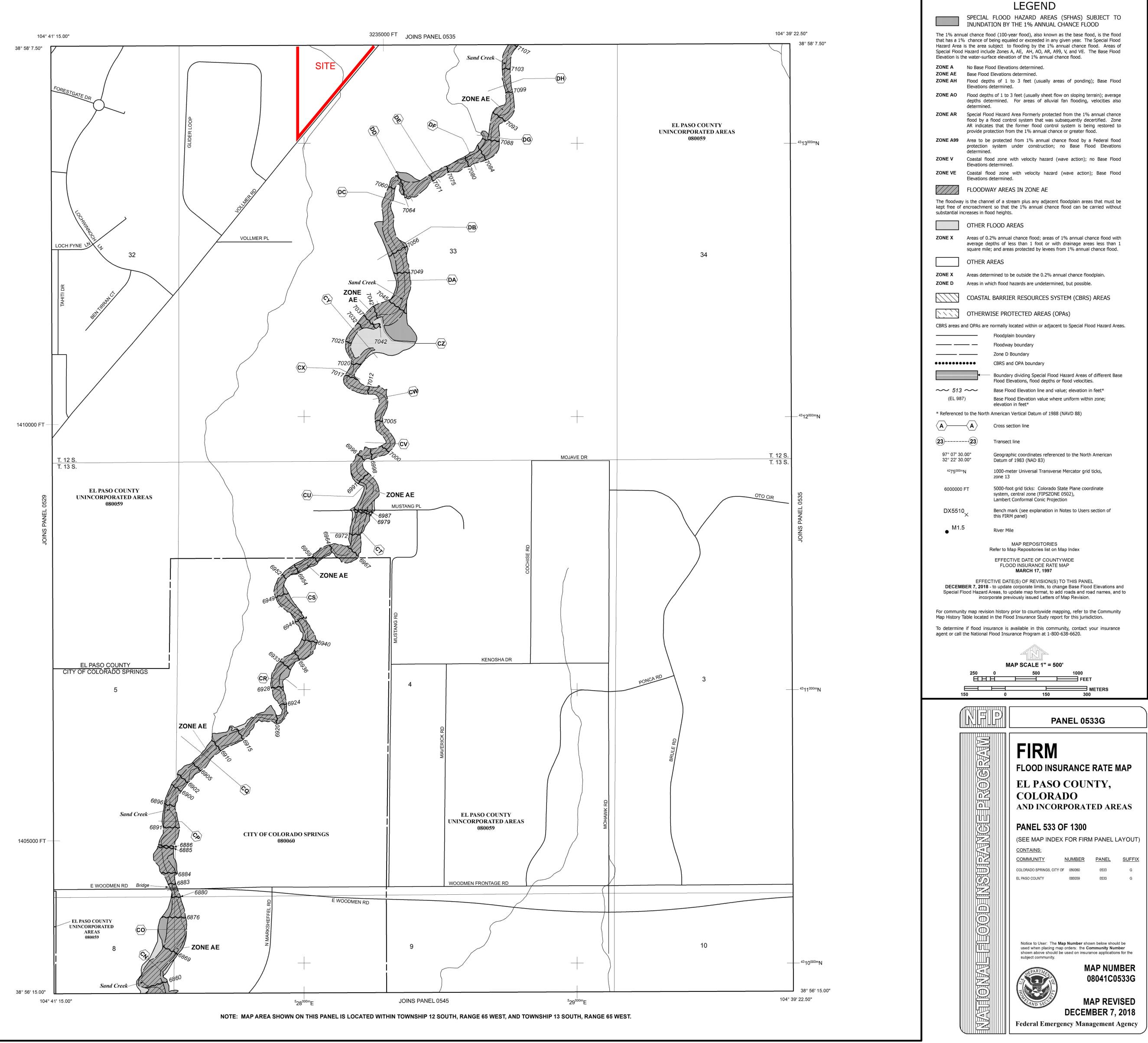
## Panel Location Map



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 (FEMA).



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





WETLANDS JURISDICTIONAL DETERMINATION (JD)



#### DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, ALBUQUERQUE DISTRICT SOUTHERN COLORADO REGULATORY BRANCH 201 WEST 8TH STREET, SUITE 350 PUEBLO, COLORADO 81003

June 30, 2022

**Regulatory Division** 

SUBJECT: Jurisdictional Determination- Action No.SPA-2022-00123

Classic Communities Attn: Loren Moreland 6385 Corporate Dr., Suite 200 Colorado Springs, Colorado 80919 <u>lorenm@classichomes.com</u>

Dear Mr. Moreland:

This letter responds to your request for a jurisdictional determination (JD) for forty (40) wetlands and one man-made pond associated with the *Classic Communities-Jayne's Parcel*, residential development. The approximately 141-acre project site is located near Sand Creek, centered at latitude 38.976682°, longitude -104.668357°, Colorado Springs, El Paso County, Colorado. We have assigned Action No. SPA-2022-00123 to your request. Please reference this number in all future correspondence concerning the site.

Based on the information provided, we concur with your aquatic resource delineation for the site, as depicted on the enclosed drawing labeled, *SPA-2022-00123, Figure 1*, prepared by Core Consultants, Inc. (enclosure 1). We have determined that the site does not contain waters of the United States that are subject to regulation under Section 404 of the Clean Water Act. The approximately 9.66-acres of aquatic resources identified as *Wetlands WT-A1* through *WT-A40* and one man-made pond, on the above drawing are intrastate isolated aquatic resources with no apparent interstate or foreign commerce connection. As such, these aquatic resources are not regulated by the U.S. Army Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Federal Clean Water Act.

We are enclosing a copy of the *Approved Jurisdictional Determination Form* for your site (enclosure 2). A copy of this JD is also available at <u>http://www.spa.usace.army.mil/reg/JD</u>. This approved JD is valid for five years unless new information warrants revision of the determination before the expiration date.

You may accept or appeal this approved JD or provide new information in accordance with the attached Notification of Administration Appeal Options and Process and Request for Appeal (NAAOP-RFA) (enclosure 3). If you elect to appeal this approved JD, you must complete Section II of the form and return it to the Army Engineer Division, South Pacific, CESPD-PDS-O, Attn: Tom Cavanaugh, Administrative

Appeal Review Officer, P.O. Box 36023, 450 Golden Gate Ave, San Francisco, CA 94102 within 60 days of the date of this notice. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

If you have any questions, please contact Senior Project Manager Kyle Zibung by email at <u>kyle.d.zibung@usace.army.mil</u>, or telephone at (651) 290-5877. For program information or to complete our Customer Survey, visit our website at <u>https://www.spa.usace.army.mil/Missions/Regulatory-Program-and-Permits/.</u>

Sincerely,

Kyle 38

for Kara Hellige Chief, Southern Colorado Branch

Enclosures

cc:

Natalie Graves, Core Consultants, Inc. (ngraves@liveyourcore.com)



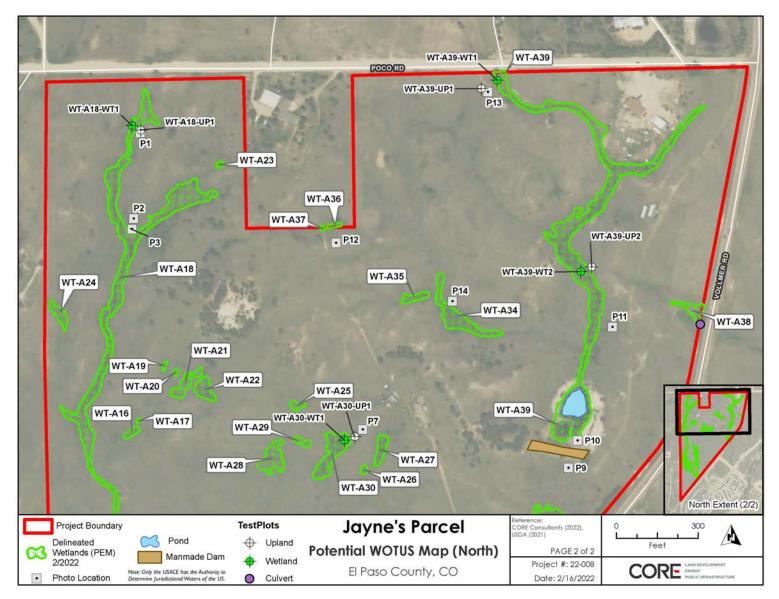


Figure 4.4 Potential WOTUS Location Map (North)



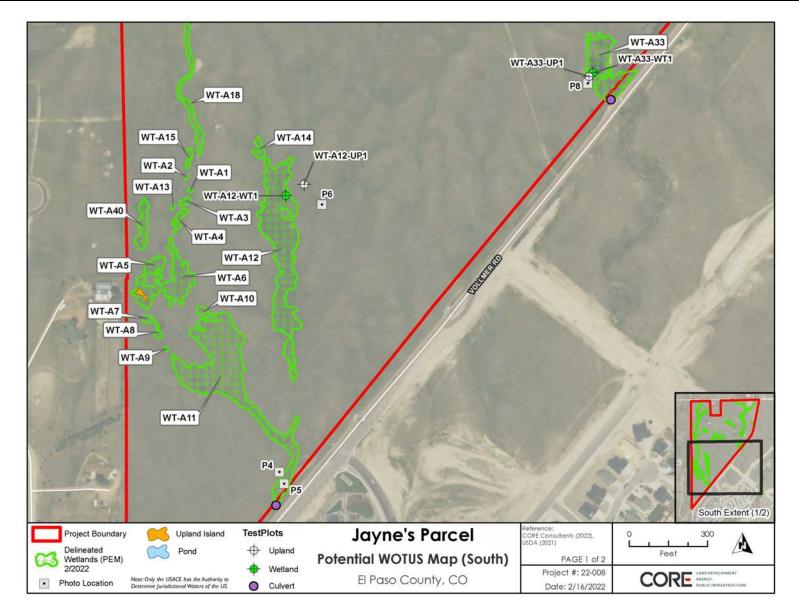


Figure 4.4 Potential WOTUS Location Map (South)

#### APPROVED JURISDICTIONAL DETERMINATION FORM U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

### SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): June 30, 2022

**B.** ST PAUL, MN DISTRICT OFFICE, FILE NAME, AND NUMBER: SPA-2022-00123, Classic Communities-Jayne's Parcel AJD

#### C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Colorado County/parish/borough: El Paso City: Colorado Springs

Center coordinates of site (lat/long in degree decimal format): Lat. 38.976682° N, Long. -104.668357° W.

Universal Transverse Mercator: 13

Name of nearest waterbody: Sand Creek

Name of watershed or Hydrologic Unit Code (HUC): 11020003-Fountain

Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

#### D. <u>REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):</u>

Office (Desk) Determination. Date: June 2, 2022

Field Determination. Date(s):

#### <u>SECTION II: SUMMARY OF FINDINGS</u> A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There are no "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area.

#### B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There are no"waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area.

- 1. Waters of the U.S.: N/A
- 2. Non-regulated waters/wetlands (check if applicable):<sup>1</sup>

Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not  $\boxtimes$ jurisdictional. Explain: The review area for this determination is comprised of 40 individual Wetlands (identified as WT A1 through WT-A40) totaling 9.51 acres and one man-made pond totaling 0.15 acre located on the approximately 141acre tract. Based on a review of the National Hydrography Dataset (NHD) the nearest mapped potential relatively permanant water (RPW) is Sand Creek located approximately 1,500 feet southeast of the review area. The National Wetland Inventory (NWI) and NHD shows mapped wetland drainages with two mapped ephemeral streams in the eastern and western portion of the review area, however, the February 2022 Core Consultants, Inc., wetland delineation report (Core Report) did not find any defined bed/banks nor ordinary high water mark indicators within these two mapped features. The Core Report determined the mapping layers to be inaccurate and best characterized both features as multiple depressional wetlands seperated by upland swales. The upland swales sever a surface connection between the wetlands, pond, and Sand Creek. The Core Report notes that a culvert is present under Vollmer Road in the eastern portion of the review area near WT-A38, however, the outlet channel is comprised of a meandering upland swale with no observed surface connection to Sand Creek. Much of the land south of the JD review area has been previously graded for residential development resulting in altered surface hydrology patterns. Due to their small size and/or disturbed characteristics, Wetlands WT-A1 through WT-A40 and the man-made pond provide limited habitat functions to surrounding areas and exhibit tenuous ecological connections to nearby surface waters. Based on this information, the Corps has determined that Wetlands WT-A1 through WT-A40 and the man-made pond are isolated features with no surface or shallow subsurface hydrologic connection or ecological connection to a RPW or TNW. Wetlands WT-A1 through WT-A40 and the man-made pond do not border, neighbor, nor are contiguous with another

water of the U.S. Wetlands WT-A1 through WT-A40 and the man-made pond are not seperated from other WOTUS by man-made dikes, barriers, or berms. Wetlands WT-A1 through WT-A40 and the man-made pond do not support a link to interstate or foreign commerce; they are not known to be used by interstate or foreign travelers for recreation or

<sup>&</sup>lt;sup>1</sup> Supporting documentation is presented in Section III.F.

other purposes; They do not produce fish or shellfish that could be taken and sold in interstate or foreign commerce; and they are not known to be used for industrial purposes by industries in interstate commerce. Therefore, the Corps has determined that Wetlands WT-A1 through WT-A40 and the man-made pond are isolated and therfore not regulated by the Corps under Section 404 of the CWA.

#### SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs: N/A

- B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY): N/A
- C. SIGNIFICANT NEXUS DETERMINATION: N/A
- D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY): N/A
- E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY): N/A

#### F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.

Prior to the Jan 2001 Supreme Court decision in "SWANCC," the review area would have been regulated based <u>solely</u> on the "Migratory Bird Rule" (MBR).

Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:

Other (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the <u>sole</u> potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

Non-wetland waters (i.e., rivers, streams): linear feet width (ft).

 $\boxtimes$  Lakes/ponds: 0.15 acres.

Other non-wetland waters: acres. List type of aquatic resource:

Wetlands: 9.51 acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).

Lakes/ponds: acres.

- Other non-wetland waters: acres. List type of aquatic resource:
- Wetlands: acres.

#### SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: February 2022 Core Consultants, Inc.

#### Wetland Delineation Report

Data sheets prepared/submitted by or on behalf of the applicant/consultant.

 $\boxtimes$  Office concurs with data sheets/delineation report.

Office does not concur with data sheets/delineation report.

Data sheets prepared by the Corps:

- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:

USGS NHD data.

USGS 8 and 12 digit HUC maps.

U.S. Geological Survey map(s). Cite scale & quad name: 1:24K Falcon NW

USDA Natural Resources Conservation Service Soil Survey. Citation: El Paso County Soil Survey

National wetlands inventory map(s). Cite name: USFWS National Wetland Inventory

State/Local wetland inventory map(s):

- FEMA/FIRM maps:
  - 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)

Photographs: Aerial (Name & Date):2020, 2018, 2017, 2015, 2013, 2010 2008, 2006, 2005, 2000, 1994 or Other (Name & Date):
 Previous determination(s). File no. and date of response letter:
 Applicable/supporting case law:
 Applicable/supporting scientific literature:
 Other information (please specify):

#### **B. ADDITIONAL COMMENTS TO SUPPORT JD:**

## NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in	REQUEST FOR APPEAL												
INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)         A           PROFFERED PERMIT (Standard Permit or Letter of permission)         B           PERMIT DENIAL         C           →         APPROVED JURISDICTIONAL DETERMINATION         D           PRELIMINARY JURISDICTIONAL DETERMINATION         E           SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision.           Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33           CFR Part 331.           A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.           •         ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit thaving determine	••	File No.: SPA-2022-00123	Date: June 30, 2022										
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- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer (address on reverse). This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

## SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

**REASONS FOR APPEAL OR OBJECTIONS**: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

needed to clarify the administrative record. Neither the appellant record. However, you may provide additional information to clarify	al information that the review officer has determined is nor the Corps may add new information or analyses to the										
record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record. <b>POINT OF CONTACT FOR QUESTIONS OR INFORMATION:</b> If you have questions regarding this decision and/or the appeal process you may contact: Kyle Zibung U.S. Army Corps of Engineers 201 West 8th Street, Suite 350 Pueblo, Colorado 81003 Phone: 651-290-5877 How and the supplemental information that the review officer V.S. Army Corps of Engineers South Pacific Division P.O. Box 36023, 450 Golden Gate Ave											
FOINT OF CONTACT FOR QUESTIONS OR INFORM	MATION.										
If you have questions regarding this decision and/or the appeal	If you only have questions regarding the appeal process you may										
	Thomas J. Cavanaugh										
	0										
Email: kyle.d.zibung@usace.army.mil	San Francisco, California 94103-1399										
	Phone: 415-503-6574, FAX 415-503-6646)										
	Email: Thomas.J.Cavanaugh@usace.army.mil										
RIGHT OF ENTRY: Your signature below grants the right of entr	y to Corps of Engineers personnel, and any government										
consultants, to conduct investigations of the project site during th											

day notice of any site investigation and will have the opportunity	to participate in all site investiga	ations.
	Date:	Telephone number:
Signature of appellant or agent.		

SPD version revised December17, 2010

HYDROLOGIC / STORMWATER QUALITY CALCULATIONS



JOB NAME:	PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN
JOB NUMBER:	1305.10
DATE:	12/08/23
CALCULATED BY:	MAW

			FI	NAL DRA	INAGE F	<u>REPORT ~</u>	BASIN	RUNOFF	COEFFICI	ENT SUMM	IARY					1
		DEVELC	DEVELOPED AREA/IMPERVIOUS AREA					LANDSCAPE/UNDEVELOPED AREAS						IMPERVIOUSNESS		
BASIN	TOTAL AREA (AC)	AREA (AC)	C(2)	C(5)	C(100)	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(2)	CA(5)	CA(100)	%
EX-A	0.78	0.00	0.03	0.09	0.36	0.78	0.03	0.09	0.36	0.03	0.09	0.36	0.02	0.07	0.28	2%
EX-B	2.80	0.00	0.03	0.09	0.36	2.80	0.03	0.09	0.36	0.03	0.09	0.36	0.08	0.25	1.01	2%
EX-C	41.40	0.00	0.03	0.09	0.36	41.40	0.03	0.09	0.36	0.03	0.09	0.36	1.24	3.73	14.90	2%
EX-D	1.30	0.00	0.03	0.09	0.36	1.30	0.03	0.09	0.36	0.03	0.09	0.36	0.04	0.12	0.47	2%
EX-E	72.40	0.00	0.03	0.09	0.36	72.40	0.03	0.09	0.36	0.03	0.09	0.36	2.17	6.52	26.06	2%
EX-F	8.70	0.00	0.03	0.09	0.36	8.70	0.03	0.09	0.36	0.03	0.09	0.36	0.26	0.78	3.13	2%
EX-G	8.30	0.00	0.03	0.09	0.36	8.30	0.03	0.09	0.36	0.03	0.09	0.36	0.25	0.75	2.99	2%
EX-H	6.50	0.00	0.03	0.09	0.36	6.50	0.03	0.09	0.36	0.03	0.09	0.36	0.20	0.59	2.34	2%
OS-1	2.00	2.00	0.06	0.13	0.40	0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.12	0.26	0.80	10%
OS-2	5.30	5.30	0.06	0.13	0.40	0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.32	0.69	2.12	10%
EX-3	44.30	44.30	0.04	0.11	0.38	0.00	0.02	0.08	0.35	0.04	0.11	0.38	1.77	4.65	16.61	5%
EX-4A	77.00	77.00	0.04	0.11	0.38	0.00	0.02	0.08	0.35	0.04	0.11	0.38	3.08	8.09	28.88	5%
EX-4B	70.00	70.00	0.04	0.11	0.38	0.00	0.02	0.08	0.35	0.04	0.11	0.38	2.80	7.35	26.25	5%

Job Nami Job Num		PRAIRIEK 1305.10	RIDGE FIL	ING NC	). 1 PRI	ELIMIN	ARY P	LAN					Table 6	cient, C	, v				
DATE:		12/08/23											Type	e of Lan	d Surfac	e		C <sub>v</sub>	
CALC'D B	Y:	MAW										Heav	y meadow		u Sui iac		_	2.5	
	Retur											Tillag	ge/field		. 1	. 10		5	
	Period 2	1 Depth 1.19											p (not bu	ried)*	$t_c = \frac{1}{18}$			6.5	
	5	1.50		(	0.395(1	$(1-C_5)$	$\sqrt{L}$	T	z = c	0.5			Short pasture and lawns						
	10	1.75		$t_i = -$	,	S <sup>0.33</sup>		,	- C <sub>v</sub> ,	W	IC-L/V		y bare gr				_	10	
	25	2.00									ed water		1	1	-	15			
	50	2.25			Paved areas and shallow paved swales For buried riprap, select C <sub>v</sub> value based on type of ver													20 ve cover.	
	100	2.52	FII	NAL D	RAIN	AGE R	EPOF	RT ~ Β	ASIN	RUNC	FF SL			•			Ū		
		WEIGHTEI		INAL DRAINAGE REPOR					-	ANNEL		Тс		NTENSIT	ſY	тот	AL FLO	ows	
BASIN	CA(2)	CA(5)							Velocity		TOTAL	I(2)	I(5)	I(100)	Q(2)	Q(5)	Q(100)		
2.1011	0/ (_)			0(0)	(ft)	(ft)	(min)	(ft)	(%)	(fps)	(min)	(min)	(in/hr)	(in/hr)	(in/hr)	(cfs)	(cfs)	(cfs)	
EX-A	0.02	0.07	0.28	0.09	240	9	18.3					18.3	2.58	3.23	5.41	0.1	0.2	2	
EX-B	0.08	0.25	1.01	0.09	300	24	15.9	120	2.0%	1.0	2.0	17.9	2.60	3.25	5.46	0.2	0.8	6	
EX-C	1.24	3.73	14.90	0.09	300	18	17.5	1300	2.9%	1.7	12.7	30.2	1.98	2.47	4.15	2	9	62	
EX-D	0.04	0.12	0.47	0.09	225	10	16.7					16.7	2.68	3.36	5.64	0.1	0.4	3	
EX-E	2.17	6.52	26.06	0.09	280	20	15.9	3400	2.5%	1.6	35.8	51.8	1.34	1.66	2.79	3	11	73	
EX-F	0.26	0.78	3.13	0.09	300	12	20.0	560	2.0%	1.4	6.6	26.6	2.13	2.66	4.47	1	2	14	
EX-G	0.25	0.75	2.99	0.09	300	10	21.2	420	2.0%	1.4	4.9	26.2	2.15	2.69	4.51	1	2	13	
EX-H	0.20	0.59	2.34	0.09	300	10	21.2	800	2.0%	1.4	9.4	30.7	1.96	2.45	4.11	0.4	1.4	10	
OS-1	0.12	0.26	0.80	0.08	300	10	21.4					21.4	2.39	2.99	5.01	0.3	0.8	4	
OS-2	0.32	0.69	2.12	0.08	300	12	20.2					20.2	2.46	3.08	5.16	1	2	11	
EX-3	1.77	4.65	16.61	0.08	300	10	21.4	650	2.0%	1.4	7.7	29.1	2.02	2.53	4.24	4	12	70	
EX-4A	3.08	8.09	28.88	0.08	300	9	22.2	2400	2.0%	1.4	28.3	50.5	1.37	1.70	2.85	4	14	82	
EX-4B	2.80	7.35	26.25	0.08	300	10	21.4	3500	1.8%	1.3	43.5	64.9	1.07	1.32	2.22	3	10	58	

JOB NAME:	PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN
JOB NUMBER:	1305.10
DATE:	12/08/23
CALCULATED BY:	MAW

FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY
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					Inten	sity	FI	ow		
Design Point(s)	- I Contributing Basins		Equivalent Equivalent CA(5) CA(100)		l(5)	l(100)	Q(5)	Q(100)	Inlet Size	
E1	EX-4A	8.09	28.88	50.5	1.70	2.85	14	82	EX. 24" CMP CULVERT	
E2	EX-4B	7.35	26.25	64.9	1.32	2.22	10	58	EX. STOCK OFF- SITE POND	
E3	EX-A, EX-B	0.32	1.29	18.3	3.23	5.41	1	7	TYPE D CDOT INLET W/ 24" RCP	
E4	EX-4A, EX-4B, EX-C	19.16	70.03	64.9	1.32	2.22	25	155	PLANNED 48" RCP W/ MH AND GRATE	
E5	EX-3	4.65	16.61	29.1	2.53	4.24	12	70	EX. 24" CMP CULVERT	
E6	EX-G	0.75	2.99	26.2	2.69	4.51	2	13	TYPE D CDOT INLET W/ 24" RCP	
E7	EX-H	0.59	2.34	30.7	2.45	4.11	1	10	TYPE C CDOT INLET W/ 18" RCP	
E8	EX-3, EX-E, OS-2	11.86	44.80	51.8	1.66	2.79	20	125	EX. 24" CMP CULVERT	
E9	DP-E8, EX-F, OS-1	12.90	48.73	55.8	1.55	2.60	20	127	MODIFIED 4'X14' TYPE D CDOT INLET W/ 54" RCP	
E10	EX-D	0.12	0.47	16.7	3.36	5.64	0.4	3	SHEET FLOW TO NATURAL RAVINE	

JOB NAME:	PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN	
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 JOB NUMBER:
 FRAIRIE

 JOB NUMBER:
 1305.10

 DATE:
 12/08/23

 CALCULATED BY:
 MAW

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BASIN RUNOFF COEFFICIENT SUMMARY

			C VAL	UE DCM TAB	BLE 6-6				C VAI	LUE DCM TAB	LE 6-6			WEIGI	HTED "C" VA	LUE		WEIGHTED IMP.		
BASIN	TOTAL AREA (AC)	LAND USE	PERCENT IMP.	AREA (AC)	C(2)	C(5)	C(100)	LAND USE	PERCENT IMP.	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(2)	CA(5)	CA(100)	PERCENT
EX-3	41.80	RES. 5 AC,	5.0%	41.80	0.04	0.11	0.38			0.00	0.02	0.08	0.35	0.04	0.11	0.38	1.67	4.39	15.68	5.0%
EX-3A	2.50	RES. 5 AC.	5.0%	2.50	0.04	0.11	0.38			0.00	0.02	0.08	0.35	0.04	0.11	0.38	0.10	0.26	0.94	5.0%
EX-4A	74.20	RES. 5 AC.	5.0%	74.20	0.04	0.11	0.38			0.00	0.02	0.08	0.35	0.04	0.11	0.38	2.97	7.79	27.83	5.0%
EX-4B	70.00	RES. 5 AC.	5.0%	70.00	0.04	0.11	0.38			0.00	0.02	0.08	0.35	0.04	0.11	0.38	2.80	7.35	26.25	5.0%
EX-4C	2.80	RES. 5 AC.	5.0%	2.80	0.04	0.11	0.38			0.00	0.02	0.08	0.35	0.04	0.11	0.38	0.11	0.29	1.05	5.0%
OS-1A	0.30	RES. 2.5 AC.	10.0%	0.30	0.06	0.13	0.40			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.02	0.04	0.12	10.0%
03-1A 0S-1B	0.30	RES. 2.5 AC. RES. 2.5 AC.	10.0%	0.80	0.00	0.13	0.40			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.02	0.04	0.12	10.0%
OS-2A	1.20	RES. 2.5 AC.	10.0%	1.20	0.06	0.13	0.40			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.03	0.16	0.48	10.0%
OS-2A OS-2B	0.53	RES. 2.5 AC.	10.0%	0.53	0.06	0.13	0.40			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.03	0.07	0.40	10.0%
03-2C	3.60	RES. 2.5 AC.	10.0%	3.60	0.06	0.13	0.40			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.22	0.47	1.44	10.0%
0020	0.00	N20. 2.0 A0.	10.076	0.00							0.02	0.00	0.00	0.00	0.10	0.10		••••		101070
А	3.00	RES. 2.5 AC.	10.0%	2.65	0.06	0.13	0.40	RES. 1/3 AC.	30.0%	0.35	0.18	0.25	0.47	0.07	0.14	0.41	0.22	0.43	1.22	12.3%
В	2.10	RES. 2.5 AC.	10.0%	1.68	0.06	0.13	0.40	RES. 1/3 AC.	30.0%	0.42	0.18	0.25	0.47	0.08	0.11	0.41	0.18	0.32	0.87	14.0%
C1	7.70	RES. 2.5 AC.	10.0%	3.80	0.06	0.13	0.40	RES. 1/3 AC.	30.0%	3.90	0.18	0.25	0.47	0.12	0.19	0.44	0.93	1.47	3.35	20.1%
C2	2.50	RES. 1/3 AC.	30.0%	2.50	0.18	0.25	0.47			0.00	0.08	0.08	0.08	0.18	0.25	0.47	0.45	0.63	1.18	30.0%
D	1.10	RES. 1/6 AC.	52.5%	1.10	0.32	0.38	0.55			0.00	0.02	0.08	0.35	0.32	0.38	0.55	0.35	0.41	0.60	52.5%
E	4.00	RES. 1/6 AC.	52.5%	3.75	0.32	0.38	0.55	POCKET PARK	7.0%	0.25	0.05	0.12	0.39	0.30	0.36	0.54	1.21	1.44	2.14	49.7%
F	1.70	RES. 1/6 AC.	52.5%	1.70	0.32	0.38	0.55			0.00	0.02	0.08	0.35	0.32	0.38	0.55	0.54	0.64	0.93	52.5%
G	1.70	RES. 1/8 AC.	65.0%	1.70	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.70	0.77	1.00	65.0%
Н	3.20	RES. 1/8 AC.	65.0%	3.20	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.31	1.44	1.89	65.0%
I	1.10	RES. 1/8 AC.	65.0%	1.10	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.45	0.50	0.65	65.0%
J	5.40	RES. 1/6 AC.	52.5%	5.40	0.32	0.38	0.55			0.00	0.02	0.08	0.35	0.32	0.38	0.55	1.73	2.03	2.94	52.5%
К	0.80	ROADWAY	100.0%	0.80	0.89	0.90	0.96			0.00	0.02	0.08	0.35	0.89	0.90	0.96	0.71	0.72	0.77	100.0%
L	0.60	RES. 1/3 AC.	30.0%	0.50	0.18	0.25	0.47	ROADWAY	100.0%	0.10	0.89	0.90	0.96	0.30	0.36	0.55	0.18	0.22	0.33	41.7%
М	5.90	PARK	7.0%	5.90	0.05	0.12	0.39			0.00	0.02	0.08	0.35	0.05	0.12	0.39	0.30	0.71	2.30	7.0%
N	3.70	RES. 1/8 AC.	65.0%	3.70	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.52	1.67	2.18	65.0%
0	9.50	RES. 1/8 AC.	65.0%	9.50	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	3.90	4.28	5.61	65.0%
Р	5.70	COMMERCIAL	95.0%	4.50	0.41	0.45	0.59	OS BUFFER	7.0%	1.20	0.05	0.12	0.39	0.33	0.38	0.55	1.91	2.17	3.12	76.5%
Q	1.90	RES. 1/8 AC.	65.0%	0.90	0.41	0.45	0.59	OS BUFFER	7.0%	1.00	0.05	0.12	0.39	0.22	0.28	0.48	0.42	0.53	0.92	34.5%
R	3.40	RES. 2.5 AC.	10.0%	3.40	0.06	0.13	0.40			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.20	0.44	1.36	10.0%
S	4.50	RES. 2.5 AC.	10.0%	4.22	0.06	0.13	0.40	RES. 1/3 AC.	30.0%	0.28	0.18	0.25	0.47	0.07	0.14	0.40	0.30	0.62	1.82	11.2%
1	1.30	RES. 2.5 AC.	10.0%	1.30	0.06	0.13	0.40			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.08	0.17	0.52	10.0%
UV	5.10	RES. 1/2 AC.	25.0%	5.10	0.15	0.22	0.46			0.00	0.02	0.08	0.35	0.15	0.22	0.46	0.77	1.12	2.35	25.0%
W	0.90	RES. 1/8 AC. RES. 1/6 AC.	65.0% 52.5%	0.90	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.37	0.41	0.53	65.0% 52.5%
X	0.30	RES. 1/6 AC. RES. 1/8 AC.	52.5% 65.0%	0.30	0.32	0.38	0.55			0.00	0.02	0.08	0.35	0.32	0.38	0.55	1.73 0.12	0.14	0.18	52.5% 65.0%
X Y	4.20		65.0% 46.0%	4.20	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.16	1.42	2.19	46.0%
Z	2.20	RES. 1/5 AC. RES. 1/2 AC.	46.0%	4.20	0.28	0.34	0.52			0.00	0.02	0.08	0.35	0.28	0.34	0.52	0.33	0.48	1.01	46.0%
AA	2.20	RES. 1/2 AC. RES. 1 AC.	20.0%	2.20	0.15	0.22	0.46			0.00	0.02	0.08	0.35	0.15	0.22	0.46	0.33	0.40	0.88	20.0%
BB	1.80	RES. 1 AC.	20.0%	1.80	0.12	0.20	0.44			0.00	0.02	0.08	0.35	0.12	0.20	0.44	0.24	0.40	0.88	20.0%
CC	1.50	RES. 1/4 AC.	40.0%	1.00	0.12	0.20	0.44	ROADWAY	100.0%	0.00	0.02	0.00	0.35	0.12	0.20	0.44	0.22	0.63	0.79	52.0%
DD	0.60	ROADWAY	100.0%	0.45	0.89	0.90	0.96	PARKWAY	7.0%	0.15	0.05	0.30	0.30	0.68	0.42	0.33	0.34	0.03	0.49	76.8%
EE	1.10	ROADWAY	100.0%	0.40	0.89	0.90	0.96	RES. 1/8 AC.	65.0%	0.50	0.41	0.45	0.59	0.67	0.70	0.79	0.74	0.77	0.43	84.1%
FF	3.20	RES. 1/6 AC.	52.5%	3.20	0.32	0.38	0.55	ALO. 10 NO.	00.070	0.00	0.02	0.08	0.35	0.32	0.38	0.75	1.02	1.20	1.74	52.5%
GG	2.40	ROADWAY	100.0%	1.35	0.89	0.90	0.96	PARKWAY	7.0%	1.05	0.02	0.12	0.39	0.52	0.56	0.71	1.02	1.34	1.71	59.3%
HH	1.50	ROADWAY	100.0%	1.35	0.89	0.90	0.96	PARKWAY	7.0%	0.15	0.05	0.12	0.39	0.81	0.82	0.90	1.23	1.23	1.35	90.7%

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							E	BASIN RUN	OFF COEF	FICIENT S	UMMAR	Y								
			C VAL	UE DCM TAE	3LE 6-6				C VA	LUE DCM TAB	LE 6-6			WEIGH	ITED "C" VA	ALUE		WEIGHTED C	A	WEIGHTED IMP.
	TOTAL		PERCENT						PERCENT											
BASIN	AREA (AC)	LAND USE	IMP.	AREA (AC)	C(2)	C(5)	C(100)	LAND USE	IMP.	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(2)	CA(5)	CA(100)	PERCENT
II	12.00	RES. 1/8 AC.	65.0%	10.50	0.41	0.45	0.59	OS BUFFER	7.0%	1.50	0.05	0.12	0.39	0.37	0.41	0.57	4.38	4.91	6.78	57.8%
JJ	1.20	RES. 1/6 AC.	52.5%	0.80	0.32	0.38	0.55	ROADWAY	100.0%	0.40	0.89	0.90	0.96	0.51	0.55	0.68	0.61	0.66	0.82	68.3%
KK	2.60	RES. 1/8 AC.	65.0%	2.60	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.07	1.17	1.53	65.0%
LL	2.40	RES. 1/8 AC.	65.0%	2.40	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.98	1.08	1.42	65.0%
MM	3.30	RES. 1/8 AC.	65.0%	3.30	0.41	0.45	0.59			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.35	1.49	1.95	65.0%
NN	2.40	ROADWAY	100.0%	0.80	0.89	0.90	0.96	RES. 1/8 AC.	65.0%	1.60	0.41	0.45	0.59	0.57	0.60	0.71	1.37	1.44	1.71	76.7%
00	2.40	RES. 1 AC.	20.0%	1.60	0.12	0.20	0.44	ROADWAY	100.0%	0.80	0.89	0.90	0.96	0.38	0.43	0.61	0.90	1.04	1.47	46.7%
PP	2.40	RES. 1 AC.	20.0%	2.40	0.12	0.20	0.44			0.00	0.02	0.08	0.35	0.12	0.20	0.44	0.29	0.48	1.06	20.0%
QQ	1.50	RES. 1 AC.	20.0%	1.50	0.12	0.20	0.44			0.00	0.02	0.08	0.35	0.12	0.20	0.44	0.18	0.30	0.66	20.0%
RR	7.70	RES. 1/8 AC.	65.0%	0.50	0.41	0.45	0.59	PARK/POND	7.0%	7.20	0.05	0.12	0.39	0.07	0.14	0.40	0.57	1.09	3.10	10.8%
SS	0.80	OPEN SPACE	7.0%	0.80	0.05	0.12	0.39			0.00	0.02	0.08	0.35	0.05	0.12	0.39	0.04	0.10	0.31	7.0%
TT	0.30	ROADWAY	100.0%	0.24	0.89	0.90	0.96	PARKWAY	7.0%	0.06	0.05	0.12	0.39	0.72	0.74	0.85	0.22	0.22	0.25	81.4%
UU	0.20	ROADWAY	100.0%	0.14	0.89	0.90	0.96	PARKWAY	7.0%	0.06	0.05	0.12	0.39	0.64	0.67	0.79	0.13	0.13	0.16	72.1%
VV	0.70	OPEN SPACE	7.0%	0.70	0.05	0.12	0.39			0.00	0.02	0.08	0.35	0.05	0.12	0.39	0.04	0.08	0.27	7.0%

#### TOTAL AREA TRIBUTARY TO OFF-SITE POND C 193.40 12.9%

TOTAL AREA		
<b>TRIBUTARY TO</b>		
PROP. ON-SITE		
POND 1	144.43	32.6%

Basins tributaty to off-site Pond C constructed within Homestead North at Sterling Ranch Filing No. 1 (SF-22-013) Basins tributaty to proposed on-site Pond Basin w/ exclusion 1.7.1.B.5 (Large lot 2.5 ac. min) Basin w/ exclusion 1.7.1.B.7 (Open Space/BufferTract)

ATE: ALC'D B	<i>.</i>	07/28/03 MAW						-					Туре	of Lan	d Surfac	e		C.
								-				-	meadov	V				2.5
Return Period	1-Hour Depth											Tillag	e/field		$t_c = \frac{L}{18}$	$\frac{1}{-} + 10$		5
2	1.19						_									0	-	6.5
5	1.50			t = -	0.395(1	$1 - C_5$	$) \sqrt{L}$	V	$V = C_v S$	0.5	Tc=L/V		pasture a y bare gr	and lawn	5		_	7
10	1.75			° i		S <sup>0.33</sup>							ed water				_	15
25	2.00														w paved	swales	_	20
50 100	2.25											For bu	ried riprap,	select Cv	value based	l on type o	f vegetativ	e cover.
100	2.52					BAS	in Ru	NOFF	SUM	MARY								
		WEIGHTED	)		OVER	LAND		STRE	ET / CH	ANNEL	FLOW	Tc	I	ITENSIT	Y	тот	AL FLO	ows
BASIN	CA(2)	CA(5)	CA(100)	C(5)	Length <i>(ft)</i>	Height <i>(ft)</i>	Tc (min)	Length <i>(ft)</i>	Slope (%)	Velocity (fps)	Tc (min)	TOTAL (min)	l(2) <i>(in/hr)</i>	l(5) (in/hr)	l(100) (in/hr)	Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
EX-3	1.67	4.39	15.68	0.08	300	10	21.4	650	2.0%	1.4	7.7	29.1	2.02	2.53	4.24	3	11	66
EX-3A	0.10	0.26	0.94	0.08	300	17	18.0					18.0	2.60	3.25	5.45	0.3	0.9	5
EX-4A	2.97	7.79	27.83	0.08	300	9	22.2	2400	2.0%	1.4	28.3	50.5	1.37	1.70	2.85	4	13	79
EX-4B	2.80	7.35	26.25	0.08	300	10	21.4	3500	1.8%	1.3	43.5	64.9	1.07	1.32	2.22	3	10	58
EX-4C	0.11	0.29	1.05	0.08	300	10	21.4					21.4	2.39	2.99	5.01	0.3	0.9	5
OS-1A	0.02	0.04	0.12	0.08	140	5	14.3					14.3	2.87	3.59	6.03	0.1	0.1	0.7
OS-1B	0.05	0.10	0.32	0.08	300	10	21.4					21.4	2.39	2.99	5.01	0.1	0.3	1.6
OS-2A	0.07	0.16	0.48	0.08	300	14	19.2					19.2	2.52	3.15	5.29	0.2	0.5	2.5
OS-2B	0.03	0.07	0.21	0.08	100	4	11.7					11.7	3.11	3.90	6.55	0.1	0.3	1.4
OS-2C	0.22	0.47	1.44	0.08	300	12	20.2					20.2	2.46	3.08	5.16	0.5	1.4	7
А	0.22	0.43	1.22	0.08	200	12	14.4	150	2.0%	1.4	1.8	16.2	2.72	3.41	5.72	0.6	1.5	7
В	0.18	0.32	0.87	0.08	220	12	15.6	180	3.5%	1.9	1.6	17.2	2.65	3.31	5.56	0.5	1.1	5
C1	0.93	1.47	3.35	0.08	300	10	21.4	150	3.0%	1.7	1.4	22.9	2.31	2.89	4.85	2	4	16
C2	0.45	0.63	1.18	0.08	100	2	14.7	300	2.0%	2.8	1.8	16.4	2.70	3.39	5.68	1	2	7

JOB NAM	IE:	PRAIRIER	RIDGE FIL	ING NO	). 1 PRE	ELIMIN	ARYP	LAN										
JOB NUM	IBER:	1305.10						-					Table 6	-7. Con	veyance	e Coeffi	cient, C	v
DATE:		07/28/03						-					Type	e of Land	d Surfac	e		C,
CALC'D B	3Y:	MAW						-				Heavy	y meadow					2.5
Return Period												Tillag	e/field		$t_c = \frac{1}{18}$	$\frac{1}{2}$ + 10	-	5
2	1.19						_									30		6.5
5	1.50			$t_{i} = -$	0.395(1	$.1 - C_5$	$) \sqrt{L}$	I	$V = C_v S$	Sw <sup>0.5</sup>	Tc=L/V		pasture a y bare gr	and lawn	5		_	7
10	1.75	-		1		S <sup>0.33</sup>							ed water	1100			_	15
25	2.00											Paved	l areas ar	nd shallo	w paved			20
100	2.52								<u> </u>			For bu	ried riprap,	select Cv	value based	i on type o	f vegetativ	e cover.
	-			-		BAS	in Ru	NOFF	SUMI	MARY		-				-		
		WEIGHTE			OVER	RLAND		STRE		IANNEL		Tc	11	NTENSIT		тот	AL FLO	
BASIN	CA(2)	CA(5)	CA(100)	C(5)	-	Height	Tc	Length		Velocity		TOTAL	I(2)	I(5)	I(100)	Q(2)	Q(5)	Q(100)
			1		(ft)	(ft)	(min)	(ft)	(%)	(fps)	(min)	(min)	(in/hr)	(in/hr)	(in/hr)	(cfs)	(cfs)	(cfs)
D	0.35	0.41	0.60	0.08	100	2	14.7	100	1.5%	2.4	0.7	15.3	2.79	3.49	5.86	1.0	1.4	4
E	1.21	1.44	2.14	0.08	100	2	14.7	600	2.0%	2.8	3.5	18.2	2.58	3.23	5.43	3	5	12
F	0.54	0.64	0.93	0.08	100	2	14.7	180	5.0%	4.5	0.7	15.3	2.79	3.49	5.86	1.5	2.2	5
G	0.70	0.77	1.00	0.08	50	1	10.4	475	4.0%	4.0	2.0	12.3	3.04	3.81	6.40	2	3	6
Н	1.31	1.44	1.89	0.08	100	2	14.7	500	1.5%	2.4	3.4	18.1	2.59	3.24	5.44	3	5	10
I	0.45	0.50	0.65	0.08	50	1	10.4	500	1.5%	2.4	3.4	13.8	2.91	3.65	6.13	1.3	1.8	4
J	1.73	2.03	2.94	0.08	60	1.2	11.3	650	1.5%	2.4	4.4	15.8	2.75	3.45	5.78	5	7	17
К	0.71	0.72	0.77	0.08	15	0.3	5.7	650	1.5%	2.4	4.4	10.1	3.28	4.11	6.91	2	3	5
L	0.18	0.22	0.33	0.08	100	3	12.8	80	2.0%	2.8	0.5	13.3	2.96	3.70	6.22	0.5	0.8	2.1
М	0.30	0.71	2.30	0.08	300	20	17.1					17.1	2.66	3.33	5.59	1	2	13
Ν	1.52	1.67	2.18	0.08	100	2	14.7	500	2.0%	2.8	2.9	17.6	2.62	3.28	5.51	4	5	12
0	3.90	4.28	5.61	0.08	100	2	14.7	650	2.0%	2.8	3.8	18.5	2.56	3.21	5.38	10	14	30
Р	1.91	2.17	3.12	0.12	30	0.6	7.7	400	1.5%	2.4	2.7	10.4	3.24	4.07	6.83	6	9	21
Q	0.42	0.53	0.92	0.12	80	1.6	12.6	300	4.0%	2.0	2.5	15.1	2.81	3.51	5.90	1.2	1.8	5
R	0.20	0.44	1.36	0.08	300	20	17.1	200	4.0%	2.0	1.7	18.7	2.55	3.19	5.35	0.5	1.4	7
S	0.30	0.62	1.82	0.25	300	20	14.2	250	4.0%	2.0	2.1	16.3	2.71	3.40	5.70	0.8	2.1	10

	NAME			RIDGE FIL	ING NO	). 1 PRE	ELIMIN	ARY P	LAN										
	NUME	BER:	1305.10											Table 6	-7. Con	veyance	Coeffi	cient, C	v
DATE		1.	<u>07/28/03</u>											Туре	e of Lan	d Surfac	e		C <sub>v</sub>
	JD BI		MAW						-				Heav	y meadow	N				2.5
	etum	1-Hour Depth											Tillag	e/field		$t_c = \frac{1}{18}$	-+10		5
	2	1.19	-					_									0		6.5
	5	1.50			t = (	0.395(1	$.1 - C_5$	$) \sqrt{L}$	I	$V = C_{y}S$	Sw <sup>0.5</sup>	Tc=L/V		pasture a y bare gr		5			7
	10	1.75			*i		S <sup>0.33</sup>							ed water				_	15
	25	2.00	-												-	w paved	swales	_	20
	50 100	2.25	-										For bu	ried riprap,	select Cv	value based	l on type o	f vegetativ	e cover.
	100	2.32					BAS	in Ru	NOFF	SUM	MARY								
			WEIGHTE	)		OVER	LAND		STRE	ET / CH	IANNEL	FLOW	Tc	11	NTENSIT	Υ	тот	AL FLO	ows
BAS	SIN	CA(2)	CA(5)	CA(100)	C(5)	Length <i>(ft)</i>	Height <i>(ft)</i>	Tc (min)	Length <i>(ft)</i>	Slope (%)	Velocity (fps)	Tc (min)	TOTAL (min)	l(2) (in/hr)	l(5) (in/hr)	l(100) (in/hr)	Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
1	Г	0.08	0.17	0.52	0.08	200	9	15.9	(19		(	()	15.9	2.75	3.44	5.77	0.2	0.6	3
ι	J	0.77	1.12	2.35	0.08	100	2	14.7	800	2.0%	2.8	4.7	19.4	2.51	3.14	5.27	2	4	12
١	V	0.37	0.41	0.53	0.08	50	1	10.4	275	4.0%	4.0	1.1	11.5	3.13	3.92	6.58	1.2	1.6	3
V	V	1.73	2.03	2.94	0.08	50	1	10.4	900	2.5%	3.2	4.7	15.1	2.80	3.51	5.89	5	7	17
>	x	0.12	0.14	0.18	0.08	50	1	10.4	100	1.5%	2.4	0.7	11.0	3.18	3.98	6.68	0.4	0.5	1.2
١	Y	1.16	1.42	2.19	0.08	100	2	14.7	650	1.5%	2.4	4.4	19.1	2.53	3.16	5.31	3	4	12
Z	Z	0.33	0.48	1.01	0.08	50	1	10.4	650	1.5%	2.4	4.4	14.8	2.83	3.54	5.95	1	2	6
A	A	0.24	0.40	0.88	0.08	100	3	12.8	375	3.5%	1.9	3.3	16.2	2.72	3.41	5.72	0.7	1.4	5
В	B	0.22	0.36	0.79	0.08	80	3	10.6	430	1.5%	1.2	5.9	16.5	2.70	3.38	5.67	0.6	1.2	4
С	C	0.54	0.63	0.89	0.08	100	6	10.2	150	1.5%	2.4	1.0	11.2	3.16	3.96	6.64	2	2	6
D	D	0.41	0.42	0.49	0.12	30	0.9	6.7	70	1.5%	2.4	0.5	7.2	3.68	4.62	7.75	2	2	4
E	E	0.74	0.77	0.87	0.45	10	0.2	3.0	550	4.0%	4.0	2.3	5.2	4.06	5.10	8.56	3	4	7
F	F	1.02	1.20	1.74	0.08	85	2.5	11.9	550	4.0%	4.0	2.3	14.2	2.88	3.60	6.05	3	4	11
G	G	1.25	1.34	1.71	0.12	40	1.2	7.8	750	2.0%	2.8	4.4	12.2	3.06	3.83	6.43	4	5	11
Н	н	1.21	1.23	1.35	0.12	30	0.9	6.7	750	2.0%	2.8	4.4	11.2	3.16	3.96	6.66	4	5	9
I	I	4.38	4.91	6.78	0.12	100	2	14.1	800	1.5%	2.4	5.4	19.5	2.50	3.13	5.25	11	15	36

JOB NAM JOB NUM		<b>PRAIRIE</b> 1305.10	RIDGE FIL	ING NO	). 1 PRI	ELIMIN	ARY P	LAN					Table 6	7 . Com	iveyance	Cooff	aiont (	~
DATE:	DEN.	07/28/03						-					I able 0	-/. Con	iveyance	e Coem	cient, c	(V
CALC'D B	<b>v</b> .	MAW						-					Тур	e of Lan	d Surfac	e		Cv
								-				Heavy	y meado	w				2.5
Return Period	1-Hour Depth											Tillag	e/field		$t_c = \frac{1}{18}$	$\frac{1}{2} + 10$	_	5
2	1.19															30		6.5
5	1.50				0.395(1	$.1 - C_5$	$\mathcal{N}L$	T		0.5			-	and lawn	5		_	7
10	1.75			$t_i = -$		S <sup>0.33</sup>		Į	$-C_{v^{k}}$	w	1C-L/V		y bare gi					10
25	2.00												ed water	~			_	15
50	2.25	-													w paved a		fuegetatio	20
100	2.52	2							~			10100	neu npiap	, select C <sub>V</sub>	value baset	a on type o	i vegetati	ve cover.
	I	-				BAS	IN KU	NOFF	SOMI	MARY								ľ
		WEIGHTE	D		OVER	LAND		STRE	et / Ch	IANNEL	FLOW	Tc	11	NTENSI	ΓY	тот	AL FL	OWS
BASIN	CA(2)	CA(5)	CA(100)	C(5)	Length	Height	Tc	Length	Slope	Velocity	Tc	TOTAL	I(2)	l(5)	I(100)	Q(2)	Q(5)	Q(100)
	( )		( )	. ,	(ft)	(ft)	(min)	(ft)	(%)	(fps)	(min)	(min)	(in/hr)	(in/hr)	(in/hr)	(cfs)	(cfs)	(cfs)
JJ	0.61	0.66	0.82	0.08	100	2	14.7	180	1.5%	2.4	1.2	15.9	2.74	3.44	5.77	2	2	5
KK	1.07	1.17	1.53	0.08	100	2	14.7	300	4.0%	4.0	1.3	15.9	2.74	3.43	5.76	3	4	9
LL	0.98	1.08	1.42	0.08	100	2	14.7	300	4.0%	4.0	1.3	15.9	2.74	3.43	5.76	3	4	8
MM	1.35	1.49	1.95	0.08	100	2	14.7	450	4.0%	4.0	1.9	16.5	2.70	3.38	5.67	4	5	11
NN	1.37	1.44	1.71	0.45	80	2.4	7.3	1000	4.0%	4.0	4.2	11.5	3.13	3.92	6.59	4	6	11
00	0.90	1.04	1.47	0.08	60	1.2	11.3	1100	4.0%	4.0	4.6	15.9	2.74	3.43	5.76	2	4	8
PP	0.29	0.48	1.06	0.08	100	6	10.2	450	2.0%	1.4	5.3	15.5	2.77	3.47	5.83	0.8	1.7	6
QQ	0.18	0.30	0.66	0.08	100	4	11.7	350	2.0%	2.8	2.1	13.7	2.92	3.65	6.14	0.5	1.1	4
RR	0.57	1.09	3.10	0.12	100	3	12.3	600	1.0%	1.0	10.0	22.3	2.34	2.93	4.91	1	3	15
SS	0.04	0.10	0.31	0.08	100	6	10.2					10.2	3.27	4.10	6.88	0.1	0.4	2.1
TT	0.22	0.22	0.25	0.12	40	1.2	7.8	80	1.5%	2.4	0.5	8.3	3.51	4.40	7.39	0.8	1.0	1.9
UU	0.13	0.13	0.16	0.12	15	0.45	4.8	80	1.5%	2.4	0.5	5.3	4.05	5.08	8.53	0.5	0.7	1.3

JOB NAME:	PRAIRIERIDGE FILING NO	). 1 PRELIMI	NARY PLAN						
JOB NUMBER:	1305.10		•						
DATE:	12/08/23								
CALCULATED BY:	MAW								
	*ALL STORM SEWER TO BE PR		OTHERWISE NO		IMARY				
					Inten	sity	Fl	ow	
Design Point(s)	Contributing Basins / Design Point	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Facility/ Inlet Size*
1	EX-4A, A	8.22	29.05	53.5	1.61	2.71	13	79	PROP. 36" RCP
2	EX-4B, B	7.67	26.57	65.9	1.30	2.18	10	58	PROP. 36" RCP
3	C1	1.47	3.35	22.9	2.89	4.85	4	16	10' TYPE R AT- GRADE INLET
4	C2, Flowby from DP-3	0.64	2.65	23.4	2.86	4.79	2	13	10' TYPE R SUMP INLET
5	D	0.41	0.60	15.3	3.49	5.86	1.4	4	5' TYPE R SUMP INLET
6	E	1.44	2.14	18.2	3.23	5.43	5	12	10' TYPE R AT- GRADE INLET
7	F	0.64	0.93	15.3	3.49	5.86	2.2	5	10' TYPE R AT- GRADE INLET
8	G REVISED	0.77	1.00	12.3	3.81	6.40	3	6	5' TYPE R SUMP INLET
	hould this be DP-7, as P-5 is a sump inlet?	1.44	1.89	18.1	3.24	5.44	5	10	10' TYPE R SUMP INLET
10		0.50	0.65	13.8	3.65	6.13	1.8	4	5' TYPE R SUMP INLET
11	J, Flowby from DP-5 & DP-6	2.11	3.75	19.7	3.11	5.23	7	20	10' TYPE R SUMP INLET
12	к	0.72	0.77	10.1	4.11	6.91	3	5	5' TYPE R SUMP INLET
13	1/2 N	0.83	1.09	17.6	3.28	5.51	3	6	PROP. 18" RCP

JOB NAME:	PRAIRIERIDGE FILING NO	). 1 PRELIMI	NARY PLAN						
JOB NUMBER:	1305.10								
DATE:	12/08/23								
CALCULATED BY:	MAW								
	*ALL STORM SEWER TO BE PR		OTHERWISE NO		ΙΜΔΡΥ				
					Inten	sitv	FI	ow	
Design Point(s)	Contributing Basins / Design Point	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Facility/ Inlet Size*
14	1/2 N	0.83	1.09	17.6	3.28	5.51	3	6	PROP. 24" RCP
15	м	0.71	2.30	17.1	3.33	5.59	2	13	EXIST. MH WITH GRATE
16	EX-3A, R	0.70	2.30	18.7	3.19	5.35	2	12	
17	EX-3, S, DP-16	5.71	19.79	29.1	2.53	4.24	14	84	PROP. 42" RCP
18	U	1.12	2.35	19.4	3.14	5.27	4	12	10' TYPE R SUMP INLET
19	V	0.41	0.53	11.5	3.92	6.58	1.6	3	5' TYPE R SUMP INLET
20	W	2.03	2.94	15.1	3.51	5.89	7	17	10' TYPE R SUMP INLET
21	х	0.14	0.18	11.0	3.98	6.68	0.5	1.2	5' TYPE R SUMP INLET
22	Y	1.42	2.19	19.1	3.16	5.31	4	12	10' TYPE R SUMP INLET
23	Z	0.48	1.01	14.8	3.54	5.95	2	6	5' TYPE R SUMP INLET
24	AA, OS-2A	0.56	1.36	16.2	3.41	5.72	2	8	CDOT TYPE C INLET
25	BB, OS-2B	0.43	1.00	16.5	3.38	5.67	1	6	CDOT TYPE C INLET
26	EE	0.77	0.87	5.2	5.10	8.56	4	7	5' TYPE R SUMP INLET

JOB NAME:	PRAIRIERIDGE FILING NO	). 1 PRELIMI	NARY PLAN						
JOB NUMBER:	1305.10		-						
DATE:	12/08/23								
CALCULATED BY:	MAW								
	*ALL STORM SEWER TO BE PR		OTHERWISE NO		IMARY				
					Inten	sity	FI	ow	
Design Point(s)	Contributing Basins / Design Point	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Facility/ Inlet Size*
27	FF	1.20	1.74	14.2	3.60	6.05	4	11	10' TYPE R SUMP INLET
28	сс	0.63	0.89	11.2	3.96	6.64	2	6	5' TYPE R SUMP INLET
29	DD	0.42	0.49	7.2	4.62	7.75	2	4	5' TYPE R SUMP INLET
30	JJ	0.66	0.82	15.9	3.44	5.77	2	5	5' TYPE R SUMP INLET
31	кк	1.17	1.53	15.9	3.43	5.76	4	9	10' TYPE R AT- GRADE INLET
32	LL, Flowby from DP-31	1.09	1.80	17.2	3.32	5.57	4	10	10' TYPE R AT- GRADE INLET
33	NN	1.44	1.71	11.5	3.92	6.59	6	11	10' TYPE R SUMP INLET
34	MM, Flowby from DP-32	1.50	2.45	19.0	3.17	5.31	5	13	10' TYPE R SUMP INLET
35	II (1/2 Basin)	2.45	3.39	19.5	3.13	5.25	8	18	PROP. 30" RCP
36	II (1/2 Basin)	2.45	3.39	19.5	3.13	5.25	8	18	PROP. 30" RCP
37	0	4.28	5.61	18.5	3.21	5.38	14	30	PROP. 30" RCP
38	Р	2.17	3.12	10.4	4.07	6.83	9	21	PROP. 30" RCP
39	GG	1.34	1.71	12.2	3.83	6.43	5	11	15' TYPE R AT- GRADE INLET

JOB NAME:	PRAIRIERIDGE FILING NO	). 1 PRELIMI	NARY PLAN						
JOB NUMBER:	1305.10								
DATE:	12/08/23								
CALCULATED BY:	MAW								
	*ALL STORM SEWER TO BE PRI		OTHERWISE NO		IMARY				
					Inten	sity	FI	ow	
Design Point(s)	Contributing Basins / Design Point	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Facility/ Inlet Size*
40	нн	1.23	1.35	11.2	3.96	6.66	5	9	15' TYPE R AT- GRADE INLET
41	00	1.04	1.47	15.9	3.43	5.76	4	8	10' TYPE R SUMP INLET
42	OS-2C, PP, TT, UU	1.30	2.91	20.2	3.08	5.16	4	15	CDOT TYPE C INLET
43	OS-1A, QQ	0.34	0.78	14.3	3.59	6.03	1	5	CDOT TYPE C INLET
44	TOTAL TRIBUTARY AREA TO ON-SITE POND	38.94	69.68	32.0	2.38	4.00	93	279	PROP. ON-SITE POND

IOB NAME:	PRAIRIERIDGE FILING NO	D. 1 PRELIMI	NARY PLAN						
IOB NUMBER:	1305.10							Note	: Pipe routing will
DATE:	12/08/23							be re	eviewed with FDR
CALCULATED BY:	MAW								NOTED
*	PIPES ARE LISTED AT MAXIMU REFER TO INDIVIDUAL PIPE SH PIPES ARE TO BE PRIVATE UNI PRIVATE STORM MATERIALS T	IEETS FOR HYD LESS OTHERWI	RAULIC INFOR SE NOTED.	MATION.				TRACTOR	
			PIPE ROU	TING SUMI	MARY				
					Inten	sity	FI	ow	
Pipe Run	Contributing Basin / Design Point / Pipe Run	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Pipe Size*
1	DP-1	8.22	29.05	53.48	1.61	2.71	13	79	PROP. 36" RCP
2	DP-2	7.67	26.57	65.92	1.30	2.18	10	58	PROP. 36" RCP
3	DP-4	0.64	2.65	23.38	2.86	4.79	2	13	PROP. 24" RCP
4	DP-5	0.41	0.60	15.3	3.49	5.86	1.4	4	PROP. 18" RCP
5	PR-2, PR-3, PR-4	8.73	29.82	65.9	1.30	2.18	11	65	PROP. 42" RCP
6	PR-1, PR-5	16.95	58.87	65.9	1.30	2.18	22	128	PROP. 48" RCP
7	DP-3 Collected	1.45	1.88	22.9	2.89	4.85	4	9	PROP. 18" RCP
8	PR-6, PR-7	18.40	60.75	66.4	1.29	2.16	24	131	PROP. 48" RCP
9	DP-6	1.44	2.14	18.2	3.23	5.43	5	12	PROP. 24" RCP
10	DP-7	0.64	0.93	15.3	3.49	5.86	2.2	5	PROP. 18" RCP
11	PR-8. PR-9, PR-10	20.48	63.81	66.9	1.28	2.14	26	137	PROP. 48" RCP
12	DP-9	1.44	1.89	18.1	3.24	5.44	5	10	PROP. 24" RCP

Job Name: Job Number:	PRAIRIERIDGE FILING NO	D. 1 PRELIMI	NARY PLAN								
DATE:	12/08/23										
CALCULATED BY:											
*	PIPES ARE LISTED AT MAXIMUI REFER TO INDIVIDUAL PIPE SH PIPES ARE TO BE PRIVATE UNL PRIVATE STORM MATERIALS T	EETS FOR HYD ESS OTHERWI	RAULIC INFOR SE NOTED.	MATION.				TRACTOR			
			PIPE ROU	TING SUM	MARY						
					Intensity		FI	ow			
Pipe Run	Contributing Basin / Design Point / Pipe Run	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Pipe Size*		
13	DP-10	0.50	0.65	13.8	3.65	6.13	1.8	4	PROP. 18" RCP		
14	PR-12, PR-13	1.94	2.54	18.6	3.20	5.38	6	14	PROP. 24" RCF		
15	PR-11, PR-14	22.41	66.35	67.2	1.27	2.13	28	141	PROP. 48" RCF		
16	DP-8	0.77	1.00	12.3	3.81	6.40	3	6	PROP. 18" RCP		
17	DP-11	2.11	3.75	19.7	3.11	5.23	7	20	PROP. 30" RCF		
18	DP-12	0.72	0.77	10.1	4.11	6.91	3	5	PROP. 18" RCF		
19	PR-17, PR-18	2.83	4.52	19.9	3.10	5.20	9	23	PROP. 30" RCF		
20	PR-15, PR-16, PR-19	26.01	71.87	67.7	1.26	2.11	33	152	PROP. 48" RCF		
21	DP-13	0.83	1.09	17.6	3.28	5.51	3	6	PROP. 18" RCF		
22	PR-20, PR-21	26.84	72.96	68.2	1.25	2.09	34	153	PROP. 48" RCF		
23	DP-14	0.83	1.09	17.6	3.28	5.51	3	6	PROP. 24" RCF		
24	PR-22, PR-23	27.67	74.05	68.2	1.25	2.09	35	155	PROP. 48" RCP		

JOB NAME: JOB NUMBER:	PRAIRIERIDGE FILING NO 1305.10	D. 1 PRELIMI	NARY PLAN									
DATE:	12/08/23											
CALCULATED BY:	MAW											
*	PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM SLOPE. REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION. PIPES ARE TO BE PRIVATE UNLESS OTHERWISE NOTED. PRIVATE STORM MATERIALS TO BE RCP OR DOUBLE WALL POLYPROPYLENE (DWPP) TO BE SELECTED BY CONTRACTOR											
			PIPE ROU	TING SUMI	MARY							
					Inter	nsity	FI	ow				
Pipe Run	Contributing Basin / Design Point / Pipe Run	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Pipe Size*			
25	DP-17	5.71	19.79	29.1	2.53	4.24	14	84	PROP. 42" RCF			
26	DP-19	0.41	0.53	11.5	3.92	6.58	1.6	3	PROP. 18" RCF			
27	DP-18, PR-26	1.53	2.88	19.4	3.14	5.27	5	15	PROP. 24" RCF			
28	PR-25, PR-27	7.24	22.67	30.3	2.47	4.14	18	94	PROP. 42" RCF			
29	DP-20	2.03	2.94	15.1	3.51	5.89	7	17	PROP. 24" RCF			
30	DP-21	0.14	0.18	11.0	3.98	6.68	0.5	1.2	PROP. 18" RCF			
31	PR-29, PR-30	2.16	3.12	15.9	3.43	5.76	7	18	PROP. 30" RCF			
32	DP-22	1.42	2.19	19.1	3.16	5.31	4	12	PROP. 24" RCF			
33	DP-23	0.48	1.01	14.8	3.54	5.95	2	6	PROP. 18" RCF			
34	PR-31, PR-32, PR-33	4.06	6.33	19.1	3.16	5.31	13	34	PROP. 30" RCF			
35	PR-28, PR-34	11.30	29.00	30.5	2.46	4.12	28	120	PROP. 48" RCF			
36	DP-24	0.56	1.36	16.2	3.41	5.72	2	8	PROP. 18" RCF			

IOB NAME: IOB NUMBER: DATE: CALCULATED BY: *	PIPES ARE LISTED AT MAXIMU REFER TO INDIVIDUAL PIPE SH	M SIZE REQUIR IEETS FOR HYD	ED TO ACCOMI RAULIC INFOR		FLOWS AT MI	NIMUM SLOP	E.		
	PIPES ARE TO BE PRIVATE UNI PRIVATE STORM MATERIALS T			POLYPROPYLEN	NE (DWPP) TO	D BE SELECT	ED BY CON	TRACTOR	
			PIPE ROU	TING SUMI	MARY				
					Inter	nsity	FI	ow	
Pipe Run	Contributing Basin / Design Point / Pipe Run	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Pipe Size*
37	DP-25, PR-36	0.98	2.36	16.7	3.36	5.64	3	13	PROP. 24" RCF
38	PR-35, PR-37	12.29	31.36	30.6	2.45	4.11	30	129	PROP. 48" RCF
39	DP-26	0.77	0.87	5.2	5.10	8.56	4	7	PROP. 18" RCF
40	DP-27	1.20	1.74	14.2	3.60	6.05	4	11	PROP. 24" RCP
41	PR-39, PR-40	1.97	2.62	14.2	3.60	6.05	7	16	PROP. 24" RCP
42	PR-38, PR-41	14.25	33.97	30.7	2.45	4.11	35	139	PROP. 48" RCP
43	DP-28	0.63	0.89	11.2	3.96	6.64	2	6	PROP. 18" RCF
44	DP-29, PR-43	1.05	1.38	11.3	3.94	6.62	4	9	PROP. 24" RCF
45	PR-42, PR-44	15.30	35.35	30.9	2.44	4.09	37	145	PROP. 48" RCF
46	DP-30	0.66	0.82	15.9	3.44	5.77	2	5	PROP. 18" RCF
47	PR-45, PR-46	15.96	36.17	31.2	2.42	4.07	39	147	PROP. 48" RCF
48	DP-31 Collected	1.16	1.15	15.9	3.43	5.76	4	7	PROP. 18" RCP

IOB NAME: IOB NUMBER: DATE: CALCULATED BY: *	PRAIRIERIDGE FILING NO 1305.10 12/08/23 MAW PIPES ARE LISTED AT MAXIMU REFER TO INDIVIDUAL PIPE SH PIPES ARE TO BE PRIVATE UNI	M SIZE REQUIR IEETS FOR HYD	ED TO ACCOMI RAULIC INFOR		FLOWS AT MI	NIMUM SLOP	E.		
	PRIVATE STORM MATERIALS T	O BE RCP OR D		POLYPROPYLEN	, , , , , , , , , , , , , , , , , , ,	) BE SELECT	ED BY CON	TRACTOR	
	1				Inter	nsity	FI	ow	
Pipe Run	Contributing Basin / Design Point / Pipe Run	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Pipe Size*
49	PR-47, PR-48	17.12	37.32	31.4	2.41	4.05	41	151	PROP. 48" RCF
50	DP-32 Collected	1.08	1.30	17.2	3.32	5.57	4	7	PROP. 18" RCF
51	PR-49, PR-50	18.20	38.62	31.6	2.40	4.03	44	156	PROP. 48" RCF
52	DP-35	2.45	3.39	19.5	3.13	5.25	8	18	PROP. 30" RCF
53	PR-51, PR-52	20.66	42.01	31.8	2.39	4.02	49	169	PROP. 54" RCF
54	DP-33	1.44	1.71	11.5	3.92	6.59	6	11	PROP. 24" RCP
55	DP-34, PR-54	2.94	4.16	19.0	3.17	5.31	9	22	PROP. 30" RCF
56	PR-53, PR-55	23.59	46.17	31.8	2.39	4.02	56	185	PROP. 54" RCF
57	DP-37	4.28	5.61	18.5	3.21	5.38	14	30	PROP. 30" RCF
58	DP-38	2.17	3.12	10.4	4.07	6.83	9	21	PROP. 30" RCF
59	DP-39 Collected, PR-58	3.51	4.64	12.2	3.83	6.43	13	30	PROP. 36" RCF
60	PR-57, PR-59	7.79	10.25	18.5	3.21	5.38	25	55	PROP. 36" RCP

JOB NAME: JOB NUMBER: DATE: CALCULATED BY:	PRAIRIERIDGE FILING NO 1305.10 12/08/23 MAW	D. 1 PRELIMI	NARY PLAN						
*	PIPES ARE LISTED AT MAXIMU REFER TO INDIVIDUAL PIPE SH PIPES ARE TO BE PRIVATE UNI PRIVATE STORM MATERIALS T	EETS FOR HYD ESS OTHERWI	RAULIC INFOR SE NOTED. OUBLE WALL F	MATION.	NE (DWPP) TC			FRACTOR	
	Contributing Pagin /	Equivalant	Equivalant	Maximum	Inten	sity	Fl	ow	
Pipe Run	Contributing Basin / Design Point / Pipe Run	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	l(5)	l(100)	Q(5)	Q(100)	Pipe Size*
61	DP-40 Collected	1.23	1.29	11.2	3.96	6.66	5	9	PROP. 18" RCP
62	PR-60, PR-61	9.02	11.53	19.2	3.15	5.29	28	61	PROP. 36" RCP
63	DP-36	2.45	3.39	19.5	3.13	5.25	8	18	PROP. 30" RCP
64	PR-62, PR-63	11.47	14.92	20.1	3.08	5.17	35	77	PROP. 42" RCP
65	PR-56, PR-64	35.06	61.09	32.0	2.38	4.00	84	244	PROP. 60" RCP
66	DP-42	1.30	2.91	21.2	3.00	5.04	4	15	PROP. 24" RCP
67	DP-43, PR-66	1.64	3.69	21.3	3.00	5.03	5	19	PROP. 24" RCP
68	DP-41	1.04	1.47	15.9	3.43	5.76	4	8	PROP. 18" RCP
69	PR-67-PR-68	2.68	5.16	21.5	2.98	5.00	8	26	PROP. 30" RCP

Design Procedure Form: Extended Detention Basin (EDB)				
		(Version 3.07, March 2018) Sheet 1 of 3		
Designer:	Marc A. Whorton, P.E.			
Company:	Classic Consulting			
Date:	November 29, 2023			
Project: Location:	PrairieRidge Filing No. 1 Preliminary Plan - PDR Pond 1 - 30" Outfall			
Location.				
1. Basin Storage \	/olume			
A) Effective Imp	erviousness of Tributary Area, I <sub>a</sub>	l <sub>a</sub> = 25.5 %		
	a's Imperviousness Ratio (i = $I_n$ / 100 )			
, -	,			
, -	Watershed Area	Area = <u>10.400</u> ac		
D) For Watersh Runoff Prod	eds Outside of the Denver Region, Depth of Average ucing Storm	d <sub>6</sub> = <u>0.42</u> in		
E) Design Cond	cept	Choose One		
	V when also designing for flood control)	Water Quality Capture Volume (WQCV)		
		Excess Urban Runoff Volume (EURV)		
E) Design Volu	me (WQCV) Based on 40-hour Drain Time	V <sub>DESIGN</sub> = ac-ft		
	1.0 * (0.91 * i <sup>3</sup> - 1.19 * i <sup>2</sup> + 0.78 * i) / 12 * Area )			
G) For Watersh	neds Outside of the Denver Region,	V <sub>DESIGN OTHER</sub> = 0.116 ac-ft		
	ty Capture Volume (WQCV) Design Volume <sub>R</sub> = (d <sub>6</sub> *(V <sub>DESIGN</sub> /0.43))			
	f Water Quality Capture Volume (WQCV) Design Volume ferent WQCV Design Volume is desired)	V <sub>DESIGN USER</sub> =ac-ft		
I) NRCS Hvdro	logic Soil Groups of Tributary Watershed			
i) Percenta	ge of Watershed consisting of Type A Soils	$HSG_A = 0$ %		
	age of Watershed consisting of Type B Soils age of Watershed consisting of Type C/D Soils	HSG <sub>B</sub> = 100 % HSG <sub>CD</sub> = 0 %		
I) Excess Lines	an Runoff Volume (EURV) Design Volume			
For HSG A	: EURV <sub>A</sub> = 1.68 * i <sup>1.28</sup>	EURV <sub>DESIGN</sub> = 0.269 ac-f t		
	: EURV <sub>P</sub> = 1.36 * i <sup>1.08</sup> /D: EURV <sub>CID</sub> = 1.20 * i <sup>1.08</sup>			
	f Excess Urban Runoff Volume (EURV) Design Volume	EURV <sub>DESIGN USER</sub> =ac-f t		
	ferent EURV Design Volume is desired)			
	ength to Width Ratio to width ratio of at least 2:1 will improve TSS reduction.)	L : W = 2.0 : 1		
3. Basin Side Slop	es			
A) Basin Maxim	num Side Slopes	Z = 4.00 ft / ft		
(Horizontal o	distance per unit vertical, 4:1 or flatter preferred)			
4. Inlet		Concrete Forebay		
<ul> <li>A) Describe me inflow location</li> </ul>	eans of providing energy dissipation at concentrated ons:			
5. Forebay				
A) Minimum Fo	rebay Volume	V <sub>FMIN</sub> = 0.002 ac-ft		
(V <sub>FMIN</sub>	= 2% of the WQCV)			
B) Actual Foreb	bay Volume	V <sub>F</sub> = 0.002 ac-ft		
C) Forebay Dep				
(D <sub>F</sub>	= <u>18</u> inch maximum)	$D_F = 12.0$ in		
D) Forebay Disc	charge			
i) Undetaine	ed 100-year Peak Discharge	Q <sub>100</sub> = <u>26.00</u> cfs		
ii) Forebay (Q <sub>F</sub> = 0.02	Discharge Design Flow 2 * Q <sub>100</sub> )	Q <sub>F</sub> =cfs		
E) Forebay Disc	charge Design	Choose One		
		O Berm With Pipe Flow too small for berm w/ pipe		
		Wall with Rect. Notch     Wall with V-Notch Weir		
F) Discharge Pi	pe Size (minimum 8-inches)	Calculated D <sub>P</sub> = in		
G) Rectangular	Notch Width	Calculated $W_N = 4.3$ in		

	Design Procedure Form: I	Extended Detention Basin (EDB)				
Designer:	Marc A. Whorton, P.E.	Sheet 2 of 3				
Company: Date:	November 29, 2023					
Project:	PrairieRidge Filing No. 1 Preliminary Plan - PDR					
Location:	Pond 1 - 30" Outfall					
200410111						
6. Trickle Channel		Choose One Concrete				
A) Type of Trick	kle Channel	Soft Bottom				
F) Slope of Tric	kle Channel	S = 0.0070 ft / ft				
7. Micropool and C	Dutlet Structure					
	cropool (2.5-feet minimum)	D <sub>M</sub> = ft				
<ul><li>B) Surface Area</li><li>C) Outlet Type</li></ul>	a of Micropool (10 ft <sup>2</sup> minimum)	A <sub>M</sub> = <u>170</u> sq ft				
C) Outlet Type		Choose One Orifice Plate Other (Describe):				
D) Smallest Dir (Use UD-Detent	nension of Orifice Opening Based on Hydrograph Routing tion)	D <sub>orffice</sub> =inches				
E) Total Outlet A	Area	A <sub>ct</sub> = <u>19.29</u> square inches				
8. Initial Surcharge	9 Volume					
	ial Surcharge Volume commended depth is 4 inches)	D <sub>IS</sub> =6 in				
	ial Surcharge Volume urne of 0.3% of the WQCV)	V <sub>IS</sub> = cu ft				
C) Initial Surcha	rge Provided Above Micropool	V <sub>s</sub> =cu ft				
9. Trash Rack						
	ty Screen Open Area: $A_t = A_{ot} * 38.5^* (e^{-0.095D})$	A <sub>t</sub> = <u>566</u> square inches				
in the USDCM,	en (If specifying an alternative to the materials recommended indicate "other" and enter the ratio of the total open are to the for the material specified.)	Aluminum Amico-Klemp SR Series with Cross Rods 2" O.C.				
	Other (Y/N): N					
C) Ratio of Tota	I Open Area to Total Area (only for type 'Other')	User Ratio =				
D) Total Water (	Quality Screen Area (based on screen type)	A <sub>total</sub> =sq. in.				
	ign Volume (EURV or WQCV) design concept chosen under 1E)	H= <u>6.38</u> feet				
F) Height of Wa	ter Quality Screen (H <sub>TR</sub> )	H <sub>TR</sub> = 104.56 inches				
	ter Quality Screen Opening (W <sub>opening</sub> ) inches is recommended)	W <sub>opening</sub> = 12.0 inches VALUE LESS THAN RECOMMENDED MIN. WIDTH. WIDTH HAS BEEN SET TO 12 INCHES.				

	Design Procedure Form: Extended Detention Basin (EDB)						
Designer: Company: Date: Project: Location:	Marc A. Whorton, P.E. Classic Consulting November 29, 2023 PrairieRidge Filing No. 1 Preliminary Plan - PDR Pond 1 - 30" Outfall						
B) Slope of O	embankment embankment protection for 100-year and greater overtopping: verflow Embankment I distance per unit vertical, 4:1 or flatter preferred)	Buried Rip-Rap Ze = 4.00 ft / ft					
11. Vegetation		Choose One Irrigated Not Irrigated					
12. Access A) Describe S	Sediment Removal Procedures	Per Maintenance Manual					
Notes:							

Design Procedure Form: Extended Detention Basin (EDB)						
	UD-BMP	(Version 3.07, March 2018) Sheet 1 of 3				
Designer:	Marc A. Whorton, P.E.					
Company:	Classic Consulting					
Date:	November 29, 2023					
Project:	PrairieRidge Filing No. 1 Preliminary Plan - PDR					
Location:	Pond 1 - 60" Outfall					
1. Basin Storage	Volume					
A) Effective Im	perviousness of Tributary Area, I <sub>a</sub>	l <sub>a</sub> = 35.2 %				
B) Tributary Are	ea's Imperviousness Ratio (i = I <sub>a</sub> / 100 )	i =				
C) Contributing	y Watershed Area	Area = <u>126.330</u> ac				
D) For Waters	heds Outside of the Denver Region, Depth of Average	d <sub>6</sub> = 0.42 in				
	ducing Storm					
E) Design Con	cent	Choose One				
	₩ when also designing for flood control)	Water Quality Capture Volume (WQCV)				
		Excess Urban Runoff Volume (EURV)				
	Ime (WQCV) Based on 40-hour Drain Time	V <sub>DESIGN</sub> =ac-ft				
(V <sub>DESIGN</sub> = (	1.0 * (0.91 * i <sup>3</sup> - 1.19 * i <sup>2</sup> + 0.78 * i) / 12 * Area)					
	heds Outside of the Denver Region,	V <sub>DESIGN OTHER</sub> = 1.715 ac-ft				
	lity Capture Volume (WQCV) Design Volume <sub>:R</sub> = (d <sub>6</sub> *(V <sub>DESIGN</sub> /0.43))					
	of Water Quality Capture Volume (WQCV) Design Volume fferent WQCV Design Volume is desired)	V <sub>DESIGN USER</sub> =ac-ft				
	ologic Soil Groups of Tributary Watershed	HSG <sub>A</sub> =%				
	age of Watershed consisting of Type A Soils age of Watershed consisting of Type B Soils	$HSG_{A} = 0 \%$ $HSG_{B} = 100 \%$				
	tage of Watershed consisting of Type C/D Soils	$HSG_{CD} = 0$ %				
J) Excess Urb	an Runoff Volume (EURV) Design Volume					
For HSG A	x: EURV <sub>A</sub> = 1.68 * i <sup>1.28</sup>	EURV <sub>DESIGN</sub> = 4.636 ac-f t				
	b: EURV <sub>R</sub> = 1.36 * i <sup>1.08</sup> b/D: EURV <sub>C/D</sub> = 1.20 * i <sup>1.08</sup>					
	of Excess Urban Runoff Volume (EURV) Design Volume fferent EURV Design Volume is desired)	EURV <sub>DESIGN USER</sub> =ac-ft				
2. Basin Shape: L	ength to Width Ratio	L : W = 2.0 : 1				
(A basin length	to width ratio of at least 2:1 will improve TSS reduction.)					
3. Basin Side Slop	Des					
A) Basin Maxir	num Side Slopes	Z = 4.00 ft / ft				
(Horizontal	distance per unit vertical, 4:1 or flatter preferred)					
4. Inlet		Concrete Forebay				
A) Describe m	eans of providing energy dissipation at concentrated					
ínflow locati						
5. Forebay						
A) Minimum Fo	prebay Volume	V <sub>FMIN</sub> = 0.051 ac-ft				
(V <sub>FMIN</sub>						
B) Actual Fore	bay Volume	V <sub>F</sub> = 0.051 ac-ft				
C) Forebay De	ath					
C) Forebay Dej (D <sub>F</sub>		D <sub>F</sub> = 30.0 in				
D) Forebay Dis	ាធារមួច					
i) Undetained 100-year Peak Discharge		Q <sub>100</sub> = 244.00 cfs				
ii) Forebav	Discharge Design Flow	Q <sub>F</sub> = 4.88 cfs				
(Q <sub>F</sub> = 0.0						
E) Forebay Dis	charge Design	E churre Ore				
,, 0.0		Choose One Berm With Pipe				
		Wall with Rect. Notch				
		Wall with V-Notch Weir				
F) Discharge P	ipe Size (minimum 8-inches)	Calculated $D_P =$ in				
,						
G) Rectangular	Notch Width	Calculated $W_N = 10.4$ in				

	Design Procedure Form:	Extended Detention Basin (EDB)
Designer: Company: Date: Project: Location:	Marc A. Whorton, P.E. Classic Consulting November 29, 2023 PrairieRidge Filing No. 1 Preliminary Plan - PDR Pond 1 - 60" Outfall	Sheet 2 of 3
6. Trickle Channel A) Type of Trick	kle Channel	Choose One Concrete Soft Bottom
• •	Dutlet Structure cropool (2.5-feet minimum)	S = 0.0070 ft / ft $D_M = 2.5$ ft $A_M = 170$ sq ft
<ul> <li>B) Surface Area</li> <li>C) Outlet Type</li> </ul>	a of Micropool (10 ft <sup>2</sup> minimum)	A <sub>M</sub> = <u>170</u> sq ft Choose One Orifice Plate Other (Describe):
D) Smallest Dir (Use UD-Deten E) Total Outlet A		D <sub>onflice</sub> = <u>2.86</u> inches A <sub>ct</sub> = <u>19.29</u> square inches
(Minimum re B) Minimum Initi (Minimum vol	a Volume ial Surcharge Volume commended depth is 4 inches) ial Surcharge Volume lume of 0.3% of the WQCV) arge Provided Above Micropool	$D_{1S} = 6$ in $V_{1S} = 224$ cu ft $V_s = 85.0$ cu ft
B) Type of Scre in the USDCM,	ty Screen Open Area: $A_t = A_{ot} * 38.5*(e^{-0.0950})$ en (If specifying an alternative to the materials recommended indicate "other" and enter the ratio of the total open are to the for the material specified.) Other (Y/N): N	A <sub>t</sub> = <u>566</u> square inches Aluminum Amico-Klemp SR Series with Cross Rods 2" O.C.
D) Total Water ( E) Depth of Des (Based on o F) Height of Wa G) Width of Wa	I Open Area to Total Area (only for type 'Other') Quality Screen Area (based on screen type) sign Volume (EURV or WQCV) design concept chosen under 1E) ter Quality Screen ( $H_{TR}$ ) ter Quality Screen Opening ( $W_{coening}$ ) inches is recommended)	User Ratio = $A_{total} = \overline{797}$ sq. in. H = 6.38 feet $H_{TR} = 104.56$ inches $W_{opening} = 12.0$ inches VALUE LESS THAN RECOMMENDED MIN. WIDTH. WIDTH HAS BEEN SET TO 12 INCHES.

	Design Procedure Form:	Extended Detention Basin (EDB)	
Designer: Company: Date: Project: Location:	Marc A. Whorton, P.E. Classic Consulting November 29, 2023 PrairieRidge Filing No. 1 Preliminary Plan - PDR Pond 1 - 60" Outfall	She	et 3 of 3
B) Slope of Ov	ankment mbankment protection for 100-year and greater overtopping: /erflow Embankment distance per unit vertical, 4:1 or flatter preferred)	Buried Rip-Rap Ze = 4.00 ft / ft	
11. Vegetation		Choose One O Irrigated Not Irrigated	
12. Access A) Describe S	ediment Removal Procedures	Per Maintenance Manual	
Notes:			

#### DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)

Project: <u>PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN - PDR</u> Basin ID: <u>POND 1 2004 3 (2004 2) (2004 1)</u>

			$\square$	
,	1	ZONE 1 AND 2	100-YEAR ORIFICE	
PERMANE		ORIFICES		
POOL	Example	Zone Configura	tion (Retention Pon	d)

Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	144.43	acres
Watershed Length =	4,000	ft
Watershed Length to Centroid =	2,000	ft
Watershed Slope =	0.030	ft/ft
Watershed Imperviousness =	32.60%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours
Location for 1-hr Rainfall Depths =	User Input	

## After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

			Optional User	!
Water Quality Capture Volume (WQCV) =	1.918	acre-feet		ā
Excess Urban Runoff Volume (EURV) =	4.864	acre-feet		ſ
2-yr Runoff Volume (P1 = 1.19 in.) =	4.891	acre-feet	1.19	i
5-yr Runoff Volume (P1 = 1.5 in.) =	7.750	acre-feet	1.50	i
10-yr Runoff Volume (P1 = 1.75 in.) =	10.365	acre-feet	1.75	i
25-yr Runoff Volume (P1 = 2 in.) =	14.247	acre-feet	2.00	ľ
50-yr Runoff Volume (P1 = 2.25 in.) =	17.223	acre-feet	2.25	ľ
100-yr Runoff Volume (P1 = 2.52 in.) =	21.158	acre-feet	2.52	ľ
500-yr Runoff Volume (P1 = 3.48 in.) =	33.093	acre-feet	3.48	ľ
Approximate 2-yr Detention Volume =	3.510	acre-feet		
Approximate 5-yr Detention Volume =	4.988	acre-feet		
Approximate 10-yr Detention Volume =	7.145	acre-feet		
Approximate 25-yr Detention Volume =	8.193	acre-feet		
Approximate 50-yr Detention Volume =	8.623	acre-feet		
Approximate 100-yr Detention Volume =	10.106	acre-feet		

#### Define Zones and Basin Geometry

enne zones and basin deonied y		
Zone 1 Volume (WQCV) =	1.918	acre-feet
Zone 2 Volume (EURV - Zone 1) =	2.946	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	5.242	acre-feet
Total Detention Basin Volume =	10.106	acre-feet
Initial Surcharge Volume (ISV) =	user	ft <sup>3</sup>
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H <sub>total</sub> ) =	user	ft
Depth of Trickle Channel (H <sub>TC</sub> ) =	user	ft
Slope of Trickle Channel (S <sub>TC</sub> ) =	user	ft/ft
Slopes of Main Basin Sides (S <sub>main</sub> ) =	user	H:V
Basin Length-to-Width Ratio $(R_{L/W}) =$	user	
Initial Surcharge Area $(A_{ISV}) =$	user	ft <sup>2</sup>
Surcharge Volume Length $(L_{ISV}) =$	user	ft
Surcharge Volume Width $(W_{ISV}) =$	user	ft
Depth of Basin Floor $(H_{FLOOR}) =$	user	ft
Length of Basin Floor $(L_{FLOOR}) =$	user	ft
Width of Basin Floor (W <sub>FLOOR</sub> ) =	user	ft
Area of Basin Floor (A <sub>FLOOR</sub> ) =	user	ft <sup>2</sup>
Volume of Basin Floor ( $V_{FLOOR}$ ) =	user	ft <sup>3</sup>
Depth of Main Basin $(H_{MAIN}) =$	user	ft
Length of Main Basin $(L_{MAIN}) =$	user	ft
Width of Main Basin (W <sub>MAIN</sub> ) =	user	ft
		- 2

Area of Main Basin (A<sub>MAIN</sub>) = Volume of Main Basin (V<sub>MAIN</sub>) =

Calculated Total Basin Volume (V<sub>total</sub>) = user

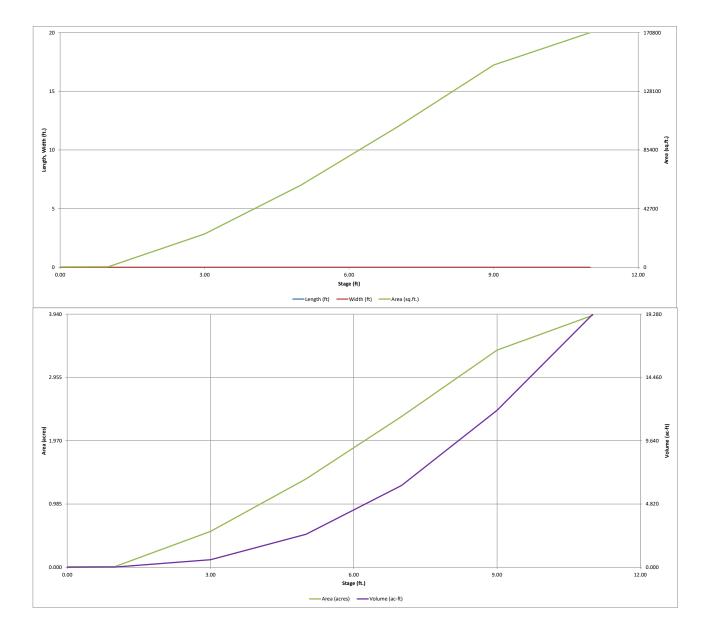
user ft<sup>2</sup> user ft<sup>3</sup>

acre-feet

Depth Increment =	1.00	ft							
		Optional				Optional			
Stage - Storage	Stage	Override	Length	Width	Area	Override	Area	Volume	Volume
Description	(ft)	Stage (ft)	(ft)	(ft)	(ft <sup>2</sup> )	Area (ft <sup>2</sup> )	(acre)	(ft 3)	(ac-ft)
Top of Micropool		0.00				300	0.007		
7090		1.00				486	0.011	393	0.009
7092		3.00				24,335	0.559	25,214	0.579
7094		5.00				59,899	1.375	109,448	2.513
7096		7.00				102,204	2.346	271,551	6.234
7098		9.00					3.381	521,042	11.961
						147,287			
7100		11.00				170,790	3.921	839,119	19.264
								1	
								-	
								1	
								<u> </u>	
								1	
								1	
								1	
								-	
								1	

#### DETENTION BASIN STAGE-STORAGE TABLE BUILDER

MHFD-Detention, Version 4.06 (July 2022)



#### DETENTION BASIN OUTLET STRUCTURE DESIGN MHFD-Detention, Version 4.06 (July 2022 Project: PRAIRIERIDGE FILING NO. 1 PRELIMINARY PLAN - PDR Basin ID: POND 1 Estimated Estimated ZONE 1 Volume (ac-ft) Outlet Type Stage (ft) VOLUME EURV WQ Zone 1 (WQCV) 4.54 1.918 Orifice Plate 100-YEAR Zone 2 (EURV) 6.38 2.946 Orifice Plate ZONE 1 AND 2 Zone 3 (100-year) 8.43 5.242 Weir&Pipe (Restrict) PERMANENT Example Zone Configuration (Retention Pond) Total (all zones) 10.106 User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP) Calculated Parameters for Underdrain ft (distance below the filtration media surface) Underdrain Orifice Area Underdrain Orifice Invert Depth = ft<sup>2</sup> Underdrain Orifice Diameter = Underdrain Orifice Centroid = inches feet User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP) Calculated Parameters for Plate Centroid of Lowest Orifice = 0.00 ft (relative to basin bottom at Stage = 0 ft) WO Orifice Area per Row = 4.465E-02 lft<sup>2</sup> Depth at top of Zone using Orifice Plate = 6.38 ft (relative to basin bottom at Stage = 0 ft) Elliptical Half-Width = N/A feet Orifice Plate: Orifice Vertical Spacing = 25.50 inches Elliptical Slot Centroid = N/A feet Orifice Plate: Orifice Area per Row = Elliptical Slot Area = ]ft² 6.43 sq. inches (use rectangular openings) N/A User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest) Row 1 (required) Row 2 (optional) Row 3 (optional) Row 4 (optional) Row 5 (optional) Row 6 (optional) Row 7 (optional) Row 8 (optional) Stage of Orifice Centroid (ft) 0.00 2.13 4.25 Orifice Area (sq. inches) 6.43 6.43 6.43 Row 9 (optional) Row 10 (optional) Row 11 (optional) Row 12 (optional) Row 13 (optional) Row 14 (optional) Row 15 (optional) Row 16 (optional) Stage of Orifice Centroid (ft) Orifice Area (sg. inches) User Input: Vertical Orifice (Circular or Rectangular) Calculated Parameters for Vertical Orifice Not Selected Not Selected Not Selected Not Selected lft<sup>2</sup> Invert of Vertical Orifice = N/A N/A ft (relative to basin bottom at Stage = 0 ft) Vertical Orifice Area N/A N/A Depth at top of Zone using Vertical Orifice = N/A N/A ft (relative to basin bottom at Stage = 0 ft) Vertical Orifice Centroid = N/A N/A feet Vertical Orifice Diameter = inches N/A N/A User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir and No Outlet Pipe) Calculated Parameters for Overflow Weir Zone 3 Weir Not Selected Zone 3 Weir Not Selected Overflow Weir Front Edge Height, Ho = 6.38 ft (relative to basin bottom at Stage = 0 ft) Height of Grate Upper Edge, $H_t$ = N/A 7.38 N/A feet Overflow Weir Slope Length = Overflow Weir Front Edge Length = 18.00 N/A feet 6.08 N/A feet Overflow Weir Grate Slope = 6.00 N/A H:V Grate Open Area / 100-yr Orifice Area = 7.92 N/A Horiz. Length of Weir Sides = Overflow Grate Open Area w/o Debris = 76.20 ft<sup>2</sup> 6.00 N/A feet N/A Overflow Grate Open Area w/ Debris = Overflow Grate Type = Type C Grate N/A 38.10 N/A fť Debris Clogging % = 50% N/A % User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice) Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate Zone 3 Restrictor Not Selected Zone 3 Restrictor Not Selected Depth to Invert of Outlet Pipe = 2.50 Outlet Orifice Area = ft<sup>2</sup> N/A ft (distance below basin bottom at Stage = 0 ft) 9.62 N/A Outlet Pipe Diameter = 42.00 N/A inches Outlet Orifice Centroid : 1.75 N/A feet Restrictor Plate Height Above Pipe Invert = 42.00 . inches Half-Central Angle of Restrictor Plate on Pipe = 3.14 N/A radians User Input: Emergency Spillway (Rectangular or Trapezoidal) Calculated Parameters for Spillway Spillway Invert Stage= 9.00 ft (relative to basin bottom at Stage = 0 ft) Spillway Design Flow Depth= 0.96 feet Spillway Crest Length = Stage at Top of Freeboard = 90.00 feet 10.96 feet Spillway End Slopes = 3.00 H:V Basin Area at Top of Freeboard 3.91 acres Freeboard above Max Water Surface = 1.00 feet Basin Volume at Top of Freeboard = 19.11 acre-ft Routed Hydrograph Results in the Inflow H phs table (C ns W throu The user can override the c ring new val EURV Design Storm Return Period = WQCV 2 Year 5 Year 10 Year 25 Year 50 Year 100 Year 500 Year One-Hour Rainfall Depth (in) = 1.50 N/A N/A 1.19 1.75 2.00 2.25 2.52 3.48 7.750 10.365 17.223 21.158 3<u>3.093</u> CUHP Runoff Volume (acre-ft) 1.918 4.864 4.891 14.247 Inflow Hydrograph Volume (acre-ft) = N/A N/A 4.891 7.750 10.365 14.247 17.223 21.158 33.093 CUHP Predevelopment Peak O (cfs) : N/A N/A 14.3 40.2 111.5 139.8 289.1 61.3 178.7 OPTIONAL Override Predevelopment Peak Q (cfs) = N/A N/A 18.9 133.7 Predevelopment Unit Peak Flow, g (cfs/acre) : 2.00 N/A N/A 0.10 0.13 0.42 0.77 0.97 0.93 404.7 Peak Inflow Q (cfs) 124.4 180.8 217.9 59.3 N/A N/A 96.1 262.7 Peak Outflow Q (cfs) : 0.9 16.4 34.2 66.5 90.5 126.3 284.0 1.3 1.3 Ratio Peak Outflow to Predevelopment Q = N/A N/A N/A 0.6 0.6 0.9 0.6 0.9 1.0 Structure Controlling Flow : Plate Overflow Weir 1 Plate Overflow Weir 1 Spillway Max Velocity through Grate 1 (fps) = N/A N/A N/A 0.2 0.4 0.8 1.9 1.2 1.6 Max Velocity through Grate 2 (fps) N/A N/A N/A N/A N/A N/A N/A N/A N/A Time to Drain 97% of Inflow Volume (hours) = 65 38 66 67 68 61 63 Time to Drain 99% of Inflow Volume (hours) 40 74 68 70 71 76 75 73 71

Maximum Ponding Depth (ft) =

Maximum Volume Stored (acre-ft) =

Area at Maximum Ponding Depth (acres)

4.54

1.19

6.38

2.05

6.26

1.99 4.631 7.09

2.39

7.51

2.61

8.07

2.90 9.041 8.43

3.08

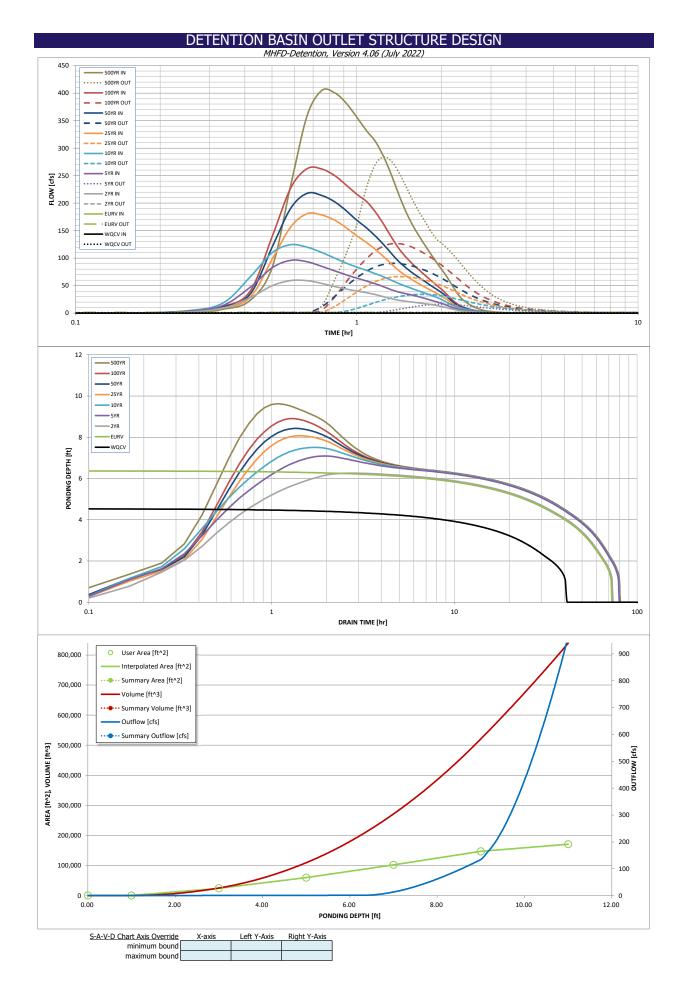
10.08

8.90

3.33

9.62

3.55 14.110



#### DETENTION BASIN OUTLET STRUCTURE DESIGN

Outflow Hydrograph Workbook Filename:

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate progra

	The user can o	verride the calcu	lated inflow hyd	rographs from t	his workbook wi	th inflow hydrog	raphs developed	l in a separate pr	ogram.	
	SOURCE	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP	CUHP
Time Interval	TIME	WQCV [cfs]	EURV [cfs]	2 Year [cfs]	5 Year [cfs]	10 Year [cfs]	25 Year [cfs]	50 Year [cfs]	100 Year [cfs]	500 Year [cfs]
5.00 min	0:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.02	1.23
	0:15:00	0.00	0.00	2.10	3.48	4.34	2.94	3.84	3.63	6.91
	0:20:00	0.00	0.00	8.85	13.71	17.93	9.40	11.21	12.05	22.76
	0:25:00	0.00	0.00	27.89	46.57	65.04	28.08	33.88	39.02	82.34
	0:30:00	0.00	0.00	49.68	82.37	109.64	97.41	119.58	138.35	233.91
	0:35:00	0.00	0.00	59.27	96.09	124.36	157.06	191.00	228.00	359.69
	0:45:00	0.00	0.00	58.94 54.09	93.33 85.12	119.79 110.39	180.85 178.49	217.88 213.98	262.75 262.22	404.71 400.82
	0:50:00	0.00	0.00	48.60	77.16	100.31	169.28	213.98	250.33	382.05
	0:55:00	0.00	0.00	43.85	69.79	91.03	155.38	186.36	233.12	356.25
	1:00:00	0.00	0.00	40.16	63.65	83.86	140.57	169.14	216.26	331.69
	1:05:00	0.00	0.00	37.16	58.37	77.70	128.38	154.98	202.98	311.79
	1:10:00	0.00	0.00	33.60	53.25	71.67	115.53	139.83	183.63	283.15
	1:15:00	0.00	0.00	29.76	47.85	65.82	102.22	123.97	160.54	249.23
	1:20:00	0.00	0.00	26.14	42.32	59.40	88.70	107.60	137.00	213.75
	1:25:00 1:30:00	0.00	0.00	23.40	38.19	53.63	76.72	93.17	116.63	183.18
	1:30:00	0.00	0.00	21.50 19.94	35.26 32.70	48.60 44.10	67.54 59.82	82.08 72.72	101.33 89.04	159.39 139.98
	1:40:00	0.00	0.00	19.94	29.79	44.10	59.82	64.58	78.41	139.98
	1:45:00	0.00	0.00	17.16	26.67	36.27	47.11	57.19	68.77	107.69
	1:50:00	0.00	0.00	15.80	23.66	32.68	41.56	50.40	59.84	93.41
	1:55:00	0.00	0.00	14.11	20.78	28.96	36.23	43.87	51.40	79.95
	2:00:00	0.00	0.00	12.25	17.92	24.87	31.10	37.62	43.49	67.38
	2:05:00	0.00	0.00	10.09	14.58	20.11	25.28	30.51	34.97	53.71
	2:10:00	0.00	0.00	7.89	11.21	15.43	19.18	23.06	26.22	40.13
	2:15:00 2:20:00	0.00	0.00	6.00	8.53	12.04	13.65	16.47	18.63	29.33
	2:20:00	0.00	0.00	4.67 3.79	6.74 5.47	9.73 7.95	10.12 7.69	12.37 9.47	13.72 10.27	22.04 16.70
	2:30:00	0.00	0.00	3.10	4.46	6.48	5.95	7.34	7.67	12.59
	2:35:00	0.00	0.00	2.54	3.64	5.25	4.59	5.67	5.69	9.42
	2:40:00	0.00	0.00	2.06	2.94	4.20	3.57	4.40	4.17	6.93
	2:45:00	0.00	0.00	1.66	2.35	3.31	2.74	3.37	3.01	5.04
	2:50:00	0.00	0.00	1.34	1.85	2.58	2.10	2.57	2.22	3.75
	2:55:00	0.00	0.00	1.08	1.45	2.01	1.64	2.01	1.75	2.93
	3:00:00	0.00	0.00	0.88	1.14	1.57	1.29	1.58	1.40	2.33
	3:05:00 3:10:00	0.00	0.00	0.70	0.89	1.22	1.01	1.24	1.12	1.84
	3:15:00	0.00	0.00	0.55	0.67	0.93	0.78	0.95	0.87	1.41
	3:20:00	0.00	0.00	0.29	0.34	0.49	0.42	0.51	0.46	0.73
	3:25:00	0.00	0.00	0.19	0.23	0.32	0.28	0.34	0.30	0.47
	3:30:00	0.00	0.00	0.12	0.14	0.18	0.17	0.20	0.18	0.27
	3:35:00	0.00	0.00	0.06	0.08	0.09	0.09	0.10	0.09	0.12
	3:40:00	0.00	0.00	0.03	0.03	0.03	0.03	0.03	0.03	0.03
	3:45:00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
	3:50:00 3:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:20:00 4:25:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:40:00 4:45:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:00:00 5:05:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:10:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:15:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:20:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:25:00 5:30:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:35:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:40:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:45:00 5:50:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5:55:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6:00:00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

#### DETENTION BASIN OUTLET STRUCTURE DESIGN

MHFD-Detention, Version 4.06 (July 2022) Summary Stage-Area-Volume-Discharge Relationships

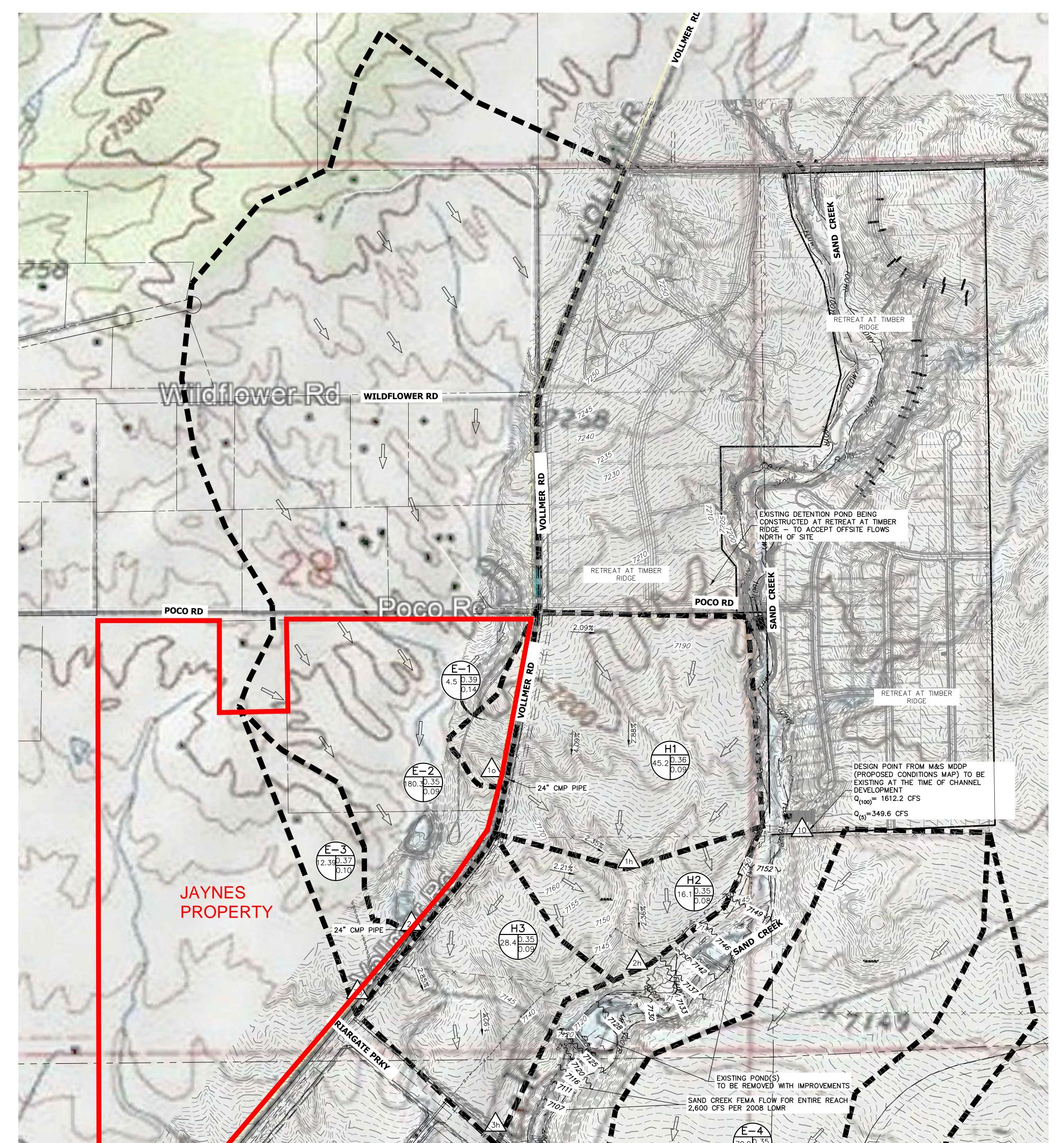
The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically. The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

Stage - Storage Description	Stage [ft]	Area [ft <sup>2</sup> ]	Area [acres]	Volume [ft <sup>3</sup> ]	Volume [ac-ft]	Total Outflow [cfs]	
							For best results, include the
							stages of all grade slope
							changes (e.g. ISV and Floor from the S-A-V table on
							-Sheet 'Basin'.
							Also include the inverts of al
							outlets (e.g. vertical orifice, overflow grate, and spillway
							where applicable).
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							4

## **REFERENCE MATERIAL**



# EXISTING DRAINAGE MAP HOMESTEAD NORTH





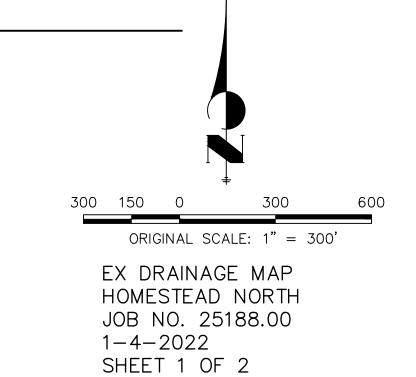
SEE SHEET 2

BASIN SUMMARY TABLE									
Tributary Sub-basin	Area (acres)	Percent Impervious	C <sub>5</sub>	C <sub>100</sub>	t <sub>c</sub> (min)	Q₅ (cfs)	Q <sub>100</sub> (cfs)	DP 1h	
E-1	4.50	9%	0.14	0.39	48.7	1.1	5.2	2h	
E-2	180.30	3%	0.09	0.35	47.4	28.1	192.9	3h	
E-3	12.39	4%	0.10	0.37	46.9	2.2	13.7	10	
E-4	70.90	2%	0.08	0.35	49.0	9.9	72.7	20	
E-5	18.80	2%	0.08	0.35	34.9	3.4	24.9	30	
E6.1	124.90	2%	0.08	0.35	48.1	17.7	130.0	40	
E6.2	49.61	2%	0.08	0.35	44.2	7.5	55.4	50	
H1	45.20	3%	0.09	0.36	34.7	8.9	61.0	6.20	
H2	16.10	2%	0.08	0.35	25.1	3.5	26.0	6.10	
H3	28.40	3%	0.09	0.35	31.3	5.9	40.8		

	Q5	Q100
P	Total	Total
h	8.0	52.4
h	10.2	69.0
h	32.5	223.2
.0	1.1	5.2
0	28.1	192.9
0	2.2	13.7
0	9.9	72.7
0	12.5	92.0
20	7.5	55.4
10	36.9	270.9

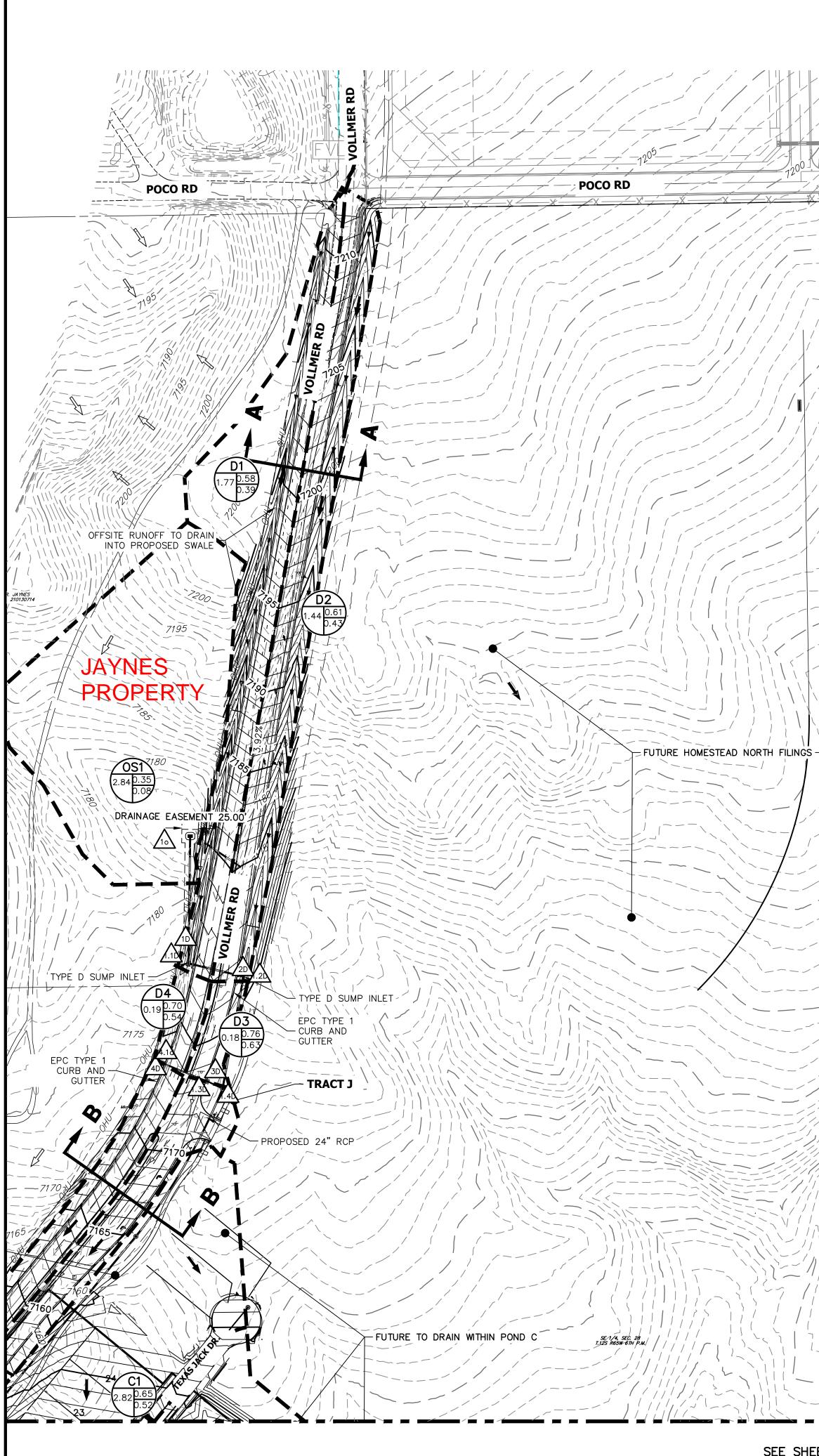
LEGEND
BASIN ID A: BASIN LABEL B: AREA C: C -100 YR D: C-5 YR
DESIGN POINT
EXISTING FLOW DIRECTION
BASIN DRAINAGE AREA
EXISTING STORM SEWER
EXISTING PROPERTY LINE
DRAINAGE ACCESS & MAINTENANCE — — — — — EASEMENT
EXISTING







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# DRAINAGE MAP

# SAND CREEK 100 YR FLOODPLAIN 100 pm 7152 mp 4:1 MAX CUT/FILL FUTURE 6' MEANDERING <sup>\_</sup> SIDEWALK

SEE SHEET 2

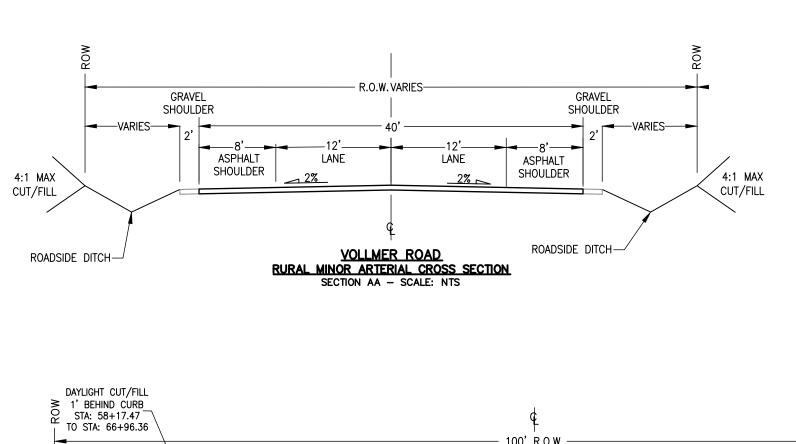
# **LEGEND**

BASIN ID A: BASIN LABEL B: AREA C: C -100 YR D: C-5 YR

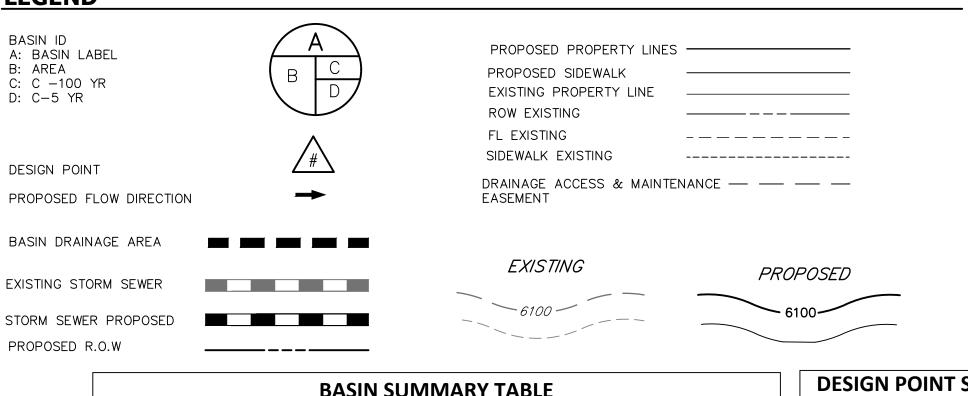
DESIGN POINT PROPOSED FLOW DIRECTION

BASIN DRAINAGE AREA

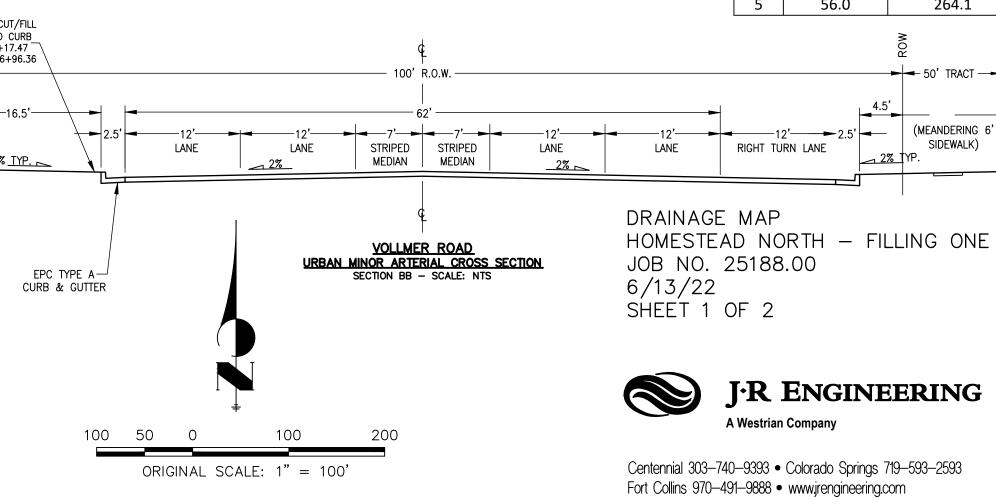
EXISTING STORM SEWER STORM SEWER PROPOSED



—16.5'— 2% <u>TYP. </u>\_\_\_\_



		BASII		ARY IAE			
Tributary	Area	Percent			tc	Q5	Q100
Sub-basin	(acres)	Impervious	С5	C100	(min)	(cfs)	(cfs)
C1	2.82	69%	0.52	0.65	13.1	5.4	11.4
C2.1	0.20	91%	0.82	0.90	5.0	0.8	1.6
C2.2	4.69	73%	0.56	0.68	12.8	9.9	20.3
C2.3	0.83	67%	0.54	0.68	10.1	1.9	3.9
C3.1	0.35	73%	0.68	0.79	5.0	1.2	2.4
C3.2	1.46	71%	0.56	0.68	8.4	3.6	7.4
C4.1	6.34	65%	0.49	0.63	12.0	12.1	25.9
C4.2	3.59	57%	0.44	0.58	12.9	5.9	13.1
C5	0.16	81%	0.74	0.84	6.4	0.6	1.0
C6	2.59	20%	0.21	0.43	6.8	2.5	8.8
D1	1.77	40%	0.40	0.60	16.5	2.4	6.0
D2	1.44	56%	0.55	0.78	15.0	2.8	6.6
D3	0.18	68%	0.63	0.76	5.4	0.6	1.2
D4	0.19	57%	0.54	0.70	6.3	0.5	1.1
D5	0.91	77%	0.71	0.82	6.0	3.1	6.1
D6	0.83	69%	0.64	0.77	6.4	2.5	5.2
D7	0.75	79%	0.72	0.82	5.0	2.8	5.3
D8	0.72	69%	0.64	0.74	5.0	2.4	4.6
OS1	2.84	2%	0.08	0.35	14.5	0.8	6.0
OS2	179.61	2%	0.08	0.35	47.4	27.1	190.9
OS3	11.98	2%	0.08	0.35	47.6	1.7	12.6

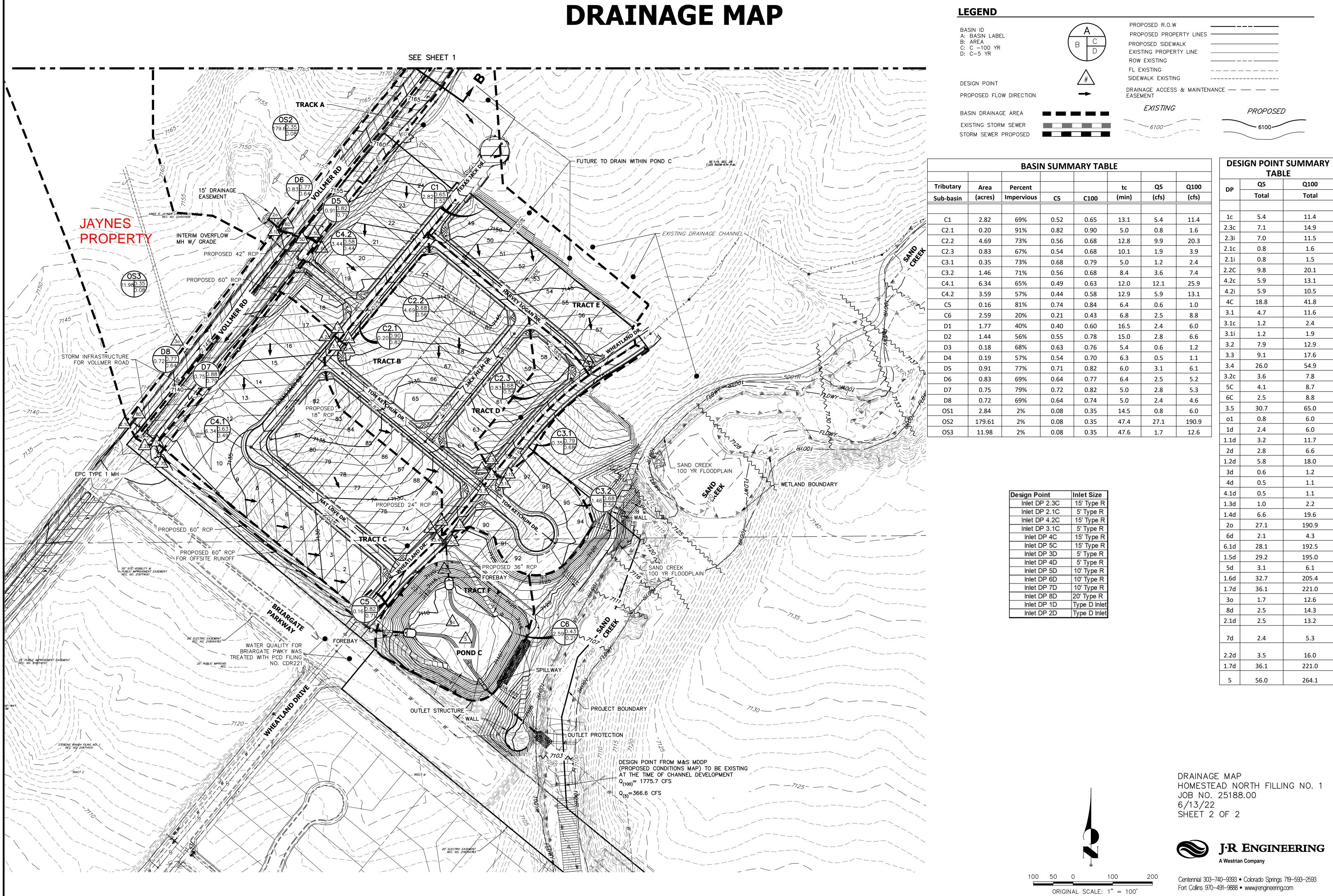


DESIGN POINT SUMMARY TABLE											
TABLEQ5Q100TotalTotal											
DP -	Total	Total									
1c	5.4	11.4									
2.3c	7.1	14.9									
2.3i	7.0	11.5									
2.1c	0.8	1.6									
2.1i	0.8	1.5									
2.2C	9.8	20.1									
4.2c	5.9	13.1									
4.2i	5.9	10.5									
4C	18.8	41.8									
3.1	4.7	11.6									
3.1c	1.2	2.4									
3.1i	1.2	1.9									
3.2	7.9	12.9									
3.3	9.1	17.6									
3.4	26.0	54.9									
3.2c	3.6	7.8									
5C	4.1	8.7									
6C	2.5	8.8									
3.5	30.7	65.0									
o1	0.8	6.0									
1d	2.4	6.0									
1.1d	3.2	11.7									
2d	2.8	6.6									
1.2d	5.8	18.0									
3d	0.6	1.2									
4d	0.5	1.1									
4.1d	0.5	1.1									
1.3d	1.0	2.2									
1.4d	6.6	19.6									
20	27.1	190.9									
6d	2.1	4.3									
6.1d	28.1	192.5									
1.5d	29.2	195.0									
5d	3.1	6.1									
1.6d	32.7	205.4									
1.7d	36.1	221.0									
30	1.7	12.6									
8d	2.5	14.3									
2.1d	2.5	13.2									
7d	2.4	5.3									
2.2d	3.5	16.0									
1.7d	36.1	221.0									
5	56.0	264.1									

🗲 50' TRACT —

\_\_\_\_ (MEANDERING 6'

SIDEWALK)



		BASI	N SUMIV	IARY TAE	BLE		
Fributary	Area	Percent			tc	Q5	Q100
Sub-basin	(acres)	Impervious	C5	C100	(min)	(cfs)	(cfs)
Sup-pasili	(40100)		6	C100	()	(010)	
C1	2.82	69%	0.52	0.65	13.1	5.4	11.4
C2.1	0.20	91%	0.82	0.90	5.0	0.8	1.6
C2.2	4.69	73%	0.56	0.68	12.8	9.9	20.3
C2.3	0.83	67%	0.54	0.68	10.1	1.9	3.9
C3.1	0.35	73%	0.68	0.79	5.0	1.2	2.4
C3.2	1.46	71%	0.56	0.68	8.4	3.6	7.4
C4.1	6.34	65%	0.49	0.63	12.0	12.1	25.9
C4.2	3.59	57%	0.44	0.58	12.9	5.9	13.1
C5	0.16	81%	0.74	0.84	6.4	0.6	1.0
C6	2.59	20%	0.21	0.43	6.8	2.5	8.8
D1	1.77	40%	0.40	0.60	16.5	2.4	6.0
D2	1.44	56%	0.55	0.78	15.0	2.8	6.6
D3	0.18	68%	0.63	0.76	5.4	0.6	1.2
D4	0.19	57%	0.54	0.70	6.3	0.5	1.1
D5	0.91	77%	0.71	0.82	6.0	3.1	6.1
D6	0.83	69%	0.64	0.77	6.4	2.5	5.2
D7	0.75	79%	0.72	0.82	5.0	2.8	5.3
D8	0.72	69%	0.64	0.74	5.0	2.4	4.6
OS1	2.84	2%	0.08	0.35	14.5	0.8	6.0
OS2	179.61	2%	0.08	0.35	47.4	27.1	190.9
OS3	11.98	2%	0.08	0.35	47.6	1.7	12.6

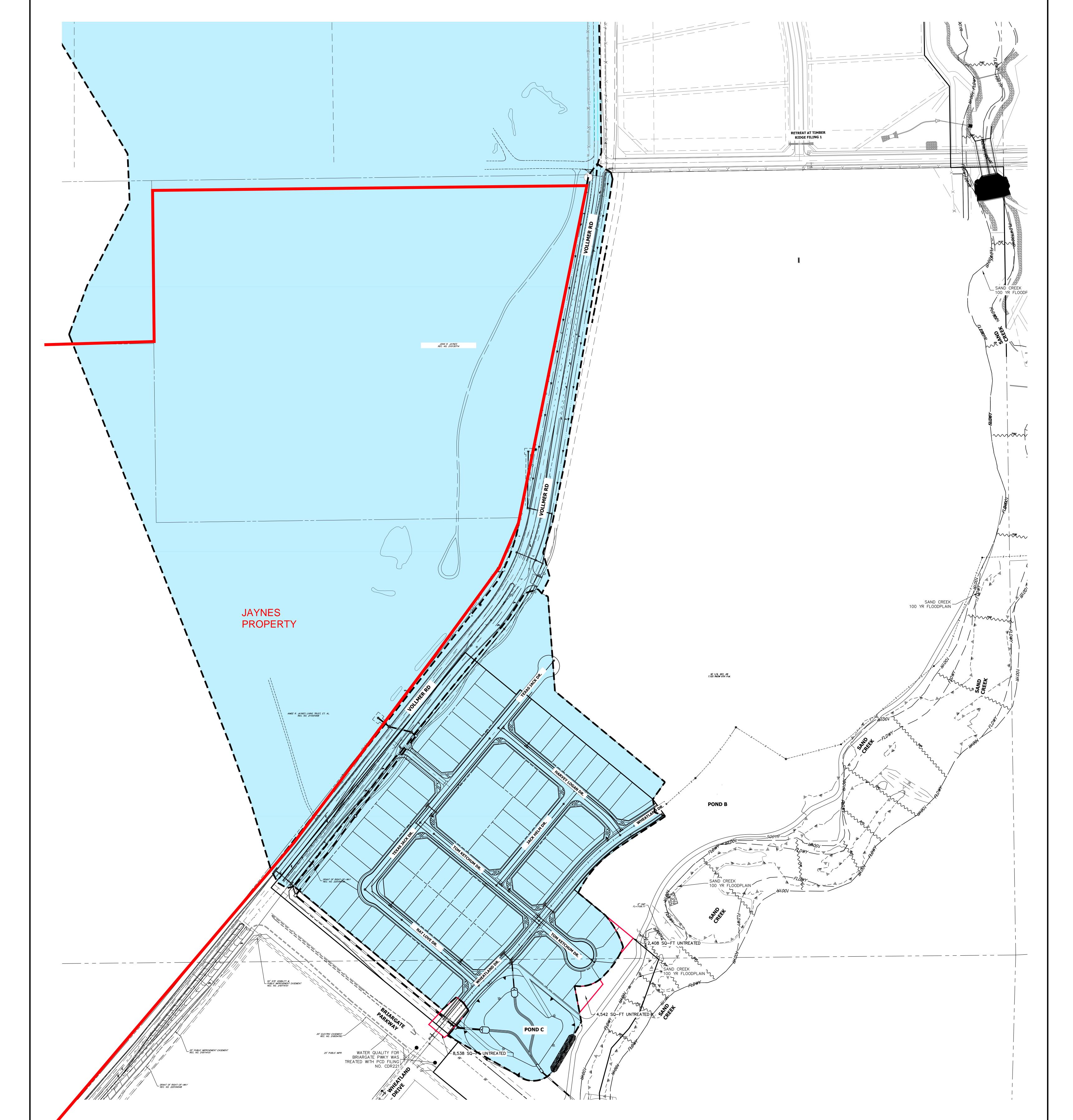
DP	Total	Total				
1c	5.4	11.4				
2.3c	7.1	14.9				
2.3i	7.0	11.5				
2.1c	0.8	1.6				
2.1i	0.8	1.5				
2.2C	9.8	20.1				
4.2c	5.9	13.1				
4.2i	5.9	10.5				
4C	18.8	41.8				
3.1	4.7	11.6				
3.1c	1.2	2.4				
3.1i	1.2	1.9				
3.2	7.9	12.9				
3.3	9.1	17.6				
3.4	26.0	54.9				
3.2c	3.6	7.8				
5C	4.1	8.7				
6C	2.5	8.8				
3.5	30.7	65.0				
o1	0.8	6.0				
1d	2.4	6.0				
1.1d	3.2	11.7				
2d	2.8	6.6				
1.2d	5.8	18.0				
3d	0.6	1.2				
4d	0.5	1.1				
4.1d	0.5	1.1				
1.3d	1.0	2.2				
1.4d	6.6	19.6				
20	27.1	190.9				
6d	2.1	4.3				
6.1d	28.1	192.5				
1.5d	29.2	195.0				
5d	3.1	6.1				
1.6d	32.7	205.4				
1.7d	36.1	221.0				
30	1.7	12.6				
8d	2.5	14.3				
2.1d	2.5	13.2				
7d	2.4	5.3				
2.2d	3.5	16.0				
1.7d	36.1	221.0				
5	56.0	264.1				

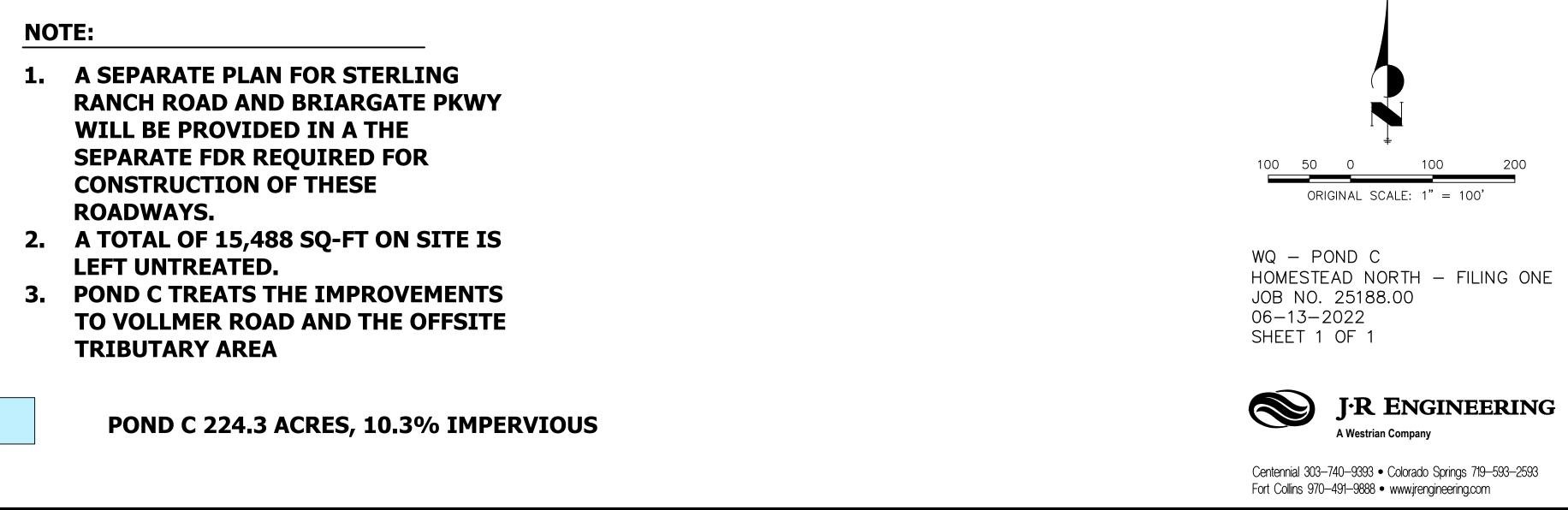
Design Point	Inlet Size
Inlet DP 2.3C	15' Type R
Inlet DP 2.1C	5' Type R
Inlet DP 4.2C	15' Type R
Inlet DP 3.1C	5' Type R
Inlet DP 4C	15' Type R
Inlet DP 5C	15' Type R
Inlet DP 3D	5' Type R
Inlet DP 4D	5' Type R
Inlet DP 5D	10' Type R
Inlet DP 6D	10' Type R
Inlet DP 7D	10' Type R
Inlet DP 8D	20' Type R
Inlet DP 1D	Type D Inlet
Inlet DP 2D	Type D Inlet

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# WATER QUALITY CAPTURE PLAN

# **HOMESTEAD NORTH**





200

#### COMPOSITE % IMPERVIOUS & COMPOSITE RUNOFF COEFFICIENT CALCULATIONS

Subdivision: Location:

Homestead North Fil. 1 El Paso County

Project Name: <u>Homestead North-Filing 1</u> Project No.: <u>25188.00</u>

Calculated By: ARJ

Checked By:

Date: 6/15/22

	Total	Stree	ts/Pave	d (100% Imj	pervious)	Reside	ntial (45	%-65% Ir	mpervious)	L	awns (29	% Imperv	rious)	5	nted C	Basins Total Weighted %
Basin ID	Area (ac)	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	Weighted % Imp.	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	Weighted % Imp.	C <sub>5</sub>	C <sub>100</sub>	Area (ac)	Weighted % Imp.	Val C <sub>5</sub>	ues C <sub>100</sub>	Imp.
C1	2.82	0.90	0.96	0.49	17.2%	0.45	0.59	2.25	51.7%	80.0	0.35	0.09	0.1%	0.52	0.65	69.0%
C2.1	0.20	0.90	0.96	0.18	90.5%	0.45	0.59	0.00	0.0%	0.08	0.35	0.02	0.2%	0.82	0.90	90.7%
C2.2	4.69	0.90	0.96	1.26	26.9%	0.45	0.59	3.33	46.1%	0.08	0.35	0.10	0.0%	0.56	0.68	73.0%
C2.3	0.83	0.90	0.96	0.28	34.1%	0.45	0.59	0.41	32.4%	0.08	0.35	0.13	0.3%	0.54	0.68	66.9%
C3.1	0.35	0.90	0.96	0.25	72.8%	0.45	0.59	0.00	0.0%	0.08	0.35	0.09	0.5%	0.68	0.79	73.3%
C3.2	1.66	0.90	0.96	0.42	25.1%	0.45	0.59	0.96	37.7%	0.08	0.35	0.28	0.3%	0.50	0.64	63.2%
C4.1	6.34	0.90	0.96	1.04	16.4%	0.45	0.59	4.76	48.8%	0.08	0.35	0.55	0.2%	0.49	0.63	65.5%
C4.2	3.59	0.90	0.96	0.59	16.4%	0.45	0.59	2.20	39.8%	0.08	0.35	0.65	0.4%	0.44	0.58	56.6%
C5	0.16	0.90	0.96	0.13	80.9%	0.45	0.59	0.00	0.0%	0.08	0.35	0.03	0.4%	0.74	0.84	81.3%
C6	2.59	0.90	0.96	0.27	10.6%	0.45	0.59	0.32	8.1%	0.08	0.35	1.89	1.5%	0.21	0.43	20.2%
36" Pipe w/ Forebay	23.23															61.3%
D1	1.77	0.90	0.96	0.69	38.8%	0.45	0.59	0.00	0.0%	0.08	0.35	1.14	1.3%	0.40	0.60	40.1%
D2	1.44	0.90	0.96	0.79	54.9%	0.45	0.59	0.00	0.0%	0.08	0.35	1.02	1.4%	0.55	0.78	56.4%
D3	0.18	0.90	0.96	0.12	67.0%	0.45	0.59	0.00	0.0%	0.08	0.35	0.06	0.7%	0.63	0.76	67.6%
D4	0.19	0.90	0.96	0.11	56.6%	0.45	0.59	0.00	0.0%	0.08	0.35	0.08	0.9%	0.54	0.70	57.5%
D5	0.91	0.90	0.96	0.70	76.5%	0.45	0.59	0.00	0.0%	80.0	0.35	0.21	0.5%	0.71	0.82	77.0%
D6	0.83	0.90	0.96	0.57	68.4%	0.45	0.59	0.00	0.0%	80.0	0.35	0.26	0.6%	0.64	0.77	69.0%
D7	0.75	0.90	0.96	0.59	78.5%	0.45	0.59	0.00	0.0%	0.08	0.35	0.14	0.4%	0.72	0.82	78.9%
D8	0.72	0.90	0.96	0.49	68.8%	0.45	0.59	0.00	0.0%	0.08	0.35	0.17	0.5%	0.64	0.74	69.3%
OffSite Basins																
OS1	2.84	0.90	0.96	0.00	0.0%	0.45	0.59	0.00	0.0%	0.08	0.35	2.85	2.0%	0.08	0.35	2.0%
OS2	179.61	0.90	0.96	0.91	0.5%	0.45	0.59	0.00	0.0%	0.08	0.35	178.71	2.0%	0.08	0.35	2.5%
OS3	11.98	0.90	0.96	0.00	0.0%	0.45	0.59	0.00	0.0%	0.08	0.35	11.99	2.0%	0.08	0.35	2.0%
60" Pipe w/ Forebay	201.22															4.4%
Pond C	224.4															10.3%

### DRAINAGE REPORT FOR

#### HOMESTEAD NORTH AT STERLING RANCH FILING NO. 1

point 5C, a 15' type R sump inlet. Basin C5 collects runoff from basin C3.2 and C5. The runoff from basin C ultimately outfalls into pond C. In the event the inlet clogs at Basin C5 the runoff will overflow to pond C. A berm has been graded to ensure that the overflow path will go into pond C.

**Basin C6** 2.59 acres and 20% percent impervious, is comprised of pond C and some single-family residential area. Runoff ( $Q_5=2.5$  cfs,  $Q_{100}=8.8$  cfs) generated in Basin B11 sheet flows into Pond C where it is treated for water-quality and is detained up until the 100 year-event. The MHFD Detention sheet for pond C is shown in Appendix C of this report.

**Pond C** has a tributary area of 224.3 acres and is 10.3 % impervious. Pond C has been graded in to fit the design volume, as shown in Appendix C of this report. This pond will be built in phase 1 of Homestead North at Sterling Ranch. The Pond C overflow emergency spillway will overflow into Sand Creek. The WQCV, 5 year and 100 year volumes, releases rates and stages for pond C are shown in Table 2.3 below. These results correspond to the Routed Hydrograph results, as shown in Appendix C of this report.

	TABLE 2.3 F	Pond C	
	Stage –ft	Volume (Acres)	Release Rate (cfs)
WQCV	3.32	1.288	0.7
<mark>5 Year</mark>	6.22	4.310	20.6
<b>100 Year</b>	<mark>9.94</mark>	<mark>9.263</mark>	173.8

The following basins are tributary to the adjacent portion of Vollmer Road being designed by JR Engineering. Runoff will be detained within pond C and the runoff will then be released into Sand Creek adjacent to the crossing of Briargate road and Sand Creek.

**Basin D1** has a tributary area of 1.77 acres and is 40.1% impervious. Basin D1 consists of the northwest portion of Vollmer road (Rural Cross Section). Runoff from basin D1 ( $Q_5=2.4$  cfs,  $Q_{100}=6.0$  cfs) drains to an adjacent roadside swale and drains into a type C inlet at design point 1D runoff is then piped at design point 1.1D in confluence with upstream runoff from the inlet collect at design point 10. From here on the runoff is piped with upstream runoff from basin OS1 into the Vollmer storm sewer system.

**Basin D2** has a tributary area of 1.44 acres and is 56.4% impervious. Basin D2 consists of the northeast portion of Vollmer road (Rural Cross Section). Runoff from basin D2 ( $Q_5=2.8$  cfs,  $Q_{100}=6.6$  cfs) drains to an adjacent roadside swale and drains into a type C inlet at design point 2D. From here



#### DETENTION BASIN STAGE-STORAGE TABLE BUILDER

Depth Increment

Stage - Storage Description

Top of Micropool

7107

7108

7109

Optional User Overrides acre-feet cre-feet

ches

tches

nches

nches

nches nches

nches

1.19

1.50

1.75

2.00

2.25

4.00

1.00

Stage

(ft)

Length Width Агеа

(ft) (ft)

age (fl

0.00

0.24

1.24

2.24

Area (acre)

0.002

0.008

0.177

0.611

ride

90

331

7,689

26,604

(ft 2)

Volume (ft 3)

51

4,061

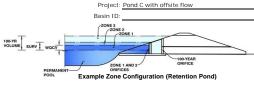
21,207

Volume (ac-ft)

0.001

0.093

0.487



Watershed Information

Selected BMP Type =	EDB	
Watershed Area =	224.3	acres
Watershed Length =	5,645	ft
Watershed Length to Centroid =	3,387	ft
Watershed Slope =	0.034	ft/ft
Watershed Imperviousness =	10.30%	percent
Percentage Hydrologic Soil Group A =	0.0%	percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =	0.0%	percent
Target WQCV Drain Time =	40.0	hours

Location for 1-hr Rainfall Depths = User Input

## After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

Water Quality Capture Volume (WQCV) =	1.285	acre-feet
Excess Urban Runoff Volume (EURV) =	2.177	acre-feet
2-yr Runoff Volume (P1 = 1.19 in.) =	3.053	acre-feet
5-yr Runoff Volume (P1 = 1.5 in.) =	6.690	acre-feet
10-yr Runoff Volume (P1 = 1.75 in.) =	10.314	acre-feet
25-yr Runoff Volume (P1 = 2 in.) =	16.752	acre-feet
50-yr Runoff Volume (P1 = 2.25 in.) =	21.154	acre-feet
100-yr Runoff Volume (P1 = 2.52 in.) =	27.479	acre-feet
500-yr Runoff Volume (P1 = 4 in.) =	55.481	acre-feet
Approximate 2-yr Detention Volume =	1.394	acre-feet
Approximate 5-yr Detention Volume =	2.181	acre-feet
Approximate 10-yr Detention Volume =	4.470	acre-feet
Approximate 25-yr Detention Volume =	6.213	acre-feet
Approximate 50-yr Detention Volume =	6.504	acre-feet
Approximate 100-yr Detention Volume =	8.393	acre-feet

#### Define Zones and Basin Geometry

enne zones and basin deometry		
Zone 1 Volume (WQCV) =	1.285	acre-feet
Zone 2 Volume (EURV - Zone 1) =	0.892	acre-feet
Zone 3 Volume (100-year - Zones 1 & 2) =	6.216	acre-feet
Total Detention Basin Volume =	8.393	acre-feet
Initial Surcharge Volume (ISV) =	user	ft <sup>3</sup>
Initial Surcharge Depth (ISD) =	user	ft
Total Available Detention Depth (H <sub>total</sub> ) =	user	ft
Depth of Trickle Channel $(H_{TC}) =$	user	ft
Slope of Trickle Channel ( $S_{TC}$ ) =	user	ft/ft
Slopes of Main Basin Sides (S <sub>main</sub> ) =	user	H:V
Basin Length-to-Width Ratio (R <sub>L/W</sub> ) =	user	
	-	-
Initial Surcharge Area (A <sub>ISV</sub> ) =	user	ft <sup>2</sup>
Surcharge Volume Length $(L_{ISV}) =$	user	ft
Surcharge Volume Width (WISV) =	user	ft

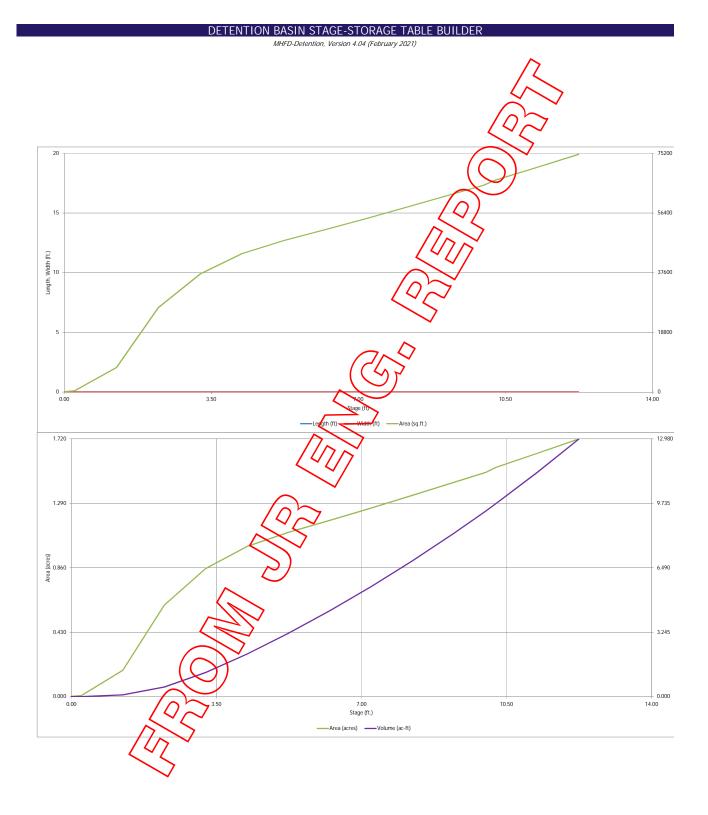
Surcharge Volume Width ( $W_{ISV}$ ) = Depth of Basin Floor (H<sub>FLOOR</sub>) = user Length of Basin Floor (L $_{\rm FLOOR}$ ) user Width of Basin Floor ( $W_{FLOOR}$ ) = user Area of Basin Floor (A<sub>FLOOR</sub>) user Volume of Basin Floor (V<sub>FLOOR</sub>) = user Depth of Main Basin (H<sub>MAIN</sub>) user Length of Main Basin ( $L_{MAIN}$ ) user Width of Main Basin ( $\rm W_{MAIN}$ ) user Area of Main Basin ( $A_{MAIN}$ ) user Volume of Main Basin (V<sub>MAIN</sub>)

# Calculated Total Basin Volume (Vtotal)

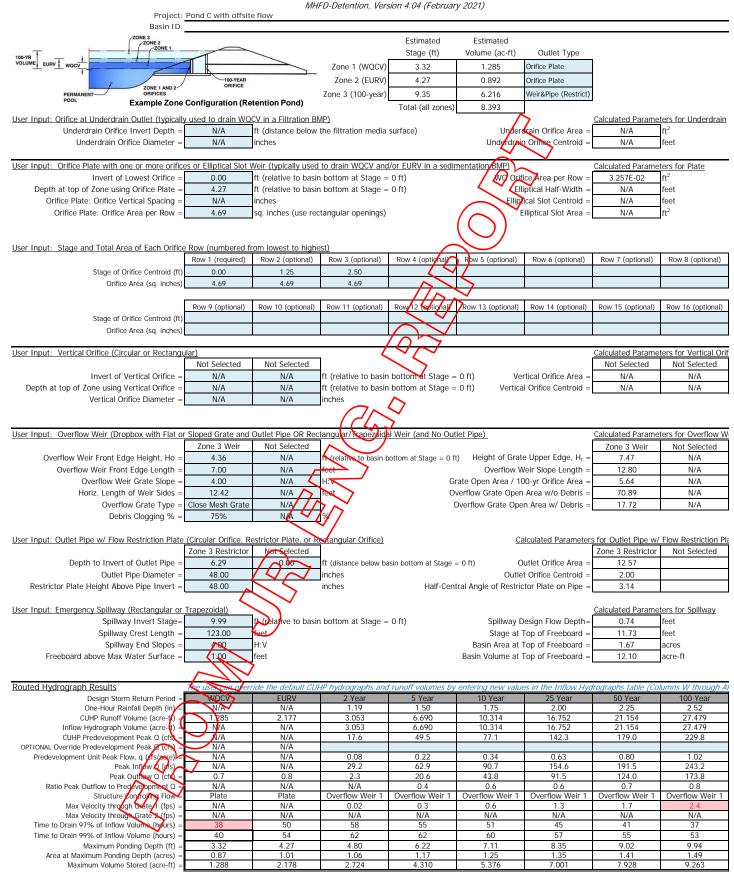
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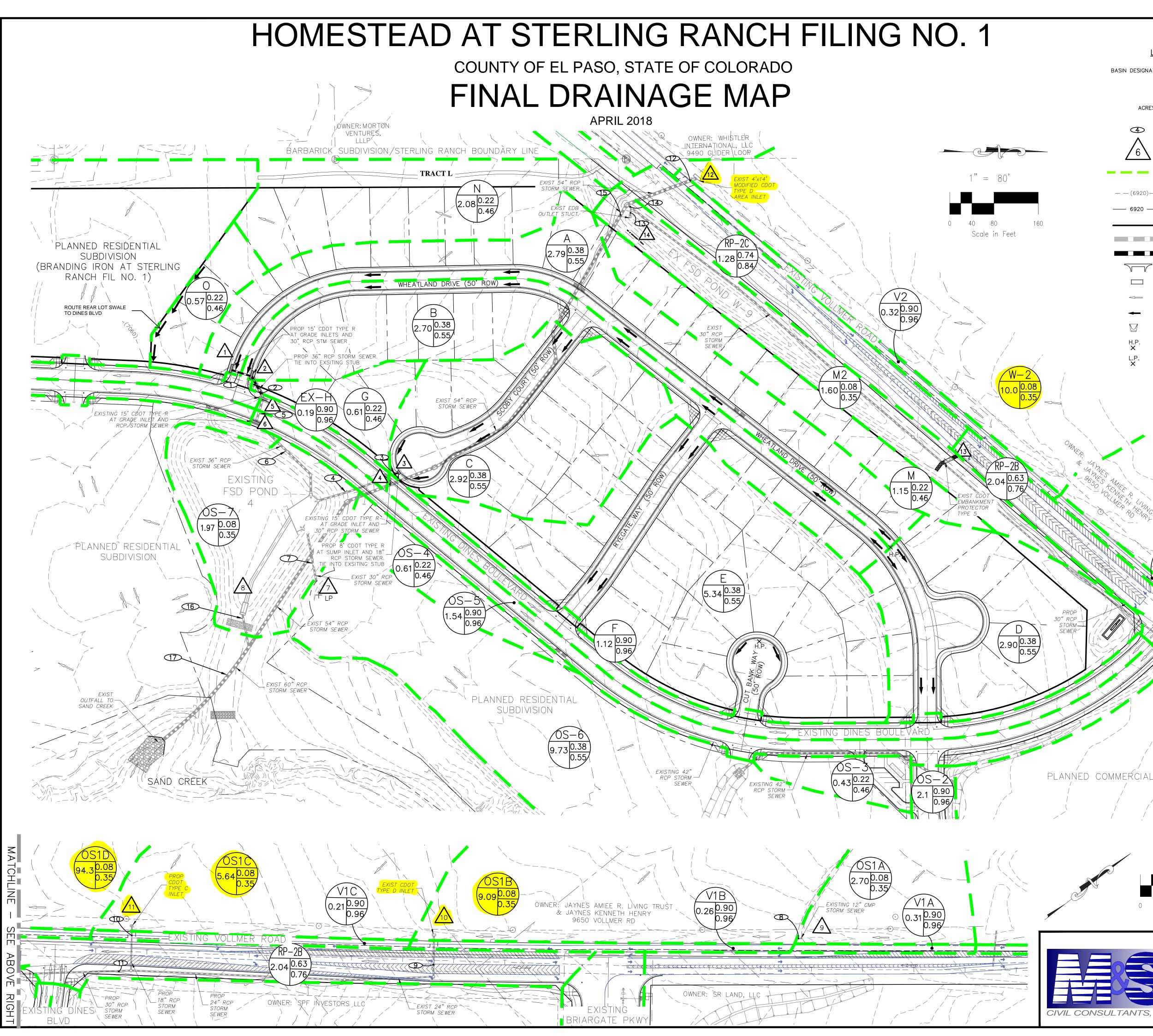
re-feet

	7109		2.24				26,604	0.611	21,207	0.487
	7110		3.24				37,234	0.855	53,126	1.220
	7111		4.24				43,658	1.002	93,573	2.148
	7112		5.24		14		47,762	1.096	139,282	3.197
	7112		6.24			<u> </u>	51,250		188,788	
					$ \land$			1.177		4.334
	7114		7.24		<b>V</b> 1		54,827	1.259	241,827	5.552
	7115		8.24			1	58,544	1.344	298,513	6.853
	7116		9.24	1. 1	)		62,316	1.431	358,943	8.240
			9.99	14	1~	7		1.496		
	7116.75* Spillway		9.99	<u> </u>		·	65,152	1.496	406,744	9.338
	7117		10.24				66,643	1.530	423,218	9.716
	7118		11.24				70,696	1.623	491,888	11.292
	7119		17.24		~			1.719		
	/119		17.24				74,859	1.719	564,665	12.963
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#### DETENTION BASIN OUTLET STRUCTURE DESIGN





					BASIN	SUMMARY		
LEGE	<u>ND</u>				BASIN	AREA (ACRES)	<b>Q</b> <sub>5</sub>	Q <sub>100</sub>
BASIN DESIGNATION ~					OS2	2.10	8.9	15.9
DASIN DESIGNATION	Z				OS3	0.43	0.4	1.3
				OS4	0.61	0.5	1.9	
	25 .25				OS5	1.54	5.6	10.0
	√ 1.35/				OS6	9.73	12.5	30.4
ACRES -	.35 c100				OS7	1.97	0.7	5.3
	PIPE RUN REFERENCE LABEL				A	2.79	3.6	8.7
(4)					В	2.70	3.6	8.6
Λ					С	2.92	4.2	10.1
	SURFACE DESIGN POINT				D	2.90	4.3	10.4
$\sqrt{6}$					E	5.34	8.2	19.9
					F	1.12	4.3	7.7
	BASIN BOUNDARY				G	0.61	0.5	1.9
					EX-H	0.19	0.9	1.6
— — (6920)— —	EXISTING CONTOUR				М	1.15	1.0	3.6
					M2	1.60	0.4	3.2
<u> </u>	PROP CONTOUR				N	2.08	1.6	5.7
					0	0.57	0.5	1.8
	FILING NO. 4 BOUNDARY				W-2	10.00	2.7	19.7
	EXISTING STORM SEWER PIPE				OS1 HISTORIC	111.70	18.9	136.8
					SUB-BASIN OS1A	2.70	0.7	5.3
	EXISTING STORM SEWER PIPE				SUB-BASIN OS1B	9.09	2.4	17.8
	CROSSPAN				SUB-BASIN OS1C	5.64	1.5	11.1
J K	CRUSSFAN				SUB-BASIN OS1D	94.3	16.3	119.5
	INLET				V1 A	0.31	1.4	2.6
	EXISTING FLOW DIRECTION				V1B	0.26	1.2	2.2
	ARROW				V1C	0.21	1.0	1.7
-					V1D	0.13	0.6	1.1
-	FLOW DIRECTION				V2	0.32	1.5	2.7
	FLARED END SECTION				RP-2B	2.04	4.9	9.9
					RP-2C	1.28	4.3	8.2
H.P. X	HIGH POINT							
L.P. X	LOW POINT				DESIGN POI	NT SUM	IAR	Y
^		DESIGN POINT	<b>Q</b> <sub>5</sub>	Q <sub>100</sub>	BAS			SI

V1D 0 1 3 0.90

SEWER

PROP∫ 24" RCP\_\_\_\_ STORM SEWER

N N

b.96

DESIGN POINT	<b>Q</b> <sub>5</sub>	<b>Q</b> <sub>100</sub>	BASIN	STRUCTURE
1	3.6	8.7	А	15'AT-GRADE INLET
2	3.6	8.6	В	15'AT-GRADE INLET
3	4.2	10.1	С	8' SUMP INLET
4	16.1	36.7	D, E, F	15'AT-GRADE INLET
5	4.2	19.7	G, EX—H, FLOWBY DP4	EX 15' AT-GRADE INLET
6	14.1	26.7	OS2, OS3, OS4, OS5	EX 15' AT-GRADE INLET
7	12.6	30.5	OS6	EX 18' RCP
8	49.2	105.3	OS7, PR4, PR6, PR7	EX FDS POND 4
9	1.6	7.0	OS1A, V1A	EX 12" CMP CULVERT
10	4.8	26.3	OS1B, V1B, DP6	EX 2.9'x5.7' CDOT TYPE D INLET
11	2.2	12.3	OS1C, V1C,	EX 2.9'x2.9' CDOT TYPE C INLET
12	18.9	133.7	OS1D, V1D, W-2, V2	EX 4'x14' MOD CDOT TYPE D INLET
13	2.8	5.6	RP-2B	EX CDOT EMBANKMENT PROTECTOR TYPE 5
14	8.9	21.2	M, M2, RP2C, DP13	EX FSD POND W-9

ST	ORN	1 SEV	NER SUM	MARY
PIPE RUN	<b>Q</b> <sub>5</sub>	<b>Q</b> <sub>100</sub>	PIPE SIZE	CONTRIBUTING PIPES/DP'S
1	3.6	8.7	30" RCP	DP1
2	7.1	17.2	36" RCP	DP2, PR1
3	4.2	10.1	18"RCP	DP3
4	16.8	29.4	30" RCP	DP4, PR3
5	10.8	30.0	36" RCP	DP5, PR2
6	21.0	44.6	36" RCP	DP6, PR5
7	12.6	30.5	24" RCP	DP7
8	1.6	7.0	12" CMP	DP9
9	4.8	26.3	24" RCP	DP10
10	2.2	12.3	18"RCP	DP11
11	7.0	38.6	30" RCP	PR5, PR6
12	18.9	133.7	54" RCP	DP12
13	0.6	8.7	18"RCP	OUTFLOW EDB POND W-9
14	7.6	47.2	30" RCP	PR7, PR9
15	23.8	164.1	54" RCP	PR8, PR10
16	2.7	36.2	30" RCP	OUTFLOW EDB POND 4
17	26.5	200.3	60"RCP	PR11, PR12

## REVISED POND W-9 FSD BASIN DATA

WQ WATER SURFACE EL = 7086.59 WQ VOLUME=0.092 AC-FT EURV WATER SURFACE EL = 7087.99 EURV VOLUME=0.390 AC-FT 100-YR WATER SURFACE EL=7088.84 SPILLWAY CREST EL=7088.84 TOP OF EMBANKMENT EL=7090.5 100-YR VOLUME=0.638 AC-FT 100-YR INFLOW = 21.2 CFS 100-YR RELEASE = 8.7 CFS

		FF-SITE RAINGE		FOR BURIED UTI 48 HRS BEFO CALL 1-800	
	20 BOULDER CRESCENT, SUITE 110	HOMESTEAD	AT STERLI	NG RANCH F	TIL NO. 1
	COLORADO SPRINGS, CO 80903 PHONE: 719.955.5485	F	INAL DRAI	NAGE MAP	
		PROJECT NO. 09-005	SCALE:	DATE: 4/12/2018	
L CONSULTANTS, INC.		DESIGNED BY: CMN DRAWN BY: CMN CHECKED BY: VAS	HORIZONTAL: 1"=80' VERTICAL: N/A	SHEET 1 OF 1	FDM01

REVISED POND 4 FSD

BASIN DATA

WQ WATER SURFACE EL = 7056.39 WQ VOLUME=0.046 AC-FT EURV WATER SURFACE EL = 7058.46 EURV VOLUME=1.510 AC-FT

100-YR WATER SURFACE EL=7059.98

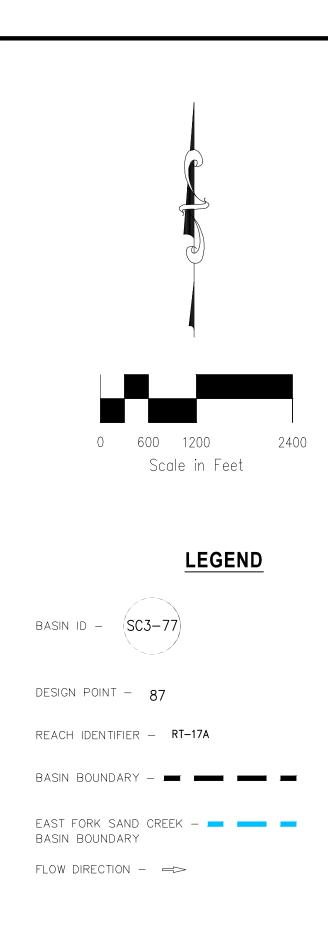
SPILLWAY CREST EL=7060.0 TOP OF EMBANKMENT EL=7063.0 100-YR VOLUME=2.915 AC-FT

100-YR INFLOW = 105.3 CFS

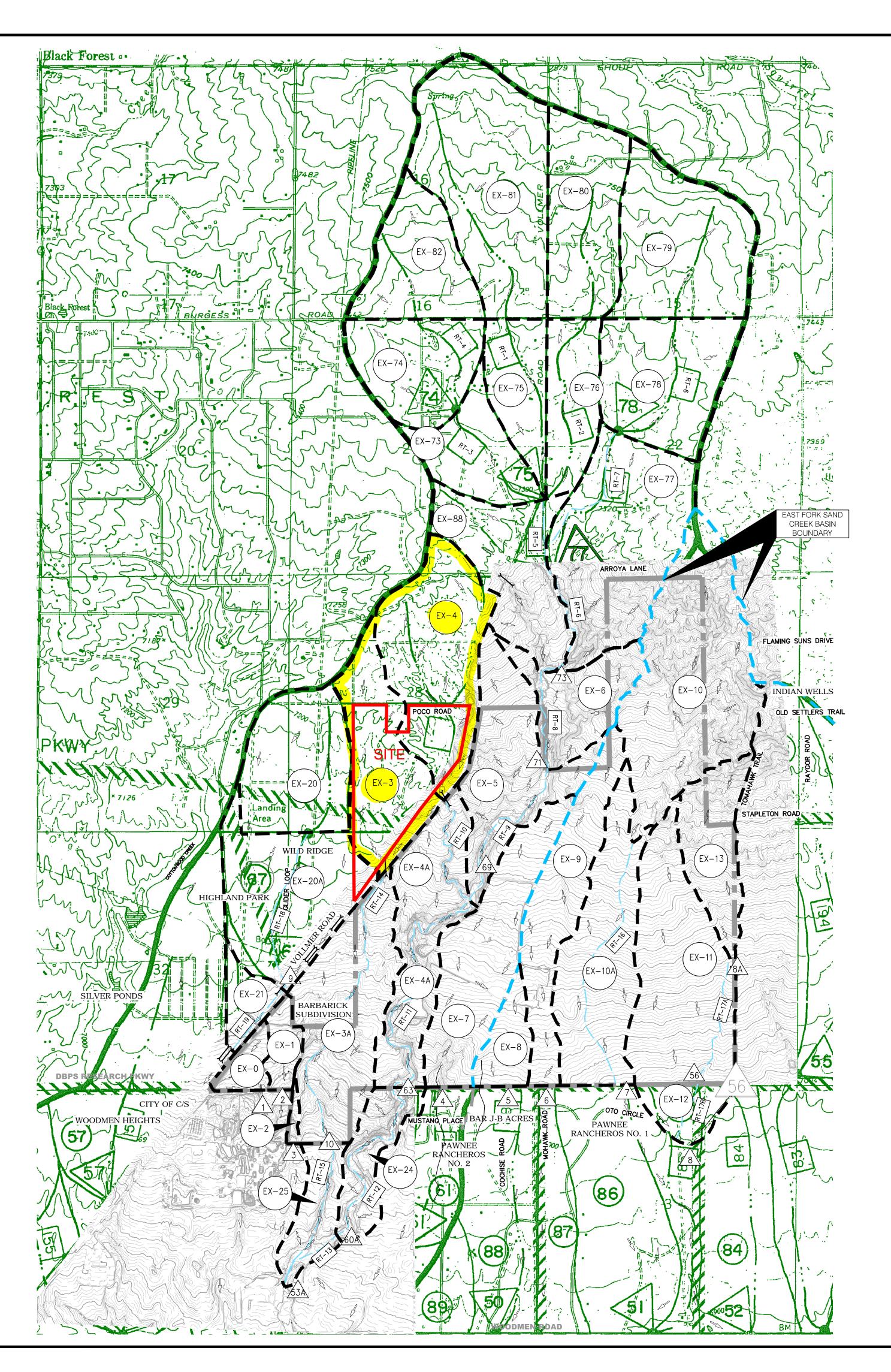
100-YR RELEASE = 36.8 CFS

**DRAINAGE MAPS** 









			BA	ASIN S	UMMAF	RY			
BASIN	CN	AREA (acres)	AREA (sq mi)	Q 2 (CFS)	Q 5 (CFS)	Q10 (CFS)	Q <sub>25</sub> (CFS)	Q 50 (CFS)	Q100 (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)	Q2 (CFS)	Q5 (CFS)	Q10 (CFS)	Q 25 (CFS)	Q 50 (CFS)	Q100 (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	GN PO	INT SU	MMARY	′ (VOLI	JME)
DESIGN POINT	AREA (sq mi)	V₂ (AC−FT)	V5 (AC-FT)	V10 (AC-FT)	V25 (AC−FT)	V50 (AC−FT)	V100 (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

SUMMARY (PEAK FLOW)										
DBPS DESIGN POINT	AREA (sq mi)	Q10 (CFS)	Q 100 (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							
DP-56	0.79	63.6	265.0							





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

# 2018 STERLING RANCH MDDP

EXISTING H	IYDROLOGI	C CONDITIONS MA	١P
PROJECT NO. <b>09-002</b>	FILE: \dwg\Eng Exhi	ibits\2018-MDDP-ExistCondWSWrkMap.dwg	g
	SCALE	DATE: 08-22-18	

DESIGNED BY: DLM SCALE DATE: 08-22-18 DRAWN BY: DLM HORIZ: NTS DM1	11(00E01 1(0: 00 002		AIIDIG (2010 MBBI EXISCOULD	ne minimap: a mg
	DESIGNED BY: <b>DLM</b>	SCALE	DATE: 08-22-18	
	DRAWN BY: DLM	HORIZ: NTS		
CHECKED BY: VAS VERT: NTS	CHECKED BY: VAS	VERT: NTS		

		DEVELO	PED AREA	/IMPERVIOU	JS AREA	LANDS	SCAPE/UN	DEVELOPED	) AREAS	١	NEIGHTED			WEIGHTED	CA	IMPERVIOUSNESS
	TOTAL		0 / 0)				0 (0)									
BASIN		AREA (AC)	C(2)	C(5)	C(100)	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(2)	CA(5)	CA(100)	%
EX-A	0.78	0.00	0.03	0.09	0.36	0.78	0.03	0.09	0.36	0.03	0.09	0.36	0.02	0.07	0.28	2%
EX-B	2.80	0.00	0.03	0.09	0.36	2.80	0.03	0.09	0.36	0.03	0.09	0.36	0.08	0.25	1.01	2%
EX-C	41.40	0.00	0.03	0.09	0.36	41.40	0.03	0.09	0.36	0.03	0.09	0.36	1.24	3.73	14.90	2%
EX-D	1.30	0.00	0.03	0.09	0.36	1.30	0.03	0.09	0.36	0.03	0.09	0.36	0.04	0.12	0.47	2%
EX-E	72.40	0.00	0.03	0.09	0.36	72.40	0.03	0.09	0.36	0.03	0.09	0.36	2.17	6.52	26.06	2%
EX-F	8.70	0.00	0.03	0.09	0.36	8.70	0.03	0.09	0.36	0.03	0.09	0.36	0.26	0.78	3.13	2%
EX-G	8.30	0.00	0.03	0.09	0.36	8.30	0.03	0.09	0.36	0.03	0.09	0.36	0.25	0.75	2.99	2%
EX-H	6.50	0.00	0.03	0.09	0.36	6.50	0.03	0.09	0.36	0.03	0.09	0.36	0.20	0.59	2.34	2%
OS-1	2.00	2.00	0.06	0.13	0.40	0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.12	0.26	0.80	10%
OS-2	5.30	5.30	0.06	0.13	0.40	0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.32	0.69	2.12	10%
EX-3	44.30	44.30	0.04	0.11	0.38	0.00	0.02	0.08	0.35	0.04	0.11	0.38	1.77	4.65	16.61	- 5%
EX-4A	77.00	77.00	0.04	0.11	0.38	0.00	0.02	0.08	0.35	0.04	0.11	0.38	3.08	8.09	28.88	5%
EX-4B	70.00	70.00	0.04	0.11	0.38	0.00	0.02	0.08	0.35	0.04	0.11	0.38	2.80	7.35	26.25	5%

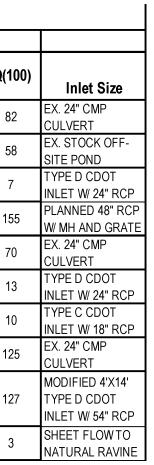
		WEIGHTEI	D		OVER	LAND		STREE	ET / CH	IANNEL	FLOW	Тс	I IN	ITENSI	ΓY	TOT	AL FLO	OWS
BASIN	CA(2)	CA(5)	CA(100)	C(5)	Length <i>(ft)</i>	Height <i>(ft)</i>	Tc ( <i>min)</i>	Length <i>(ft)</i>	Slope (%)	Velocity (fps)	Tc ( <i>min</i> )	TOTAL <i>(min)</i>	l(2) (in/hr)	l(5) (in/hr)	l(100) (in/hr)	Q(2) (cfs)	Q(5) (cfs)	Q(100) (cfs)
EX-A	0.02	0.07	0.28	0.09	240	9	18.3					18.3	2.58	3.23	5.41	0.1	0.2	2
EX-B	0.08	0.25	1.01	0.09	300	24	15.9	120	2.0%	1.0	2.0	17.9	2.60	3.25	5.46	0.2	0.8	6
EX-C	1.24	3.73	14.90	0.09	300	18	17.5	1300	2.9%	1.7	12.7	30.2	1.98	2.47	4.15	2	9	62
EX-D	0.04	0.12	0.47	0.09	225	10	16.7					16.7	2.68	3.36	5.64	0.1	0.4	3
EX-E	2.17	6.52	26.06	0.09	280	20	15.9	3400	2.5%	1.6	35.8	51.8	1.34	1.66	2.79	3	11	73
EX-F	0.26	0.78	3.13	0.09	300	12	20.0	560	2.0%	1.4	6.6	26.6	2.13	2.66	4.47	1	2	14
EX-G	0.25	0.75	2.99	0.09	300	10	21.2	420	2.0%	1.4	4.9	26.2	2.15	2.69	4.51	1	2	13
EX-H	0.20	0.59	2.34	0.09	300	10	21.2	800	2.0%	1.4	9.4	30.7	1.96	2.45	4.11	0.4	1.4	10
OS-1	0.12	0.26	0.80	0.08	300	10	21.4					21.4	2.39	2.99	5.01	0.3	0.8	4
OS-2	0.32	0.69	2.12	0.08	300	12	20.2					20.2	2.46	3.08	5.16	1	2	11
EX-3	1.77	4.65	16.61	0.08	300	10	21.4	650	2.0%	1.4	7.7	29.1	2.02	2.53	4.24	4	12	70
EX-4A	3.08	8.09	28.88	0.08	300	9	22.2	2400	2.0%	1.4	28.3	50.5	1.37	1.70	2.85	4	14	82
EX-4B	2.80	7.35	26.25	0.08	300	10	21.4	3500	1.8%	1.3	43.5	64.9	1.07	1.32	2.22	3	10	58

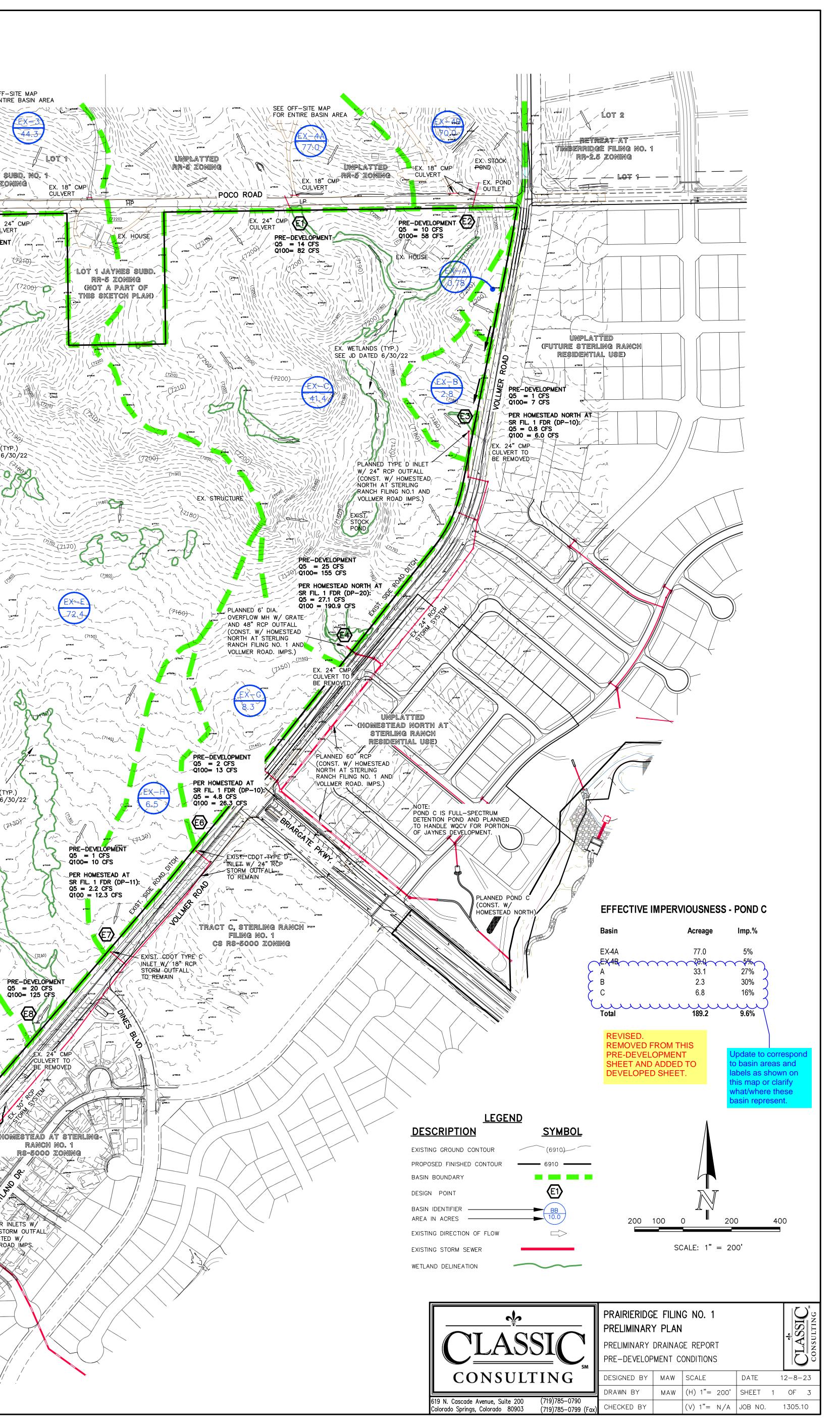
					Inten	sity	Flow	
Design Point(s)	Contributing Basins	Equivalent CA(5)	Equivalent CA(100)	Maximum Tc	I(5)	I(100)	Q(5)	Q(10
E1	EX-4A	8.09	28.88	50.5	1.70	2.85	14	82
E2	EX-4B	7.35	26.25	64.9	1.32	2.22	10	58
E3	EX-A, EX-B	0.32	1.29	18.3	3.23	5.41	1	7
E4	EX-4A, EX-4B, EX-C	19.16	70.03	64.9	1.32	2.22	25	155
E5	EX-3	4.65	16.61	29.1	2.53	4.24	12	70
E6	EX-G	0.75	2.99	26.2	2.69	4.51	2	13
E7	EX-H	0.59	2.34	30.7	2.45	4.11	1	10
E8	EX-3, EX-E, OS-2	11.86	44.80	51.8	1.66	2.79	20	125
E9	DP-E8, EX-F, OS-1	12.90	48.73	55.8	1.55	2.60	20	127
E10	EX-D	0.12	0.47	16.7	3.36	5.64	0.4	3

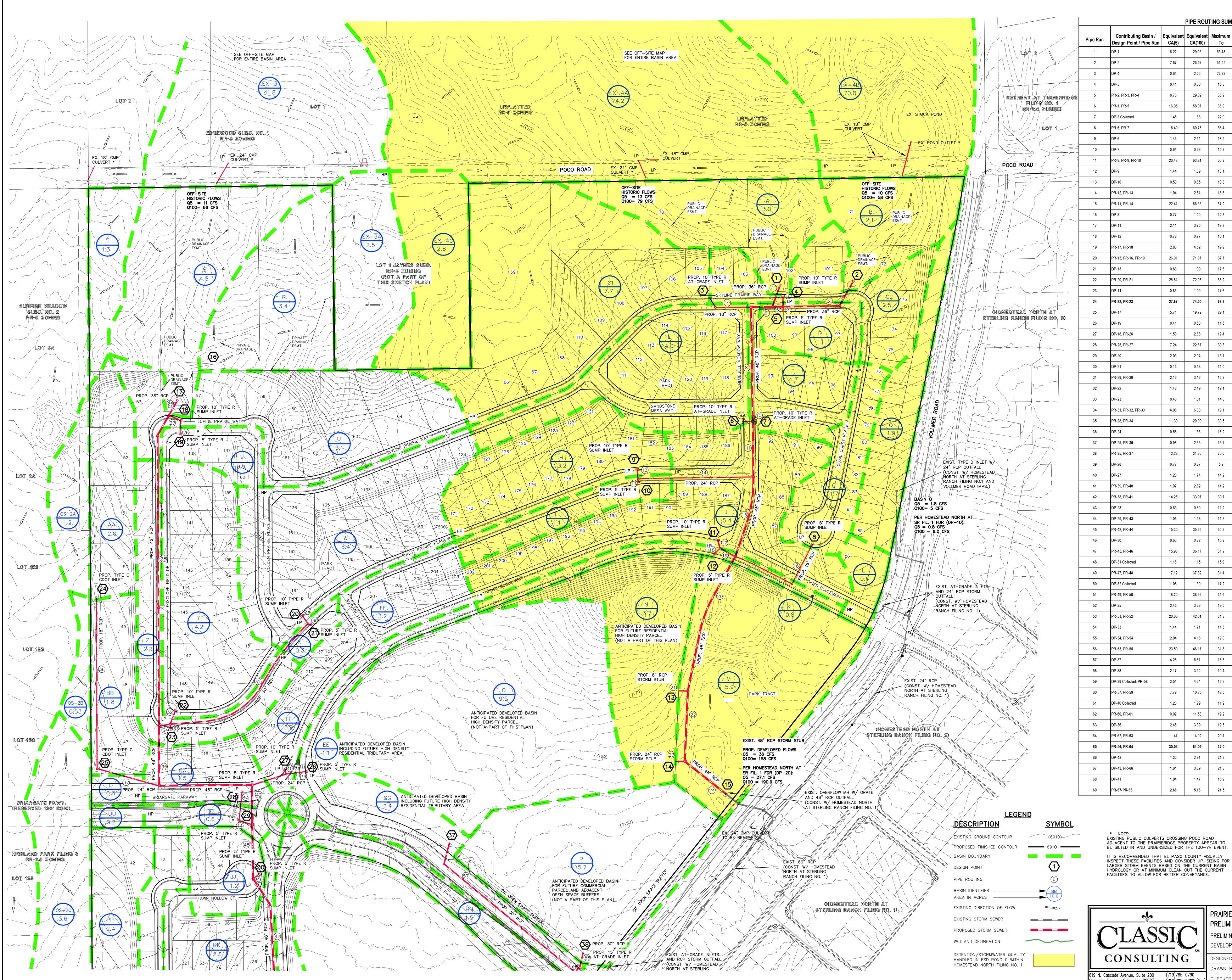
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SUNRISE MEADOW SUBD, NO. 2 RR-5 ZONING PRE-DEVELOPMENT Q5 = 0.4 CFS Q100= 3 CFS	ensise ensise
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LOT 151 HIGHLAND PARK FILING 3 RR=2.5 ZONING CONT 153 CONT 153 CON	PARTA PA
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WILDRIDGE SUBD- NO. 2 RR-5mzZONING	
PRE-DEVELOPMENT Q5 = 20 CFS Q100= 127 CFS PER HOMESTEAD AT SR FIL. 1 FDR (DP-12): Q5 = 18.9 CFS Q100 = 133.7 CFS Q100 = 127 CFS	interior of the second
(MAY BE RELOCATED W/ VOLLMER ROAD IMPS.	54" RCP STORM 54" RCP STORM 54" RCP STORM TEM TO SAND CREEK







Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

Maximum [		sity		ow	
Tc	l(5)	l(100)	Q(5)	Q(100)	Pipe Size*
53.48	1.61	2.71	13	79	PROP. 36" RCP
65.92	1.30	2.18	10	58	PROP. 36" RCP
23.38 15.3	2.86	4.79 5.86	2	13 4	PROP. 24" RCP 
65.9	1.30	2.18	1.4	65	PROP. 42" RCP
65.9	1.30	2.18	22	128	PROP. 48" RCP
22.9	2.89	4.85	4	9	PROP. 18" RCP
66.4	1.29	2.16	24	131	PROP. 48" RCP
18.2	3.23	5.43	5	12	PROP. 24" RCP
15.3	3.49	5.86	2.2	5	PROP. 18" RCP
66.9	1.28	2.14	26	137	PROP. 48" RCP
18.1	3.24	5.44	5	10	PROP. 24" RCP
13.8	3.65	6.13	1.8	4	PROP. 18" RCP
18.6	3.20	5.38	6	14	PROP. 24" RCP
67.2	1.27	2.13	28	141	PROP. 48" RCP
12.3 19.7	3.81 3.11	6.40 5.23	3	6 20	PROP. 18" RCP 
19.7	4.11	6.91	3	5	PROP. 18" RCP
19.9	3.10	5.20	9	23	PROP. 30" RCP
67.7	1.26	2.11	33	152	PROP. 48" RCP
17.6	3.28	5.51	3	6	PROP. 18" RCP
68.2	1.25	2.09	34	153	PROP. 48" RCP
17.6	3.28	5.51	3	6	PROP. 24" RCP
68.2	1.25	2.09	35	155	PROP. 48" RCP
29.1	2.53	4.24	14	84	PROP. 42" RCP
11.5	3.92	6.58	1.6	3	PROP. 18" RCP
19.4	3.14	5.27	5	15	PROP. 24" RCP
30.3	2.47	4.14	18	94	PROP. 42" RCP
15.1	3.51	5.89	7	17	PROP. 24" RCP
11.0	3.98	6.68	0.5	1.2	PROP. 18" RCP
15.9	3.43	5.76	7	18	PROP. 30" RCP
19.1	3.16	5.31	4	12	PROP. 24" RCP
14.8	3.54	5.95	2	6	PROP. 18" RCP
19.1	3.16	5.31	13	34	PROP. 30" RCP
30.5	2.46	4.12	28	120	PROP. 48" RCP
16.2	3.41	5.72	2	8	PROP. 18" RCP
16.7	3.36	5.64	3	13	PROP. 24" RCP
30.6	2.45	4.11	30	129	PROP. 48" RCP
5.2 14.2	5.10 3.60	8.56 6.05	4	7	PROP. 18" RCP PROP. 24" RCP
14.2	3.60	6.05	7	16	PROP. 24" RCP
30.7	2.45	4.11	35	139	PROP. 48" RCP
11.2	3.96	6.64	2	6	PROP. 18" RCP
11.3	3.94	6.62	4	9	PROP. 24" RCP
30.9	2.44	4.09	37	145	PROP. 48" RCP
15.9	3.44	5.77	2	5	PROP. 18" RCP
31.2	2.42	4.07	39	147	PROP. 48" RCP
15.9	3.43	5.76	4	7	PROP. 18" RCP
31.4	2.41	4.05	41	151	PROP. 48" RCP
17.2	3.32	5.57	4	7	PROP. 18" RCP
31.6	2.40	4.03	44	156	PROP. 48" RCP
19.5	3.13	5.25	8	18	PROP. 30" RCP
31.8	2.39	4.02	49	169	PROP. 54" RCP
11.5	3.92	6.59	6	11	PROP. 24" RCP
19.0	3.17	5.31	9	22	PROP. 30" RCP
31.8	2.39	4.02	56	185	PROP. 54" RCP
18.5	3.21	5.38	14	30	PROP. 30" RCP
10.4	4.07	6.83	9	21	PROP. 30" RCP
12.2	3.83	6.43	13 	30 55	PROP. 36" RCP 
18.5 11.2	3.21	5.38 6.66	25 5	55 9	PROP. 36" RCP PROP. 18" RCP
11.2	3.96	5.29	28	9 61	PROP. 18" RCP PROP. 36" RCP
19.2	3.15	5.29	8	18	PROP. 36" RCP PROP. 30" RCP
20.1	3.08	5.25	35	77	PROP. 42" RCP
32.0	2.38	4.00	84	244	PROP. 60" RCP
21.2	3.00	5.04	4	15	PROP. 24" RCP
21.3	3.00	5.03	5	19	PROP. 24" RCP
15.9	3.43	5.76	4	8	PROP. 18" RCP
21.5	2.98	5.00	8	26	PROP. 30" RCP

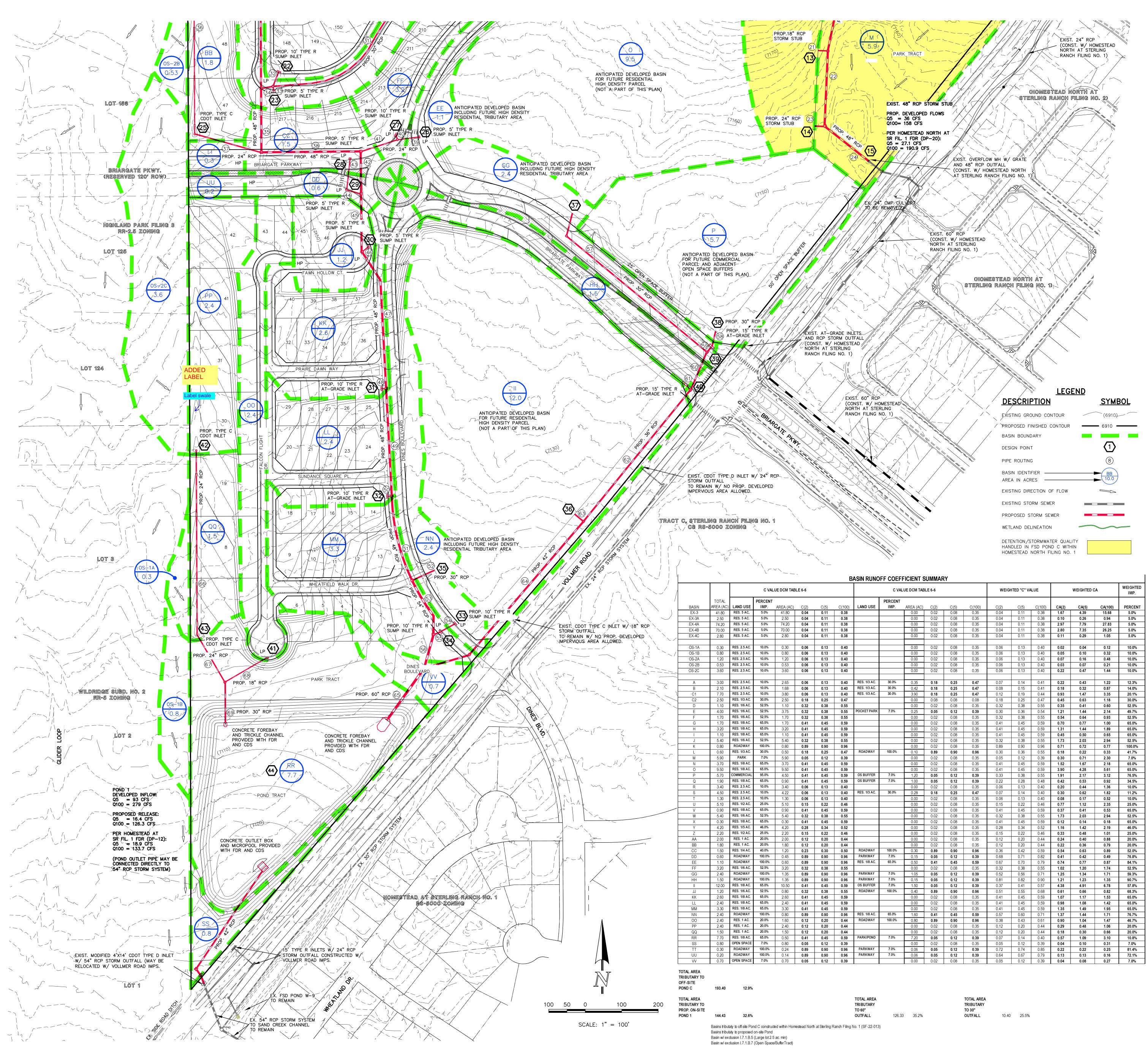


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SCALE: 1" = 100'

200

		JUNEL. 1	- 100	
PRAIRIERIDG PRELIMINAR`		G NO. 1		SSIC SSIC
PRELIMINARY DEVELOPED C				CLA
DESIGNED BY	MAW	SCALE	DATE 1	0-5-23
DRAWN BY	MAW	(H) 1"= 100'	SHEET 2	OF 3
CHECKED BY		(V) 1"= N/A	JOB NO.	1305.10



D	ASIN KUNU				XI		<b>I</b>						
		C VAL	UE DCM TAB	LE 6-6			WEIG	HTED "C" V	ALUE		WEIGHTED IMP.		
		PERCENT		<u> </u>	0/5	0//023	2/2)	0/5	0///20		<b>.</b>		
)	LAND USE	IMP.	AREA (AC)	C(2)	C(5)	C(100)	C(2)	C(5)	C(100)	CA(2)	CA(5)	CA(100)	PERCENT
			0.00	0.02	0.08	0.35	0.04	0.11	0.38	1.67	4.39	15.68	5.0%
			0.00	0.02	0.08	0.35	0.04	0.11	0.38	0.10 2.97	0.26	0.94 27.83	5.0% 5.0%
			0.00	0.02	0.08	0.35	0.04	0.11	0.38	2.97	7.19	27.83	5.0%
			0.00	0.02	0.08	0.35	0.04	0.11	0.38	0.11	0.29	1.05	5.0%
			0.00	0.02	0.00	0.55	0.04	0.11	0.36	0.11	0.29	1.05	5.0%
			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.02	0.04	0.12	10.0%
			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.05	0.10	0.32	10.0%
			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.07	0.16	0.48	10.0%
			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.03	0.07	0.21	10.0%
			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.22	0.47	1.44	10.0%
	RES. 1/3 AC.	30.0%	0.35	0.18	0.25	0.47	0.07	0.14	0.41	0.22	0.43	1.22	12.3%
	RES. 1/3 AC.	30.0%	0.42	0.18	0.25	0.47	0.08	0.15	0.41	0.18	0.32	0.87	14.0%
	RES. 1/3 AC.	30.0%	3.90	0.18	0.25	0.47	0.12	0.19	0.44	0.93	1.47	3.35	20.1%
			0.00	0.08	0.08	0.08	0.18	0.25	0.47	0.45	0.63	1.18	30.0%
	POCKET PARK	7.0%	0.00	0.02	0.08	0.35	0.32	0.38	0.55	0.35	0.41	0.60	52.5%
	FOCKETFARK	7.0%	0.25	0.05	0.12	0.39	0.30	0.36	0.54	1.21	1.44	2.14	49.7%
			0.00	0.02	0.08	0.35	0.32	0.38	0.55	0.54 0.70	0.64	0.93	52.5% 65.0%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.31	1.44	1.89	65.0%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.45	0.50	0.65	65.0%
			0.00	0.02	0.08	0.35	0.32	0.38	0.55	1.73	2.03	2.94	52.5%
			0.00	0.02	0.08	0.35	0.89	0.90	0.96	0.71	0.72	0.77	100.0%
	ROADWAY	100.0%	0.10	0.89	0.90	0.96	0.30	0.36	0.55	0.18	0.22	0.33	41.7%
			0.00	0.02	0.08	0.35	0.05	0.12	0.39	0.30	0.71	2.30	7.0%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.52	1.67	2.18	65.0%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	3.90	4.28	5.61	65.0%
	OS BUFFER	7.0%	1.20	0.05	0.12	0.39	0.33	0.38	0.55	1.91	2.17	3.12	76.5%
	OS BUFFER	7.0%	1.00	0.05	0.12	0.39	0.22	0.28	0.48	0.42	0.53	0.92	34.5%
			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.20	0.44	1.36	10.0%
	RES. 1/3 AC.	30.0%	0.28	0.18	0.25	0.47	0.07	0.14	0.40	0.30	0.62	1.82	11.2%
			0.00	0.02	0.08	0.35	0.06	0.13	0.40	0.08	0.17	0.52	10.0%
			0.00	0.02	0.08	0.35	0.15	0.22	0.46	0.77	1.12	2.35	25.0%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.37	0.41	0.53	65.0%
			0.00	0.02	0.08	0.35	0.32	0.38	0.55	1.73	2.03	2.94	52.5%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.12	0.14	0.18	65.0%
			0.00	0.02	0.08	0.35	0.28	0.34	0.52	1.16 0.33	1.42 0.48	2.19	46.0% 25.0%
			0.00	0.02	0.08	0.35	0.13	0.22	0.40	0.33	0.48	0.88	20.0%
			0.00	0.02	0.08	0.35	0.12	0.20	0.44	0.24	0.40	0.88	20.0%
	ROADWAY	100.0%	0.30	0.89	0.00	0.96	0.36	0.20	0.59	0.54	0.63	0.79	52.0%
	PARKWAY	7.0%	0.15	0.05	0.12	0.39	0.68	0.71	0.82	0.04	0.42	0.49	76.8%
	RES. 1/8 AC.	65.0%	0.50	0.41	0.45	0.59	0.67	0.70	0.79	0.74	0.77	0.87	84.1%
			0.00	0.02	0.08	0.35	0.32	0.38	0.55	1.02	1.20	1.74	52.5%
_	PARKWAY	7.0%	1.05	0.05	0.12	0.39	0.52	0.56	0.71	1.25	1.34	1.71	59.3%
	PARKWAY	7.0%	0.15	0.05	0.12	0.39	0.81	0.82	0.90	1.21	1.23	1.35	90.7%
	OS BUFFER	7.0%	1.50	0.05	0.12	0.39	0.37	0.41	0.57	4.38	4.91	6.78	57.8%
	ROADWAY	100.0%	0.40	0.89	0.90	0.96	0.51	0.55	0.68	0.61	0.66	0.82	68.3%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.07	1.17	1.53	65.0%
			0.00	0.02	0.08	0.35	0.41	0.45	0.59	0.98	1.08	1.42	65.0%
	DES 4/0 A.C.	65.00/	0.00	0.02	0.08	0.35	0.41	0.45	0.59	1.35	1.49	1.95	65.0%
	RES. 1/8 AC. ROADWAY	65.0% 100.0%	1.60	0.41	0.45	0.59	0.57	0.60	0.71	1.37	1.44	1.71	76.7%
	RUADWAY	100.0%	0.80	0.89	0.90	0.96	0.38	0.43	0.61	0.90	1.04	1.47	46.7%
			0.00	0.02	0.08	0.35	0.12	0.20	0.44	0.29 0.18	0.48	1.06 0.66	20.0% 20.0%
	PARK/POND	7.0%	7.20	0.02	0.08	0.35	0.12	0.20	0.44	0.18	1.09	3.10	20.0%
		1.070	0.00	0.03	0.12	0.39	0.07	0.14	0.40	0.04	0.10	0.31	7.0%
	PARKWAY	7.0%	0.00	0.02	0.00	0.39	0.00	0.72	0.85	0.22	0.10	0.31	81.4%
	PARKWAY	7.0%	0.06	0.05	0.12	0.39	0.64	0.67	0.79	0.22	0.22	0.25	72.1%
		-	0.00	0.00		0.00	0.07	0.07	1 0.70	0.10		0.10	

SURFACE ROUTING SUMMARY																		
Desig Point(		Desi	ting Basir gn Point	15 /	CA(5	)	Equival CA(100		flaximun Tc 53.5	י	<b>l(5)</b>	<b>I(1</b> )	<b>00)</b> 71	<b>Q(5)</b>	· ·	<b>100)</b> 79	Facility Siz	<u>:</u> e*
1		EX-4A, A EX-4B, B			8.22	_	29.05 26.57		53.5 65.9		1.61 1.30	2.7 2.7		13 10			PROP. 36	6" RCP
3		C1 C2, Flowby fr	om DP-3		1.47 0.64	$\rightarrow$	3.35 2.65	_	22.9 23.4		2.89	4.8		4		16 13	10' TYPE GRADE II 10' TYPE	NLET R
5		D			0.41	_	0.60		15.3		3.49	5.8		1.4		4	SUMP IN 5' TYPE F SUMP IN	२ LET
6 7		E F			1.44 0.64	$\rightarrow$	2.14 0.93	+	18.2 15.3		3.23 3.49	5.4		5 2.2		12 5	10' TYPE GRADE II 10' TYPE	NLET R AT-
8		G			0.77	_	1.00		12.3		3.81	6.4		3		6	GRADE II 5' TYPE F SUMP IN	२ LET
9		H			1.44	$\rightarrow$	1.89 0.65	_	18.1 13.8		3.24 3.65	5.4 6. <sup>2</sup>		5		10	10' TYPE SUMP IN 5' TYPE F	LET R
		J, Flowby from DP-6 & DP-7		9-7	2.11	_	3.75		19.7		3.11	5.2		7		20	SUMP IN 10' TYPE SUMP IN	R LET
12 K		K 1/2 N			0.72	$\rightarrow$	0.77		10.1		4.11 3.28	6.9 5.5		3		D	5' TYPE F SUMP IN PROP. 18	LET
13 14		1/2 N			0.83	_	1.09 1.09		17.6 17.6		3.28	5.5		3			PROP. 18	
15					0.71		2.30		17.1		3.33	5.5		2		13	EXIST. M GRATE	H WITH
16 17			:X-3A, R :X-3, S, DP-16		0.70 5.71	$\rightarrow$	2.30 19.79		18.7 29.1		3.19 2.53	5.3 4.2		2 14		12 84	PROP. 42	2" RCP
		U			1.12		2.35		19.4		3.14	5.2		4		12	10' TYPE SUMP IN 5' TYPE F	LET
19 20		v w			0.41 2.03		0.53 2.94		11.5 15.1		3.92 3.51	6.5 5.8		1.6 7		3 17	SUMP IN 10' TYPE SUMP IN	LET R
21		X			0.14	_	0.18		11.0		3.98	6.6		0.5		1.2	5' TYPE F SUMP IN 10' TYPE	२ LET
22 23		Y Z			1.42 0.48	_	2.19 1.01		19.1 14.8		3.16 3.54	5.3		4		6	SUMP IN 5' TYPE F SUMP IN	२
24		AA, OS-2A			0.56	_	1.36	1	16.2		3.41		72	2		8	CDOT TY INLET CDOT TY	PE C
25 26		BB, OS-2B EE			0.43		1.00 0.87	+	16.5 5.2	+	3.38 5.10	5.6 8.5		1		/	INLET 5' TYPE F SUMP IN	२
27		FF			1.20	_	1.74		14.2		3.60	6.0		4		11	SUMP IN 10' TYPE SUMP IN 5' TYPE F	R LET
28 29		CC DD			0.63	_	0.89	+	11.2 7.2	-	3.96 4.62	6.6 7.7		2		б 4	5' TYPE F SUMP IN 5' TYPE F SUMP IN	LET R
30		JJ			0.66	_	0.82	1	15.9		3.44	-	77	2		5	SUMP IN 5' TYPE F SUMP IN 10' TYPE	२ LET
31 32		KK LL, Flowby fro	om DP-31		1.17	_	1.53 1.80	+	15.9 17.2	-	3.43 3.32	5.7		4		9 10	10' TYPE GRADE II 10' TYPE GRADE II	NLET R AT-
33		NN			1.44		1.71	1	11.5	1	3.92	6.5		6		11	GRADE II 10' TYPE SUMP IN 10' TYPE	R LET
34 35		MM, Flowby f II (1/2 Basin)	rom DP-32		1.50 2.45	_	2.45 3.39	+	19.0 19.5		3.17 3.13	5.3 5.2		5 8		13	SUMP IN PROP. 30	LET
36		II (1/2 Basin)			2.45		3.39		19.5	1	3.13	5.2	25	8		18	PROP. 30	)" RCP
37 38		O P			4.28	_	5.61 3.12	+	18.5 10.4	-	3.21 4.07	5.3 6.8		14 9			PROP. 30 PROP. 30	
39		GG			1.34	_	1.71		12.2	1	3.83	6.4		5		11	15' TYPE GRADE II 15' TYPE	NLET
40		нн 00			1.23	_	1.35 1.47	+	11.2 15.9		3.96 3.43	6.6 5.7	66 76	5		ч	15' TYPE GRADE II 10' TYPE SUMP IN	NLET R
42		OS-2C, PP, T	T, UU		1.30	_	2.91		20.2		3.08	5.		4		15	CDOT TY	PE C
43 44		OS-1A, QQ TOTAL TRIB ON-SITE PO		A TO	0.34 <b>38.9</b> 4	_	0.78 69.68	+	14.3 <b>32.0</b>	+	3.59 <b>2.38</b>	6.0 <b>4.0</b>	03 00	1 93		ວ 79	INLET PROP. OI	
				1		1	<b></b>						I					I
	CA/~	WEIGHTE		05	OVER	LAND		STRE	ET / CH	ANNEL	. FLOW	TC Total					TAL FLO	
ASIN EX-3	CA(2)	CA(5)	CA(100)	C(5) 0.08	Length (ft) 300	Heig <i>(ft)</i> 10	ht Tc <i>(min)</i> 21.4	Lengt <sup>+</sup> (ft) 650	n Slope (%) 2.0%	Velocity (fps) 1.4	/ Tc ( <i>min</i> ) 7.7	TOTAL <i>(min)</i> 29.1	l(2) (in/hr) 2.02	l(5) (in/hr) 2.53	l(100) (in/hr) 4.24	Q(2) (cfs) 3	Q(5) (cfs) 11	Q(100) <i>(cfs)</i> 66
X-3A X-4A	0.10 2.97	0.26	0.94 27.83	0.08	300 300	17 9	18.0 22.2	2400	2.0%	1.4	28.3	18.0 50.5	2.60 1.37	3.25 1.70	5.45 2.85	0.3 4	0.9 13	5 79
X-4B <-4C	2.80 0.11	7.35	26.25 1.05	0.08	300 300	10 10	21.4	3500	1.8%	1.3	43.5	64.9 21.4	1.07 2.39	1.32 2.99	2.22 5.01	3 0.3	10 0.9	58 5
S-1A	0.02	0.04	0.12	0.08	140	5	14.3					14.3	2.87	3.59	6.03	0.0	0.0	0.7
S-1A S-1B S-2A	0.02	0.04	0.12	0.08	300 300	10 14	21.4					21.4 19.2	2.39 2.52	2.99 3.15	5.01 5.29	0.1	0.1	1.6 2.5
S-2B	0.03	0.07	0.21	0.08	100	4	11.7					11.7	3.11	3.90	6.55	0.1	0.3	2.5 1.4 7
A	0.22	0.47	1.44	0.08	300	12	20.2	45-1				20.2	2.46	3.08	5.16	0.5	1.4	
A B	0.22	0.43	0.87	0.08	200 220	12 12	14.4 15.6	150 180	2.0% 3.5%	1.4 1.9	1.8 1.6	16.2 17.2	2.72 2.65	3.41 3.31	5.72 5.56	0.6 0.5	1.5 1.1	7 5
C1 C2	0.93 0.45	0.63	3.35 1.18	0.08	300 100	10 2	21.4 14.7	150 300	3.0% 2.0%	1.7 2.8	1.4 1.8	22.9 16.4	2.31 2.70	2.89 3.39	4.85 5.68	2	4 2	16 7
D E	0.35 1.21	0.41	0.60	0.08	100 100	2	14.7 14.7	100 600	1.5% 2.0%	2.4 2.8	0.7 3.5	15.3 18.2	2.79 2.58	3.49 3.23	5.86 5.43	1.0 3	1.4 5	4 12
F G	0.54 0.70	0.64	0.93	0.08	100 50	2	14.7 10.4	180 475	5.0% 4.0%	4.5 4.0	0.7 2.0	15.3 12.3	2.79 3.04	3.49 3.81	5.86 6.40	1.5 2	2.2 3	5 6
H I	1.31 0.45	0.50	1.89 0.65	0.08 0.08	100 50	2 1	14.7 10.4	500 500	1.5% 1.5%	2.4 2.4	3.4 3.4	18.1 13.8	2.59 2.91	3.24 3.65	5.44 6.13	3 1.3	5 1.8	10 4
J K	1.73 0.71	2.03 0.72	2.94 0.77	0.08 0.08	60 15	1.2 0.3	_	650 650	1.5% 1.5%	2.4 2.4	4.4 4.4	15.8 10.1	2.75 3.28	3.45 4.11	5.78 6.91	5 2	7 3	17 5
L M	0.18 0.30	0.22	0.33	0.08 0.08	100 300	3 20	12.8 17.1	80	2.0%	2.8	0.5	13.3 17.1	2.96 2.66	3.70 3.33	6.22 5.59	0.5 1	0.8 2	2.1 13
N O	1.52 3.90	1.67 4.28	2.18 5.61	0.08	100	2	14.7 14.7	500 650	2.0%	2.8 2.8	2.9 3.8	17.6 18.5	2.62 2.56	3.28 3.21	5.51 5.38	4 10	5 14	12 30
P Q	1.91 0.42	2.17	3.12 0.92	0.12	30 80	0.6 1.6	7.7	400 300	1.5% 4.0%	2.4 2.0	2.7 2.5	10.4 15.1	3.24 2.81	4.07 3.51	6.83 5.90	6 1.2	9 1.8	21 5
R S	0.20	0.44	1.36 1.82	0.08	300 300	20	17.1	200 250	4.0%	2.0	1.7 2.1	18.7 16.3	2.55	3.19 3.40	5.35 5.70	0.5	1.4 2.1	7 10
T U	0.30	0.62	0.52	0.25	200	20 9 2	14.2	800	2.0%	2.0	4.7	15.9 19.4	2.71	3.40 3.44 3.14	5.70 5.77 5.27	0.8	2.1 0.6 4	3
V	0.37	0.41	0.53	0.08	50	1	10.4	275	4.0%	4.0	1.1	11.5	3.13	3.92	6.58	1.2	1.6	3
W X	1.73 0.12	0.14	2.94 0.18	0.08	50 50	1	10.4	900	2.5%	3.2	4.7 0.7	15.1 11.0	2.80 3.18	3.51 3.98	5.89 6.68	5 0.4	7 0.5	17
Y Z	1.16 0.33	0.48	2.19	0.08	100 50	2	14.7	650 650	1.5% 1.5%	2.4	4.4	19.1 14.8	2.53 2.83	3.16 3.54	5.31 5.95	3	4 2	12 6
AA BB	0.24 0.22	0.40	0.88	0.08	100 80	3	12.8 10.6	375 430	3.5% 1.5%	1.9 1.2	3.3 5.9	16.2 16.5	2.72 2.70	3.41 3.38	5.72 5.67	0.7 0.6	1.4 1.2	5 4
CC DD	0.54 0.41	0.63	0.89	0.08 0.12	100 30	6 0.9	10.2 6.7	150 70	1.5% 1.5%	2.4 2.4	1.0 0.5	11.2 7.2	3.16 3.68	3.96 4.62	6.64 7.75	2 2	2 2	6 4
EE FF	0.74 1.02	0.77	0.87	0.45 0.08	10 85	0.2 2.5	_	550 550	4.0% 4.0%	4.0 4.0	2.3 2.3	5.2 14.2	4.06 2.88	5.10 3.60	8.56 6.05	3 3	4	7 11
GG HH	1.25 1.21	1.34	1.71 1.35	0.12	40 30	1.2 0.9	_	750 750	2.0%	2.8 2.8	4.4	12.2 11.2	3.06 3.16	3.83 3.96	6.43 6.66	4	5 5	11 9
IJ	4.38 0.61	4.91	6.78 0.82	0.12	100	2	14.1 14.7	800 180	1.5% 1.5%	2.4 2.4	5.4	19.5 15.9	2.50 2.74	3.13 3.44	5.25 5.77	11 2	15 2	36 5
KK LL	1.07 0.98	1.17	1.53 1.42	0.08	100	2	14.7	300 300	4.0%	4.0	1.3	15.9 15.9	2.74	3.43 3.43	5.76 5.76	3	4	9
MM	1.35	1.49	1.42	0.08	100	2	14.7	450 1000	4.0%	4.0	1.3 1.9 4.2	16.5 11.5	2.74 2.70 3.13	3.43 3.38 3.92	5.67 6.59	4	4 5 6	° 11 11
00	0.90	1.04	1.47	0.08	60	2.4 1.2 6	11.3	1100	4.0%	4.0	4.6	15.9	2.74	3.43	5.76	2	4	11 8 6
PP QQ PP	0.29	0.48	1.06 0.66	0.08	100 100	4	10.2 11.7	450 350	2.0%	1.4 2.8	5.3 2.1	15.5 13.7	2.77 2.92	3.47 3.65	5.83 6.14	0.8	1.7 1.1 3	4
RR SS	0.57	0.10	3.10 0.31	0.12	100	3	12.3 10.2	600	1.0%	1.0	10.0	22.3 10.2	2.34 3.27	2.93 4.10	4.91 6.88	1 0.1	3 0.4	15 2.1
TT UU	0.22 0.13	0.22	0.25	0.12 0.12	40 15	1.2 0.45	_	80 80	1.5% 1.5%	2.4 2.4	0.5	8.3 5.3	3.51 4.05	4.40 5.08	7.39 8.53	0.8 0.5	1.0 0.7	1.9 1.3
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T	/		SI						MINA /INAR				RL	рÜВт				
									OPED									
)	N S	UL	TII	N		SM	DE	SIGN	IED B	Y	MAW	I S	SCAL	E		D	ATE	
Aven		uite 200			-0790				I BY		MAW		H) 1 V) 1	"= 1 "			IEET	3
		80903			-0799	/-	V CH	⊢ (`K	ED B`	. 1		10	VI 1	= \	/A		B NO.	

