Preliminary Drainage Report
for

Windingwalk Filings 1 & 2 PUD

and
Final Drainage Report
for

Windingwalk Filing 1

at

Meridian Ranch

EL PASO COUNTY, COLORADO

March 2018

Prepared For:

GTL DEVELOPMENT, INC.
P.O. Box 80036
San Diego, CA 92138

Prepared By:
Tech Contractors
11886 Stapleton Drive
Falcon, CO 80831
719.495.7444

PCD Project No. PUDSP-18-002
SF-18-002

CERTIFICATIONS

Design 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.

____________________________________ _______________

Thomas A. Kerby, P.E. #31429 Date

Owner/Developer's Statement:

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

____________________________________ _______________

Raul Guzman, Vice President Date
GTL Development, Inc.
P.O. Box 80036
San Diego, CA 92138

El Paso County:

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

____________________________________ _______________

Jennifer Irvine, P.E. Date
County Engineer / ECM Administrator

Windingwalk Filing 1 at Meridian Ranch
Preliminary Drainage Plan

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EXECUTIVE SUMMARY

The purpose of the following Preliminary Drainge (PDR) and Final Drainage Report (FDR) is to present the changes to the drainage patterns as a result Windingwalk Filings 1 & 2 at Meridian Ranch due to development. Runoff quantities and proposed facilities have been calculated using the current City of Colorado Springs/El Paso County Drainage Criteria Manual (DCM) (1994 version) and portions of the City of Colorado Springs Drainage Criteria Manual, Volume 1 (DCM-1) ((2014 version).

This report anticipates the revisions to the most recent sketch plan amendment in process with the Planning and Community Development Department. The submitted Sketch Plan includes a change of use from business to residential resulting in lower developed runoff. Another significant change from previous drainage reports submitted to El Paso County concerning development associated within Meridian Ranch is the adopted changes to the drainage criteria. El Paso County by Resolution 15-042 adopted Chapter 6 of the 2014 version of the City of Colorado Springs Drainage Criteria Manual (COSDCM). Chapter 6 addresses the hydrologic calculations and includes an updated hydrograph to be used with storm drainage runoff. The new hydrograph results in lower historic values for runoff rates and higher developed values given the same input values. The county adopted Section 3.2.1 of Chapter 13 of the COSDCM referencing Full Spectrum Detention; the concept "provides better control of the full range of runoff rates that pass through detention facilities than the convention multi-stage concept. By providing an Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage with an outlet similar to the Water Quality Capture Volume (WQCV), *frequent and infrequent inflows are released at rates approximating undeveloped conditions.*" This report includes hydrologic models from HEC-HMS for the historic, interim and future conditions for the 2-yr, 5-yr, 10-yr, 25-yr, 50-yr, and 100-yr design storm frequencies. The interim and the future conditions include detention facilities sized and modeled such that *"frequent and infrequent inflows are released at rates approximating undeveloped conditions"*

On November 16, 2000 the El Paso County Board of County Commissioners approved the rezoning of the Meridian Ranch project (PUD-00-010) from A-35 to PUD with several conditions. Condition number seven stated in part that "drainage plans shall release and/or retain at approximately eight percent (80%) of historic rates." At the time of the initial approvals there were no drainage improvements downstream of the Meridian Ranch project and the existing natural channels were shallow and undefined. Since the time of the original approvals, development has occurred downstream of Meridian Ranch with drainage facilities designed and constructed of sufficient size to safely convey the historic flow rates discharged from Meridian Ranch to downstream properties.

Windingwalk Filings 1 & 2 at Meridian Ranch PUD encompasses 139± acres and is located in Sections 29, 30 and 32, Township 12 South, Range 64 West of the 6th Principal Meridian. It is approximately 12 miles northeast of the city of Colorado Springs, 2.5 miles north of the unincorporated town of Falcon, and immediately north of the Woodmen Hills development.

Windingwalk Filing 1 &2 at Meridian Ranch is located within three separate drainage basins; the Bennett Ranch Basin. Gieck Ranch Basin and the Haegler Ranch Basin. The Bennett and the Haegler Basins have been studied Basin and have final approval from El Paso County. The Gieck Ranch Basin has been studied, but has not received final approval from El Paso County.

Based on the aforementioned design parameters the development of the project will not adversely affect downstream properties.

INTRODUCTION

Purpose

The purpose of the following Final Drainage Report (FDR) is to present proposed changes to the drainage patterns as a result of the development of Windingwalk Filings 1 &2 at Meridian Ranch. The report outlines the proposed drainage mitigation based on calculated developed flows in excess of allowable exiting runoff discharge.

Scope

The scope of this report includes:

- Location and description of the proposed development stating the proposed land use, density, acreage and adjacent features to the site.
- Calculations for design peak flows from all off-site tributary drainage areas.
- Calculations for design peak flows within the proposed project area for all drainage areas.
- Discussion of major drainage facilities required as a result of the development.
- Discussion and analysis of existing and proposed facilities.

Runoff quantities and proposed facilities have been calculated using the current City of Colorado Springs/El Paso County Drainage Criteria Manual (DCM) (1994 version) and those portions of the City of Colorado Springs Drainage Criteria Manual, Volume 1 (DCM-1) ((2014 version) adopted by Resolution 15-042 of the El Paso County Board of County Commissioners.

Background

On November 16, 2000 the El Paso County Board of County Commissioners approved the rezoning of the Meridian Ranch project (PUD-00-010) from A-35 to PUD with several conditions. Condition number seven stated in part that "drainage plans shall release and/or retain at approximately eight percent (80%) of historic rates." At the time of the initial approvals there were no drainage improvements downstream of the Meridian Ranch project and the existing natural channels were shallow and undefined.

Development has occurred downstream of Meridian Ranch since the time of the original approvals with drainage facilities designed and constructed of sufficient size to safely convey the historic flow rates off of Meridian Ranch further downstream. The 4-Way Ranch development located adjacent and downstream of Meridian Ranch has processed a Letter of Map Revision (LOMR) and constructed storm drainage improvements downstream of the existing Pond E outlets. The LOMR was processed and the improvements constructed assuming historic flow rates from Meridian Ranch using the original El Paso County DCM. Storm drain improvements near the intersection of Stapleton Drive and Eastonville have also been designed and constructed to convey the historic flow rates from Meridian Ranch. The design of these improvements and the downstream system anticipated 87 CFS to be collected near outlet of the future Pond H from Meridian Ranch. The design of Pond H has yielded a 100-year flow rate of 60 CFS, well below the anticipated 87 CFS figure.

Current estimates show the design discharge Pond E to 4-Way are near or below 90% of historic flow rates for the 100-year discharge at full buildout and the 5-year discharge at or slightly above historic.

EXISTING CONDITIONS

General Location

The Windingwalk Filings 1 & 2 at Meridian Ranch PUD project encompasses 139± acres and is located in Sections 29, 30 and 32, Township 12 South, Range 64 West of the 6th Principal Meridian. It is approximately 12 miles northeast of the city of Colorado Springs, 2.5 miles north of the unincorporated town of Falcon, and immediately north of the Woodmen Hills development.

Land Use

Historically, ranching dominated the area surrounding Meridian Ranch; however, currently urbanization has occurred in the general vicinity. Most notably, urbanization is occurring to the north with Latigo Trails, to the south in the Woodmen Hills Subdivision, to the east in Four Way Ranch, to the west in the Falcon Hills subdivision, and to the northwest in the Paint Brush Hills subdivision.

Climate

Mild summers and winter, light precipitation; high evaporation and moderately high wind velocities characterize the climate of the study area. The average annual monthly temperature is 48.4 F with an average monthly low of 30.3 F in the winter and an average monthly high of 68.1 F in the summer. Two years in ten will have maximum temperature higher than 98 F and a minimum temperature lower than –16 F. Precipitation averages 15.73" annually, with 80% of this occurring during the months of April through September. The average annual Class A pan evaporation is 45 inches. (Soil Survey of El Paso County Area, Colorado).

Topography and Floodplains

The topography of the site is typical of a high desert, short prairie grass with relatively flat slopes generally ranging from 2% to 4%. The project site drains generally from the northwest to southeast and is tributary to the Black Squirrel Creek.

The Flood Insurance Rate Maps (FIRM No. 08041C0575-F dated 3/17/1997) indicates that the project is outside of any designated flood plain. Letter of Map Revision (LOMR), Case No. 14-08-1121P was approved by FEMA on November 6, 2014 with an effective date of March 24, 2015. Please see Figure 2: Windingwalk Filing 1 at Meridian Ranch Federal Emergency Management Agency (FEMA) Floodplain Map.

Geology

The National Resources Conservation Service (NRCS) soil survey records indicate that the service area is predominately covered by soils classified in the Stapleton series. This series is categorized in the Hydrological Group B.

Figure 1: Vicinity Map

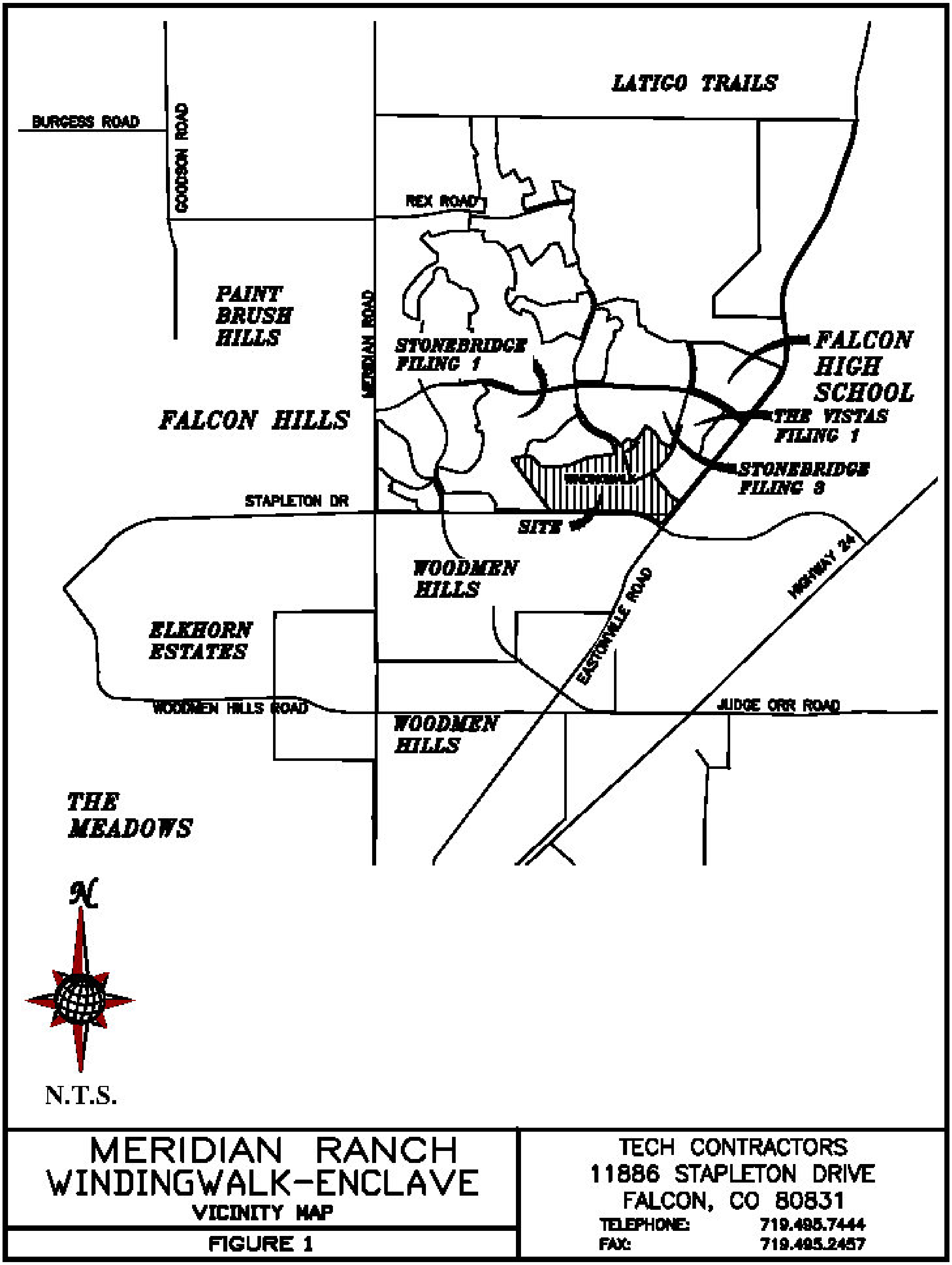


Figure 2: FEMA Floodplain Map

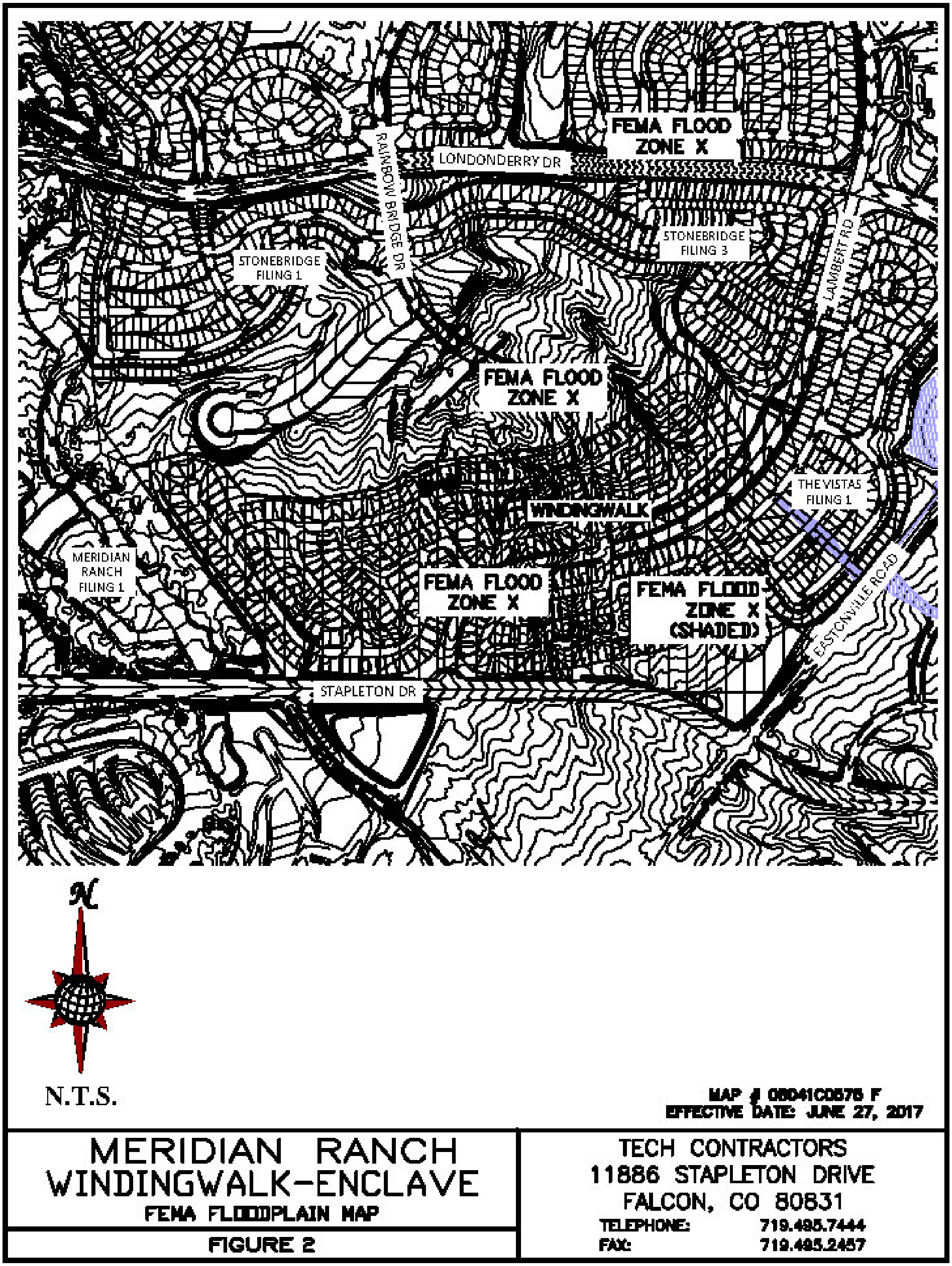
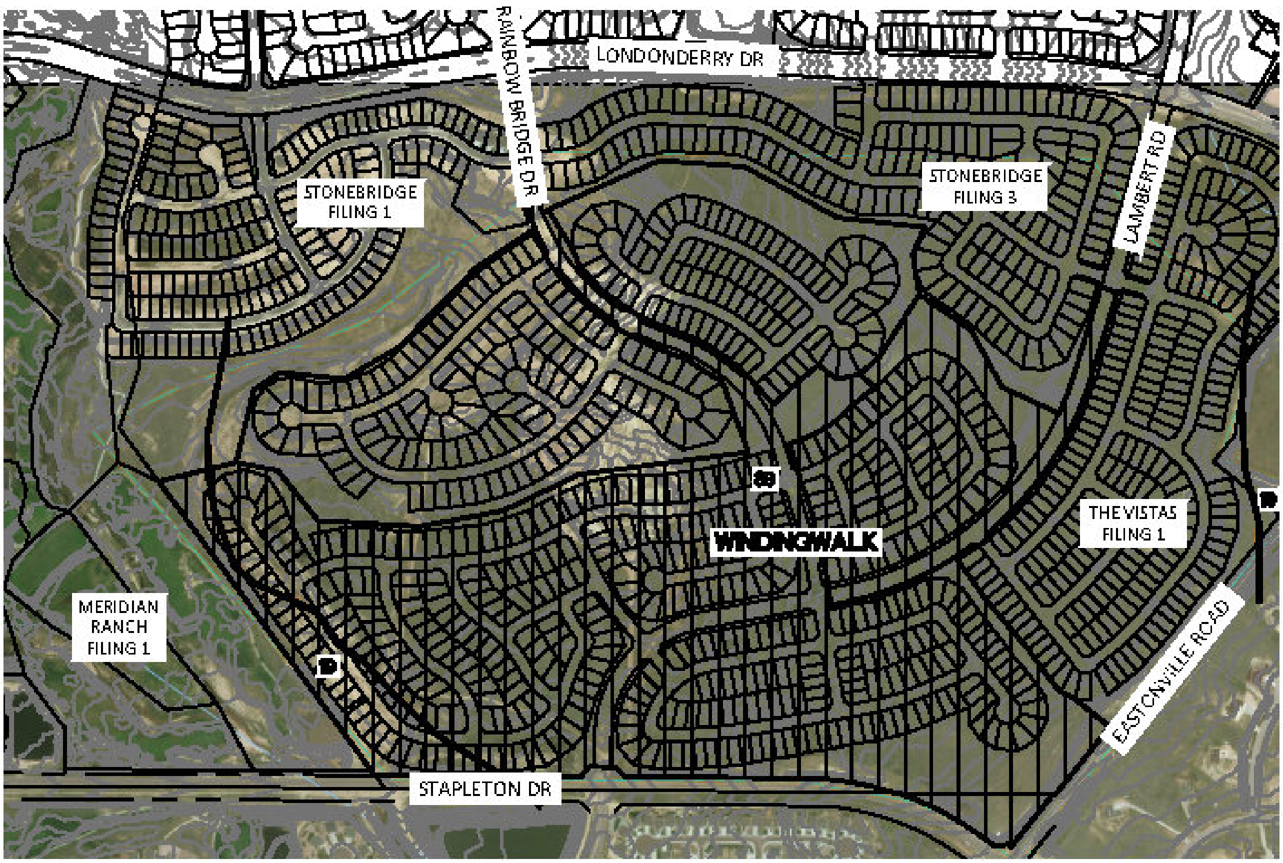


Figure 3: Soils Map



N.T.S.

MERIDIAN RANCH WINDINGWALK-ENCLAVE SOILS MAP	TECH CONTRACTORS 11886 STAPLETON DRIVE FALCON, CO 80831
FIGURE 3	TELEPHONE: 719.495.7444 FAX: 719.495.2457

The Columbine (19) gravelly sandy loam is a deep, well-drained to excessively drained soil formed in coarse textured material on alluvial terraces, fans and flood plains. Permeability of this soil is very rapid. Available water capacity is low to moderate, surface runoff is slow, and the hazard of erosion is slight to moderate. This soil is used mainly for grazing livestock, for wildlife habitat and for home sites. The main limitation of this soil for urban development is a hazard of flooding in some areas.

The Stapleton (83) sandy loam is a deep, non-calcareous, well-drained soil formed in alluvium derived from arkosic bedrock on uplands. Permeability of this soil is rapid. Available water capacity is moderate, surface runoff is slow, and the hazard of erosion and soil blowing is moderate. This soil is suited to habitat for open land and rangeland wildlife. The main limitation of this soil for urban development is frost-action potential.

Typically, these soils are well-drained, gravelly sandy loams that form on alluvial terraces and fans and exhibit high permeability and low available water capacity with depth to bedrock greater than 6 feet.

Note: (#) indicates Soil Conservation Survey soil classification number. See Figure 3 Windingwalk Filing 1 at Meridian Ranch – Soils Map.

Natural Hazards Analysis

Natural hazards analysis indicates that no unusual surface or subsurface hazards are located near the vicinity. However, because the soils are cohesionless, sloughing of steep banks during drilling and/or excavation could occur. By citing improvements in a manner that provides an opportunity to lay the banks of excavations back at a 1:1 slope during construction, the problems associated with sloughing soils can be minimized.

DRAINAGE BASINS AND SUB-BASINS

The site is within the Bennett Ranch, Gieck Ranch and the Haegler Ranch Basins and accepts flow from areas north of the project site within portions of Meridian Ranch.

Three different scenarios were analyzed for the drainage conditions for the project.

The first scenario analyzes the historic conditions for Meridian Ranch. This condition has all of the Meridian Ranch development in the pre-development state; where the entirety of Meridian Ranch is modeled in its predeveloped, undisturbed condition.

The second scenario, the interim conditions scenario is the existing conditions with the addition of Windingwalk PUD in the developed condition. This condition was analyzed to ensure that historic conditions at given design points along Eastonville Road and Stapleton Drive were maintained after Windingwalk Filings 1 &2 are completed.

The final scenario analyzes the future build out conditions for the entirety of Meridian Ranch to ensure the storm drain facilities located at the discharge points of the project are able to properly convey the historic peak flow rates as the storm drainage exits the project.

DRAINAGE DESIGN CRITERIA

SCS Hydrograph Procedure

The US Army Corp of Engineers HEC-HMS computer program was used to model the Soil Conservation Service (SCS) Hydrograph procedure was used to determine final design parameters for the major drainage facilities within the project. Onsite basin areas were calculated using aerial topography of the site and approved final design data. Times of concentration were estimated using the SCS procedures described in the DCM. Based upon the hydrologic soil type, the natural conditions found in the basins and the runoff curve numbers (CN) chart from Table 6-10 of the City of Colorado Springs DCM for Antecedent Runoff Condition II (ARC II), the following CN values were used for the given conditions.

Table 1: SCS Runoff Curve Numbers

Condition	CN
Residential Lots (5 acre)	63
Residential Lots (2.5 acre)	66
Residential Lots (1 acre)	68
Residential Lots (1/2 acre)	70
Residential Lots (1/3 acre)	72
Residential Lots (1/4 acre)	75
Residential Lots (1/5 acre)	78
Residential Lots (1/6 acre)	80

School	80
Parks/Open Space	62
Commercial	85
Roadways	98
Graded	67
Golf Course	62
Latigo Undeveloped	65
Undeveloped	61

*Curve Numbers were interpolated and based on amount of impervious area per lot. The 24 hour storm precipitation values were selected from the NOAA Atlas 14, Volume 8, Version 2 for the Meridian Ranch location (Latitude 38.9783°, Longitude -104.5842°, Elevation 7054 ft). These numbers along with SCS information were used as input to the U.S. Army Corp of Engineers HEC-HMS computer model to determine design runoffs. See the table for all the design storm events in Appendix A. These numbers along with SCS information were used as input to the U.S. Army Corp of Engineers HEC-HMS computer model to determine design runoffs.

Full Spectrum Design

The City of Colorado Springs adopted a new Drainage Criteria Manual (DCM) in 2014 which incorporated the use of *Full Spectrum Design* for storm drainage analysis for projects located within the city limits. Full Spectrum analyzes the storm water runoff for the 2-year, 5-year, 10-year, 25-year, 50-year and the 100-year design storms in order ensure the analysis more accurately project the conditions of post development. El Paso County adopted portions of the City's 2014 DCM by resolution in January 2015; the County resolution adopted Chapter 6 (Hydrology) and Section 3.2.1 of Chapter 13 (Full Spectrum Detention) for projects outside of the City of Colorado Springs establishing a 1 year review period to analyze the impacts of the Full Spectrum Design on the storm drainage analysis of projects. This report has incorporated the use of full spectrum in the analysis of the interim and future conditions.

The idea behind full spectrum detention is to release the developed runoff flows to at or below those of the pre-developed condition. The design of Pond H and control structure meets or exceeds the intent and spirit of the concept.

Table 2: Detention Pond Summary:

BENNETT REGIONAL DETENTION POND						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
INTERIM CONDITIONS						
5-YEAR STORM	244	93	70	64	17.6	6969.8
10-YEAR STORM	404	232	118	109	29.5	6970.7
25-YEAR STORM	733	566	205	192	47.2	6971.7
50-YEAR STORM	1206	943	290	273	63.5	6972.6
100-YEAR STORM	1746	1359	394	374	84.1	6973.7
FUTURE CONDITIONS						
5-YEAR STORM	251	95	71	64	18.0	6969.8
10-YEAR STORM	414	235	119	110	29.7	6970.7
25-YEAR STORM	736	571	207	194	47.4	6971.7
50-YEAR STORM	1209	950	292	275	63.8	6972.6
100-YEAR STORM	1751	1365	396	376	84.4	6973.7

POND H						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
INTERIM CONDITIONS						
5-YEAR STORM	21	1.9	3.6	1.9	2.4	6971.6
10-YEAR STORM	35	5.1	5.6	3.6	3.2	6971.9
25-YEAR STORM	61	13	9.0	6.5	4.5	6972.4
50-YEAR STORM	86	23	12.3	9.6	5.7	6972.8
100-YEAR STORM	115	42	16.1	13.3	7.0	6973.2
FUTURE CONDITIONS						
5-YEAR STORM	34	3.0	4.5	2.6	2.8	6971.7
10-YEAR STORM	53	7.8	6.7	4.6	3.6	6972.1
25-YEAR STORM	87	18	10.5	7.9	5.1	6972.6
50-YEAR STORM	117	32	13.9	11.2	6.5	6973.1
100-YEAR STORM	152	57	18.0	15.2	7.7	6973.4

POND E						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
INTERIM CONDITIONS						
5-YEAR STORM	107	12	23.8	9.8	15.6	6971.1
10-YEAR STORM	165	24	37.4	19.4	21.1	6971.7
25-YEAR STORM	265	58	60.5	38.6	27.5	6972.3
50-YEAR STORM	361	115	83.5	60.4	33.2	6972.8
100-YEAR STORM	471	193	111.1	87.1	39.1	6973.3
FUTURE CONDITIONS						
5-YEAR STORM	126	16	29.0	13.1	17.9	6971.4
10-YEAR STORM	198	30	43.9	24.6	23.0	6971.9
25-YEAR STORM	321	81	69.4	47.1	30.1	6972.5
50-YEAR STORM	435	151	94.1	70.8	36.2	6973.1
100-YEAR STORM	609	240	123.4	99.4	42.2	6973.6

DRAINAGE CALCULATIONS

SCS General Overview

The project is located within portions of the Bennett Ranch, Gieck Ranch and the Haegler Ranch Basins. Storm water runoff will be conveyed across the site overland and within storm drain networks to the detention ponds and existing drainage swales. Temporary sedimentation ponds were constructed during the WindingWalk grading operations within the boundaries of this project and the Enclaves project. The sedimentation ponds installed within the boundaries of WindingWalk Filings 1 & 2 will be removed at the development of each filing with this PUD. The temporary ponds located within the Enclave PUD will be removed during the development of that project.

The facilities have been adequately sized such that the developed flows will be detained and released at or below the historic flow rates for the various design storm events as outlined in the El Paso County DCM and those sections of the City of Colorado Springs DCM-1 adopted by the El Paso County Board of County Commissioners. Existing facilities located downstream of the proposed development have been designed and/or constructed to accept the given release flow rates from Meridian Ranch. Those existing facilities have been reviewed sufficiently to verify the capacity to convey the storm flow rates from Meridian Ranch.

Those portions of the site tributary to the Bennett Ranch Basin (SCS DB28) will be directed to an existing sedimentation pond prior to being released into the adjacent channel then conveyed downstream to the existing Bennett Ranch Regional Detention facility. The existing sedimentation pond located near the Stapleton Box culvert will be removed upon establishment of 70% of historic vegetative cover for areas tributary to this pond.

The portion of the site located within the Bennett Ranch Basin (SCS FB1 & FB2) is tributary to an existing 48” RCP storm drain pipe located within Lambert Road. The storm drain conveys the flow southerly toward the North Channel where it discharges into the Bennett Regional Detention Pond located within the Bennett Ranch Basin. The storm drain was designed using the old criteria hydrologic methods and was expected to accept 143 CFS for the 100-year storm event, the results of this analysis estimates 148 CFS will be discharged into the 48” RCP. The storm drain was hydraulically analyzed against the new CFS value and found to be sized adequately to convey the flow.

The portions of the project are tributary to the existing Bennett Regional Detention Pond located downstream in Woodmen Hills. The pond was designed using the old criteria hydrologic methods and with a release rate approximating 80% of the historic peak flow rates for the 5-year and the 100-year storm events. The analysis shows the pond releasing the developed peak flows below the historic flow rates for the full spectrum of design storms. The pond was also designed with water quality provisions to accommodate the entirety of all tributary areas from Meridian Ranch and Woodmen Hills.

Those portions of the site tributary to the Haegler Ranch Basin (SCS FH1) will be directed to and released to the proposed Pond H detention. The proposed detention Pond H will be utilized as a combination sedimentation/detention pond until such time as the tributary areas establish sufficient ground cover or development in the area is complete.

The portion of the site tributary to the proposed Pond H located within the Haegler Ranch Basin, the pond was sized using the new criteria hydrologic methods and with a release rate approximating the historic peak flow rates for the full spectrum of storm events. Pond H was identified by the Haegler Ranch DBPS as a regional detention facility, the developer will apply for credits at final plat stage for WindingWalk Filing 1 as a result of constructing the pond. The analysis shows the pond releasing the developed peak flows below the historic flow rates for the full spectrum of design storms and below 90 percent of the 100-year historic flow rate for that location. Additionally, the release rate of the 2-year storm event has been calculated to be 2.5 CFS. The existing storm drain pipe accepting flow from the proposed Pond H is designed to accept a higher flow rate than the Historic rate of flow and the rate of flow that will be discharge from the pond during the 100-yr storm event.

That portion of the site (SCS FG18) located within the Gieck Ranch Basin, tributary to Pond E was designed using the old criteria hydrologic methods and with a release rate approximating 80% of the historic peak flow rates for the 5-year and the 100-year storm events. The analysis shows the pond releasing the developed peak flows below the historic flow rates for the full spectrum of design storms using the newly adopted unit hydrograph from the City DCM-1.

Figure 4: Meridian Ranch SCS Calculations – Historic Conditions Map and Figure 5: Meridian Ranch SCS Calculations – Future Conditions Map depict the historic and future general drainage patterns for Windingwalk and the Enclave portion of Meridian Ranch.

The purpose of this report is to show that the development of the Windingwalk PUD at Meridian Ranch will not adversely impact the existing drainage facilities adjacent to and downstream of the developed area and the proposed Ponds E & H are properly sized for the anticipated future development of the Enclaves PUD located within Basin FB1 and the northern reaches of Basins DB28, FH1 and FG18.

SCS Calculations

Historic Drainage - SCS Calculation Method

Following is a tabulation of the surface drainage characteristics under Existing Conditions using the SCS calculation method. Please refer to Figure 4 - Meridian Ranch SCS Calculations - Historic Basin Map.

Table 3: Historic Drainage Basins – SCS

HISTORIC							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
OS02	0.2219	140	96	62	28	12	2.5
B01	0.2219	140	96	62	28	12	2.5
B01-B07	0.2219	139	96	61	28	12	2.5
OS03	0.1984	123	83	51	22	8.7	1.6
B02-B03	0.1984	119	81	51	22	8.7	1.6
HB01	0.0234	18	12	6.8	2.6	0.8	0.1
B03	0.2218	131	88	55	23	9.3	1.7
B03-B07	0.2218	129	88	54	23	9.3	1.7
OS04	0.1359	77	51	30	11	3.8	0.6
B04-B05	0.1359	76	50	30	11	3.7	0.6
HB03	0.1266	94	61	36	14	4.2	0.5
B05	0.2625	137	87	50	19	6.6	1.1
B05-B07	0.2625	137	85	49	19	6.5	1.1
HB02	0.1063	71	47	28	10	3.3	0.4
HB04	0.0609	43	28	17	6.4	2	0.3
B07	0.8734	490	321	195	80	31	5.6
B07-B12	0.8734	486	319	193	79	31	5.6
HB05	0.1375	94	62	37	14	4.3	0.6
HB06	0.1641	104	68	40	15	4.9	0.7
B12	1.175	636	415	243	97	38	6.8

HISTORIC							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
B12-PB	1.175	629	413	242	97	37	6.8
HB07	0.0313	27	18	11	3.9	1.2	0.1
POND B	1.2063	639	420	245	98	38	6.9
PB-19	1.2063	636	416	244	97	38	6.9
OS01	1.5594	726	488	303	130	53	11
OS01-B19	1.5594	720	487	301	130	53	11
HB08	0.1344	76	50	30	11	3.7	0.6
HB09	0.3047	132	86	51	20	7.2	1.2
B19	3.2048	1490	990	602	253	100	19
B19-B26	3.2048	1475	987	599	252	100	19
HB10	**0.3047**	**162**	**105**	**63**	**24**	**8.1**	**1.3**
HB12	0.0797	51	33	19	7.4	2.4	0.3
HB12-B26	0.0797	49	33	19	7.3	2.3	0.3
B26	3.5892	1651	1086	657	274	108	21
26-32	3.5892	1633	1081	656	273	108	21
HB11	**0.1125**	**57**	**37**	**22**	**8.5**	**2.9**	**0.5**
32	3.7017	1678	1112	672	279	110	21
32-37	3.7017	1667	1104	667	277	109	21
B-14	0.4039	171	111	67	26	9.4	1.6
B-13	0.2813	122	80	47	19	6.6	1.1
36	0.6852	293	191	114	45	16	2.7
36-37	0.6852	290	190	113	45	16	2.7
B-15	0.075	37	24	14	5.6	1.9	0.3
37	4.4619	1988	1306	782	320	126	24
HG07	0.0984	47	31	18	7.1	2.4	0.4
HG07-G11	0.0984	47	31	18	7.0	2.4	0.4
HG08	0.1328	73	48	28	11	3.6	0.5
G11	0.2312	115	75	44	17	5.7	0.9
G11-G12	0.2312	114	75	44	17	5.6	0.9
HG09	0.1781	73	48	29	11	4.1	0.7
G12	0.4093	187	122	72	28	9.7	1.6
G12-H08	0.4093	183	121	71	28	9.7	1.6
HG10	**0.1375**	**39**	**26**	**16**	**6.5**	**2.6**	**0.5**
H08	**0.5468**	**216**	**142**	**85**	**34**	**12**	**2.1**
HG11	**0.2047**	**77**	**51**	**30**	**12**	**4.5**	**0.8**
H09	**0.2047**	**77**	**51**	**30**	**12**	**4.5**	**0.8**
HH01	**0.0984**	**65**	**43**	**25**	**9.4**	**3**	**0.4**
H12	**0.0984**	**65**	**43**	**25**	**9.4**	**3**	**0.4**
HG12	**0.1297**	**57**	**38**	**22**	**8.7**	**3.1**	**0.5**
H10	**0.1297**	**57**	**38**	**22**	**8.7**	**3.1**	**0.5**

See approved Meridian Ranch MDDP (EPC File SKP171) dated January 2018 for complete hydrologic calculations and maps.

Interim Drainage - SCS Calculation Method

Following is a tabulation of the surface drainage characteristics for the interim conditions using the SCS calculation method. Please refer to Figure 5 - Meridian Ranch SCS Calculations – Interim Basins Map

Table 4: Interim Drainage Basins-SCS

INTERIM CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
OS01	1.5594	726	488	303	130	53	11
DB16	0.0578	85	66	50	32	22	12
B10	1.6172	765	516	322	143	60	13
B10-B11	1.6172	763	514	322	142	60	13
DB17	0.0048	15	13	11	8.3	6.9	5.3
B11	1.622	765	516	323	143	61	15
B11-POND C	1.622	759	515	321	143	61	14

INTERIM CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
DB21	0.0519	49	34	22	11	4.9	1.0
DB18	0.0346	60	47	36	24	16	9.0
DB19	0.0281	34	25	18	11	6.2	2.6
DB20	0.0147	23	18	13	8.5	5.8	3.2
POND C	1.7513	727	492	302	126	50	11
POND C-B16	1.7513	725	488	300	126	50	11
DB25	0.0211	40	32	25	16	11	6.6
B16	1.7724	730	492	303	128	51	11
B16-B17	1.7724	724	492	302	127	51	11
DB26	0.0682	124	101	80	57	42	27
B17	1.8406	751	511	315	135	55	31
B17-B26	1.8406	748	508	315	135	55	30
OS03	0.1984	123	83	51	22	8.7	1.6
DB01	0.0719	83	61	42	23	12	4.3
B01	0.2703	190	132	85	39	18	4.6
B01-B02	0.2703	184	129	83	39	18	4.6
OS02	0.2219	140	96	62	28	12	2.5
DB02	0.0516	66	48	34	18	9.6	2.9
B02	0.5438	358	249	161	75	34	8.1
B02-POND A	0.5438	357	248	160	74	34	8.1
OS04	0.1359	77	51	30	11	3.8	0.6
DB03	0.0703	63	45	30	14	6.5	1.4
B03	0.2062	137	92	57	24	9.4	1.5
B03-B04	0.2062	135	92	56	24	9.1	1.5
DB04	0.0422	40	28	19	10	4.6	1.1
DB05	0.0384	35	25	17	8.6	4.4	1.3
B04	0.2868	201	139	88	39	17	3.4
B04-B05	0.2868	201	139	88	38	16	3.3
DB06	0.0219	41	33	26	18	13	7.8
B05	0.3087	232	162	107	51	24	9.6
B05-POND A	0.3087	230	162	106	50	23	9.4
DB07	0.0254	33	24	17	9.2	5.0	1.7
DB08	0.0297	30	21	13	6.0	2.6	0.4
POND A	0.9076	523	365	210	69	18	1.5
POND A-B06	0.9076	523	364	209	68	18	1.5
DB09	0.0189	31	24	18	11	7.0	3.4
B06	0.9265	530	370	213	70	18	3.4
B06-B07	0.9265	530	363	211	69	18	3.2
DB11	0.0969	107	80	57	32	18	7.6
DB10	0.0364	52	40	29	18	11	5.3
B07	1.0598	609	421	241	81	32	13
B07-B09	1.0598	608	416	241	81	31	13
DB12	0.0453	76	59	45	29	19	10
B09	1.1051	632	431	250	85	43	18
B09-POND B	1.1051	631	430	249	85	42	18
DB15	0.1234	98	70	47	23	11	3.1
DB13	0.0703	84	63	46	27	16	7.4
DB14	0.0556	86	66	50	32	21	11
POND B	1.3544	669	486	282	119	67	29
POND B-B12	1.3544	669	483	279	119	66	28
DB22	0.0516	84	66	50	33	22	13
DB23	0.0172	42	36	29	22	17	12
B12	1.4232	698	505	294	140	80	36
B12-B14	1.4232	697	502	293	139	80	36
DB24	0.0531	88	69	52	33	22	12
B14	1.4763	719	517	301	152	89	44
B14-B15	1.4763	716	514	301	151	89	43
DB28	**0.0741**	**77**	**57**	**39**	**21**	**11**	**4.1**
B15	1.5504	749	534	312	167	98	47
B15-B18	1.5504	748	532	311	165	98	47
DB29	0.1697	138	100	67	35	18	5.8

INTERIM CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
DB27	0.0508	63	49	37	24	16	8.3
B26	3.6115	1569	1090	661	271	168	82
B26-27	3.6115	1566	1090	658	265	165	81
FB-02	**0.05**	**63**	**50**	**38**	**24**	**16**	**8.9**
FB-01	**0.0373**	**36**	**26**	**17**	**8.6**	**4.1**	**1.0**
FB01-27a	0.0373	35	25	17	8.4	3.9	1.0
B19	0.0873	97	74	53	32	20	9.9
B19-27	0.0873	95	72	52	32	20	9.6
FB-03	**0.0078**	**19**	**16**	**13**	**9.6**	**7.5**	**5.2**
27	3.7066	1603	1114	674	295	183	89
27-32	3.7066	1601	1113	671	293	180	88
WH-24	0.1325	199	156	119	77	52	29
WH-26	0.0839	46	31	19	7.5	2.8	0.5
WH-27	0.0217	20	14	8.7	3.6	1.2	0.1
30	0.2381	252	191	139	85	55	29
30-31	0.2381	251	190	138	84	53	28
WH-28	0.0398	57	44	33	21	14	7.6
31	0.2779	308	234	171	105	68	35
31-32	0.2779	301	227	165	100	65	35
WH-29	0.0495	71	56	42	27	18	9.5
WH-31	0.0406	71	56	43	28	19	11
WH-30	0.0159	24	18	12	6.4	3.3	1.0
32	4.0905	1739	1201	730	401	243	116
WH32	0.0458	49	33	20	7.9	2.8	0.3
BEN POND	**4.1363**	**1359**	**943**	**566**	**232**	**93**	**44**
WH-33	0.0064	11	8.9	6.8	4.4	3.0	1.7
33	4.1427	1360	944	567	232	94	44
33-37	4.1427	1357	942	566	232	94	44
WH35	0.155	155	112	77	40	21	5.8
WH34	0.045	63	48	35	21	13	6.4
B34-36	0.045	61	46	34	21	13	6.1
36	0.2	216	159	111	61	34	12
36-37	0.2	214	156	108	59	33	12
WH36	0.075	58	39	25	10	3.9	0.6
37	**4.4177**	**1398**	**971**	**585**	**241**	**99**	**47**
FG08A	0.075	117	91	67	42	27	14
FG08A-G05	0.075	111	86	65	41	27	14
FG08B	0.063	87	67	50	31	20	10
FG08B-G05	0.063	85	66	49	30	20	10
FG11	0.0625	76	59	45	29	19	10
FG09	0.0484	49	36	26	15	8.4	3.3
FG09-G05	0.0484	48	36	25	14	8.2	3.3
HG10	0.0467	29	20	12	5.3	2.1	0.4
G05	0.2956	344	261	190	115	72	36
FG13	0.0661	44	31	20	10	4.9	1.4
FG12	0.0328	51	40	31	20	14	7.9
POND D	0.3945	107	70	34	16	9.1	2.9
POND D-G17	0.3945	107	69	34	16	9.1	2.9
HG15	0.0297	13	8.8	5.4	2.2	0.9	0.2
FG15a	0.0156	28	22	17	11	7.3	4.0
G17	0.4398	119	77	38	17	9.9	4.4
G17-G18	0.4398	119	77	38	17	9.9	4.2
FG16	0.0773	127	98	74	47	31	16
G18	0.5171	167	126	93	59	39	20
G18-POND E	0.5171	161	121	89	56	37	20
HG30	0.1844	50	33	20	8.4	3.3	0.7
FG30-PONDHS	0.1844	50	33	20	8.4	3.3	0.7
FG31	0.0922	118	92	71	46	31	18
POND HS	0.2766	102	62	40	27	19	10
FG17a	0.0694	108	84	63	40	26	14
FG17a-POND E	0.0694	106	82	61	39	26	14

INTERIM CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
FG18	**0.0644**	**51**	**37**	**26**	**14**	**8.1**	**3.1**
FG18-POND E	0.0644	51	37	26	14	8.1	3.1
FG19	0.0527	75	58	43	27	18	9.3
FG17c	0.0313	32	22	15	6.7	2.9	0.5
FG17b	0.0214	40	31	24	16	11	6.2
POND E	**1.0329**	**193**	**115**	**58**	**24**	**12**	**5.5**
H08		**169**	**104**	**51**	**18**	**8.2**	**3.3**
H09		**24**	**11**	**7.3**	**5.3**	**3.4**	**2.2**
FH01	**0.1348**	**115**	**86**	**61**	**35**	**21**	**9.2**
POND H	**0.1348**	**42**	**23**	**13**	**5.1**	**1.9**	**1.1**
FH02	**0.0091**	**11**	**8.0**	**5.6**	**3.2**	**1.9**	**0.7**
FH03	0.0081	14	11	8.3	5.5	3.8	2.2
H12	0.152	46	25	15	9.2	6.1	3.0

See approved Meridian Ranch MDDP (EPC File SKP171) dated January 2018 for complete hydrologic calculations and maps.

Future Drainage - SCS Calculation Method

Following is a tabulation of the surface drainage characteristics for the future conditions using the SCS calculation method. Please refer to Figure 6 - Meridian Ranch SCS Calculations – Future Basins Map

Table 5: Future Drainage Basins-SCS

FUTURE CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
OS01	1.5594	726	488	303	130	53	11
DB16	0.0578	85	66	50	32	22	12
B10	1.6172	765	516	322	143	60	13
B10-B11	1.6172	763	514	322	142	60	13
DB17	0.0048	15	13	11	8.3	6.9	5.3
B11	1.6220	765	516	323	143	61	15
B11-POND C	1.6220	759	515	321	143	61	14
DB21	0.0519	49	34	22	11	4.9	1.0
DB18	0.0346	60	47	36	24	16	9
DB19	0.0281	34	25	18	11	6.2	2.6
DB20	0.0147	23	18	13	8.5	5.8	3.2
POND C	1.7513	727	492	302	126	50	11
POND C-B16	1.7513	725	488	300	126	50	11
DB25	0.0211	40	32	25	16	11	6.6
B16	1.7724	730	492	303	128	51	11
B16-B17	1.7724	724	492	302	127	51	11
DB26	0.0682	124	101	80	57	42	27
B17	1.8406	751	511	315	135	55	31
B17-B26	1.8406	748	508	315	135	55	30
OS03	0.1984	123	83	51	22	8.7	1.6
DB01	0.0719	83	61	42	23	12	4.3
B01	0.2703	190	132	85	39	18	4.6
B01-B02	0.2703	184	129	83	39	18	4.6
OS02	0.2219	140	96	62	28	12	2.5
DB02	0.0516	66	48	34	18	10	2.9
B02	0.5438	358	249	161	75	34	8.1
B02-POND A	0.5438	357	248	160	74	34	8.1
OS04	0.1359	77	51	30	11	3.8	0.6
DB03	0.0703	63	45	30	14	6.5	1.4
B03	0.2062	137	92	57	24	9	1.5
B03-B04	0.2062	135	92	56	24	9	1.5
DB04	0.0422	40	28	19	10	4.6	1.1
DB05	0.0384	35	25	17	8.6	4.4	1.3
B04	0.2868	201	139	88	39	17	3.4
B04-B05	0.2868	201	139	88	38	16	3.3
DB06	0.0219	41	33	26	18	13	7.8
B05	0.3087	232	162	107	51	24	10
B05-POND A	0.3087	230	162	106	50	23	9

FUTURE CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
DB07	0.0254	33	24	17	9	5	1.7
DB08	0.0297	30	21	13	6	3	0.4
POND A	0.9076	523	365	210	69	18	1.5
POND A-B06	0.9076	523	364	209	68	18	1.5
DB09	0.0189	31	24	18	11	7	3.4
B06	0.9265	530	370	213	70	18	3.4
B06-B07	0.9265	530	363	211	69	18	3.2
DB11	0.0969	107	80	57	32	18	7.6
DB10	0.0364	52	40	29	18	11	5.3
B07	1.0598	609	421	241	81	32	13
B07-B09	1.0598	608	416	241	81	31	13
DB12	0.0453	76	59	45	29	19	10
B09	1.1051	632	431	250	85	43	18
B09-POND B	1.1051	631	430	249	85	42	18
DB15	0.1234	98	70	47	23	11	3.1
DB13	0.0703	84	63	46	27	16	7.4
DB14	0.0556	86	66	50	32	21	11
POND B	1.3544	669	486	282	119	67	29
POND B-B12	1.3544	669	483	279	119	66	28
DB22	0.0516	84	66	50	33	22	13
DB23	0.0172	42	36	29	22	17	12
B12	1.4232	698	505	294	140	80	36
B12-B14	1.4232	697	502	293	139	80	36
DB24	0.0531	88	69	52	33	22	12
B14	1.4763	719	517	301	152	89	44
B14-B15	1.4763	716	514	301	151	89	43
DB28	**0.0741**	**79**	**59**	**41**	**23**	**13**	**4.7**
B15	1.5504	750	534	312	168	99	48
B15-B26	1.5504	748	532	311	166	99	47
DB29	0.1697	138	100	67	35	18	5.8
DB27	0.0508	63	49	37	24	16	8.3
B26	**3.6115**	**1570**	**1090**	**661**	**273**	**169**	**83**
B26-27	3.6115	1567	1090	658	267	166	82
FB-02	**0.0500**	**63**	**50**	**38**	**24**	**16**	**8.9**
FB-01	**0.0373**	**58**	**45**	**34**	**21**	**14**	**7.4**
FB01-B19	0.0373	56	43	32	21	14	7.3
B19	0.0873	117	91	69	44	29	15
B19-27	0.0873	115	90	67	43	28	15
FB-03	**0.0078**	**19**	**16**	**13**	**10**	**7.5**	**5.2**
27	3.7066	1607	1118	677	304	189	92
27-32	3.7066	1605	1116	674	300	186	91
WH-24	0.1325	199	156	119	77	52	29
WH-26	0.0839	46	31	19	7.5	2.8	0.5
WH-27	0.0217	20	14	9	3.6	1.2	0.1
30	0.2381	252	191	139	85	55	29
30-31	0.2381	251	190	138	84	53	28
WH-28	0.0398	57	44	33	21	14	7.6
31	0.2779	308	234	171	105	68	35
31-32	0.2779	301	227	165	100	65	35
WH-29	0.0495	71	56	42	27	18	10
WH-31	0.0406	71	56	43	28	19	11
WH-30	0.0159	24	18	12	6.4	3.3	1.0
32	4.0905	1744	1205	733	411	249	120
WH32	0.0458	49	33	20	8	2.8	0.3
BEN POND	**4.1363**	**1365**	**950**	**571**	**235**	**95**	**45**
WH-33	0.0064	11	8.9	6.8	4.4	3.0	1.7
33	4.1427	1366	951	572	236	95	45
33-37	4.1427	1363	948	571	236	95	45
WH35	0.1550	155	112	77	40	21	5.8
WH34	0.0450	63	48	35	21	13	6.4
B34-36	0.0450	61	46	34	21	13	6.1

FUTURE CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
36	0.2000	216	159	111	61	34	12
36-37	0.2000	214	156	108	59	33	12
WH36	0.0750	58	39	25	10	3.9	0.6
37	**4.4177**	**1404**	**977**	**590**	**245**	**100**	**49**
FG08A	0.0750	117	91	67	42	27	14
FG08A-G05	0.0750	111	86	65	41	27	14
FG10	0.0669	46	34	24	14	8.3	3.6
FG08B	0.0630	87	67	50	31	20	10
FG08B-G05	0.0630	85	66	49	30	20	10
FG11	0.0625	76	59	45	29	19	10
FG09	0.0484	49	36	26	15	8.4	3.3
FG09-G05	0.0484	48	36	25	14	8.2	3.3
G05	0.3158	342	262	192	117	75	38
FG13	0.0661	44	31	20	10	4.9	1.4
FG14	0.0331	42	32	24	15	10	5.2
FG12	0.0328	51	40	31	20	14	7.9
POND D	0.4478	131	89	51	19	12	4.5
POND D-G17	0.4478	131	89	51	19	12	4.5
FG15	0.1017	95	71	51	29	18	7.5
G17a	0.1017	95	71	51	29	18	7.5
FG15a	0.0156	28	22	17	11	7.3	4.0
G17	0.5651	184	121	72	40	23	11
G17-G18	0.5651	184	121	72	40	23	11
FG16	0.0773	127	98	74	47	31	16
G18	0.6424	235	177	127	77	49	24
G18-POND E	0.6424	233	176	126	77	48	24
FG31	0.0922	118	92	71	46	31	18
FG30	0.0400	76	60	46	31	21	12
FG30-PONDHS	0.0400	74	59	45	29	20	11
POND HS	0.1322	156	107	60	37	27	15
FG17a	0.0694	102	79	58	36	23	12
FG17a-POND E	0.0694	100	77	57	36	23	12
FG18	**0.0644**	**57**	**43**	**31**	**18**	**11**	**4.8**
FG18-POND E	0.0644	57	42	30	18	11	4.7
FG19	0.0527	85	67	51	33	23	13
FG17c	0.0313	32	22	15	6.7	2.9	0.5
FG17b	0.0214	40	31	24	16	11	6.2
POND E	**1.0138**	**240**	**151**	**81**	**30**	**16**	**6.6**
H08		**204**	**136**	**73**	**24**	**12**	**4.1**
H09		**36**	**16**	**8.4**	**6.0**	**4.2**	**2.5**
FH01	**0.1344**	**152**	**117**	**87**	**53**	**34**	**17**
POND H	**0.1344**	**57**	**32**	**18**	**7.8**	**3.0**	**1.2**
FH02	**0.0091**	**11**	**8.0**	**5.6**	**3.2**	**1.9**	**0.7**
FH03	0.0081	14	11	8.3	5.5	3.8	2.2
H12	0.1516	62	35	20	10	6.3	3.5

See approved Meridian Ranch MDDP (EPC File SKP171) dated January 2018 for complete hydrologic calculations and maps.

Rational Calculations

The Rational Hydrologic Calculation Method was used to estimate the total runoff from the design storm and thus establish the storm drainage system design. Using the rational calculation methodology outlined in the Hydrology Section (Ch 6) of the COSDCM coupled with the El Paso County EPCDCM an effective storm drainage design for the Windingwalk Filings 1&2 PUD has been designed. The storm drainage facility has been designed such that the minor storm will be captured by the inlets and conveyed by the storm drain pipes such that the street flow does not overtop the curbs. The storm drainage facility has been designed such that the major storm will be captured by the inlets and conveyed by the storm drain pipes such that the street flow does not exceed the right-of-way widths for residential streets and the hydraulic grade line will be more than one foot below the surface.

The far eastern portion (future WindingWalk Filing 2) of the site is located within the Gieck Ranch Drainage Basin, the middle section (WindingWalk Filings 1 & 2) is located within Haegler Ranch Drainage Basin and the western portion (WindingWalk Filing 1) of the side is within the Bennett Ranch Drainage Basin. The project will discharge the collected surface flow from the project into existing downstream facilities properly sized to safely convey the storm water flows away from the project without damaging adjacent property.

Rational hydrologic calculations were performed for the entire PUD area and hydraulic calculations are provided for WindingWalk Filing 1 only. That portion located within the Gieck Basin will be collected by a series of inlets and storm drain pipe then conveyed through an existing storm drain system constructed as a part of the Vistas Filing 1 and discharged into the existing Pond E.

The Haegler Ranch portion will consist of a single backbone storm drain system along Rainbow Bridge Dr ranging in size from 24” to 48” that collects runoff from laterals and inlets, conveying the collected flow southerly and discharging the storm water into Pond H located near northwest of the intersection of Stapleton Drive and Eastonville Road. The storm water (58 CFS) will be released into an existing storm drainage system at rates below the historic flow rates and significantly below the anticipated design flow (87 CFS) when the system was designed and constructed.

The Bennett Ranch portion will discharge the collected surface flow either into the existing main Bennett Ranch channel or into an existing 48” RCP located at the intersection of Stapleton Drive and Lambert Road. A storm drain system ranging in size from 18” to 30” with several inlets flanked on either side is located along Fairway Glen Circle on the far western portion of the subdivision will collect the surface runoff before discharging into an existing temporary sedimentation basin. The flow will combine with other upstream flow from Meridian Ranch where it will cross under Stapleton Drive then be conveyed to the Bennett Ranch Regional Detention Pond. The middle portion of the subdivision will have its surface runoff collected by a storm drain system located along Winding Park Lane and Lambert Road with pipe sizes ranging from 30” to 48” before discharging the flow into an existing 48” RCP located at Stapleton Drive and Lambert Road. Several inlets and laterals are located along this storm drain that will collect the surface runoff from the proposed subdivision and future development to the north. The storm water (148 CFS) will be released into an existing storm drainage system located along Lambert Road at rates near the anticipated design flow (143 CFS) when the system was designed and constructed. The flow cross Stapleton Drive and continue along Lambert Road where it will be discharged into the main Bennett Ranch Channel then be conveyed to the Bennett Ranch Regional Detention Pond. The Bennett Ranch Regional Detention Pond was designed and constructed to provide water quality and detain developed runoff from the Bennett Ranch portions of both the Meridian Ranch and Woodmen Hills subdivisions such that the storm flow rates at Judge Orr Road and the Bennett Channel are at or near 80% of historic flow rates.

Hydraulic analyses were completed on the storm drain systems proposed within WindingWalk Filing 1, the detention ponds, and the existing downstream facilities. The hydraulic calculations can be found at the end of the Rational Calculation Appendix. The analyses show the existing facilities are sized adequately to accept, convey and discharge the design flow without adversely affecting downstream properties.

Rational Narrative

The following is a detailed narrative of the storm drainage system located within the WindingWalk Filing 1 & 2 PUD. The description organized by system beginning on the west in the Bennett Ranch portion of WindingWalk 1 and ending on the east in WindingWalk Filing 2 and the Gieck Ranch Basin.

<u>Bennett Ranch</u>

- Basin B18 (6.1 acres, Q_5= 6.2 CFS, Q_{100} = 16 CFS) contains the rear lots of the future Enclaves at the western end of Enclave Scenic Dr and the open space behind the lots. The surface runoff will sheet flow off of the residential lots and be directed to a swale in the open space then to a Type C inlet. All of the flow is captured by this inlet (Q_5= 6.2 CFS, Q_{100} = 16 CFS) and is conveyed via a 24" RCP to Junction J17 then J18 where it will combine with the runoff captured at Inlet I17.

- Basin B19 (4.1 acres, Q_5= 5.9 CFS, Q_{100} = 14 CFS) contains lots along the east side of Fairway Glen Cir and the north side of Windingwalk Dr., the surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R sump inlet located at I17. The flow captured by this inlet (Q_5= 5.9 CFS, Q_{100} = 11 CFS) is conveyed via an 18" RCP to Junction J18. The remaining surface runoff (Q_{100} = 2.6 CFS) continues along the curb and gutter toward Inlet I18.

- The pipe flow from Junction J18(Q_5= 10 CFS, Q_{100} = 27 CFS) is conveyed via a 30" RCP to Junction J21.

- Basin B20 (3.3 acres, Q_5= 4.6 CFS, Q_{100} = 11 CFS) contains lots along the east side of Fairway Glen Cir. The surface runoff will sheet flow off of the residential lots and be proposed 5' Type R sump inlet located at I18. The flow captured by this inlet (Q_5= 4.6 CFS, Q_{100} = 11 CFS) is conveyed via an 18" RCP to Junction J21. The remaining surface runoff (Q_{100} = 0.4 CFS) continues across the street to Inlet I19.

- The pipe flow conveyed to Junction J21(Q_5= 10 CFS, Q_{100} = 27 CFS) is combined with flow captured by I18 for a total flow of Q_5= 12 CFS, Q_{100} = 35 CFS.

- Basin B21 (2.0 acres, Q_5= 2.7 CFS, Q_{100} = 6.1 CFS) contains lots along the west side of Fairway Glen Cir., the surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R sump inlet located at I19. All of the flow is captured by this inlet (Q_5= 2.7 CFS, Q_{100} = 6.1 CFS) and is combined with flow from Junction J21(Q_5= 12 CFS, Q_{100} = 35 CFS) for a total flow of Q_5= 14 CFS, Q_{100} = 41 CFS and is discharged into an existing drainage temporary sedimentation pond at OS2. The flow is then discharged in the main Bennett Ranch Channel and conveyed southerly toward the Bennett Ranch Regional Detention Pond. Should both inlets at incomplete sentence.

this location, the side yard is able to safely convey the total Q_{100} flow of 17 CFS through the rear yard.

- Basin B01 (1.9 acres, Q_5= 2.6 CFS, Q_{100} = 6.0 CFS) contains lots along the north side of future Enclave Scenic Dr., the surface runoff will sheet flow off of the residential lots and be conveyed to a future 5' Type R sump Inlet located at I01. All of the flow is captured by this inlet (Q_5= 2.6 CFS, Q_{100} = 6.0 CFS) is conveyed via a future 18" RCP to Junction J01 where it will combine with the runoff captured at I02.

- Basin B02 (1.9 acres, Q_5= 2.7 CFS, Q_{100} = 6.3 CFS) contains lots along the south side of future Enclave Scenic Dr., the surface runoff will sheet flow off of the residential lots and be conveyed to a future 10' Type R flow-by inlet located at I02. The flow captured by this inlet (Q_5= 2.1 CFS, Q_{100} = 4.2 CFS) is conveyed via a future 18" RCP to Junction J01. The remaining surface runoff (Q_5= 0.6 CFS, Q_{100} = 2.1 CFS) continues along the curb and gutter toward I04.

- The pipe flow from Junction J01 (Q_5= 3.7 CFS, Q_{100} = 10 CFS) is conveyed via a future storm drain system through several manholes to Junction J05.

- Basin B03 (4.4 acres, Q_5= 7.2 CFS, Q_{100} = 16 CFS) contains lots along the west side of future Marble Canyon Way and east side of Granite Park Lane., the surface runoff will sheet flow off of the residential lots and be conveyed to a future 15' Type R forced sump Inlet located at I03. Most of the flow is captured by this inlet (Q_5= 7.2 CFS, Q_{100} = 15 CFS) is conveyed via a future storm drain to Junction J05 where it will combine with the pipe flow from Junction J01. The remaining surface runoff (Q_{100} = 1.5 CFS) continues along the curb and gutter toward I04.

- Basin B04 (7.4 acres, Q_5= 9.3 CFS, Q_{100} = 23 CFS) contains lots along the north side of future Granite Ridge Dr. The surface runoff will sheet flow off of the residential lots and be captured by a future 15' Type R sump inlet located at I04. The flow captured by this inlet (Q_5= 9.3 CFS, Q_{100} = 23 CFS) is conveyed via a future 18" RCP to Junction J05.

- The pipe flow conveyed to Junction J05 from J01 and I03 is combined with flow captured by I04 for a total flow of Q_5= 14 CFS, Q_{100} = 42 CFS.

- Basin B05 (2.5 acres, Q_5= 3.3 CFS, Q_{100} = 7.6 CFS) contains lots along the south side of future Granite Ridge Dr, the surface runoff will sheet flow off of the residential lots and be conveyed to a future 10' Type R sump inlet located at I05. All of the flow is captured by this inlet (Q_5= 3.3 CFS, Q_{100} = 7.6 CFS) and is combined with flow from Junction J05 (Q_5= 14 CFS, Q_{100} = 42 CFS) for a total flow of Q_5= 16 CFS, Q_{100} = 49 CFS and is conveyed southerly through a future open space with and a Type C inlet (CB01)

Describe what happens during emergency spillway.

- During the interim condition, prior to the construction of the Enclaves, the surface runoff from Basins B01-B05 will be directed to a temporary sedimentation pond constructed during the grading operations associated with the WindingWalk Grading Permit. The temporary pond will be removed during the construction of the improvements for the Enclaves.

- Basin B06 (5.8 acres, Q_5= 6.6 CFS, Q_{100} = 17 CFS) contains the rear lots and an open space of the future Enclaves. The surface runoff will sheet flow off of the residential lots and be directed to a swale in the open space then to a Type C inlet (CB01). All of the flow is captured by this inlet (Q_5= 6.6 CFS, Q_{100} = 17 CFS) is combined with the upstream flow and is conveyed via a proposed 36" RCP (Q_5= 20 CFS, Q_{100} = 62 CFS) to inlet I06. The inlet at CB01 and the connecting 36" RCP is the beginning of improvements associated with WindingWalk Filing 1.

- Basin B07 (3.3 acres, Q_5= 4.7 CFS, Q_{100} = 11 CFS) contains lots along the north side of Windingwalk Dr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R sump inlet located at I06. All of the flow is captured by this inlet and is combined with the upstream flow from CB01 (Q_5= 22 CFS, Q_{100} = 71 CFS) and conveyed via an 36" RCP to Junction J07.

- Basin B08 (3.2 acres, Q_5= 5.2 CFS, Q_{100} = 12 CFS) contains lots along the south side of Windingwalk Dr. and the north side of Hiddenwalk Way. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 15' Type R forced sump inlet located at I07. All of the flow is captured by this inlet and is combined with the upstream flow from I06 at J07 (Q_5= 25 CFS, Q_{100} = 79 CFS) and conveyed via a 36" RCP to Junction J08.

- Basin B09 (2.4 acres, Q_5= 3.9 CFS, Q_{100} = 9.0 CFS) contains lots along the east side of Windingpark Lane. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 15' Type R forced sump inlet located at I08. All of the flow is captured by this inlet and is combined with the upstream flow from J07 at J08 (Q_5= 26 CFS, Q_{100} = 84 CFS) and conveyed via a 42" RCP downstream to manholes J09, J10 and J15 where it will combine with flow from I09, I10, I11, and I12.

- Basin B10 (4.1 acres, Q_5= 5.7 CFS, Q_{100} = 13 CFS) contains lots along the west side of Porch Swing Lane. and the east side of Fairway Glen Cir. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 15' Type R forced sump inlet located at I09. All of the flow is captured by this inlet and conveyed via an 18" RCP to J13.

- Basin B11 (3.3 acres, Q_5= 4.7 CFS, Q_{100} = 11 CFS) contains lots along the east side of Arbor Walk Ln. and the north and west side of Fairway Glen Way. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R forced sump inlet located at I10. All of the flow is captured by this inlet and conveyed via an 18" RCP to J13.

- Basin B12 (7.1 acres, Q_5= 10 CFS, Q_{100} = 24 CFS) contains lots along the east side of Porch Swing Ln. and the west side of Arbor Walk Ln. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 15’ Type R sump inlet located at I11. Most of the flow is captured by this inlet (Q_5= 10 CFS, Q_{100} = 19 CFS) is conveyed via an 18” RCP to J13 where it will combine with the pipe flow from I09 and I10 for a total flow of Q_5= 16 CFS, Q_{100} = 41 CFS and directed to I12 via a 24” RCP. The remaining surface runoff (Q_{100} = 4.5 CFS) crosses the centerline toward I12.

- Basin B13 (2.3 acres, Q_5= 3.6 CFS, Q_{100} = 8.3 CFS) contains lots along the south side of Fairway Glen Cir Lane. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10’ Type R sump inlet located at I12. All of the flow is captured by this inlet and is combined with the upstream flow from J13 (Q_5= 18 CFS, Q_{100} = 52 CFS) and conveyed via a 36” RCP downstream to manholes J14 and J15 where it will combine with flow from J10 for a total combined flow of Q_5= 39 CFS, Q_{100} = 126 CFS where the flow will continue southerly along Lambert Road to J16 via a 48” RCP. Should both inlets at this location, the side yard is able to safely convey the total Q_{100} flow of 23 CFS through the rear yard.

- Basin B14 (4.9 acres, Q_5= 12 CFS, Q_{100} = 25 CFS) contains runoff from the rear lots along the west side of Rainbow Bridge Dr and Lambert Rd. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 20’ Type R sump inlet located at I13. Most of the flow is captured by this inlet (Q_5= 12 CFS, Q_{100} = 19 CFS) is conveyed via a 24” RCP to J16 where it will combine with the pipe flow from I14 and J15. The remaining surface runoff (Q_{100} = 6.2 CFS) crosses the centerline toward I14.

- Basin B15 (1.5 acres, Q_5= 3.8 CFS, Q_{100} = 7.6 CFS) contains runoff from the rear lots along the east side of Lambert Rd. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 20’ Type R flow-by inlet located at I14. Most of the flow is captured by this inlet (Q_5= 3.6 CFS, Q_{100} = 9.7 CFS) is conveyed via an 18” RCP to J16 where it will combine with the pipe flow from I13 and J15 for a total combined flow of Q_5= 48 CFS, Q_{100} = 148 CFS where the flow will continue southerly along Lambert Road to EJ16 via an existing 48” RCP. The remaining surface runoff (Q_5= 0.1 CFS, Q_{100} = 2.6 CFS) continues easterly along the curb and gutter on the north side of Stapleton Dr toward a pair of existing flow-by inlets at EI37a and EI37b.

- Basin B16 (3.2 acres, Q_5= 8.1 CFS, Q_{100} = 16 CFS) contains runoff from the rear lots along the north side of Stapleton Dr. The surface runoff will sheet flow off of the residential lots and be conveyed to an existing 20’ Type R flow-by inlet located at EI15. Most of the flow is captured by this inlet (Q_5= 5.8 CFS, Q_{100} = 10 CFS) is conveyed via a 24” RCP to EI16 where it will combine with the flow captured by EI16. The remaining surface runoff (Q_5= 2.3 CFS, Q_{100} = 5.6 CFS) continues easterly along the curb and gutter on the north side of Stapleton Dr toward I13 located on Lambert Rd.

- Basin B17 (1.7 acres, Q_5= 5.8 CFS, Q_{100} = 10 CFS) contains runoff from the south side of Stapleton Dr. The surface runoff will be conveyed to an existing 20' Type R flow-by inlet located at EI16. Most of the flow is captured by this inlet (Q_5= 4.4 CFS, Q_{100} = 7.2 CFS) is combined with the flow captured by EI15 and conveyed via an existing 30" RCP to EJ16 where it will combine with the pipe flow from J16 for a total combined flow of Q_5= 53 CFS, Q_{100} = 160 CFS where the flow will continue southerly along Lambert Road via an existing 48" RCP collecting additional flow from Woodmen Hills along the way where the flow will eventually discharge into the North Channel and be conveyed to the Bennett Regional Detention Pond.

<u>Haegler Ranch</u>

- Basin H01 (1.0 acres, Q_5= 1.5 CFS, Q_{100} = 3.5 CFS) contains lots fronting along the future Granite Ridge Dr and Meridian Mills Tr, the surface runoff will sheet flow off of the residential lots and be conveyed via curb and gutter to DP05.

- Basin H02 (3.5 acres, Q_5= 6.1 CFS, Q_{100} = 13 CFS) contains lots along the future Meridian Mills Tr and the east side of Rainbow Bridge Dr, the surface runoff will sheet flow off of the residential lots and is combined with the surface flow from DP05 then is conveyed to a proposed 20' Type R forced sump inlet located at I20. Most of the flow is captured by this inlet (Q_5= 7.4 CFS, Q_{100} = 15 CFS) is conveyed via an 18" RCP to J22, J23, and J24 where it will combine with the pipe flow from I23. The remaining surface runoff (Q_{100} = 1.3 CFS) continues along the curb and gutter southerly along Rainbow Bridge toward I23.

- Basin H03 (3.0 acres, Q_5= 5.8 CFS, Q_{100} = 12 CFS) contains lots from Stonebridge Filing 1 on Stone Valley Dr and the west side of Rainbow Bridge Dr, the surface runoff will sheet flow off of the residential lots and be conveyed via curb and gutter to DP06.

- Basin H04 (2.4 acres, Q_5= 4.8 CFS, Q_{100} = 10 CFS) contains lots along the east side of future Marble Canyon Way and the wesr side of Rainbow Bridge Dr, the surface runoff will sheet flow off of the residential lots and is combined with the surface flow from DP06 then is conveyed to a future 20' Type R forced sump inlet located at I21. The flow captured by this inlet (Q_5= 9.0 CFS, Q_{100} = 19 CFS) is conveyed via a future 24" RCP to J25A and I22.

- Basin H05 (2.0 acres, Q_5= 3.5 CFS, Q_{100} = 7.9 CFS) contains lots along future Marble Canyon Way. The surface runoff will sheet flow off of the residential lots and be conveyed to a future 10' Type R sump inlet located at I12. All of the flow is captured by this inlet and is combined with the upstream flow from I21 (Q_5= 9 CFS, Q_{100} = 25 CFS) and conveyed via a 24" RCP downstream to manholes J25B and J26

- During the interim condition, prior to the construction of the Enclaves, the surface runoff from Basins H03 and H04 will be directed to a temporary sedimentation pond constructed during the grading operations associated with the WindingWalk Grading

Permit. A temporary PVC riser will be replaced with another temporary CMP riser and connected to the storm drain system to be constructed with WindingWalk Filing 1. The temporary pond will be removed during the construction of the improvements for the Enclaves and the CMP riser will be replaced with the future 10’ Type R sump inlet at I22.

- Basin H06 (2.5 acres, Q_5= 4.3 CFS, Q_{100} = 9.9 CFS) contains lots along the east side of future Meridian Mills Tr, the surface runoff will sheet flow off of the residential lots and be conveyed via curb and gutter to DP07.

- Basin H07 (3.1 acres, Q_5= 6.3 CFS, Q_{100} = 14 CFS) contains lots along the west side of future Meridian Mills Tr and the east side of Rainbow Bridge Dr, the surface runoff will sheet flow off of the residential lots and is combined with the surface flow from DP07 then is conveyed to a proposed 15’ Type R forced sump inlet located at I23. Most of the flow is captured by this inlet (Q_5= 8.4 CFS, Q_{100} = 15 CFS) is conveyed via a 24” RCP to J24 where it will combine with the pipe flow from I20 (Q_5= 12 CFS, Q_{100} = 29 CFS) and conveyed via a 24” RCP downstream to manholes J26. The remaining surface runoff (Q_{100} = 5.0 CFS) continues along the curb and gutter southerly along Rainbow Bridge toward I25.

- The pipe flow conveyed to Junction J26 from J25B and J24 is combined at J26 for a total flow of Q_5= 20 CFS, Q_{100} = 51 CFS conveyed via a 30” RCP downstream to manhole J27.

- Basin H08 (4.4 acres, Q_5= 4.6 CFS, Q_{100} = 12 CFS) contains the rear lots and an open space of the future Enclaves. The surface runoff will sheet flow off of the residential lots and be directed to a swale in the open space then to a Type C inlet (CB03). All of the flow is captured by this inlet (Q_5= 4.6 CFS, Q_{100} = 12 CFS) and is conveyed via a proposed 18” to J27.

- Basin H09 (2.8 acres, Q_5= 3.1 CFS, Q_{100} = 8.0 CFS) contains the rear lots of the future Enclaves and a park with WindingWalk Filing 1. The surface runoff will sheet flow off of the residential lots and be directed to a swale in the park then to a Type C inlet (CB04). All of the flow is captured by this inlet (Q_5= 3.1 CFS, Q_{100} = 8.0 CFS) and is conveyed via a proposed 18” to J27.

- The pipe flow conveyed to Junction J27 from J26, CB03 and CB04 is combined at J27 for a total flow of Q_5= 25 CFS, Q_{100} = 69 CFS conveyed via a 42” RCP downstream to manhole J28.

- Basin H10 (5.0 acres, Q_5= 8.2 CFS, Q_{100} = 18 CFS) contains lots along the north side of Windingwalk Dr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10’ Type R forced sump inlet located at I24. Most of the flow is captured by this inlet (Q_5= 8.2 CFS, Q_{100} = 11 CFS) is conveyed via an 18” RCP to J28 where it will combine with the pipe flow from I25 and J27. The remaining surface runoff (Q_{100} = 7.0 CFS) continues along the curb and gutter southerly along Rainbow Bridge toward I29.

- Basin H11 (2.0 acres, Q_5= 3.8 CFS, Q_{100} = 11 CFS) contains the lots in the future Enclaves and future WindingWalk Filing 2 along with the east side of Rainbow Bridge Dr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R forced sump inlet located at I25. Most of the flow captured by this inlet (Q_5= 3.8 CFS, Q_{100} = 11 CFS) is conveyed via an 18" RCP to J28 where it will combine with the pipe flow from I25 and J27. The remaining surface runoff (Q_{100} = 0.3 CFS) continues along the curb and gutter southerly along Rainbow Bridge toward I28.

- The pipe flow conveyed to Junction J28 from J27, I24 and I25 is combined for a total flow of Q_5= 33 CFS, Q_{100} = 89 CFS conveyed via a 42" RCP downstream to manhole J29.

- Basin H12 (4.9 acres, Q_5= 6.9 CFS, Q_{100} = 16 CFS) contains lots along the north side of Winding Glen Ln. and lots along the south side of Windingwalk Dr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 5' Type R sump inlet located at I26. Most of the flow is captured by this inlet (Q_5= 6.9 CFS, Q_{100} = 11 CFS) is conveyed via an 18" RCP to I27. The remaining surface runoff (Q_{100} = 4.6 CFS) crosses the centerline toward I27.

Describe the emergency path if I27 is clogged.

- Basin H13 (1.3 acres, Q_5= 2.1 CFS, Q_{100} = 4.7 CFS) contains lots along the south and east side of Winding Glen Ln. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R sump inlet located at I27. All of the flow is captured by this inlet (Q_5= 2.1 CFS, Q_{100} = 8.7 CFS) is conveyed via a 24" RCP to J29.

- The pipe flow conveyed from I26 and I27 is combined for a total flow of Q_5= 7.2 CFS, Q_{100} = 20 CFS and conveyed via a 24" RCP downstream to manhole J29 where it will combine with the pipe flow from J28. The combined total flow of Q_5= 33 CFS, Q_{100} = 106 CFS is conveyed via a 42" RCP downstream to manhole J30 where it will combine with the pipe flow from I28.

- Basin H14 (1.5 acres, Q_5= 2.7 CFS, Q_{100} = 6.2 CFS) contains lots along the south side of future Windingwalk Dr., east side of future Picket Fence Way and north side of future Morning Creek Ln within the future WindingWalk Filing 2. The surface runoff will sheet flow off of the residential lots and be conveyed via curb and gutter to DP08.

- Basin H15 (1.9 acres, Q_5= 3.4 CFS, Q_{100} = 7.9 CFS) contains lots along the west side of future Picket Fence Way, south side of future Windingwalk Dr., north side of future Morning Creek Ln. within the future WindingWalk Filing 2 and the east side of Rainbow Bridge Dr. The surface runoff will sheet flow off of the residential lots and is combined with the surface flow from DP08, then is conveyed to a proposed 15'

Type R forced sump inlet located at I28. All of the flow is captured by this inlet (Q_5= 5.8 CFS, Q_{100} = 13 CFS) is conveyed via an 18" RCP to J30 where it will combine with the pipe flow from J29 (Q_5= 36 CFS, Q_{100} = 116 CFS) and conveyed via a 42" RCP downstream to manhole J31.

- Basin H16 (4.1 acres, Q_5= 7.7 CFS, Q_{100} = 16 CFS) contains lots along the north side of Lambert Rd, west side of Rainbow Bridge Dr. and north side of Windingwalk Dr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 20' Type R forced sump inlet located at I29. Most of the flow is captured by this inlet (Q_5= 7.7 CFS, Q_{100} = 19 CFS) is conveyed via a 24" RCP to J31 where it will combine with the pipe flow J30. The remaining surface runoff (Q_{100} = 2.1 CFS) continues along the curb and gutter easterly along Lambert Rd. toward I35.

- The pipe flow conveyed from I29 and J30 is combined for a total flow of Q_5= 42 CFS, Q_{100} = 133 CFS conveyed via a 48" RCP downstream to manhole J32 where it will combine with the pipe flow from I30.

- Basin H17 (3.4 acres, Q_5= 6.2 CFS, Q_{100} = 13 CFS) contains lots along the south side of Lambert Rd, west side of Rainbow Bridge Dr. and north side of Scenic Walk Tr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R forced sump inlet located at I30. Most of the flow is captured by this inlet (Q_5= 6.2 CFS, Q_{100} = 11 CFS) is conveyed via an 18" RCP to J32 where it will combine with the pipe flow J31. The remaining surface runoff (Q_{100} = 2.3 CFS) continues along the curb and gutter southerly along Rainbow Bridge Dr. toward I31.

- The pipe flow conveyed from I30 and J31 is combined for a total flow of Q_5= 45 CFS, Q_{100} = 142 CFS conveyed via a 48" RCP downstream to manhole J33 where it will combine with the pipe flow from I31.

- Basin H18 (6.0 acres, Q_5= 8.5 CFS, Q_{100} = 19 CFS) contains lots along the south side of Scenic Walk Tr, west side of Rainbow Bridge Dr. and north side of Morning Breeze Way. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 20' Type R forced sump inlet located at I31. Most of the flow is captured by this inlet (Q_5= 8.6 CFS, Q_{100} = 19 CFS) is conveyed via a 24" RCP to J33 where it will combine with the pipe flow from J32. The remaining surface runoff (Q_{100} = 2.9 CFS) continues along the curb and gutter easterly along Morning Breeze Way toward I33.

- The pipe flow conveyed from I31 and J33 is combined for a total flow of Q_5= 50 CFS, Q_{100} = 157 CFS conveyed via a 48" RCP downstream to manhole J34. The pipe flow from J34 of Q_5= 50 CFS, Q_{100} = 157 CFS continues via a 48" RCP downstream to manhole J35 where it will combine with the pipe flow from I32 and I33.

- Basin H19 (3.8 acres, Q_5= 5.4 CFS, Q_{100} = 12 CFS) contains lots along the east and west side of Summer Sky Ln., east side of Rainbow Bridge Dr. and north side of Scenic Walk Tr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R sump inlet located at I32. Most of the flow is captured by this inlet (Q_5= 5.4 CFS, Q_{100} = 11 CFS) is conveyed via a 24" RCP to J35 where it will combine with the pipe flow from J34 and I33. The remaining surface runoff (Q_{100} = 1.3 CFS) continues along the curb and gutter westerly along Morning Breeze Way toward I34.

- Basin H20 (4.6 acres, Q_5= 7.0 CFS, Q_{100} = 16 CFS) contains lots along the west side of Summer Sky Ln., east side of Rainbow Bridge Dr., north side of Morning Breeze Way, and south side of Scenic Walk Tr. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 5' Type R sump inlet located at I33. Most of the flow is captured by this inlet (Q_5= 6.9 CFS, Q_{100} = 11 CFS) is conveyed via an 18" RCP to J35 where it will combine with the pipe flow from J34 and I32. The remaining surface runoff (Q_5= 0.1 CFS, Q_{100} = 5.1 CFS) crosses the centerline toward I34.

- The pipe flow conveyed from I32, I33 and J34 is combined for a total flow of Q_5= 58 CFS, Q_{100} = 176 CFS conveyed via a 54" RCP downstream to inlet I34.

- Basin H21 (4.0 acres, Q_5= 4.9 CFS, Q_{100} = 11 CFS) contains lots along the west side of Summer Sky Ln., south side of Morning Breeze Way, west side of Scenic Walk Tr. and Windingpark Ln. The surface runoff will sheet flow off of the residential lots and be conveyed to a proposed 10' Type R sump inlet located at I34. All of the flow is captured by this inlet (Q_5= 5.0 CFS, Q_{100} = 17 CFS) and combines with flow from J35. The pipe flow (Q_5= 62 CFS, Q_{100} = 193 CFS) is conveyed via a 54" RCP to OS3 located in Pond H. Should both inlets at this location, the side yard is able to safely convey the total Q_{100} flow of 28 CFS through the rear yard.

- Basin H22 (3.0 acres, Q_5= 5.7 CFS, Q_{100} = 12 CFS) contains lots along the east side of Rainbow Bridge Dr, the south side of future Morning Creek Ln. and the north side of future Lambert Rd within future WindingWalk Filing 2. The surface runoff will sheet flow off of the future residential lots and be conveyed to a proposed 5' Type R sump inlet located at I35. All of the flow is captured by this inlet (Q_5= 5.7 CFS, Q_{100} = 12 CFS) is conveyed via an 18" RCP to I36.

- Basin H23 (1.0 acres, Q_5= 3.0 CFS, Q_{100} = 5.7 CFS) contains street landscape along the south side of future Lambert Rd within the future WindingWalk Filing 2. The surface runoff will sheet flow off of the landscape tract and be conveyed to a proposed 5' Type R sump inlet located at I36. All of the flow is captured by this inlet, combines with the flow from I35 (Q_5= 5.7 CFS, Q_{100} = 16 CFS) and is conveyed via a 24" RCP to OS4.

- Basin H24 (3.3 acres, Q_5= 3.2 CFS, Q_{100} = 10 CFS) contains the rear lots along the east side of Summer Sky Ln. and the rear lots along the west side of Evening Sky Dr. within The Vistas Filing 1 at Meridian Ranch. The surface runoff will sheet flow off of the residential lots, combine with flows from OS4 (Q_5= 11 CFS, Q_{100} = 24 CFS) and be conveyed via open channel flow to Pond H.

- Basin H25 (11.3 acres, Q_5= 10 CFS, Q_{100} = 32 CFS) contains the rear lots along the west side of Summer Sky Ln., south side of Morning Breeze Way and the rear lots along the west side of Evening Sky Dr. within The Vistas Filing 1 at Meridian Ranch. The surface runoff will sheet flow off of the residential lots, combine with flows from OS3 and Basin H24 in Pond H.

- Basin H26 (3.6 acres, Q_5= 3.7 CFS, Q_{100} = 11 CFS) contains lots along the south side of Morning Breeze Way and the north side of existing Stapleton Dr. The surface runoff will sheet flow off of the residential lots and be conveyed to a pair of existing 20' Type R flow-by inlets located at EI37a and EI37b. Most of the flow is captured by inlet EI37a (Q_5= 3.4 CFS, Q_{100} = 8.2 CFS) is conveyed via an 18" RCP to EI37b. EI 37b captures most of the remaining flow (Q_5= 0.9 CFS, Q_{100} = 3.2 CFS) and is conveyed via 24" RCP to an open channel in H27. The remaining surface runoff (Q_{100} = 0.8 CFS) continues along the curb and gutter easterly along Stapleton Dr. to an existing inlet located near the intersection of Stapleton Dr and Eastonville Rd.

- Basin H27 (2.2 acres, Q_5= 1.6 CFS, Q_{100} = 5.6 CFS) contains lots along the south side of Morning Breeze Way and open space area along the north side of existing Stapleton Dr. The surface runoff will sheet flow off of the residential lots, combine with flows from EI37b and be conveyed via open channel flow to DP09 where the flow will be combined from the outfall of Pond H.

Gieck Ranch

- Basin G01 (2.7 acres, Q_5= 4.6 CFS, Q_{100} = 11 CFS) contains lots fronting along the west side of future Hidden Ranch Ct within the future Enclaves PUD, the surface runoff will sheet flow off of the residential lots and be conveyed via curb and gutter to DP10.

- Basin G02 (4.4 acres, Q_5= 6.0 CFS, Q_{100} = 14 CFS) contains lots fronting along the east side of future Hidden Ranch Ct within the future Enclaves PUD, the surface runoff will sheet flow off of the residential lots and is combined with the surface flow from DP10 then is conveyed to a future 10' Type R sump inlet located at I40. Most of the flow is captured by this inlet (Q_5= 9.7 CFS, Q_{100} = 18 CFS) is conveyed via a future RCP to I41 where it will combine with the pipe flow from I41. The remaining surface runoff (Q_{100} = 4.3 CFS) crosses the centerline toward I41.

- Basin G03 (1.2 acres, Q_5= 2.1 CFS, Q_{100} = 4.8CFS) contains lots fronting along the south side of future Ranch Gate Tr within the future Enclaves PUD, the surface runoff will sheet flow off of the residential lots and is combined with the surface flow from I40 at a future 10' Type R sump inlet located at I41. All of the flow captured by this inlet is conveyed via a future RCP to a future storm drain end section (OS5) where it will discharge into an existing swale constructed with Stonebridge Filing 3 (Basin E02) at DP12.

- During the interim condition, prior to the construction of the Enclaves, the surface runoff from Basins G01, G02, and G03 will be directed to a temporary sedimentation pond constructed during the grading operations associated with the WindingWalk Grading Permit. The temporary pond will be removed during the construction of the improvements for the Enclaves and will be replaced with the future 10' Type R sump inlets at I40 and I41.

- Basin E02 (11 acres, Q_5= 11 CFS, Q_{100} = 27 CFS) contains rear lots along the south side of existing Stone Valley Dr in Stonebridge Filing 3 and along the east side of future Hidden Ranch Ct within the future Enclaves PUD, the surface runoff will sheet flow off of the residential lots and be conveyed via an existing swale to DP12 for a total flow of 11 acres, Q_5= 17 CFS, Q_{100} = 42 CFS.

- Basin E03 (8.3 acres, Q_5= 5.7 CFS, Q_{100} = 15 CFS) contains rear lots along the west side of existing Stone Peaks Wy in Stonebridge Filing 3 and along the east side of future Winding Bend Ln within the future WindingWalk Filing 2, the surface runoff will sheet flow off of the residential lots and be conveyed via an existing swale to DP13 where it will combine with the flow from DP12 of the existing swale constructed with Stonebridge Filing 3 for a total flow of 11 acres, Q_5= 19 CFS, Q_{100} = 48 CFS.

- Basin G04 (1.6 acres, Q_5= 2.9 CFS, Q_{100} = 6.6 CFS) contains lots fronting along the west side of future Quiet Walk Ln within the future WindingWalk Filing 2, the surface runoff will sheet flow off of the residential lots and be conveyed via curb and gutter to DP11.

- Basin G05 (3.4 acres, Q_5= 8.3 CFS, Q_{100} = 19 CFS) contains lots fronting along the east side of future Quiet Walk Ln, south side of future Windingwalk Dr, the west side of Winding Bend Ln and the north side of Morning Creek Ln, all within the future WindingWalk Filing 2, the surface runoff will sheet flow off of the residential lots and is combined with the surface flow from DP11 then is conveyed to a future 10' Type R sump inlet located at I42. Most of the flow is captured by this inlet (Q_5= 8.3 CFS, Q_{100} = 18 CFS) is conveyed via a future RCP to I43 where it will combine with the pipe flow from I42. The remaining surface runoff (Q_{100} = 1.2 CFS) crosses the centerline toward I43.

- Basin G06 (3.5 acres, Q_5= 4.7 CFS, Q_{100} = 11CFS) contains lots fronting along the north side of future Windingwalk Dr, the east side of Winding Bend Ln and the south side of Morning Creek Ln, all within the future WindingWalk Filing 2, the surface runoff will sheet flow off of the residential lots and is combined with the surface flow from I42 at a future 10' Type R sump inlet located at I43. All of the flow captured by this inlet is conveyed via a future RCP to a future storm drain located within the future extension of Lambert Rd where it will combine with flow from the existing swale constructed with Stonebridge Filing 3 at DP13 and surface runoff from I44.

- Basin E04 (3.9 acres, Q_5= 8.4 CFS, Q_{100} = 17 CFS) contains rear lots and open space along the west side of future Lambert Rd all within the future WindingWalk Filing 2, the surface runoff will sheet flow onto the street and is conveyed to a future 10' Type R sump inlet located at I44. All of the flow captured by this inlet is combined with the flow from DP13 and future inlets I42 and I43 at J39 and is conveyed via a future RCP to I45.

- Basin E05 (1.7 acres, Q_5= 3.6 CFS, Q_{100} = 7.5 CFS) contains right-of-way along the east side of Lambert Rd within the future WindingWalk Filing 2, the surface runoff will sheet flow onto the street and is conveyed to a future 10' Type R sump inlet located at I44. All of the flow captured by this inlet is combined with the flow from J39 for a total flow of Q_5= 29 CFS, Q_{100} = 69 CFS where the flow will continue downstream through an existing storm drain system constructed with the Vistas Filing 1 to the existing Pond E.

DETENTION PONDS

Bennett Regional Detention Pond

The Bennett Regional Detention Pond was constructed with in 2001 and was designed to accept the developed flows from Woodmen Hills Filing 11 and all the portions of Meridian Ranch that lies within the Bennett Ranch Drainage Basin. The developed flow rates were to be released from the pond at rates less than 80% of the historic flow rates. The water quality component was sized to accommodate the tributary areas from Woodmen Hills Filing 11 and Meridian Ranch.

The development of the WindingWalk PUD and the Enclave PUD will complete the tributary areas to the Bennett Regional Pond within the Meridian Ranch Development. The table below shows the interim and the ultimate release rates from the detention pond in comparison to the historic flow rates.

Table 6: Bennett Regional Detention Pond Summary Data

BENNETT REGIONAL DETENTION POND						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
INTERIM CONDITIONS						
5-YEAR STORM	244	93	70	64	17.6	6969.8
10-YEAR STORM	404	232	118	109	29.5	6970.7
25-YEAR STORM	733	566	205	192	47.2	6971.7
50-YEAR STORM	1206	943	290	273	63.5	6972.6
100-YEAR STORM	1746	1359	394	374	84.1	6973.7
FUTURE CONDITIONS						
5-YEAR STORM	251	95	71	64	18.0	6969.8
10-YEAR STORM	414	235	119	110	29.7	6970.7
25-YEAR STORM	736	571	207	194	47.4	6971.7
50-YEAR STORM	1209	950	292	275	63.8	6972.6
100-YEAR STORM	1751	1365	396	376	84.4	6973.7

Historic Rates for comparison is missing on the referenced Table 6, but identified in Table 9. Update either the sentence or Table 6.

Pond H Detention Storage Criteria

Detention Pond H was constructed as a part of the Windingwalk grading in anticipation of the future development of the WindingWalk Filings 1 & 2 and the Enclave PUDs in accordance with the approved Sketch Plan. The proposed pond is located within the Haegler Ranch Drainage Basin in the southeastern corner of Meridian Ranch near the intersection of Eastonville Road and Stapleton Drive. The pond will be owned and maintained by the Meridian Service Metropolitan District (MSMD). A maintenance agreement between the Meridian Service Metropolitan District and El Paso County is included with the submittal package of the WindingWalk Filing 1 final plat. Pond H is identified in the Haegler Ranch Drainage Basin Planning Study as a reimbursable Sub-Regional Detention pond (SR-01). The DBPS estimated the construction and engineering cost for this detention pond at $430,217 in 2009 at the time of publication of the study. The developer seeks credit against drainage fees associated with this development as a result of the construction of the pond with this single family subdivision. See Drainage Fee section for more information.

The Haegler Ranch DBPS hydrologic analysis shows the historic 100-year flow rate in this area to be at 90 CFS, this report shows the 100-year historic flow rate at the proposed location of the detention pond at 65 CFS. The DBPS estimated the detention pond size to be approximately 10 ac-ft, whereas this report shows the final design of the sub-regional detention pond (SR-01) to be 7.7 ac-ft. Given the parameters set forth in the approved Haegler Ranch Drainage Basin Planning Study and the calculations from this report, the final design of the storm drainage facilities, including the proposed Pond H are in substantial conformance with the approved DBPS.

The SCS calculation method was used with the aid of the Army Corp HEC-HMS computer program to determine inflow and outflow from the detention pond to ensure the excess runoff as a result of the grading and the future development will not adversely impact drainage patterns downstream of the project.

The pond is designed to accommodate the developed final inflow from Windingwalk Filings 1 and 2 at Meridian Ranch and the Enclaves at Stonebridge Filing 4. Permanent concrete control structures has been designed to handle full build out of the tributary area and reduce the developed flows to at or below the historic full spectrum peak flow rates.

A WQCV analysis for Pond H was also performed based on proposed future development of the proposed tributary area to the pond; this analysis shows that Pond H will require 0.5 acre-ft of storage for first flush water quality for all the areas tributary to the pond. The control structure at DP H12 is proposed to consist of a 6" water quality control riser with a trash grate having a top elevation of 6970.0 to achieve the required 0.5 ac-ft of storage.

The WQCV was calculated by using the equations found in Volume 2, of the Drainage Criteria Manual (DCM). The release rate from the WQCV is generally very small, which helps minimize downstream impacts. Detaining the WQCV also serves to cleanse the "first flush" of runoff from the higher initial concentration of sediment and pollutants by allowing for settlement to occur. This greatly improves the quality of runoff, leaving the facility and reduces the potential for erosion. The positive impact on water quality is expected to be significant, particularly during the construction phase of the development.

A concrete control structure is proposed for the outlet of Pond H. The structure will attenuate the peak developed flow rates to historic peak rates or less for the full spectrum of design storms as per the requirements set forth in Resolution 15-042 adopted by the Board of County Commissioners, County of El Paso. The control structure will consist of a water quality control standpipe, a rectangular slotted orifice located on the front and a grated top to reduce the developed peak flow rates. Table 6 provides summary data for the various design storms in both the interim condition resulting from the development associated with WindingWalk Filings 1 and 2 and the future development of the Enclaves.

Table 7: Pond H Summary Data

POND H						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
INTERIM CONDITIONS						
5-YEAR STORM	21	1.9	3.6	1.9	2.4	6971.6
10-YEAR STORM	35	5.1	5.6	3.6	3.2	6971.9
25-YEAR STORM	61	13	9.0	6.5	4.5	6972.4
50-YEAR STORM	86	23	12.3	9.6	5.7	6972.8
100-YEAR STORM	115	42	16.1	13.3	7.0	6973.2
FUTURE CONDITIONS						
5-YEAR STORM	34	3.0	4.5	2.6	2.8	6971.7
10-YEAR STORM	53	7.8	6.7	4.6	3.6	6972.1
25-YEAR STORM	87	18	10.5	7.9	5.1	6972.6
50-YEAR STORM	117	32	13.9	11.2	6.5	6973.1
100-YEAR STORM	152	57	18.0	15.2	7.7	6973.4

Existing Pond E Detention Storage Criteria

Existing Detention Pond E is located south of Londonderry and west of Eastonville, and was constructed as a part of the Meridian Ranch Filing 11 Grading, is owned and maintained by the Meridian Service Metropolitan District (MSMD). It has been in operation since 2013 with no reported issues. A maintenance agreement between the Meridian Service Metropolitan District and El Paso County has been recorded as a part of the Meridian Ranch Filing 11A Final Plat process.

The SCS calculation method was used to determine inflow and outflow from the detention pond to ensure the developed runoff does not overcharge the pond and the discharges do not adversely impact drainage patterns downstream of Eastonville Road. Storm drainage runoff will enter the pond from upstream development via an existing pipe network and overland from existing rear lots of the Vistas Filing 1 at Meridian Ranch. The ultimate future build-out design of the tributary areas was analyzed to insure the sizing of the pond would be adequate after development of Meridian Ranch is complete. This SCS calculation can be found in the appendix.

An analysis of the SCS calculations show that with the proposed permanent concrete control structures, installed with the operations associated with the WindingWalk Grading significantly reduce the developed flow rates to peak rates at or below the historic rates at

Eastonville Road. Temporary CMP control structures installed at the time of the original pond construction with the Meridian Ranch Filing 11 grading operations were be replaced with the permanent concrete control structures.

A water quality capture volume (WQCV) was added to the required storage volume for the final build out condition. The purpose of the WQCV is to allow particulates to settle out and accumulate over time to improve water quality and to maintain full volume for detention during the life of the facility for a major storm event. The WQCV of 1.6 ac-ft. was added to the detention of the minor storm and half (0.8 ac-ft.) was added to the detention volume of the major storm. This was accomplished with respect to the HEC-HMS computer run by providing a starting detention volume of 1.6 ft. for the 5-year storm and 0.8 ft. for the 100-year storm. The resulting storage elevations remain well below the emergency spillway elevation. See Appendix B for more information.

Table 8: Existing Pond E Summary Data

POND E						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
INTERIM CONDITIONS						
5-YEAR STORM	107	12	23.8	9.8	15.6	6971.1
10-YEAR STORM	165	24	37.4	19.4	21.1	6971.7
25-YEAR STORM	265	58	60.5	38.6	27.5	6972.3
50-YEAR STORM	361	115	83.5	60.4	33.2	6972.8
100-YEAR STORM	471	193	111.1	87.1	39.1	6973.3
FUTURE CONDITIONS						
5-YEAR STORM	126	16	29.0	13.1	17.9	6971.4
10-YEAR STORM	198	30	43.9	24.6	23.0	6971.9
25-YEAR STORM	321	81	69.4	47.1	30.1	6972.5
50-YEAR STORM	435	151	94.1	70.8	36.2	6973.1
100-YEAR STORM	609	240	123.4	99.4	42.2	6973.6

The WQCV was calculated by using the equations found in Volume 2, of the Drainage Criteria Manual (DCM). The release rate from the WQCV is generally very small, which helps minimize downstream impacts. Detaining the WQCV also serves to cleanse the "first flush" of runoff from the higher initial concentration of sediment and pollutants by allowing for settlement to occur. This greatly improves the quality of runoff, leaving the facility and reduces the potential for erosion. The positive impact on water quality is expected to be significant, particularly during the construction phase of the development. An established wetland is located downstream of the existing Pond E which acts as a final bio-cleanse for the storm water negating any need for a micro-pool.

Downstream Analysis

The facilities located downstream of SCS Basins DB28, FB1, and FB2 are the Bennett Regional Detention Pond and the North Channel running between Stapleton Drive and the Bennett Pond. The pond and channel were originally designed and constructed with Woodmen Hills Filings 10 & 11 and the channel was reconstructed in 2008. With the completion of the WindingWalk and the Enclave PUDs the areas within Meridian Ranch tributary to the Bennett Regional Pond and the North Channel will be complete.

The Bennett Regional Detention Pond design provides detention and water quality for all areas tributary to the pond within Woodmen Hills and Meridian Ranch. The analysis of the Bennett Pond shows the pond has sufficient capacity during the 100-yr storm event to accept the runoff from the upstream developed tributary areas and the release rates from the pond for the full spectrum of design storms are acceptable.

Also add a statement with your conclusion on the current condition of the Bennett pond and whether or not additional improvements outside of the typical maintenance are necessary.

Table 9: Key Design Point Comparison - SCS

KEY DESIGN POINT FLOW RATES					
EVENT	**HISTORIC**	**INTERIM**		**FUTURE**	
	PEAK FLOW (CFS)	**PEAK FLOW** (CFS)	**PERCENT OF HISTORIC**	**PEAK FLOW** (CFS)	**PERCENT OF HISTORIC**
BENNETT REGIONAL DETENTION POND					
BENNETT POND OUTLET (B32)					
5-YEAR	110	93	85%	95	86%
10-YEAR	279	232	83%	235	84%
25-YEAR	672	566	84%	571	85%
50-YEAR	1112	943	85%	950	85%
100-YEAR	1678	1359	81%	1365	81%
JUDGE ORR ROAD (B37)					
5-YEAR	126	99	79%	100	80%
10-YEAR	320	241	76%	245	77%
25-YEAR	782	585	75%	590	75%
50-YEAR	1306	971	74%	977	75%
100-YEAR	1988	1398	70%	1404	71%
DETENTION POND H (Windingwalk)					
STAPLETON DR/EASTONVILLE ROAD (H12)					
5-YEAR	3.0	1.9	63%	3.0	100%
10-YEAR	9.4	5.1	54%	7.8	83%
25-YEAR	25	13	52%	18	71%
50-YEAR	43	23	54%	32	74%
100-YEAR	65	42	65%	57	87%
DETENTION POND E (FILING 11A)					
EASTONVILLE ROAD (H08)					
5-YEAR	12.1	8.2	68%	12	97%
10-YEAR	34	18	55%	24	72%
25-YEAR	85	51	60%	73	86%
50-YEAR	142	104	73%	136	95%
100-YEAR	216	169	78%	204	95%
EASTONVILLE ROAD (H09)					
5-YEAR	4.5	3.4	76%	4.2	93%
10-YEAR	12	5.3	44%	6.0	50%
25-YEAR	30	7.3	24%	8.4	28%
50-YEAR	51	11	22%	16	31%
100-YEAR	77	24	31%	36	47%

The channel was redesigned and reconstructed as a rip-rap lined channel with multiple drop structures between Stapleton and the detention pond. The channel crosses under Lambert Road and has a carrying capacity of 1,930 CFS with an average velocity of 5.0 FPS. The final 100-yr design flow rate for the North Channel 1,650 CFS with an average velocity of 4.7 FPS, both the flow rate and velocity are below the original design parameters. The existing channel shows no significant signs of degradation from the flows over the past 10 years. Based on the above analysis the development of those portions WindingWalk and the Enclave PUDs tributary to the Bennett Ranch Drainage Basin will have no adverse impacts to the downstream facilities. See the Downstream Channel Analysis Appendix for supporting calculations.

The outlets (DP H08 & H09) for Pond E located along Eastonville Road upstream of 4-Way Ranch Filing 1 were analyzed in detail with the 2018 MDDP associated with the most recent Meridian Ranch Sketch Plan Amendment. The information can be found in Appendix D of the January 2018 Meridian Ranch MDDP. Below you will find a summary table proving release rates of flow for each Pond E outlet. See the Downstream Channel Analysis Appendix for a letter to the El Paso County Engineer regarding channel stability and analysis.

The outlet (DP H12) for Pond H is located northwest of the intersection of Eastonville Road and Stapleton Drive and upstream of 4-Way Ranch Filing 1. Pond H will discharge 58 CFS during the 100-yr storm event into an existing sedimentation/detention pond constructed with a concrete sedimentation control structure and connected to a 4' x 2' RCB installed with the construction of Stapleton Drive. The plans set, prepared by URS in 2007, indicates the anticipated flow conveyed by the storm drain to be 87 CFS. A quick analysis indicates the 58 CFS will travel through the box culvert at an average velocity of 9 FPS under normal flow. See the Downstream Channel Analysis Appendix for the hydraulic profile of the RCB storm drain.

The original 4-Way Ranch calculations show the anticipated flow from Meridian Ranch to be approximately 100 CFS, the Stapleton Drive Improvement Plans show an discharge of 110 CFS from the above mentioned RCB storm drain. The calculations show the discharge from Pond H to be 58 CFS and the discharge from the RCB storm drain to be 63 CFS with a discharge velocity of 8 FPS. The storm drain discharges into an existing natural broad bottomed swale and the swale conveys the flow downstream at an average non-erosive velocity of 3.2 FPS for the 100-yr event. See the Downstream Analysis Appendix for the hydraulic worksheets for the downstream channel.

In the event Pond H should overtop the embankment and run through the emergency spillway, the overflow would be conveyed safely down the embankment toward the existing box inlet located north of Stapleton Drive. After a portion of the flow is captured by the inlet the remainder will enter Stapleton Drive and cross both Stapleton Drive and Eastonville Road to the southeast side of the intersection and continue downstream in the existing natural channel.

EROSION CONTROL DESIGN

General Concept

Historically, erosion on this property has been held to a minimum by a variety of natural features and agricultural practices including:

- Substantial prairie grass growth
- Construction of drainage arresting berms
- Construction of multiple stock ponds along drainage courses

Existing temporary sediment ponds will also help to minimize erosion by reducing both the volume and velocity of the peak runoff.

During construction, best management practices (BMP) for erosion control will be employed based on El Paso county Criteria. BMP's will be utilized as deemed necessary by the contractor and/or engineer and are not limited to the measures shown on the construction drawing set. The contractor shall minimize the amount of area disturbed during all construction activities.

In general the following shall be applied in developing the sequence of major activities:

- Install down-slope and side-slope perimeter BMP's before the land disturbing activity occurs.
- Do not disturb an area until it is necessary for the construction activity to proceed
- Cover or stabilize as soon as possible.
- Time the construction activities to reduce the impacts from seasonal climatic changes or weather events.
- The construction of filtration BMP's should wait until the end of the construction project when upstream drainage areas have been stabilized.
- Do not remove the temporary perimeter controls until after all upstream areas are stabilized.

Four Step Process

The following four step process is recommended for selecting structural BMP's in developing urban areas:

Step 1: Employ Runoff Reduction Practices

This development incorporates wider rights-of-way than other developments, thus decreasing the amount area devoted to pavement. The rights-of-way within Meridian Ranch are 20% wider, 60 ft. instead of 50 ft., creating more landscaped area within the development.

The project has over ten acres of open space, accounting for over 20% of the entire project, creating a lower density development.

Home owners and builders are encouraged to direct roof drains to the sideyards where the runoff will travel overland to the streets and creating an opportunity to allow the runoff to infiltrate into the ground.

Step 2: Stabilize Drainageways

The drainage swale located adjacent and south of the project was designed to have a wide flat bottom and slope reducing the velocity of the concentrated flow traveling along the drainageway. The construction of the swale also included erosion control mat along the entire length of the swale. At steeper sections of the swale straw logs or rip-rap has been installed to reduce velocities and erosion.

Step 3: Provide Water Quality Capture Volume (WQCV)

An existing extended detention pond with water quality capture volume is located to the east of the project that was designed to accommodate the runoff from this development.

Step 4: Consider Need for Industrial and Commercial BMP's

This project is neither industrial nor commercial and therefore this section does not apply.

Temporary Sedimentation Pond

Temporary sedimentation ponds installed during the overlot grading process will act as the primary water quality control for the areas upstream. Runoff will travel overland toward the existing sedimentation ponds, collected and diverted into the proposed storm drain system and discharged into existing downstream systems. The pond will provide initial sediment control over exposed upstream areas.

Detention Pond

The detention ponds will act as the primary water quality control for the areas within the project boundaries. Runoff will be collected by the proposed storm drainage system and diverted into the detention pond where practical. The pond will serve a dual purpose: first, by facilitating the settling of sediment in runoff during and after construction (by means of the WQCV) and, second, by maintaining runoff at or below existing levels.

Silt Fence

Silt fence will be place along downstream limits of disturbed areas. This will prevent suspended sediment from leaving the site during infrastructure construction. Silt fencing is to remain in place until vegetation is reestablished.

Erosion Bales

Erosion bales will be placed ten (10) feet from the inlet of all culverts during construction to prevent culverts from filling with sediment. Erosion bales will remain in place until vegetation is reestablished. Erosion bale checks will be used on slopes greater than 1 percent to reduce flow velocities until vegetation is reestablished.

Miscellaneous

Best erosion control practices will be utilized as deemed necessary by the Contractor or Engineer and are not limited to the measures described above.

DRAINAGE FEES

The proposed Windingwalk Filing 1 development is located within two major drainage basins; the Bennett Ranch and the Haegler Ranch Drainage Basins. Of the 114.06 acres of Windingwalk Filing 1, 52.97 acres fall within the Bennett Ranch Basin and 61.09 acres is located within the Haegler Ranch Basin. The Bennett Ranch portion includes 11.4 acres are residential development and 3.5 acres are designated as right-of-way, and 0.8 acres landscape tract. The portion within the Haegler Ranch includes 11.4 acres of residential development and 3.5 acres designated as right-of-way, and 0.8 acres landscape tract. See the calculation below.

The following is the imperviousness calculation:

BENNETT RANCH

	Acres	Assumed Imperviousness	Impervious Acres
Right-of-way	11.12	85%	9.5
Residential Lots	32.28	52% (73 Lots)	16.8
Landscape Tract	9.57	5%	0.5
Total	52.97		26.7 = 50.4% imp.

Bennett Ranch

Drainage Basin Fees: 52.97 ac*$ 10,832/Ac*0.504 Imp Area = $289,389.00

Meridian Ranch holds Bridge Fee credits for the construction of the Stapleton Drive bridge constructed in 2007, these credits are to be applied against the bridge fee requirements associated with this project.

Bridge Fees:	52.97 ac*$ 4,155/Ac*0.504 Imp Area =	$ 111,005.00
Existing Credits:		$ -543,531.93
Remaining Credits		$ -432,526.93

HAEGLER RANCH

	Acres	Assumed Imperviousness	Impervious Acres
Right-of-way	13.96	85%	11.9
Residential Lots	29.56	52% (73 Lots)	15.4
Landscape Tract	17.57	5%	0.9
Total	61.09		28.1 = 46.0% imp.

The proposed Pond H is identified in the approved Haegler Basin Planning Study as Sub-regional Detention Pond SR-01 and is reimbursable to developer after construction. The estimated cost of construction of the pond found in the approved May 2009 planning study is

With available credits being used, add a row identifying Bridge Fees due at plat recording is $0.

$430,217. By applying the Denver Area Consumer Price Index to the original 2009 estimate, the estimated cost of the pond in 2018 will be $521,423 (see data below)

Denver CPI		
Year	CPI-U all items 1982-84=100	Rate of Increase
2009	208.548	
2018	252.760	1.212

Description	Quantity	Unit Cost	Cost
Earthwork	28,000 CY	$ 5.00	$ 140,000.00
Permanent Seeding & Mulch	5.7 AC	$ 1030.00	$ 5871.00
42" RCP	62 LF	$ 134.00	$ 8,308.00
Rip-Rap	286 CY	$ 98.00	$ 28,028.00
Concrete Outlet Structure	1 EA	$ 10,000.00	$ 10,000.00
15% Engineering	1 EA	$ 27,750.00	$ 28,750.00
Total			$ 220,957.00

Final credit will be based on the lower of the actual construction costs or the DBPS cost estimate brought forward per the DCM. The estimated cost of construction of the detention pond can be found above, based upon the estimate above the drainage reimbursement credit will be approximately $220,500. Upon completion of the construction, the developer shall submit a certification from a Colorado Profession Engineer stating the facilities have been constructed in accordance with the approved plans along with the records of the actual construction cost.

Haegler Ranch

Drainage Basin Fees: 61.09 ac*$ 9,676/Ac*0.460 Imp Area = $ 258,505.00

Sub-regional Pond SR-01 Construction Cost Estimate: $ 220,957.00

Estimated Drainage Fees due: $ 37,548.00

Drainage Basin Fee Paid at Plat Recording: $ 0.00

Bridge Fees: 61.09 ac*$ 1,428/Ac*0.460 Imp Area = $ 38,151.00

The review 1 comment comment to identify fee paid at plat as $0 was because the cost to construct the pond was identified as greater than the required basin fees.

Since the revised cost estimate for the pond construction is less than the drainage fees, the remainder of the drainage fee must be paid at plat recording.

REFERENCES

1. "City of Colorado Springs/El Paso County Drainage Criteria Manual" September 1987, Revised November 1991, Revised October 1994.

2. Chapter 6, Hydrology and Chapter 11, Storage, Section 3.2.1 of the "City of Colorado Springs Drainage Criteria Manual" May 2014.

3. "Volume 2, El Paso County/City of Colorado Springs Drainage Criteria Manual-Stormwater Quality Policies, Procedures and Best Management Practices" November 1, 2002.

4. Flood Insurance Rate Study for El Paso County, Colorado and Incorporated Areas. Federal Emergency Management Agency, Revised March 17, 1997.

5. Soils Survey of El Paso County area, Natural Resources Conservation Services of Colorado.

6. Master Development Drainage Plan Meridian Ranch. August 2000. Prepared by URS Corp.

7. Revision to Master Development Drainage Plan Meridian Ranch. May 2015. Prepared by Tech Contractors.

8. Master Development Drainage Plan Latigo Trails. October 2001. Prepared by URS Corp.

9. Final Drainage Report for Meridian Ranch Filing 1. November 2001. Prepared by URS Corp.

10. Preliminary Drainage Plan for Meridian Ranch Phase II. September 2003. Prepared by URS.

11. Final Drainage Plan for The Trails Filing No.7. March 2005. Prepared by URS.

12. Final Drainage Report for Meridian Ranch Filing 3. August 2011. Prepared by Tech Contractors.

13. Preliminary and Final Drainage Report for Meridian Ranch Filing 7. June 2012. Prepared by Tech Contractors.

14. Final Drainage Report for Meridian Ranch Estates Filing 2. July 2013. Prepared by Tech Contractors.

15. Final Drainage Report for Meridian Ranch Filing 11A. March 2014. Prepared by Tech Contractors.

16. Preliminary and Final Drainage Report for Meridian Ranch Filing 8. December 2014. Prepared by Tech Contractors.

17. Preliminary and Final Drainage Report for Meridian Ranch Filing 4B. April 2014. Prepared by Tech Contractors.

18. Final Drainage Report for Stonebridge Filing 1 at Meridian Ranch. June 2014. Prepared by Tech Contractors.

19. Final Drainage Report for Meridian Ranch Filing 9. May 2015. Prepared by Tech Contractors.

20. Revision to Master Development Drainage Plan Meridian Ranch. July 2015. Prepared by Tech Contractors.

21. Final Drainage Report for Meridian Ranch Estates Filing 3. October 2015. Prepared by Tech Contractors.

22. Final Drainage Report for the Vistas Filing 1 at Meridian Ranch. July 2016. Prepared by Tech Contractors.

23. Final Drainage Report for Stonebridge Filing 2 at Meridian Ranch. September 2016. Prepared by Tech Contractors.

24. Final Drainage Report for Stonebridge Filing 3 at Meridian Ranch. April 2017. Prepared by Tech Contractors.

25. Revision to Master Development Drainage Plan Meridian Ranch. November 2017. Prepared by Tech Contractors.

<u>Appendices</u>

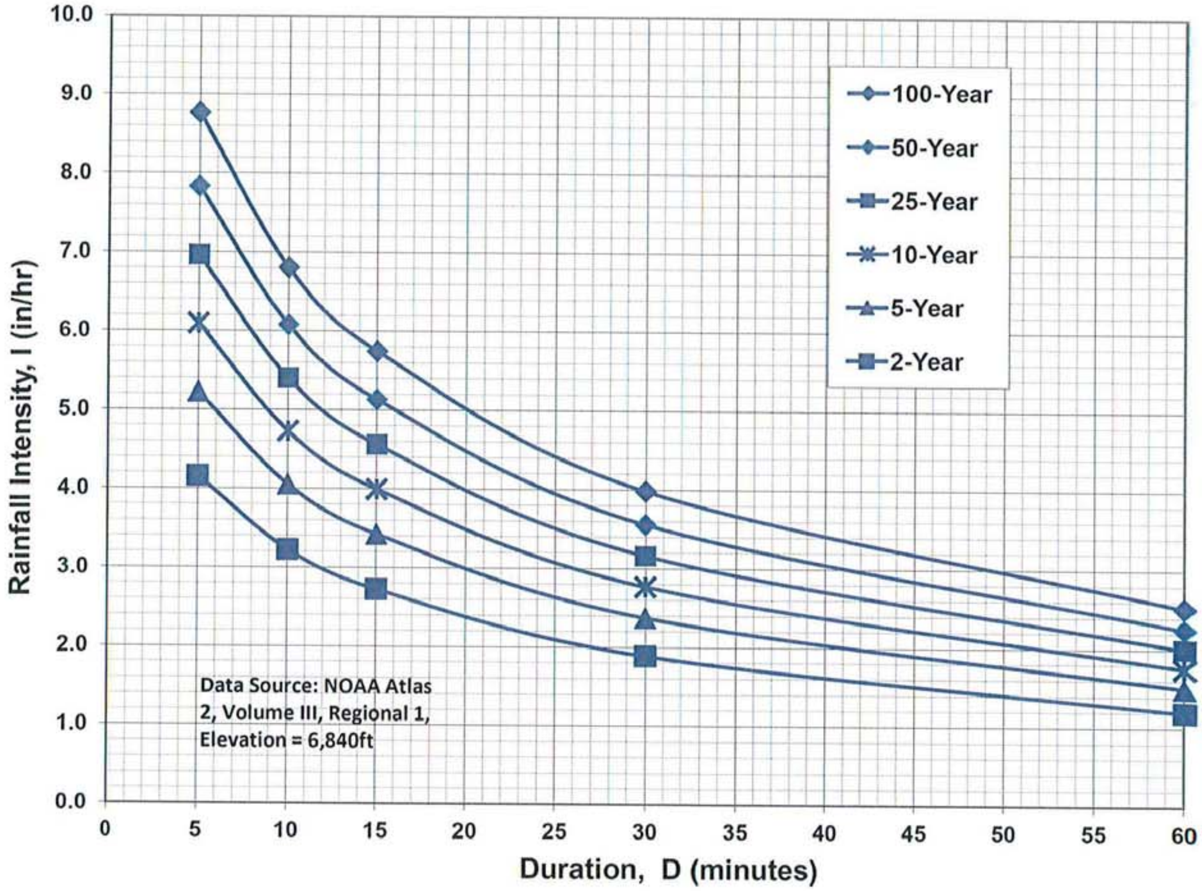
Appendix A – Rational Calculations

Table 6-6. Runoff Coefficients for Rational Method

(Source: UDFCD 2001)

Land Use or Surface Characteristics	Percent Impervious	Runoff Coefficients											
		2-year		5-year		10-year		25-year		50-year		100-year	
		HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D	HSG A&B	HSG C&D
Business													
Commercial Areas	95	0.79	0.80	0.81	0.82	0.83	0.84	0.85	0.87	0.87	0.88	0.88	0.89
Neighborhood Areas	70	0.45	0.49	0.49	0.53	0.53	0.57	0.58	0.62	0.60	0.65	0.62	0.68
Residential													
1/8 Acre or less	65	0.41	0.45	0.45	0.49	0.49	0.54	0.54	0.59	0.57	0.62	0.59	0.65
1/4 Acre	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
1/3 Acre	30	0.18	0.22	0.25	0.30	0.32	0.38	0.39	0.47	0.43	0.52	0.47	0.57
1/2 Acre	25	0.15	0.20	0.22	0.28	0.30	0.36	0.37	0.46	0.41	0.51	0.46	0.56
1 Acre	20	0.12	0.17	0.20	0.26	0.27	0.34	0.35	0.44	0.40	0.50	0.44	0.55
Industrial													
Light Areas	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Heavy Areas	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Parks and Cemeteries	7	0.05	0.09	0.12	0.19	0.20	0.29	0.30	0.40	0.34	0.46	0.39	0.52
Playgrounds	13	0.07	0.13	0.16	0.23	0.24	0.31	0.32	0.42	0.37	0.48	0.41	0.54
Railroad Yard Areas	40	0.23	0.28	0.30	0.35	0.36	0.42	0.42	0.50	0.46	0.54	0.50	0.58
Undeveloped Areas													
Historic Flow Analysis-- Greenbelts, Agriculture	2	0.03	0.05	0.09	0.16	0.17	0.26	0.26	0.38	0.31	0.45	0.36	0.51
Pasture/Meadow	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Forest	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50
Exposed Rock	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Offsite Flow Analysis (when landuse is undefined)	45	0.26	0.31	0.32	0.37	0.38	0.44	0.44	0.51	0.48	0.55	0.51	0.59
Streets													
Paved	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Gravel	80	0.57	0.60	0.59	0.63	0.63	0.66	0.66	0.70	0.68	0.72	0.70	0.74
Drive and Walks	100	0.89	0.89	0.90	0.90	0.92	0.92	0.94	0.94	0.95	0.95	0.96	0.96
Roofs	90	0.71	0.73	0.73	0.75	0.75	0.77	0.78	0.80	0.80	0.82	0.81	0.83
Lawns	0	0.02	0.04	0.08	0.15	0.15	0.25	0.25	0.37	0.30	0.44	0.35	0.50

Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency



IDF Equations

$$I_{100} = -2.52 \ln(D) + 12.735$$

$$I_{50} = -2.25 \ln(D) + 11.375$$

$$I_{25} = -2.00 \ln(D) + 10.111$$

$$I_{10} = -1.75 \ln(D) + 8.847$$

$$I_{5} = -1.50 \ln(D) + 7.583$$

$$I_{2} = -1.19 \ln(D) + 6.035$$

Note: Values calculated by equations may not precisely duplicate values read from figure.

COMPOSITE 'C' FACTORS

PROJECT: **Windingwalk and the Enclave PUD** 3/15/2018

BASIN		AREA (AC.)						COMPOSITE FACTOR		Percent Impervious
LABEL	DEV.	UNDEV	6 DU/AC	STREETS	REC CENTER	OPEN SPACE PARKS/GC	TOTAL	5-year	100-year	
B01	**The Enclave (TE)**		1.9				1.9	**0.40**	**0.55**	**52.0%**
B02			1.9				1.9	**0.40**	**0.55**	**52.0%**
B03			4.4				4.4	**0.40**	**0.55**	**52.0%**
B04			7.4				7.4	**0.40**	**0.55**	**52.0%**
B05			2.5				2.5	**0.40**	**0.55**	**52.0%**
B06			2.8			3.0	5.8	**0.32**	**0.48**	**26.2%**
B07	**Windingwalk (WW)**		3.3				3.3	**0.40**	**0.55**	**52.0%**
B08			3.2				3.2	**0.40**	**0.55**	**52.0%**
B09			2.4				2.4	**0.40**	**0.55**	**52.0%**
B10			4.1				4.1	**0.40**	**0.55**	**52.0%**
B11			3.3				3.3	**0.40**	**0.55**	**52.0%**
B12			7.1				7.1	**0.40**	**0.55**	**52.0%**
B13			2.3				2.3	**0.40**	**0.55**	**52.0%**
B14			2.5	1.4		1.0	4.9	**0.51**	**0.64**	**55.8%**
B15			0.5	0.6		0.3	1.4	**0.58**	**0.69**	**61.3%**
B16			0.8	1.9		0.5	3.2	**0.66**	**0.76**	**71.5%**
B17				1.7			1.7	**0.90**	**0.96**	**100.0%**
B18	**TE**		1.6			4.6	6.1	**0.28**	**0.44**	**14.8%**
B19	**WW**		4.1				4.1	**0.40**	**0.55**	**52.0%**
B20			3.3				3.3	**0.40**	**0.55**	**52.0%**
B21			2.0				2.0	**0.40**	**0.55**	**52.0%**
B22	**S1**		3.9		1.3	6.4	11.6	**0.34**	**0.49**	**24.4%**
B23			4.0			5.8	9.8	**0.30**	**0.46**	**22.3%**
B24	**WW**		3.1			5.9	9.1	**0.30**	**0.46**	**19.3%**
B25			0.8			0.7	1.5	**0.32**	**0.48**	**28.5%**
H01	**The Enclave**		1.0				1.0	**0.40**	**0.55**	**52.0%**
H02			1.9	0.7		0.9	3.5	**0.45**	**0.59**	**47.9%**
H03			1.2	0.7	0.5	0.5	3.0	**0.54**	**0.66**	**55.7%**
H04			1.8	0.4		0.2	2.4	**0.46**	**0.60**	**55.3%**
H05			2.0				2.0	**0.40**	**0.55**	**52.0%**
H06			2.5				2.5	**0.40**	**0.55**	**52.0%**
H07			2.4	0.5		0.3	3.1	**0.46**	**0.60**	**54.9%**
H08			1.5			2.9	4.4	**0.29**	**0.46**	**19.1%**
H09			1.1			1.7	2.8	**0.30**	**0.46**	**21.4%**

BASIN		AREA (AC.)						COMPOSITE FACTOR		Percent Impervious
LABEL	DEV.	UNDEV	6 DU/AC	STREETS	REC CENTER	OPEN SPACE PARKS/GC	TOTAL	5-year	100-year	
H10	**Windingwalk**		3.6	0.8		0.6	5.0	**0.46**	**0.59**	**53.8%**
H11			1.4	0.4		0.2	2.0	**0.48**	**0.61**	**56.0%**
H12			4.9				4.9	**0.40**	**0.55**	**52.0%**
H13			1.3				1.3	**0.40**	**0.55**	**52.0%**
H14			1.5				1.5	**0.40**	**0.55**	**52.0%**
H15			1.9				1.9	**0.40**	**0.55**	**52.0%**
H16			2.3	1.1		0.7	4.1	**0.50**	**0.63**	**55.4%**
H17			2.4	0.7		0.4	3.4	**0.48**	**0.61**	**56.0%**
H18			6.0				6.0	**0.40**	**0.55**	**52.0%**
H19			3.8				3.8	**0.40**	**0.55**	**52.0%**
H20			4.6				4.6	**0.40**	**0.55**	**52.0%**
H21			4.0				4.0	**0.40**	**0.55**	**52.0%**
H22			1.8	0.8		0.4	3.0	**0.51**	**0.64**	**58.5%**
H23			0.0	0.7		0.3	1.0	**0.67**	**0.77**	**66.6%**
H24			2.0			1.2	3.3	**0.34**	**0.49**	**33.2%**
H25			3.7			7.6	11.3	**0.29**	**0.45**	**18.3%**
H26			2.7			0.9	3.6	**0.36**	**0.51**	**39.0%**
H27			0.3			1.9	2.2	**0.26**	**0.43**	**9.0%**
H28				1.5		0.2	1.7	**0.83**	**0.90**	**89.4%**
G01	**TE**		2.7				2.7	**0.40**	**0.55**	**52.0%**
G02			4.4				4.4	**0.40**	**0.55**	**52.0%**
G03			1.2				1.2	**0.40**	**0.55**	**52.0%**
G04	**WW**		1.6				1.6	**0.40**	**0.55**	**52.0%**
G05			3.4				3.4	**0.40**	**0.55**	**52.0%**
G06			3.5				3.5	**0.40**	**0.55**	**52.0%**
E02	**S3**		7.2			10.9	18.1	**0.30**	**0.46**	**21.8%**
E03			2.1			4.2	6.3	**0.29**	**0.45**	**18.4%**
E04	**WW**		1.9	1.1		0.9	3.9	**0.51**	**0.64**	**55.1%**
E05				0.8		1.0	1.7	**0.53**	**0.65**	**45.3%**
E06	**The Vistas Filing 1**		5.1	0.3		0.1	5.4	**0.42**	**0.56**	**53.7%**
E07			4.9				4.9	**0.40**	**0.55**	**52.0%**
E08			1.2				1.2	**0.40**	**0.55**	**52.0%**
E09			2.9				2.9	**0.40**	**0.55**	**52.0%**
E10			4.9				4.9	**0.40**	**0.55**	**52.0%**
E11			3.0				3.0	**0.40**	**0.55**	**52.0%**
E12			2.6				2.6	**0.40**	**0.55**	**52.0%**
E13			3.2				3.2	**0.40**	**0.55**	**52.0%**
E14			1.9			2.3	4.2	**0.31**	**0.47**	**24.9%**
E15				1.1		0.6	1.7	**0.65**	**0.75**	**62.9%**
E16			0.6	0.9			1.5	**0.71**	**0.81**	**82.1%**
									Composite:	**42.9%**

TIME OF CONCENTRATION

SCS Calculations

PROJECT: **Windingwalk and the Enclave PUD** DATE: 3/15/2018

TIME OF CONCENTRATION			INIT./OVERLAND TIME (T_i)				TRAVEL TIME (T_t)							TOTAL	Tc Check (Urbanized Basins)		FINAL T_c
BASIN DESIGNATION	C_5	AREA (AC)	LENGTH (FT)	ΔH	SLOPE %	Ti (Min.)*	LENGTH (FT)	ΔH	SLOPE %	CONVEYANCE TYPE	CONVEYANCE COEF.	VEL. (FPS)	Tt(Min.)**	Ti+Tt(Min.)	L (FT)	Tc = (L/180) + 10	(min)
B01	0.40	1.9	40	0.8	2.0%	6.4	1110	12	1.1%	P	20	2.1	8.9	15.3	1150.00	16.4	**15.3**
B02	0.40	1.9	40	0.8	2.0%	6.4	977	11	1.1%	P	20	2.1	7.7	14.1	1017.00	15.7	**14.1**
B03	0.40	4.4	40	0.8	2.0%	6.4	795	23	2.9%	P	20	3.4	3.9	10.3	835.00	14.6	**10.3**
B04	0.40	7.4	40	0.8	2.0%	6.4	1022	13	1.3%	P	20	2.3	7.6	14.0	1062.00	15.9	**14.0**
B05	0.40	2.5	40	0.8	2.0%	6.4	1433	18	1.3%	P	20	2.2	10.7	17.1	1473.00	18.2	**17.1**
B06	0.32	5.8	100	8.0	8.0%	7.2	700	7	1.0%	B	10	1.0	11.7	18.8	800.00	14.4	**14.4**
B07	0.40	3.3	100	2.0	2.0%	10.2	790	8	1.0%	P	20	2.0	6.5	16.7	890.00	14.9	**14.9**
B08	0.40	3.2	30	0.6	2.0%	5.6	772	13	1.7%	P	20	2.6	5.0	10.5	802.00	14.5	**10.5**
B09	0.40	2.4	40	0.8	2.0%	6.4	755	17	2.3%	P	20	3.0	4.2	10.6	795.00	14.4	**10.6**
B10	0.40	4.1	100	2.0	2.0%	10.2	850	14	1.6%	P	20	2.6	5.5	15.7	950.00	15.3	**15.3**
B11	0.40	3.3	100	2.0	2.0%	10.2	735	20	2.7%	P	20	3.3	3.7	13.9	835.00	14.6	**13.9**
B12	0.40	7.1	15	0.3	2.0%	5.0	1382	26	1.9%	P	20	2.7	8.4	13.4	1397.00	17.8	**13.4**
B13	0.40	2.3	40	0.8	2.0%	6.4	817	17	2.1%	P	20	2.9	4.7	11.2	857.00	14.8	**11.2**
B14	0.51	4.9	15	0.3	2.0%	5.0	1233	21	1.7%	P	20	2.6	7.9	12.9	1248.00	16.9	**12.9**
B15	0.58	1.4	35	0.7	2.0%	5.0	505	13	2.6%	P	20	3.2	2.6	7.6	540.00	13.0	**7.6**
B16	0.66	3.2	13	0.3	2.0%	5.0	1226	22	1.8%	P	20	2.7	7.6	12.6	1238.50	16.9	**12.6**
B17	0.90	1.7	13	0.3	2.0%	5.0	1230	22	1.8%	P	20	2.7	7.7	12.7	1242.50	16.9	**12.7**
B18	0.28	6.1	100	7.0	7.0%	7.8	660	15	2.3%	B	10	1.5	7.3	15.1	760.00	14.2	**14.2**
B19	0.40	4.1	100	2.0	2.0%	10.2	605	4	0.7%	P	20	1.6	6.2	16.4	705.00	13.9	**13.9**
B20	0.40	3.3	30	0.6	2.0%	5.6	999	8	0.8%	P	20	1.8	9.3	14.9	1029.00	15.7	**14.9**
B21	0.40	2.0	100	2.0	2.0%	10.2	1160	14	1.2%	P	20	2.2	8.8	19.0	1260.00	17.0	**17.0**
B22	0.34	11.6	100	7.0	7.0%	7.3	1140	19	1.7%	G	15	1.9	9.8	17.1	1240.00	16.9	**16.9**
B23	0.30	9.8	100	7.0	7.0%	7.6	1085	18	1.7%	G	15	1.9	9.4	17.0	1185.00	16.6	**16.6**
B24	0.30	9.1	100	7.0	7.0%	7.7	1900	35	1.8%	G	15	2.0	15.6	23.3	2000.00	21.1	**21.1**
B25	0.32	1.5	100	2.0	2.0%	11.3	125	1	1.0%	B	10	1.0	2.1	13.4	225.00	11.3	**11.3**
H01	0.40	1.0	100	2.0	2.0%	10.2	370	14	3.8%	P	20	3.9	1.6	11.8	470.00	12.6	**11.8**
H02	0.45	3.5	100	2.0	2.0%	9.4	520	16	3.1%	P	20	3.5	2.5	11.9	620.00	13.4	**11.9**
H03	0.54	3.0	100	2.0	2.0%	8.1	850	13	1.5%	P	20	2.5	5.7	13.9	950.00	15.3	**13.9**
H04	0.46	2.4	15	0.3	2.0%	5.0	707	18	2.5%	P	20	3.2	3.7	8.7	722.00	14.0	**8.7**
H05	0.40	2.0	15	0.3	2.0%	5.0	606	9	1.5%	P	20	2.4	4.1	9.1	621.00	13.5	**9.1**
H06	0.40	2.5	15	0.3	2.0%	5.0	800	23	2.9%	P	20	3.4	3.9	8.9	815.00	14.5	**8.9**
H07	0.46	3.1	25	0.5	2.0%	5.0	764	22	2.9%	P	20	3.4	3.8	8.8	789.00	14.4	**8.8**
H08	0.29	4.4	100	6.0	6.0%	8.1	800	23	2.9%	B	10	1.7	7.9	16.0	900.00	15.0	**15.0**
H09	0.30	2.8	100	2.0	2.0%	11.6	455	8	1.8%	B	10	1.3	5.7	17.3	555.00	13.1	**13.1**
H10	0.46	5.0	100	2.0	2.0%	9.3	840	17	2.0%	P	20	2.8	4.9	14.2	940.00	15.2	**14.2**
H11	0.48	2.0	40	0.8	2.0%	5.7	810	14	1.7%	P	20	2.6	5.1	10.8	850.00	14.7	**10.8**
H12	0.40	4.9	100	2.0	2.0%	10.2	210	4	1.9%	L	7	1.0	3.6				
							561	18	3.2%	P	20	3.6	2.6	16.4	871.00	14.8	**14.8**
H13	0.40	1.3	40	0.8	2.0%	6.4	703	13	1.8%	P	20	2.7	4.3	10.8	743.00	14.1	**10.8**
H14	0.40	1.5	30	0.6	2.0%	5.6	503	13	2.6%	P	20	3.2	2.6	8.2	533.00	13.0	**8.2**
H15	0.40	1.9	15	0.3	2.0%	5.0	467	11	2.4%	P	20	3.1	2.5	7.5	482.00	12.7	**7.5**
H16	0.50	4.1	100	2.0	2.0%	8.7	720	13	1.8%	P	20	2.7	4.5	13.2	820.00	14.6	**13.2**
H17	0.48	3.4	100	2.0	2.0%	9.0	645	13	2.0%	P	20	2.8	3.8	12.8	745.00	14.1	**12.8**
H18	0.40	6.0	100	2.0	2.0%	10.2	140	3	2.1%	L	7	1.0	2.3				
							605	11	1.8%	P	20	2.7	3.7	16.2	845.00	14.7	**14.7**
H19	0.40	3.8	100	2.0	2.0%	10.2	830	16	1.9%	P	20	2.8	5.0	15.2	930.00	15.2	**15.2**
H20	0.40	4.6	100	2.0	2.0%	10.2	185	4	2.0%	L	7	1.0	3.1				
							120	2	1.7%	P	20	2.6	0.8	14.1	405.00	12.3	**12.3**
H21	0.40	4.0	100	2.0	2.0%	10.2	1730	34	2.0%	P	20	2.8	10.3	20.5	1830.00	20.2	**20.2**
H22	0.51	3.0	40	0.8	2.0%	5.4	1093	13	1.2%	P	20	2.2	8.4	13.8	1133.00	16.3	**13.8**
H23	0.67	1.0	35	0.7	2.0%	5.0	540	8	1.5%	P	20	2.4	3.7	8.7	575.00	13.2	**8.7**
H24	0.34	3.3	100	2.0	2.0%	11.1	765	23	3.0%	G	15	2.6	4.9	16.0	865.00	14.8	**14.8**
H25	0.29	11.3	100	9.0	9.0%	7.1	600	17	2.8%	B	10	1.7	5.9	13.1	700.00	13.9	**13.1**
H26	0.36	3.6	100	2.0	2.0%	10.8	85	4	4.7%	L	7	1.5	0.9				
							635	15	2.4%	P	20	3.1	3.4	15.2	820.00	14.6	**14.6**
H27	0.26	2.2	100	8.0	8.0%	7.7	1010	22	2.2%	G	15	2.2	7.6	15.3	1110.00	16.2	**15.3**
H28	0.83	1.7	13	0.3	2.0%	5.0	909	19	2.1%	P	20	2.9	5.2	10.2	921.50	15.1	**10.2**
G01	0.40	2.7	15	0.3	2.0%	5.0	870	26	3.0%	P	20	3.5	4.2	9.2	885.00	14.9	**9.2**
G02	0.40	4.4	100	2.0	2.0%	10.2	1115	28	2.5%	P	20	3.2	5.9	16.0	1215.00	16.8	**16.0**
G03	0.40	1.2	40	0.8	2.0%	6.4	352	5	1.4%	P	20	2.4	2.5	8.9	392.00	12.2	**8.9**
G04	0.40	1.6	30	0.6	2.0%	5.6	556	14	2.5%	P	20	3.2	2.9	8.5	586.00	13.3	**8.5**
G05	0.40	3.4	25	0.5	2.0%	5.1	745	14	1.9%	P	20	2.7	4.5	9.6	770.00	14.3	**9.6**
G06	0.40	3.5	100	2.0	2.0%	10.2	1100	16	1.5%	P	20	2.4	7.6	17.8	1200.00	16.7	**16.7**

			INIT./OVERLAND TIME (T_i)				TRAVEL TIME (T_t)							TOTAL	Tc Check (Urbanized Basins)		FINAL T_c
BASIN DESIGNATION	C_5	AREA (AC)	LENGTH (FT)	ΔH	SLOPE %	Ti (Min.)*	LENGTH (FT)	ΔH	SLOPE %	CONVEYANCE		VEL. (FPS)	Tt(Min.)**	Ti+Tt(Min.)			
										TYPE	COEF.				L (FT)	Tc = (L/180) + 10	(min)
E02	0.30	18.1	100	2.0	2.0%	11.6	2242	63	2.8%	L	7	1.2	31.8	43.4			**43.4**
E03	0.29	6.3	100	2.0	2.0%	11.7	710	32	4.5%	L	7	1.5	8.0	19.7			**19.7**
E04	0.51	3.9	100	8.0	8.0%	5.4	695	13	1.9%	P	20	2.7	4.2	9.6	795.00	14.4	**9.6**
E05	0.53	1.7												11.2	765.00	14.3	**11.2**
E06	0.42	5.4												13.7	695.00	13.9	**13.7**
E07	0.40	4.9												15.8	885.00	14.9	**14.9**
E08	0.40	1.2												15.2	850.00	14.7	**14.7**
E09	0.40	2.9	FROM APPROVED VISTAS FILING 1 FINAL DRAINAGE REPORT											16.2	680.00	13.8	**13.8**
E10	0.40	4.9												20.2	1230.00	16.8	**16.8**
E11	0.40	3.0												15.0	640.00	13.6	**13.6**
E12	0.40	2.6												13.9	755.00	14.2	**13.9**
E13	0.40	3.2												23.1	1880.00	20.4	**20.4**
E14	0.31	4.2												27.3			**27.3**
E15	0.65	1.7	10	0.3	2.5%	5.0	530	11	2.1%	L	7	1.0	8.8	13.8	540.00	13.0	**13.0**
E16	0.71	1.5	25	0.5	2.0%	5.0	464	10	2.2%	L	7	1.0	7.5	12.5	489.00	12.7	**12.5**

Notes:		
	* Ti = $\frac{\text{* Ti} = 0.395\,(1.1-C5)L^{0.5}}{S^{0.33}}$	
	$V = C_V S_W^{0.5}$	** Tt = L x V

TYPE OF SURFACE		C_V
HEAVY MEADOW	H	2.5
TILLAGE/FIELD	T	5
RIPRAP (not buried)	R	6.5
SHORT PASTURE AND LAWNS	L	7
NEARLY BARE GROUND	B	10
GRASSED WATERWAY	G	15
PAVED AREAS	P	20

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)
SURFACE ROUTING

PROJECT: **Windingwalk and the Enclave PUD** Date: 3/26/2018

DESIGN POINT	DIRECT RUNOFF											TOTAL RUNOFF							OVERLAND TRAVEL TIME						
	BASIN	AREA (AC)	Tc (Min.)	I (in./ hr.)		COEFF. ©		CA		Q		Sum Tc (min.)	I (in./ hr.)		CA		Q		DESTINATION DP	CONVEYANCE TYPE	COEFFICIENT C_V	SLOPE %	VEL. (FPS)	LENGTH (FT)	TRAVEL TIME Tt
				(5 YR)	(100 YR)	(5 YR)	(100 YR)	(5 YR)	(100 YR)	(5 YR)	(100 YR)		(5 YR)	(100 YR)	(5 YR)	(100 YR)	**(5 YR)**	**(100 YR)**							
I01	B01	1.9	15.3	3.49	5.85	0.40	0.55	0.75	1.03	2.6	6.0						**2.6**	**6.0**							
I02	B02	1.9	14.1	3.61	6.06	0.40	0.55	0.76	1.04	2.7	6.3						**2.7**	**6.3**	I04	P	20.0	1.30%	2.3	1072	7.8
I03	B03	4.4	10.3	4.08	6.85	0.40	0.55	1.76	2.40	7.2	16						**7.2**	**16**	I04	P	20.0	1.80%	2.7	163	1.0
I04	B04	7.4	22.0	2.95	4.95	0.40	0.55	2.96	4.03	8.7	20	22.0	2.95	4.95	3.13	4.59	**9.2**	**23**							
I05	B05	2.5	17.1	3.32	5.58	0.40	0.55	1.00	1.36	3.3	7.6						**3.3**	**7.6**							
CB01	B06	5.8	14.4	3.58	6.01	0.32	0.48	1.85	2.76	6.6	17						**6.6**	**17**							
I06	B07	3.3	14.9	3.53	5.92	0.40	0.55	1.34	1.82	4.7	11						**4.7**	**11**	I08	P	20.0	2.24%	3.0	625	3.5
I07	B08	3.2	10.5	4.05	6.80	0.40	0.55	1.27	1.73	5.2	12						**5.2**	**12**							
I08	B09	2.4	10.6	4.04	6.78	0.40	0.55	0.97	1.32	3.9	9.0						**3.9**	**9.0**							
I09	B10	4.1	15.3	3.49	5.86	0.40	0.55	1.63	2.22	5.7	13						**5.7**	**13**							
I10	B11	3.3	13.9	3.64	6.10	0.40	0.55	1.30	1.77	4.7	11						**4.7**	**11**							
I11	B12	7.1	13.4	3.69	6.20	0.40	0.55	2.83	3.85	10	24						**10**	**24**	I12	P	20.0	2.00%	2.8	17.5	0.1
I12	B13	2.3	11.2	3.96	6.66	0.40	0.55	0.91	1.24	3.6	8.3	13.5	3.68	6.18	0.91	1.97	**3.6**	**12**							
I13	B14	4.9	12.9	3.75	6.30	0.51	0.64	2.52	3.14	9.5	20	13.2	3.71	6.22	3.14	4.03	**12**	**25**	I14	P	20.0	2.00%	2.8	25	0.1
I14	B15	1.4	7.6	4.54	7.62	0.58	0.69	0.83	0.99	3.8	7.6	13.4	3.69	6.20	0.83	1.98	**3.8**	**12**	EI37a	P	20.0	2.10%	2.9	815	4.7
EI15	B16	3.2	12.6	3.78	6.34	0.66	0.76	2.15	2.47	8.1	16						**8.1**	**16**	I13	P	20.0	2.20%	3.0	110	0.6
EI16	B17	1.7	12.7	3.77	6.34	0.90	0.96	1.55	1.65	5.8	10						**5.8**	**10**	EI17	P	20.0	2.00%	2.8	530	3.1
EI17	E15	1.7	13.0	3.74	6.27	0.65	0.75	1.11	1.29	4.2	8.1	15.8	3.44	5.78	1.49	1.81	**5.1**	**10**							
EI18	E16	1.5	12.5	3.80	6.37	0.71	0.81	1.08	1.21	4.1	7.7						**4.1**	**7.7**							
DP05	H01	1.0	11.8	3.88	6.52	0.40	0.55	0.40	0.54	1.5	3.5						**1.5**	**3.5**	I20	P	20.0	1.20%	2.2	140	1.1
I20	H02	3.5	11.9	3.87	6.49	0.45	0.59	1.57	2.04	6.1	13	12.8	3.75	6.30	1.97	2.58	**7.4**	**16**	I23	P	20.0	3.10%	3.5	650	3.1
DP06	H03	3.0	13.9	3.64	6.11	0.54	0.66	1.60	1.96	5.8	12						**5.8**	**12**	I21	P	20.0	2.75%	3.3	618	3.1
I21	H04	2.4	8.7	4.34	7.29	0.46	0.60	1.10	1.42	4.8	10	17.0	3.34	5.60	2.70	3.38	**9.0**	**19**							
I22	H05	2.0	9.1	4.26	7.16	0.40	0.55	0.81	1.11	3.5	7.9						**3.5**	**7.9**							
DP07	H06	2.5	8.9	4.30	7.22	0.40	0.55	1.01	1.37	4.3	9.9						**4.3**	**9.9**	I23	P	20.0	1.00%	2.0	152	1.3
I23	H07	3.1	8.8	4.33	7.27	0.46	0.60	1.45	1.87	6.3	14	15.9	3.43	5.76	2.46	3.46	**8.4**	**20**	I25	P	20.0	3.30%	3.6	520	2.4
CB03	H08	4.4	15.0	3.52	5.91	0.29	0.46	1.30	2.01	4.6	12						**4.6**	**12**							
CB04	H09	2.8	13.1	3.73	6.26	0.30	0.46	0.84	1.28	3.1	8.0						**3.1**	**8.0**							
I24	H10	5.0	14.2	3.60	6.04	0.46	0.59	2.29	2.96	8.2	18						**8.2**	**18**	I29	P	20.0	2.50%	3.2	523	2.8
I25	H11	2.0	10.8	4.01	6.73	0.48	0.61	0.95	1.21	3.8	8.1	18.3	3.22	5.41	0.95	2.08	**3.8**	**11**							
I26	H12	4.9	14.8	3.54	5.94	0.40	0.55	1.95	2.66	6.9	16						**6.9**	**16**	I27	P	20.0	2.00%	2.8	15	0.1
I27	H13	1.3	10.8	4.02	6.75	0.40	0.55	0.51	0.70	2.1	4.7	14.9	3.53	5.92	0.51	1.47	**2.1**	**8.7**							
DP08	H14	1.5	8.2	4.43	7.44	0.40	0.55	0.61	0.83	2.7	6.2						**2.7**	**6.2**	I28	P	20.0	1.20%	2.2	170	1.3
I28	H15	1.9	7.5	4.55	7.65	0.40	0.55	0.75	1.03	3.4	7.9	9.5	4.21	7.07	1.37	1.86	**5.8**	**13**							
I29	H16	4.1	13.2	3.71	6.23	0.50	0.63	2.07	2.60	7.7	16	17.0	3.33	5.60	2.07	3.75	**7.7**	**21**	I35	P	20.0	1.20%	2.2	600	4.6
I30	H17	3.4	12.8	3.76	6.31	0.48	0.61	1.65	2.10	6.2	13						**6.2**	**13**	I31	P	20.0	2.30%	3.0	300	1.6

DESIGN POINT	DIRECT RUNOFF											TOTAL RUNOFF							OVERLAND TRAVEL TIME						
	BASIN	AREA (AC)	Tc (Min.)	I (in./ hr.) (5 YR)	I (in./ hr.) (100 YR)	COEFF. © (5 YR)	COEFF. © (100 YR)	CA (5 YR)	CA (100 YR)	Q (5 YR)	Q (100 YR)	Sum Tc (min.)	I (in./ hr.) (5 YR)	I (in./ hr.) (100 YR)	CA (5 YR)	CA (100 YR)	Q **(5 YR)**	Q **(100 YR)**	DESTINATION DP	CONVEYANCE TYPE	COEFFICIENT C_V	SLOPE %	VEL. (FPS)	LENGTH (FT)	TRAVEL TIME Tt
I31	H18	6.0	14.7	3.55	5.96	0.40	0.55	2.40	3.27	8.5	19	14.5	3.57	6.00	2.40	3.63	**8.6**	**22**	I33	p	20.0	1.00%	2.0	410	3.4
I32	H19	3.8	15.2	3.50	5.88	0.40	0.55	1.53	2.09	5.4	12						**5.4**	**12**	I34	P	20.0	1.00%	2.0	308	2.6
I33	H20	4.6	12.3	3.82	6.42	0.40	0.55	1.84	2.50	7.0	16	17.9	3.26	5.47	1.84	2.98	**7.0**	**16**	I34	P	20.0	2.00%	2.8	15	0.1
I34	H21	4.0	20.2	3.08	5.16	0.40	0.55	1.60	2.19	4.9	11	20.2	3.08	5.16	1.64	3.34	**5.0**	**17**							
CB02	B18	6.1	14.2	3.60	6.04	0.28	0.44	1.72	2.72	6.2	16						**6.2**	**16**							
I17	B19	4.1	13.9	3.63	6.10	0.40	0.55	1.63	2.22	5.9	14						**5.9**	**14**	I18	P	20.0	0.94%	1.9	638	5.5
I18	B20	3.3	14.9	3.53	5.93	0.40	0.55	1.30	1.78	4.6	11	19.4	3.14	5.26	1.30	2.20	**4.6**	**12**	I19	P	20.0	2.00%	2.8	15	0.1
I19	B21	2.0	17.0	3.33	5.60	0.40	0.55	0.80	1.09	2.7	6.1	19.5	3.13	5.25	0.80	1.16	**2.7**	**6.1**							
DP01	B22	11.6	16.9	3.34	5.61	0.34	0.49	3.94	5.71	13	32						**13**	**32**	DP02	G	15.0	1.10%	1.6	921	9.8
DP02	B23	9.8	16.6	3.37	5.66	0.30	0.46	2.99	4.56	10	26	26.6	2.66	4.46	6.93	10.28	**18**	**46**	DP03	G	15.0	1.40%	1.8	1546	14.5
DP03	B24	9.1	21.1	3.01	5.05	0.30	0.46	2.68	4.14	8.1	21	41.2	2.01	3.37	9.61	14.42	**19**	**49**							
DP04	B25	1.5	11.3	3.95	6.64	0.32	0.48	0.50	0.74	2.0	4.9						**2.0**	**4.9**							
I35	H22	3.0	13.8	3.65	6.13	0.51	0.64	1.55	1.93	5.7	12	21.6	2.98	5.00	1.55	2.30	**5.7**	**12**							
I36	H23	1.0	8.7	4.34	7.28	0.67	0.77	0.69	0.79	3.0	5.7						**3.0**	**5.7**							
OS4	H24	3.3	14.8	3.54	5.94	0.34	0.49	1.11	1.62	3.9	10	21.8	2.96	4.97	3.71	4.78	**11**	**24**	POND	G	15.0	1.20%	1.6	425	4.3
POND	H25	11.3	13.1	3.73	6.26	0.29	0.45	3.30	5.13	12	32						**12**	**32**							
EI37a	H26	3.6	14.6	3.57	5.99	0.36	0.51	1.29	1.83	4.6	11	18.1	3.24	5.44	1.32	2.25	**4.6**	**12**	EI37b	P	20.0	2.10%	2.9	53	0.3
EI37b												18.4	3.22	5.40	0.29	0.74	**0.9**	**4.0**	EI38	P	20.0	2.10%	2.9	909	5.2
DP09	H27	2.2	15.3	3.49	5.86	0.26	0.43	0.58	0.95	2.0	5.6	23.6	2.84	4.77	2.01	3.06	**5.7**	**15**							
EI38	H28	1.7	10.2	4.09	6.87	0.83	0.90	1.39	1.51	5.7	10	23.6	2.84	4.77	1.39	1.65	**5.7**	**10**	EI39	P	20.0	2.20%	3.0	126	0.7
EI39												24.3	2.80	4.69	0.47	0.68	**1.3**	**3.2**							
DP10	G01	2.7	9.2	4.26	7.14	0.40	0.55	1.08	1.47	4.6	11						**4.6**	**11**	I40	P	20.0	0.90%	1.9	143	1.3
I40	G02	4.4	16.0	3.42	5.74	0.40	0.55	1.74	2.38	6.0	14	16.0	3.42	5.74	2.82	3.85	**9.7**	**22**	I41	P	20.0	2.00%	2.8	15	0.1
I41	G03	1.2	8.9	4.30	7.23	0.40	0.55	0.49	0.66	2.1	4.8	16.1	3.41	5.73	0.49	1.42	**2.1**	**8.1**							
DP11	G04	1.6	8.5	4.37	7.34	0.40	0.55	0.65	0.89	2.9	6.6						**2.9**	**6.6**	I42	P	20.0	1.00%	2.0	216	1.8
I42	G05	3.4	9.6	4.19	7.03	0.40	0.55	1.37	1.87	5.7	13	10.3	4.08	6.86	2.02	2.76	**8.3**	**19**	I43	P	20.0	2.00%	2.8	15	0.1
I43	G06	3.5	16.7	3.36	5.65	0.40	0.55	1.41	1.92	4.7	11	16.7	3.36	5.65	1.41	2.10	**4.7**	**12**							
DP12	E02	18.1	43.4	1.93	3.23	0.30	0.46	5.48	8.38	11	27	43.4	1.93	3.23	8.92	12.89	**17**	**42**	DP13	G	15.0	4.50%	3.2	693	3.6
DP13	E03	6.3	19.7	3.11	5.22	0.29	0.45	1.83	2.84	5.7	15	47.1	1.81	3.03	10.75	15.73	**19**	**48**	I44	G	15.0	1.00%	1.5	50	0.6
I44	E04	3.9	9.6	4.18	7.03	0.51	0.64	2.00	2.49	8.4	17						**8.4**	**17**							
I45	E05	1.7	11.2	3.96	6.64	0.53	0.65	0.91	1.12	3.6	7.5	11.2	3.96	6.64	0.91	1.12	**3.6**	**7.5**							
EI04	E06	5.4	13.7	3.66	6.14	0.42	0.56	2.29	3.05	8.4	19						**8.4**	**19**	EI05	P	20.0	0.63%	1.6	315	3.3
EI05	E07	4.9	14.9	3.53	5.92	0.40	0.55	1.95	2.66	6.9	16	17.0	3.33	5.59	1.95	2.82	**6.9**	**16**	EI07	P	20.0	0.68%	1.6	294	3.0
EI07	E08	1.2	14.7	3.55	5.96	0.40	0.55	0.49	0.67	1.8	4.0	25.5	2.72	4.57	0.86	1.65	**2.3**	**7.5**							
DP1	E09	2.9	13.8	3.65	6.12	0.40	0.55	1.17	1.60	4.3	9.8						**4.3**	**9.8**	EI06	P	20.0	0.73%	1.7	1235	12.1
EI06	E10	4.9	16.8	3.35	5.62	0.40	0.55	1.95	2.66	6.5	15	21.8	2.96	4.97	3.12	4.25	**9.2**	**21**							

DESIGN POINT	DIRECT RUNOFF BASIN	AREA (AC)	Tc (Min.)	I (in./ hr.) (5 YR)	I (in./ hr.) (100 YR)	COEFF. © (5 YR)	COEFF. © (100 YR)	CA (5 YR)	CA (100 YR)	Q (5 YR)	Q (100 YR)	TOTAL RUNOFF Sum Tc (min.)	I (in./ hr.) (5 YR)	I (in./ hr.) (100 YR)	CA (5 YR)	CA (100 YR)	Q **(5 YR)**	Q **(100 YR)**	OVERLAND TRAVEL TIME DESTINATION DP	CONVEYANCE TYPE	COEFFICIENT C_V	SLOPE %	VEL. (FPS)	LENGTH (FT)	TRAVEL TIME Tt
DP2	E11	3.0	13.6	3.67	6.17	0.40	0.55	1.19	1.62	4.4	10						**4.4**	**10**	EI06	P	20.0	0.91%	1.9	770	6.7
EI06	E12	2.6	13.9	3.64	6.11	0.40	0.55	1.04	1.41	3.8	8.6	16.7	3.36	5.64	2.23	3.04	**7.5**	**17**							
EI06												21.8	2.96	4.97	5.35	7.29	**16**	**36**	EI07	P	20.0	2.00%	2.8	15	0.1
EI07	E13	3.2	20.4	3.06	5.13	0.40	0.55	1.27	1.73	3.9	8.9	25.5	2.72	4.57	2.13	4.47	**5.8**	**20**							
H10	E14	4.2	27.3	2.62	4.40	0.31	0.47	1.31	1.97	3.4	8.7						**3.4**	**8.7**							

TYPE OF SURFACE		C_V
HEAVY MEADOW	H	3
TILLAGE/FIELD	T	5
RIPRAP (not buried)	R	7
SHORT PASTURE AND LAWNS	L	7
NEARLY BARE GROUND	B	10
GRASSED WATERWAY	G	15
PAVED AREAS	P	20

STORM DRAINAGE SYSTEM DESIGN
INLET CALCULATIONS

PROJECT: **Windingwalk Filing 1 & 2 PUD**   Date: 3/26/2018

							Q_{Total}		$Q_{Capture}$				$Q_{Flow-by}$				DEPTH (max)		SPREAD	
DP	Inlet size L(i)	Proposed or Existing	INLET TYPE	CROSS SLOPE	STREET SLOPE	T_c	Q_5 (cfs)	Q_{100} (cfs)	Q_5 (cfs)	Q_{100} (cfs)	CAeqv. (5-yr)	$CA_{eqv.}$ (100-yr)	Q_5 (cfs)	Q_{100} (cfs)	CAeqv. (5-yr)	$CA_{eqv.}$ (100-yr)	Q_5 (cfs)	Q_{100} (ft)	Q_5 (cfs)	Q_{100} (ft)
I01	5	PROP	SUMP	2.0%		15.3	2.6	6.0	2.6	6.0	0.75	1.03	-	-	-	-	0.50	0.50		
I02	10	PROP	FLOW-BY	2.0%	0.5%	14.1	2.7	6.3	2.1	4.2	0.59	0.70	0.6	2.1	0.17	0.34	0.32	0.41	12.0	16.3
I03	15	PROP	SUMP[1]	2.0%		10.3	7.2	16	7.2	15	1.76	2.18	-	1.5	-	0.22	0.40	0.50		
I04	15	PROP	SUMP	2.0%		22.0	9.2	23	9.2	23	3.13	4.59	-	-	-	-	0.50	0.70		
I05	10	PROP	SUMP	2.0%		17.1	3.3	7.6	3.3	7.6	1.00	1.36	-	-	-	-	0.50	0.70		
CB01	Type C	PROP	SUMP	2.0%		14.4	6.6	17	6.6	17	1.85	2.76	-	-	-	-	0.46	0.68		
I06	10	PROP	SUMP	2.0%		14.9	4.7	11	4.7	11	1.34	1.82	-	-	-	-	0.50	0.50		
I07	15	PROP	SUMP[1]	2.0%		10.5	5.2	12	5.2	12	1.27	1.73	-	-	-	-	0.50	0.50		
I08	15	PROP	SUMP[1]	2.0%		10.6	3.9	9.0	3.9	9.0	0.97	1.32	-	-	-	-	0.50	0.50		
I09	15	PROP	SUMP[1]	2.0%		15.3	5.7	13	5.7	13	1.63	2.22	-	-	-	-	0.50	0.50		
I10	10	PROP	SUMP[1]	2.0%		13.9	4.7	11	4.7	11	1.30	1.77	-	-	-	-	0.50	0.50		
I11	15	PROP	SUMP	2.0%		13.4	10	24	10	19	2.83	3.12	-	4.5	-	0.73	0.50	0.60		
I12	10	PROP	SUMP	2.0%		13.5	3.6	12	3.6	12	0.98	1.97	-	-	-	-	0.50	0.60		
I13	20	PROP	SUMP	2.0%		13.2	12	25	12	19	3.14	3.04	-	6.2	-	0.99	0.50	0.50		
I14	20	PROP	FLOW-BY	2.0%	0.5%	13.4	3.8	12	3.6	9.7	0.99	1.57	0.1	2.6	0.03	0.41	0.35	0.51	13.5	21.0
EI15	20	PROP	FLOW-BY	2.0%	2.2%	12.6	8.1	16	5.8	10	1.54	1.58	2.3	5.6	0.61	0.89	0.36	0.43	13.6	17.4
EI16	20	PROP	FLOW-BY	2.0%	2.2%	12.7	5.8	10	4.4	7.2	1.17	1.13	1.4	3.3	0.38	0.52	0.33	0.38	12.0	15.0
EI17	5	PROP	SUMP	2.0%		15.8	5.1	10	5.1	10	1.49	1.81	-	-	-	-	0.50	1.00		
EI18	12	PROP	SUMP	2.0%		12.5	4.1	7.7	4.1	7.7	1.08	1.21	-	-	-	-	0.50	1.00		
CB02	Type C	PROP	SUMP	2.0%		14.2	6.2	16	6.2	16	1.72	2.72	-	-	-	-	0.45	0.68		
I17	10	PROP	SUMP	2.0%		13.9	5.9	14	5.9	11	1.63	1.79	-	2.6	-	0.43	0.50	0.50		
I18	5	PROP	SUMP	2.0%		19.4	4.6	12	4.6	11	1.47	2.13	-	0.4	-	0.07	0.50	0.70		
I19	10	PROP	SUMP	2.0%		19.5	2.7	6.1	2.7	6.1	0.85	1.16	-	-	-	-	0.50	1.00		
I20	15	PROP	SUMP[1]	2.0%		12.8	7.4	16	7.4	15	1.97	2.37	-	1.3	-	0.21	0.50	0.50		
I21	20	PROP	SUMP[1]	2.0%		17.0	9.0	19	9.0	19	2.70	3.38	-	-	-	-	0.50	0.50		
I22	10	PROP	SUMP	2.0%		9.1	3.5	7.9	3.5	7.9	0.81	1.11	-	-	-	-	0.50	1.00		
I23	15	PROP	SUMP[1]	2.0%		15.9	8.4	20	8.4	15	2.46	2.59	-	5.0	-	0.87	0.50	0.50		

							Q_{Total}		$Q_{Capture}$				$Q_{Flow\text{-}by}$				DEPTH (max)		SPREAD	
DP	Inlet size L(i)	Proposed or Existing	INLET TYPE	CROSS SLOPE	STREET SLOPE	T_c	Q_5 (cfs)	Q_{100} (cfs)	Q_5 (cfs)	Q_{100} (cfs)	CAeqv. (5-yr)	$CA_{eqv.}$ (100-yr)	Q_5 (cfs)	Q_{100} (cfs)	CAeqv. (5-yr)	$CA_{eqv.}$ (100-yr)	Q_5 (cfs)	Q_{100} (ft)	Q_5 (cfs)	Q_{100} (ft)
CB03	Type C	PROP	SUMP	2.0%		15.0	4.6	12	4.6	12	1.30	2.01	-	-	-	-	0.40	0.59		
CB04	Type C	PROP	SUMP	2.0%		13.1	3.1	8.0	3.1	8.0	0.84	1.28	-	-	-	-	0.32	0.50		
I24	10	PROP	SUMP[1]	2.0%		14.2	8.2	18	8.2	11	2.29	1.81	-	7.0	-	1.15	0.50	0.50		
I25	10	PROP	SUMP[1]	2.0%		18.3	3.8	11	3.8	11	1.18	2.02	-	0.3	-	0.06	0.50	0.50		
I26	5	PROP	SUMP	2.0%		14.8	6.9	16	6.9	11	1.95	1.89	-	4.6	-	0.77	0.50	0.70		
I27	10	PROP	SUMP	2.0%		14.9	2.1	8.7	2.1	8.7	0.58	1.47	-	-	-	-	0.50	0.70		
I28	15	PROP	SUMP[1]	2.0%		9.5	5.8	13	5.8	13	1.37	1.86	-	-	-	-	0.50	0.50		
I29	20	PROP	SUMP[1]	2.0%		17.0	7.7	21	7.7	19	2.31	3.39	-	2.1	-	0.37	0.50	0.50		
I30	10	PROP	SUMP[1]	2.0%		12.8	6.2	13	6.2	11	1.65	1.73	-	2.3	-	0.37	0.50	0.50		
I31	20	PROP	SUMP[1]	2.0%		14.5	8.6	22	8.6	19	2.40	3.16	-	2.9	-	0.48	0.50	0.50		
I32	10	PROP	SUMP	2.0%		15.2	5.4	12	5.4	11	1.53	1.86	-	1.3	-	0.23	0.50	0.50		
I33	5	PROP	SUMP	2.0%		17.9	7.0	16	6.9	11	2.12	2.05	0.1	5.1	0.04	0.93	0.50	0.70		
I34	10	PROP	SUMP	2.0%		20.2	5.0	17	5.0	17	1.64	3.34	-	-	-	-	0.50	0.70		
I35	5	PROP	SUMP	2.0%		21.6	5.7	12	5.7	12	1.90	2.37	-	-	-	-	0.50	1.00		
I36	5	PROP	SUMP	2.0%		8.7	3.0	5.7	3.0	5.7	0.69	0.79	-	-	-	-	0.50	1.00		
EI37a	20	PROP	FLOW-BY	2.0%	2.1%	18.1	4.6	12	3.6	8.2	1.12	1.51	1.0	4.0	0.29	0.74	0.31	0.41	11.1	16.0
EI37b	20	PROP	FLOW-BY	2.0%	2.1%	18.4	0.9	4.0	1.0	3.2	0.30	0.60	-	0.8	-	0.14	0.21	0.30	6.1	10.5
EI38	20	PROP	FLOW-BY	2.0%	2.1%	23.6	5.7	10	4.4	7.2	1.53	1.51	1.3	3.2	0.47	0.68	0.33	0.39	12.1	15.1
EI39	20	PROP	FLOW-BY	2.0%	2.1%	24.3	1.3	3.2	1.3	2.7	0.46	0.57	0.0	0.5	0.01	0.11	0.22	0.28	7.0	9.7
I40	10	PROP	SUMP	2.0%		16.0	9.7	22	9.7	18	2.82	3.09	-	4.3	-	0.76	0.50	0.70		
I41	10	PROP	SUMP	2.0%		16.1	2.1	8.1	2.1	8.1	0.61	1.42	-	-	-	-	0.50	0.70		
I42	10	PROP	SUMP	2.0%		10.3	8.3	19	8.3	18	2.02	2.59	-	1.2	-	0.17	0.50	0.70		
I43	10	PROP	SUMP	2.0%		16.7	4.7	12	4.7	12	1.41	2.10	-	-	-	-	0.50	0.70		
I44	10	PROP	SUMP	2.0%		9.6	8.4	17	8.4	17	2.00	2.49	-	-	-	-	0.50	0.70		
I45	10	PROP	SUMP	2.0%		11.2	3.6	7.5	3.6	7.5	0.91	1.12	-	-	-	-	0.50	0.70		
EI04	10	EXIST	SUMP	2.0%		13.7	8.4	19	8.4	18	2.29	2.89	-	1.0	-	0.16	0.50	0.70		
EI05	10	EXIST	SUMP[1]	2.0%		17.0	6.9	16	6.9	16	2.07	2.82	-	-	-	-	0.50	0.70		
EI06	20	EXIST	SUMP	2.0%		21.8	16	36	16	31	4.71	6.20	-	5.4	-	1.09	0.50	0.70		
EI07	15	EXIST	SUMP	2.0%		25.5	5.8	20	5.8	20	2.13	4.47	-	-	-	-	0.50	0.80		

[1] Forced sump at intersection

STORM DRAINAGE SYSTEM DESIGN
(RATIONAL METHOD PROCEDURE)
PIPE ROUTING

PROJECT: **Windingwalk and the Enclave PUD** Date: 3/26/2018

UPSTREAM DESIGN POINT	UPSTREAM BASIN	INLET FLOW Tc (Min.)	INLET FLOW I (in./ hr.) (5 YR)	INLET FLOW I (in./ hr.) (100 YR)	INLET FLOW CA (5 YR)	INLET FLOW CA (100 YR)	INLET FLOW Q (5 YR)	INLET FLOW Q (100 YR)	SYSTEM FLOW Sum Tc (min.)	SYSTEM FLOW I (in./ hr.) (5 YR)	SYSTEM FLOW I (in./ hr.) (100 YR)	SYSTEM FLOW CA (5 YR)	SYSTEM FLOW CA (100 YR)	SYSTEM FLOW Q (5 YR)	SYSTEM FLOW Q (100 YR)	TRAVEL TIME PIPE DIA	ROUGHNESS (n)	DESTINATION DP	SLOPE %	LENGTH (FT)	VEL. (FPS) (Estimate)*	TRAVEL TIME Tt
I01	B01	15.3	3.49	5.85	0.75	1.03	2.6	6.0						**2.6**	**6.0**	18	0.013	J01	0.90%	33	6	0.1
I02	B02	14.1	3.61	6.06	0.59	0.70	2.1	4.2						**2.1**	**4.2**	18	0.013	J01	1.40%	24	7	0.1
J01									15.4	3.48	5.84	1.34	1.72	**4.7**	**10**	18	0.013	J02	3.34%	297	11	0.5
J02									15.9	3.43	5.77	1.34	1.72	**4.6**	**10**	18	0.013	J02	0.81%	285	5	0.9
J03									16.8	3.35	5.63	1.34	1.72	**4.5**	**10**	24	0.013	J05	0.55%	487	5	1.5
I03	B03	10.3	4.08	6.85	1.76	2.18	7.2	15						**7.2**	**15**	18	0.013	J04	1.04%	48	6	0.1
J04									10.5	4.06	6.82	1.76	2.18	**7.1**	**15**	24	0.013	J05	1.85%	127	10	0.2
I04	B04	22.0	2.95	4.95	3.13	4.59	9.2	23						**9.2**	**23**	18	0.013	J05	1.93%	5	8	0.0
J05									22.0	2.95	4.95	6.24	8.50	**18**	**42**	24	0.013	I05	7.55%	25	20	0.0
I05	B05	17.1	3.32	5.58	1.00	1.36	3.3	7.6	22.0	2.95	4.95	7.24	9.86	**21**	**49**	24	0.013	J06	5.71%	147	17	0.1
J06									22.1	2.94	4.93	7.24	9.86	**21**	**49**	30	0.013	CB01	1.08%	102	9	0.2
CB01	B06	14.4	3.58	6.01	1.85	2.76	6.6	17	22.3	2.92	4.91	9.08	12.62	**27**	**62**	36	0.013	I06	1.62%	160	12	0.2
I06	B07	14.9	3.53	5.92	1.34	1.82	4.7	11	22.5	2.91	4.88	10.42	14.45	**30**	**71**	36	0.013	J07	3.12%	296	17	0.3
I07	B08	10.5	4.05	6.80	1.27	1.73	5.2	12						**5.2**	**12**	18	0.013	J07	1.00%	45	6	0.1
J07									22.8	2.89	4.85	11.69	16.18	**34**	**79**	36	0.013	J08	1.19%	332	10	0.5
I08	B09	10.6	4.04	6.78	0.97	1.32	3.9	9.0						**3.9**	**9.0**	18	0.013	J08	1.00%	8	6	0.0
J08									23.4	2.86	4.79	12.66	17.50	**36**	**84**	42	0.013	J09	1.06%	57	11	0.1
J09									23.5	2.85	4.78	12.66	17.50	**36**	**84**	42	0.013	J10	2.81%	306	18	0.3
J10									23.7	2.83	4.75	12.66	17.50	**36**	**83**	42	0.013	J15	1.85%	205	14	0.2
I09	B10	15.3	3.49	5.86	1.63	2.22	5.7	13						**5.7**	**13**	18	0.013	J11	1.04%	48	6	0.1
J11									15.4	3.48	5.84	1.63	2.22	**5.7**	**13**	18	0.013	J13	1.62%	334	8	0.7
I10	B11	13.9	3.64	6.10	1.30	1.77	4.7	11						**4.7**	**11**	18	0.013	J12	1.04%	58	6	0.2
J12									14.1	3.62	6.07	1.30	1.77	**4.7**	**11**	18	0.013	J13	1.06%	76	6	0.2
I11	B12	13.4	3.69	6.20	2.83	3.12	10	19						**10**	**19**	18	0.013	J13	1.93%	5	8	0.0
J13									16.1	3.41	5.73	5.76	7.11	**20**	**41**	24	0.013	I12	2.78%	25	12	0.0
I12	B13	13.5	3.68	6.18	0.98	1.97	3.6	12	16.2	3.41	5.72	6.74	9.08	**23**	**52**	30	0.013	J14	4.17%	166	17	0.2
J14									16.3	3.39	5.70	6.74	9.08	**23**	**52**	36	0.013	J15	0.88%	113	9	0.2
J15									24.0	2.82	4.73	19.40	26.59	**55**	**126**	48	0.013	J16	0.99%	85	11	0.1
I13	B14	13.2	3.71	6.22	3.14	3.04	12	19						**12**	**19**	24	0.013	J16	4.86%	13	16	0.0
I14	B15	13.4	3.69	6.20	0.99	1.57	3.6	9.7						**3.6**	**9.7**	18	0.013	J16	1.93%	33	8	0.1
J16									24.0	2.82	4.73	23.52	31.20	**66**	**148**	48	0.013	EJ16	1.00%	153	11	0.2
EI15	B16	12.6	3.78	6.34	1.54	1.58	5.8	10						**5.8**	**10**	24	0.013	EI16	1.10%	108	8	0.2
EI16	B17	12.7	3.77	6.34	1.17	1.13	4.4	7.2	12.9	3.75	6.30	2.71	2.71	**10**	**17**	30	0.013	EJ16	1.60%	100	11	0.2
EJ16									24.2	2.80	4.70	26.23	33.91	**74**	**160**	48	0.013	EJ17	1.30%	343	13	0.4
EJ17									24.6	2.78	4.66	26.23	33.91	**73**	**158**	48	0.013	EJ18	0.50%	120	8	0.2

UPSTREAM DESIGN POINT	UPSTREAM BASIN	INLET FLOW							SYSTEM FLOW							TRAVEL TIME						
		Tc (Min.)	I (in./ hr.)		CA		Q		Sum Tc (min.)	I (in./ hr.)		CA		Q		PIPE DIA	ROUGHNESS (n)	DESTINATION DP	SLOPE %	LENGTH (FT)	VEL. (FPS) (Estimate)*	TRAVEL TIME Tt
			(5 YR)	(100 YR)	(5 YR)	(100 YR)	(5 YR)	(100 YR)		(5 YR)	(100 YR)	(5 YR)	(100 YR)	(5 YR)	(100 YR)							
EI17	E15	15.8	3.44	5.78	1.49	1.81	5.1	10						5.1	10	24	0.013	EJ18	1.33%	13	8	0.0
EI18	E16	12.5	3.80	6.37	1.08	1.21	4.1	7.7						4.1	7.7	24	0.013	EJ18	0.50%	33	5	0.1
EJ18									24.9	2.76	4.63	28.80	36.94	80	171	54	0.013	EJ19	0.50%	342	9	0.7
EJ19									25.5	2.72	4.57	28.80	36.94	78	169	54	0.013	EJ19	2.10%	96	18	0.1
CB02	B18	14.2	3.60	6.04	1.72	2.72	6.2	16						6.2	16	24	0.013	J17	1.00%	180	7	0.4
J17									14.6	3.56	5.97	1.72	2.72	6.1	16	24	0.013	J18	0.99%	116	7	0.3
I17	B19	13.9	3.63	6.10	1.63	1.79	5.9	11						5.9	11	18	0.013	J18	1.93%	5	8	0.0
J18									14.9	3.53	5.93	3.35	4.52	12	27	30	0.013	J19	1.05%	38	9	0.1
J19									15.0	3.52	5.91	3.35	4.52	12	27	30	0.013	J20	1.03%	107	9	0.2
J20									15.2	3.50	5.88	3.35	4.52	12	27	30	0.013	J21	0.71%	489	7	1.2
I18	B20	19.4	3.14	5.26	1.47	2.13	4.6	11						4.6	11	18	0.013	J21	9.64%	5	19	0.0
J21									19.4	3.13	5.26	4.82	6.65	15	35	30	0.013	I19	1.22%	25	9	0.0
I19	B21	19.5	3.13	5.25	0.85	1.16	2.7	6.1	19.5	3.13	5.25	5.67	7.81	18	41	30	0.013	OS2	2.20%	159	12	0.2
I20	H02	12.8	3.75	6.30	1.97	2.37	7.4	15						7.4	15	18	0.013	J22	1.00%	65	6.0	0.2
J22									13.0	3.73	6.27	1.97	2.37	7.3	15	18	0.013	J23	3.69%	330	11.4	0.5
J23									13.5	3.68	6.18	1.97	2.37	7.2	15	18	0.013	J24	3.82%	234	11.6	0.3
I23	H07	15.9	3.43	5.76	2.46	2.59	8.4	15						8.4	15	24	0.013	J24	1.08%	32	7.5	0.1
J24									16.0	3.43	5.75	4.43	4.96	15	29	24	0.013	J26	2.91%	105	12.3	0.1
I21	H04	17.0	3.34	5.60	2.70	3.38	9.0	19						9.0	19	24	0.013	J25A	1.03%	183	7.3	0.4
J25A									17.4	3.30	5.54	2.70	3.38	8.9	19	24	0.013	I22	3.32%	344	13.2	0.4
I22	H05	9.1	4.26	7.16	0.81	1.11	3.5	7.9	17.8	3.26	5.48	3.52	4.49	11	25	24	0.013	J25B	4.97%	178	16	0.2
J25B									18.0	3.25	5.45	3.52	4.49	11	24	24	0.013	J26	1.00%	100	7	0.2
J26									18.2	3.23	5.42	7.94	9.45	26	51	30	0.013	J27	4.13%	216	17	0.2
CB03	H08	15.0	3.52	5.91	1.30	2.01	4.6	12						4.6	12	18	0.013	J27	0.99%	71	6	0.2
CB04	H09	13.1	3.73	6.26	0.84	1.28	3.1	8.0						3.1	8.0	18	0.013	J27	1.38%	51	7	0.1
J27									18.4	3.21	5.39	10.08	12.74	32	69	42	0.013	J28	3.10%	158	18	0.1
I24	H10	14.2	3.60	6.04	2.29	1.81	8.2	11						8.2	11	18	0.013	J28	1.04%	53	6	0.1
I25	H11	18.3	3.22	5.41	1.18	2.02	3.8	11						3.8	11	18	0.013	J28	1.68%	33	8	0.1
J28									18.6	3.20	5.37	13.55	16.57	43	89	42	0.013	J29	3.43%	264	19	0.2
I26	H12	14.8	3.54	5.94	1.95	1.89	6.9	11						6.9	11	18	0.013	I27	4.25%	35	12	0.0
I27	H13	14.9	3.53	5.92	0.58	1.47	2.1	8.7	14.9	3.53	5.92	2.54	3.36	8.9	20	24	0.013	J29	3.07%	192	13	0.3
J29									18.8	3.18	5.34	13.55	19.93	43	106	42	0.013	J30	1.79%	90	14	0.1
I28	H15	9.5	4.21	7.07	1.37	1.86	5.8	13						5.8	13	18	0.013	J30	1.38%	33	7	0.1
J30									18.9	3.17	5.33	14.92	21.79	47	116	42	0.013	J31	1.95%	169	15	0.2
I29	H16	17.0	3.33	5.60	2.31	3.39	7.7	19						7.7	19	24	0.013	J31	5.91%	28	18	0.0
J31									19.1	3.16	5.30	17.22	25.17	54	133	48	0.013	J32	1.43%	249	14	0.3
I30	H17	12.8	3.76	6.31	1.65	1.73	6.2	11						6.2	11	18	0.013	J32	2.45%	45	9	0.1
J32									19.4	3.13	5.26	18.87	26.90	59	142	48	0.013	J33	3.06%	303	20	0.3
I31	H18	14.5	3.57	6.00	2.40	3.16	8.6	19						8.6	19	24	0.013	J33	6.82%	25	19	0.0
J33									19.7	3.12	5.23	21.27	30.06	66	157	48	0.013	J34	1.04%	48	12	0.1
J34									19.7	3.11	5.22	21.27	30.06	66	157	48	0.013	J35	2.55%	387	18	0.4
I32	H19	15.2	3.50	5.88	1.53	1.86	5.4	11						5.4	11	24	0.013	J35	1.62%	312	9	0.6
I33	H20	17.9	3.26	5.47	2.12	2.05	6.9	11						6.9	11	18	0.013	J35	9.90%	24	19	0.0

UPSTREAM DESIGN POINT	UPSTREAM BASIN	INLET FLOW							SYSTEM FLOW							TRAVEL TIME						
			I (in./ hr.)		CA		Q			I (in./ hr.)		CA		Q								
		Tc (Min.)	(5 YR)	(100 YR)	(5 YR)	(100 YR)	(5 YR)	(100 YR)	Sum Tc (min.)	(5 YR)	(100 YR)	(5 YR)	(100 YR)	**(5 YR)**	**(100 YR)**	PIPE DIA	ROUGHNESS (n)	DESTINATION DP	SLOPE %	LENGTH (FT)	VEL. (FPS) (Estimate)*	TRAVEL TIME Tt
J35									20.1	3.08	5.18	24.92	33.97	**77**	**176**	48	0.013	I34	3.05%	5	20	0.0
I34	H21	20.2	3.08	5.16	1.64	3.34	5.0	17	20.1	3.08	5.18	26.56	37.31	**82**	**193**	48	0.013	OS3	1.01%	248	12	0.4
I35	H22	21.6	2.98	5.00	1.90	2.37	5.7	12						**5.7**	**12**	18	0.013	I36	1.03%	53	6	0.1
I36	H23	8.7	4.34	7.28	0.69	0.79	3.0	5.7	21.7	2.97	4.98	2.59	3.16	**7.7**	**16**	24	0.013	OS4	1.06%	52	7	0.1
EI37a	H26	18.1	3.24	5.44	1.12	1.51	3.6	8.2						**3.6**	**8.2**	30	0.013	DP03	2.20%	50	12	0.1
EI37b		18.4	3.22	5.40	0.30	0.60	1.0	3.2	18.4	3.22	5.40	1.43	2.11	**4.6**	**11**	30	0.013	DP03	2.20%	50	12	0.1
EI38	H28	23.6	2.84	4.77	1.53	1.51	4.4	7.2						**4.4**	**7.2**	30	0.013	DP03	2.20%	50	12	0.1
EI39		24.3	2.80	4.69	0.46	0.57	1.3	2.7						**1.3**	**2.7**							
I40	G02	16.0	3.42	5.74	2.82	3.09	9.7	18						**9.7**	**18**	18	0.013	I41	0.99%	35	6	0.1
I41	G03	16.1	3.41	5.73	0.61	1.42	2.1	8.1	16.1	3.41	5.73	3.44	4.51	**12**	**26**	24	0.013	J36	2.62%	193	12	0.3
J33									16.4	3.39	5.68	3.44	4.51	**12**	**26**	24	0.013	OS5	1.00%	114	7	0.3
I42	G05	10.3	4.08	6.86	2.02	2.59	8.3	18						**8.3**	**18**	18	0.013	I43	6.65%	35	15	0.0
I43	G06	16.7	3.36	5.65	1.41	2.10	4.7	12	16.7	3.36	5.65	3.44	4.68	**12**	**26**	24	0.013	J37	2.71%	188	12	0.3
J37									16.9	3.34	5.61	3.44	4.68	**11**	**26**	30	0.013	J38	1.02%	490	8	1.0
J38									17.9	3.26	5.47	3.44	4.68	**11**	**26**	30	0.013	J39	1.38%	123	10	0.2
DP13	E03	47.1	1.81	3.03	10.75	15.73	19	48	47.1	1.81	3.03	10.75	15.73	**19**	**48**	42	0.013	I44	1.21%	33	12	0.0
I44	E04	9.6	4.18	7.03	2.00	2.49	8.4	17	47.1	1.80	3.03	12.75	18.22	**23**	**55**	42	0.013	J39	1.07%	14	11	0.0
J39									47.1	1.80	3.03	16.19	22.90	**29**	**69**	24	0.013	I45	1.04%	34	7	0.1
I45	E05	11.2	3.96	6.64	0.91	1.12	3.6	7.5	47.2	1.80	3.02	17.10	24.03	**31**	**73**	42	0.013	EI04	2.01%	165	15	0.2
EI04	E06	13.7	3.66	6.14	2.29	2.89	8.4	18	47.4	1.80	3.01	19.39	26.92	**35**	**81**	42	0.013	EJ04	1.00%	296	10	0.5
EI05	E07	17.0	3.33	5.59	2.07	2.82	6.9	16						**6.9**	**16**	18	0.013	EJ04	3.70%	23	11	0.0
EJ04									47.9	1.78	2.99	21.46	29.74	**38**	**89**	42	0.013	EJ06	1.10%	226	11	0.3
EI06	E10 & E12	21.8	2.96	4.97	4.71	6.20	14	31						**14**	**31**	24	0.013	EJ05	1.00%	25	7	0.1
EI07	E08 & E14	25.5	2.72	4.57	2.13	4.47	5.8	20						**5.8**	**20**	24	0.013	EJ05	5.40%	5	17	0.0
EJ05									25.5	2.72	4.57	6.84	10.67	**19**	**49**	36	0.013	EJ06	1.80%	56	13	0.1
EJ06									48.2	1.77	2.97	28.30	40.41	**50**	**120**	48	0.013	OS2	1.50%	165	14	0.2

* Velocity estimated for calculation of travel time. Refer to Hydraulics for calculated velocity.

STORM DRAINAGE SYSTEM DESIGN

HYDRAULICS

PROJECT: **Windingwalk Filing 1** Date: 3/26/2018

Label	Upstrm Node	Dnstrm Node	Intlet CA (acres)	Inlet Tc (min)	Inlet Flow (ft^3/s)	System CA (acres)	System Flow Time (min)	System Intensity (in/hr)	Length (ft)	Section Size (in)	Slope (%)	Capacity (Full Flow) (ft^3/s)	System Flow (ft^3/s)	Velocity (Ave) (ft/s)	Elevation Ground (Upstrm) (ft)	Hydraulic Grade Line (Upstrm) (ft)	Invert (Upstrm) (ft)	Elevation Ground (Dnstrm) (ft)	Hydraulic Grade Line (Dnstrm) (ft)	Invert (Dnstrm) (ft)
P01	I01	J01	1.03	15.3	6	1.03	15.3	5.86	34	18	0.90%	10	6.1	3.9	7061.73	7058.3	7057.20	7061.16	7058.3	7056.90
P02	I02	J01	0.70	14.1	4	0.70	14.1	6.07	24	18	1.40%	13	4.3	2.9	7061.76	7058.3	7057.25	7061.16	7058.3	7056.90
P03	J01	J02				1.73	15.4	5.84	297	18	3.40%	19	10	11	7061.16	7058.1	7056.90	7051.06	7048.3	7046.90
P04	J02	J03				1.73	15.9	5.76	285	18	0.80%	9	10	6.1	7051.06	7048.3	7046.90	7048.74	7045.8	7044.60
P05	J03	J05				1.73	16.7	5.64	487	24	0.60%	17	10	4.4	7048.74	7045.2	7044.10	7046.29	7043.8	7041.40
P08	I04	J05	4.59	22.0	23	4.59	22.0	4.95	5.2	18	1.90%	15	23	13	7046.52	7044.3	7042.00	7046.29	7044.0	7041.90
P07	J04	J05				2.18	10.4	6.84	127	24	1.90%	31	15	6.7	7048.77	7045.2	7043.75	7046.29	7044.0	7041.40
P06	I03	J04	2.18	10.3	15	2.18	10.3	6.86	48	18	1.00%	11	15	8.5	7049.27	7046.7	7044.75	7048.77	7045.7	7044.25
P08A	J05	I05				8.50	22.0	4.95	25	24	7.50%	62	42	14	7046.29	7043.4	7041.40	7046.52	7042.2	7039.50
P09	I05	J06	1.36	17.1	8	9.86	22.0	4.94	147	24	5.70%	54	49	16	7046.52	7041.5	7039.50	7038.50	7034.3	7031.10
P10	J06	CB01				9.86	22.2	4.92	102	30	1.50%	50	49	10	7038.50	7033.4	7030.60	7033.00	7031.9	7029.10
P11	CB01	I06	2.76	14.4	17	12.62	22.4	4.90	160	36	1.40%	78	62	11	7033.00	7031.1	7028.60	7032.48	7029.3	7026.40
P12	I06	J07	1.82	14.9	11	14.44	22.6	4.88	296	36	3.10%	118	71	15	7032.48	7029.1	7026.40	7024.03	7020.5	7017.15
P13	I07	J07	1.73	10.5	12	1.73	10.5	6.81	45	18	1.00%	10	12	6.7	7023.64	7021.2	7019.10	7024.03	7020.6	7018.65
P14	J07	J08				16.17	22.9	4.84	332	36	1.20%	73	79	11	7024.03	7020.5	7017.15	7019.13	7016.0	7013.20
P15	I08	J08	1.32	10.6	9	1.32	10.6	6.79	5	18	1.90%	15	9.0	5.1	7019.34	7016.6	7014.80	7019.13	7016.6	7014.70
P16	J08	J09				17.49	23.4	4.79	57	42	1.10%	103	84	10	7019.13	7015.6	7012.70	7018.80	7015.3	7012.10
P17	J09	J10				17.49	23.5	4.78	305	42	2.80%	169	84	16	7018.80	7015.0	7012.10	7009.71	7006.5	7003.50
P18	J10	J15				17.49	23.8	4.74	205	42	1.90%	137	84	9.9	7009.71	7006.4	7003.50	7006.80	7004.5	6999.70
P29	I14	J16	1.57	13.4	10	1.57	13.4	6.20	33	18	1.90%	15	9.8	5.6	7006.01	7004.4	7001.50	7005.99	7004.1	7000.86
P28	I13	J16	3.04	13.2	19	3.04	13.2	6.23	21	24	2.30%	34	19	6.1	7005.85	7004.3	7000.85	7005.99	7004.1	7000.36
P26	J14	J15				9.08	16.4	5.69	113	36	0.90%	63	52	7.4	7009.00	7005.4	7001.20	7006.80	7004.7	7000.20
P25	I12	J14	1.97	13.5	12	9.08	16.2	5.72	166	30	4.20%	84	52	14	7015.46	7010.9	7008.60	7009.00	7005.5	7001.70
P24	J13	I12				7.11	16.2	5.72	25	24	2.80%	38	41	13	7015.22	7012.2	7009.80	7015.46	7011.4	7009.10
P23	I11	J13	3.12	13.4	19	3.12	13.4	6.20	5	18	1.90%	15	19	11	7015.46	7013.1	7010.40	7015.22	7012.9	7010.30
P22	J12	J13				1.77	14.1	6.07	76	18	1.10%	11	11	6.1	7015.90	7013.5	7011.10	7015.22	7012.7	7010.30
P21	I10	J12	1.77	13.9	11	1.77	13.9	6.10	58	18	1.00%	11	11	6.2	7016.22	7014.6	7011.70	7015.90	7014.0	7011.10
P21	I10	J12	1.77	13.9	11	1.77	13.9	6.10	58	18	1.00%	11	11	6.2	7016.22	7014.6	7011.70	7015.90	7014.0	7011.10
P20	J11	J13				2.22	15.4	5.84	334	18	1.60%	13	13	7.4	7020.34	7018.1	7015.70	7015.22	7012.9	7010.30
P19	I09	J11	2.22	15.3	13	2.22	15.3	5.86	48	18	1.00%	11	13	7.4	7020.73	7019.7	7016.20	7020.34	7018.9	7015.70
P30	J16	EJ16				31.18	24.3	4.69	153	48	1.00%	145	148	12	7005.99	7003.8	6998.36	7006.30	7002.2	6996.80
P32	EI16	EJ16	1.13	12.7	7	2.71	12.9	6.30	100	30	1.60%	52	17	4.0	7009.12	7004.1	7002.70	7006.30	7004.2	7001.10
P31	EI15	EI16	1.58	12.6	10	1.58	12.6	6.35	108	24	1.10%	24	10	6.9	7009.20	7005.5	7004.37	7009.12	7004.4	7003.20
P33	EJ16	EJ17				33.89	24.5	4.67	343	48	1.30%	161	160	13	7006.30	7001.9	6996.50	6999.14	6997.7	6992.20
P34	EJ17	EJ18				33.89	25.0	4.63	120	48	0.50%	102	158	13	6999.14	6997.4	6992.00	6997.94	6995.9	6991.40
P35	EI17	EJ18	1.81	15.8	11	1.81	15.8	5.78	12	24	1.30%	26	11	3.4	6998.25	6996.1	6992.91	6997.94	6996.1	6992.75
P36	EI18	EJ18	1.21	12.5	8	1.21	12.5	6.37	32	24	0.50%	16	7.8	2.5	6998.25	6996.1	6992.91	6997.94	6996.1	6992.75
P37	EJ18	EJ19				36.91	25.1	4.61	342	54	0.50%	139	171	11	6997.94	6995.9	6990.40	6999.33	6993.3	6988.69
P38	EJ19	OS1				36.91	25.7	4.56	96	54	2.10%	287	170	14	6999.33	6992.2	6988.40	6999.00	6990.9	6986.36
P53	I21	J25A	3.38	17.0	19	3.38	17.0	5.60	183	24	1.00%	23	19	8.1	7056.10	7052.7	7051.10	7054.38	7050.8	7049.20
P48	I20	J22	2.37	12.8	15	2.37	12.8	6.31	65	18	1.00%	11	15	8.5	7057.79	7055.9	7053.25	7057.29	7054.6	7052.60
P50	J23	J24				2.37	13.4	6.20	234	18	3.80%	21	15	12	7044.71	7041.9	7040.45	7036.79	7033.1	7031.50
P54	J25A	I22				3.38	17.4	5.54	344	24	3.30%	41	19	12	7054.38	7050.8	7049.20	7045.74	7039.9	7037.80
P55	I22	J25B	1.11	9.1	8	4.49	17.9	5.47	178	24	5.00%	50	25	13	7045.74	7039.6	7037.80	7035.00	7031.9	7028.95
P56	J25B	J26				4.49	18.1	5.44	100	24	1.00%	23	25	7.8	7035.00	7031.5	7028.95	7034.44	7030.3	7027.95
P52	J24	J26				4.96	16.0	5.75	105	24	2.90%	39	29	12	7036.79	7032.8	7031.00	7034.44	7030.1	7027.95
P51	I23	J24	2.59	15.9	15	2.59	15.9	5.76	32	24	1.10%	24	15	4.8	7036.38	7033.4	7031.35	7036.79	7033.3	7031.00
P57	J26	J27				9.45	18.3	5.41	216	30	4.10%	83	52	16	7034.44	7029.8	7027.45	7024.54	7020.0	7018.55
P59	CB04	J27	1.28	13.1	8	1.28	13.1	6.25	51	18	1.40%	12	8.1	6.3	7023.00	7021.4	7020.25	7024.54	7021.0	7019.55

Label	Upstrm Node	Dnstrm Node	Intlet CA (acres)	Inlet Tc (min)	Inlet Flow (ft^3/s)	System CA (acres)	System Flow Time (min)	System Intensity (in/hr)	Length (ft)	Section Size (in)	Slope (%)	Capacity (Full Flow) (ft^3/s)	System Flow (ft^3/s)	Velocity (Ave) (ft/s)	Elevation Ground (Upstrm) (ft)	Hydraulic Grade Line (Upstrm) (ft)	Invert (Upstrm) (ft)	Elevation Ground (Dnstrm) (ft)	Hydraulic Grade Line (Dnstrm) (ft)	Invert (Dnstrm) (ft)
P58	CB03	J27	2.01	15.0	12	2.01	15.0	5.91	71	18	1.00%	10	12	6.8	7023.00	7021.9	7020.25	7024.54	7021.0	7019.55
P60	J27	J28				12.74	18.5	5.38	158	42	3.10%	177	69	14	7024.54	7020.2	7017.55	7020.13	7015.7	7012.65
P62	I25	J28	2.02	18.3	11	2.02	18.3	5.41	33	18	1.70%	14	11	6.2	7019.71	7017.1	7015.20	7020.13	7016.7	7014.65
P61	I24	J28	1.81	14.2	11	1.81	14.2	6.05	53	18	1.00%	11	11	6.3	7019.71	7017.3	7015.20	7020.13	7016.7	7014.65
P63	J28	J29				16.57	18.7	5.35	264	42	3.40%	186	89	16	7020.13	7015.6	7012.65	7011.65	7006.9	7003.60
P65	I27	J29	1.47	14.9	9	3.36	14.9	5.93	192	24	3.10%	40	20	9.8	7017.49	7012.6	7011.00	7011.65	7008.3	7005.10
P64	I26	I27	1.89	14.8	11	1.89	14.8	5.95	35	18	4.20%	22	11	9.7	7017.49	7014.3	7013.00	7017.49	7012.4	7011.50
P66	J29	J30				19.93	19.0	5.32	90	42	1.80%	134	107	13	7011.65	7006.7	7003.60	7009.38	7005.4	7002.00
P67	I28	J30	1.86	9.5	13	1.86	9.5	7.06	33	18	1.40%	12	13	7.5	7008.96	7007.5	7004.45	7009.38	7007.0	7004.00
P68	J30	J31				21.79	19.1	5.30	169	42	2.00%	141	116	15	7009.38	7005.2	7002.00	7006.72	7001.2	6998.70
P69	I29	J31	3.39	17.0	19	3.39	17.0	5.60	28	24	5.90%	55	19	6.8	7006.86	7003.4	7001.85	7006.72	7003.1	7000.20
P70	J31	J32				25.18	19.3	5.28	249	48	1.40%	172	134	14	7006.72	7001.7	6998.20	7003.17	6998.3	6994.65
P71	I30	J32	1.73	12.8	11	1.73	12.8	6.31	45	18	2.40%	16	11	6.2	7002.77	7000.2	6998.25	7003.17	6999.7	6997.15
P72	J32	J33				26.91	19.6	5.24	303	48	3.10%	251	142	17	7003.17	6998.2	6994.65	6993.93	6990.2	6985.40
P73	I31	J33	3.16	14.5	19	3.16	14.5	6.00	25	24	6.80%	59	19	6.1	6994.14	6992.1	6989.10	6993.93	6992.0	6987.40
P74	J33	J34				30.07	19.9	5.20	48	48	3.10%	254	158	13	6993.93	6990.0	6985.40	6994.04	6989.4	6983.90
P75	J34	J35				30.07	19.9	5.19	387	48	2.60%	230	157	15	6994.04	6987.6	6983.90	6984.19	6980.3	6974.00
P77	I33	J35	2.05	17.9	11	2.05	17.9	5.47	24	18	9.90%	33	11	8.2	6984.42	6980.2	6978.90	6984.19	6979.0	6976.50
P78	J35	I34				33.98	20.4	5.14	5	54	3.00%	343	176	11	6984.19	6978.8	6973.50	6984.42	6978.7	6973.35
P79	I34	OS3	3.34	20.2	17	37.32	20.4	5.14	209	54	0.60%	158	193	12	6984.42	6978.5	6973.35	6977.00	6976.5	6972.00
P76	I32	J35	1.86	15.2	11	1.86	15.2	5.88	312	24	1.60%	29	11	5.1	6986.06	6982.2	6981.05	6984.19	6980.3	6976.00
P80	I40	I41	3.09	16.0	18	3.09	16.0	5.75	35	18	1.00%	10	18	10	7033.44	7031.1	7028.90	7033.44	7030.1	7028.55
P81	I41	J36	1.42	16.1	8	4.51	16.1	5.73	193	24	2.60%	37	26	10	7033.44	7029.8	7028.05	7028.50	7026.0	7023.00
P82	J36	OS5				4.51	16.4	5.68	114	24	1.00%	23	26	8.2	7028.50	7025.3	7023.00	7025.00	7023.8	7021.80
P83	I42	I43	2.59	10.3	18	2.59	10.3	6.86	35	18	6.70%	27	18	13	7006.70	7002.2	7000.70	7006.70	6999.4	6998.35
P84	I43	J37	2.1	16.7	12	4.69	16.7	5.64	188	24	2.70%	37	27	12	7006.70	6999.65	6997.85	6997.36	6994.0	6992.75
P91	EI04	EJ04	2.89	13.7	18	26.92	47.5	3.01	296	42	1.00%	100	82	11	6987.67	6983.7	6980.90	6985.47	6981.4	6977.95
P92	EI05	EJ04	2.82	17.0	16	2.82	17.0	5.60	24	18	3.60%	20	16	9.0	6985.37	6982.5	6980.80	6985.47	6982.0	6979.95
P93	EJ04	EJ06				29.74	47.9	2.98	226	42	1.10%	105	89	11	6985.47	6980.9	6977.95	6983.66	6979.1	6975.50
P96	EJ05	EJ06				10.67	25.5	4.57	56	36	1.80%	90	49	7.1	6983.04	6979.5	6977.00	6983.66	6979.4	6976.00
P94	EI06	EJ05	6.2	21.8	31	6.20	21.8	4.97	25	24	1.00%	23	31	9.9	6983.27	6980.7	6978.25	6983.04	6980.2	6978.00
P97	EJ06	EOS2				40.41	48.3	2.97	165	48	1.50%	177	121	13	6983.66	6978.3	6975.00	6978.00	6976.5	6972.50
P85	J37	J38				4.69	17.0	5.60	490	30	1.00%	41	26	8.9	6997.36	6994.0	6992.25	6992.38	6989.0	6987.25
P87	DP13	I44	15.73	47.1	48	15.73	47.1	3.03	33	42	1.20%	110	48	8.8	6991.80	6987.3	6985.10	6991.47	6987.0	6984.70
P88	I44	J39	2.49	9.6	18	18.22	47.2	3.02	14	42	1.10%	105	56	7.4	6991.47	6987.0	6984.70	6991.41	6987.3	6984.55
P86	J38	J39				4.69	17.9	5.47	124	30	1.40%	48	26	8.1	6992.38	6989.0	6987.25	6991.41	6988.0	6985.55
P95	EI07	EJ05	4.47	25.5	21	4.47	25.5	4.57	5	24	5.30%	52	21	6.6	6983.27	6980.2	6978.25	6983.04	6980.2	6978.00
P89	J39	I45				22.91	47.2	3.02	34	42	1.00%	103	70	9.8	6991.41	6987.2	6984.55	6991.47	6987.0	6984.20
P90	I45	EI04	1.12	11.2	8	24.03	47.3	3.02	165	42	2.00%	142	73	12.8	6991.47	6986.9	6984.20	6987.67	6983.9	6980.90
P27	J15	J16				26.57	24.2	4.71	85	48	1.00%	143	126	10.0	7006.80	7004.5	6999.20	7005.99	7003.8	6998.36
P39	CB02	J17	2.72	14.2	17	2.72	14.2	6.05	180	24	1.00%	23	17	7.3	7035.50	7033.7	7032.25	7036.59	7032.4	7030.45
P40	J17	J18				2.72	14.6	5.98	116	24	1.00%	23	16	7.6	7036.59	7031.9	7030.45	7036.00	7030.9	7029.30
P41	I17	J18	1.79	13.9	11	1.79	13.9	6.10	5	18	1.90%	15	11	7.4	7036.22	7031.2	7029.90	7036.00	7030.9	7029.80
P42	J18	J19				4.51	14.9	5.93	38	30	1.00%	42	27	7.2	7036.00	7030.6	7028.80	7035.92	7030.5	7028.40
P43	J19	J20				4.51	15.0	5.92	107	30	1.00%	42	27	8.6	7035.92	7030.2	7028.40	7034.26	7029.1	7027.30
P44	J20	J21				4.51	15.2	5.88	489	30	0.70%	35	27	6.9	7034.26	7029.1	7027.30	7029.57	7026.6	7023.80
P45	I18	J21	2.13	19.4	11	2.13	19.4	5.26	5	18	9.60%	33	11	8.7	7029.79	7026.5	7025.25	7029.57	7025.7	7024.80
P46	J21	I19				6.64	19.4	5.26	25	30	1.20%	45	35	8.3	7029.57	7025.8	7023.80	7029.79	7025.8	7023.50
P47	I19	OS2	1.16	19.5	6	7.80	19.5	5.25	159	30	2.20%	61	41	11.8	7029.79	7025.7	7023.50	7025.00	7022.5	7020.00
P98	I35	I36	2.37	21.6	12	2.37	21.6	4.99	53	18	1.00%	11	12	6.9	6998.91	6995.9	6994.40	6998.91	6995.2	6993.85
P99	I36	OS4	0.79	8.7	6	3.16	21.7	4.98	52	24	1.10%	23	16	5.5	6998.91	6994.8	6993.35	6996.00	6994.8	6992.80
P49	J22	J23				2.37	12.9	6.29	330	18	3.70%	20	15	12.1	7057.29	7054.0	7052.60	7044.71	7041.9	7040.45

Appendix B – Street Flow Tables

Worksheet for Ramp Full Street Section

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.75	ft

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.00
0+13	-0.25
0+14	-0.75
0+15	-0.59
0+30	-0.29
0+45	-0.59
0+46	-0.75
0+48	-0.25
0+60	0.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+13, -0.25)	0.030
(0+13, -0.25)	(0+15, -0.59)	0.013
(0+15, -0.59)	(0+45, -0.59)	0.015
(0+45, -0.59)	(0+48, -0.25)	0.013
(0+48, -0.25)	(0+60, 0.00)	0.030
<None>	(0+60, 0.00)	0.030

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Ramp Full Street Section

Results

Discharge		42.54	ft³/s
Elevation Range	-0.75 to 0.00 ft		
Flow Area		19.32	ft²
Wetted Perimeter		60.21	ft
Hydraulic Radius		0.32	ft
Top Width		60.00	ft
Normal Depth		0.75	ft
Critical Depth		0.66	ft
Critical Slope		0.01121	ft/ft
Velocity		2.20	ft/s
Velocity Head		0.08	ft
Specific Energy		0.83	ft
Froude Number		0.68	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.75	ft
Critical Depth	0.66	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.01121	ft/ft

Cross Section for Ramp Full Street Section

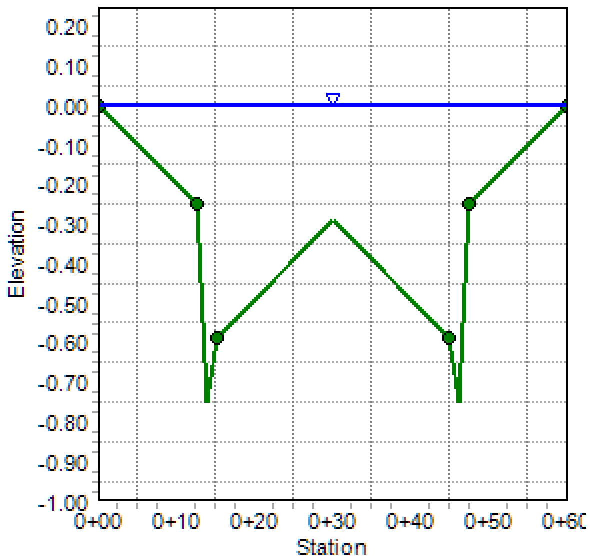
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.75	ft
Discharge	42.54	ft³/s

Cross Section Image



RESIDENTIAL STREET SECTION
RAMP CURB

5-Year Storm Event Maximum Allowable Street Flows (Maximum Flow to Top of Curb)									
Channel Slope (ft/ft)	Full Street Width					Half Street Width			
	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Top Width (ft)
0.0050	19	2.5	7.45	35.2	35.0	9.4	2.5	3.7	17.5
0.0063	21	2.8	7.45	35.2	35.0	11	2.8	3.7	17.5
0.0075	23	3.1	7.45	35.2	35.0	12	3.1	3.7	17.5
0.0088	25	3.4	7.45	35.2	35.0	12	3.3	3.7	17.5
0.0100	27	3.6	7.45	35.2	35.0	13	3.6	3.7	17.5
0.0113	28	3.8	7.45	35.2	35.0	14	3.8	3.7	17.5
0.0125	30	4.0	7.45	35.2	35.0	15	4.0	3.7	17.5
0.0138	31	4.2	7.45	35.2	35.0	16	4.2	3.7	17.5
0.0150	33	4.4	7.45	35.2	35.0	16	4.4	3.7	17.5
0.0163	34	4.6	7.45	35.2	35.0	17	4.5	3.7	17.5
0.0175	35	4.7	7.45	35.2	35.0	18	4.7	3.7	17.5
0.0188	37	4.9	7.45	35.2	35.0	18	4.9	3.7	17.5
0.0200	38	5.1	7.45	35.2	35.0	19	5.0	3.7	17.5
0.0213	39	5.2	7.45	35.2	35.0	19	5.2	3.7	17.5
0.0225	40	5.4	7.45	35.2	35.0	20	5.4	3.7	17.5
0.0238	41	5.5	7.45	35.2	35.0	20	5.5	3.7	17.5
0.0250	42	5.7	7.45	35.2	35.0	21	5.6	3.7	17.5
0.0263	43	5.8	7.45	35.2	35.0	22	5.8	3.7	17.5
0.0275	44	5.9	7.45	35.2	35.0	22	5.9	3.7	17.5
0.0288	45	6.1	7.45	35.2	35.0	23	6.0	3.7	17.5
0.0300	46	6.2	7.45	35.2	35.0	23	6.2	3.7	17.5
0.0313	47	6.3	7.45	35.2	35.0	23	6.3	3.7	17.5
0.0325	48	6.5	7.45	35.2	35.0	24	6.4	3.7	17.5
0.0338	49	6.6	7.45	35.2	35.0	24	6.6	3.7	17.5
0.0350	50	6.7	7.45	35.2	35.0	25	6.7	3.7	17.5
0.0363	51	6.8	7.45	35.2	35.0	25	6.8	3.7	17.5
0.0375	52	6.9	7.45	35.2	35.0	26	6.9	3.7	17.5
0.0388	53	7.1	7.45	35.2	35.0	26	7.0	3.7	17.5
0.0400	53	7.2	7.45	35.2	35.0	27	7.1	3.7	17.5

100-Year Storm Event Maximum Allowable Street Flows (Maximum Flow to Right-of-Way)									
Channel Slope (ft/ft)	Full Street Width					Half Street Width			
	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Top Width (ft)
0.0050	43	2.2	19.32	60.2	60.0	21	2.2	9.7	30
0.0063	48	2.5	19.32	60.2	60.0	24	2.4	9.7	30
0.0075	52	2.7	19.32	60.2	60.0	26	2.7	9.7	30
0.0088	56	2.9	19.32	60.2	60.0	28	2.9	9.7	30
0.0100	60	3.1	19.32	60.2	60.0	30	3.1	9.7	30
0.0113	64	3.3	19.32	60.2	60.0	32	3.3	9.7	30
0.0125	67	3.5	19.32	60.2	60.0	33	3.5	9.7	30
0.0138	71	3.7	19.32	60.2	60.0	35	3.6	9.7	30
0.0150	74	3.8	19.32	60.2	60.0	36	3.8	9.7	30
0.0163	77	4.0	19.32	60.2	60.0	38	3.9	9.7	30
0.0175	80	4.1	19.32	60.2	60.0	39	4.1	9.7	30
0.0188	82	4.3	19.32	60.2	60.0	41	4.2	9.7	30
0.0200	85	4.4	19.32	60.2	60.0	42	4.4	9.7	30
0.0213	88	4.5	19.32	60.2	60.0	43	4.5	9.7	30
0.0225	90	4.7	19.32	60.2	60.0	45	4.6	9.7	30
0.0238	93	4.8	19.32	60.2	60.0	46	4.8	9.7	30
0.0250	95	4.9	19.32	60.2	60.0	47	4.9	9.7	30
0.0263	97	5.0	19.32	60.2	60.0	48	5.0	9.7	30
0.0275	100	5.2	19.32	60.2	60.0	49	5.1	9.7	30
0.0288	102	5.3	19.32	60.2	60.0	50	5.2	9.7	30
0.0300	104	5.4	19.32	60.2	60.0	52	5.3	9.7	30
0.0313	106	5.5	19.32	60.2	60.0	53	5.5	9.7	30
0.0325	108	5.6	19.32	60.2	60.0	54	5.6	9.7	30
0.0338	111	5.7	19.32	60.2	60.0	55	5.7	9.7	30
0.0350	113	5.8	19.32	60.2	60.0	56	5.8	9.7	30
0.0363	115	5.9	19.32	60.2	60.0	57	5.9	9.7	30
0.0375	117	6.0	19.32	60.2	60.0	58	6.0	9.7	30
0.0388	118	6.1	19.32	60.2	60.0	59	6.1	9.7	30
0.0400	120	6.2	19.32	60.2	60.0	60	6.2	9.7	30

Street Flows Ramp Curb (Maximum Flow to Crown of Roadway)										
Channel Slope (ft/ft)	Full Street Width					Half Street Width				
	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Top Width (ft)
0.0050	13	2.2	6.05	35.0	34.8	6.7	2.2	3.0	17.4
0.0063	15	2.5	6.05	35.0	34.8	7.5	2.5	3.0	17.4
0.0075	16	2.7	6.05	35.0	34.8	8.2	2.7	3.0	17.4
0.0088	18	2.9	6.05	35.0	34.8	8.9	2.9	3.0	17.4
0.0100	19	3.1	6.05	35.0	34.8	9.5	3.1	3.0	17.4
0.0113	20	3.3	6.05	35.0	34.8	10	3.3	3.0	17.4
0.0125	21	3.5	6.05	35.0	34.8	11	3.5	3.0	17.4
0.0138	22	3.7	6.05	35.0	34.8	11	3.7	3.0	17.4
0.0150	23	3.8	6.05	35.0	34.8	12	3.8	3.0	17.4
0.0163	24	4.0	6.05	35.0	34.8	12	4.0	3.0	17.4
0.0175	25	4.1	6.05	35.0	34.8	13	4.1	3.0	17.4
0.0188	26	4.3	6.05	35.0	34.8	13	4.3	3.0	17.4
0.0200	27	4.4	6.05	35.0	34.8	13	4.4	3.0	17.4
0.0213	28	4.6	6.05	35.0	34.8	14	4.6	3.0	17.4
0.0225	28	4.7	6.05	35.0	34.8	14	4.7	3.0	17.4
0.0238	29	4.8	6.05	35.0	34.8	15	4.8	3.0	17.4
0.0250	30	5.0	6.05	35.0	34.8	15	5.0	3.0	17.4
0.0263	31	5.1	6.05	35.0	34.8	15	5.1	3.0	17.4
0.0275	31	5.2	6.05	35.0	34.8	16	5.2	3.0	17.4
0.0288	32	5.3	6.05	35.0	34.8	16	5.3	3.0	17.4
0.0300	33	5.4	6.05	35.0	34.8	16	5.4	3.0	17.4
0.0313	34	5.5	6.05	35.0	34.8	17	5.5	3.0	17.4
0.0325	34	5.7	6.05	35.0	34.8	17	5.6	3.0	17.4
0.0338	35	5.8	6.05	35.0	34.8	17	5.8	3.0	17.4
0.0350	35	5.9	6.05	35.0	34.8	18	5.9	3.0	17.4
0.0363	36	6.0	6.05	35.0	34.8	18	6.0	3.0	17.4
0.0375	37	6.1	6.05	35.0	34.8	18	6.1	3.0	17.4
0.0388	37	6.2	6.05	35.0	34.8	19	6.2	3.0	17.4
0.0400	38	6.3	6.05	35.0	34.8	19	6.3	3.0	17.4

Worksheet for Vertical Full Street Section

Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.75	ft
Section Definitions		

Station (ft)	Elevation (ft)
0+00	0.00
0+13	-0.25
0+13	-0.25
0+13	-0.75
0+15	-0.58
0+30	-0.28
0+45	-0.58
0+47	-0.75
0+47	-0.25
0+48	-0.25
0+60	0.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.00)	(0+13, -0.25)	0.030
(0+13, -0.25)	(0+15, -0.58)	0.013
(0+15, -0.58)	(0+45, -0.58)	0.015
(0+45, -0.58)	(0+48, -0.25)	0.013
(0+48, -0.25)	(0+60, 0.00)	0.030
<None>	(0+60, 0.00)	0.030

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method

Worksheet for Vertical Full Street Section

Options

Closed Channel Weighting Method	Pavlovskii's Method

Results

Discharge		41.33	ft^3/s
Elevation Range	-0.75 to 0.00 ft		
Flow Area		19.04	ft^2
Wetted Perimeter		61.02	ft
Hydraulic Radius		0.31	ft
Top Width		60.00	ft
Normal Depth		0.75	ft
Critical Depth		0.66	ft
Critical Slope		0.01143	ft/ft
Velocity		2.17	ft/s
Velocity Head		0.07	ft
Specific Energy		0.82	ft
Froude Number		0.68	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.75	ft
Critical Depth	0.66	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.01143	ft/ft

Cross Section for Vertical Full Street Section

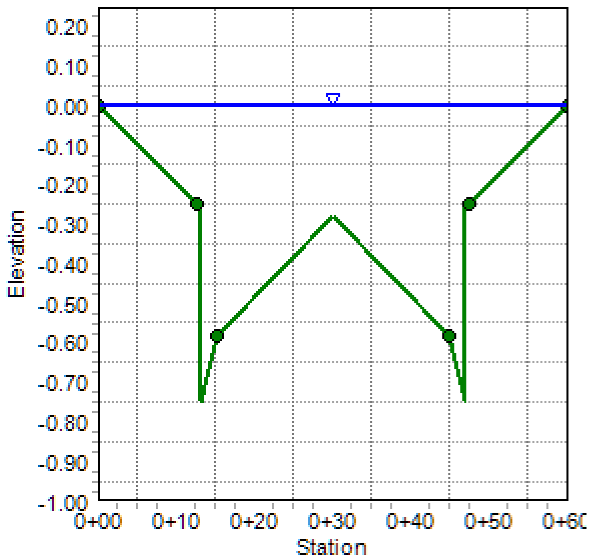
Project Description

Friction Method	Manning Formula
Solve For	Discharge

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.75	ft
Discharge	41.33	ft³/s

Cross Section Image



RESIDENTIAL STREET SECTION
VERTICAL CURB

5-Year Storm Event Maximum Allowable Street Flows
(Maximum Flow to Top of Curb)

Channel Slope (ft/ft)	Full Street Width					Half Street Width			
	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Top Width (ft)
0.0050	18	2.5	7.17	35.0	34.0	8.9	2.5	3.6	17
0.0063	20	2.8	7.17	35.0	34.0	9.9	2.8	3.6	17
0.0075	22	3.0	7.17	35.0	34.0	11	3.0	3.6	17
0.0088	23	3.3	7.17	35.0	34.0	12	3.3	3.6	17
0.0100	25	3.5	7.17	35.0	34.0	13	3.5	3.6	17
0.0113	27	3.7	7.17	35.0	34.0	13	3.7	3.6	17
0.0125	28	3.9	7.17	35.0	34.0	14	3.9	3.6	17
0.0138	29	4.1	7.17	35.0	34.0	15	4.1	3.6	17
0.0150	31	4.3	7.17	35.0	34.0	15	4.3	3.6	17
0.0163	32	4.5	7.17	35.0	34.0	16	4.5	3.6	17
0.0175	33	4.6	7.17	35.0	34.0	17	4.6	3.6	17
0.0188	34	4.8	7.17	35.0	34.0	17	4.8	3.6	17
0.0200	36	5.0	7.17	35.0	34.0	18	5.0	3.6	17
0.0213	37	5.1	7.17	35.0	34.0	18	5.1	3.6	17
0.0225	38	5.3	7.17	35.0	34.0	19	5.3	3.6	17
0.0238	39	5.4	7.17	35.0	34.0	19	5.4	3.6	17
0.0250	40	5.5	7.17	35.0	34.0	20	5.5	3.6	17
0.0263	41	5.7	7.17	35.0	34.0	20	5.7	3.6	17
0.0275	42	5.8	7.17	35.0	34.0	21	5.8	3.6	17
0.0288	43	5.9	7.17	35.0	34.0	21	5.9	3.6	17
0.0300	43	6.1	7.17	35.0	34.0	22	6.1	3.6	17
0.0313	44	6.2	7.17	35.0	34.0	22	6.2	3.6	17
0.0325	45	6.3	7.17	35.0	34.0	23	6.3	3.6	17
0.0338	46	6.4	7.17	35.0	34.0	23	6.4	3.6	17
0.0350	47	6.6	7.17	35.0	34.0	23	6.6	3.6	17
0.0363	48	6.7	7.17	35.0	34.0	24	6.7	3.6	17
0.0375	49	6.8	7.17	35.0	34.0	24	6.8	3.6	17
0.0388	49	6.9	7.17	35.0	34.0	25	6.9	3.6	17
0.0400	50	7.0	7.17	35.0	34.0	25	7.0	3.6	17

100-Year Storm Event Maximum Allowable Street Flows
(Maximum Flow to Right-of-Way)

Channel Slope (ft/ft)	Full Street Width					Half Street Width			
	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Wetted Perimeter (ft)	Top Width (ft)	Discharge (ft^3/s)	Velocity (ft/s)	Flow Area (ft^2)	Top Width (ft)
0.0050	41	2.2	19.04	61.0	60.0	21	2.2	9.5	30
0.0063	46	2.4	19.04	61.0	60.0	23	2.4	9.5	30
0.0075	51	2.7	19.04	61.0	60.0	25	2.7	9.5	30
0.0088	55	2.9	19.04	61.0	60.0	27	2.9	9.5	30
0.0100	58	3.1	19.04	61.0	60.0	29	3.1	9.5	30
0.0113	62	3.3	19.04	61.0	60.0	31	3.2	9.5	30
0.0125	65	3.4	19.04	61.0	60.0	33	3.4	9.5	30
0.0138	69	3.6	19.04	61.0	60.0	34	3.6	9.5	30
0.0150	72	3.8	19.04	61.0	60.0	36	3.8	9.5	30
0.0163	75	3.9	19.04	61.0	60.0	37	3.9	9.5	30
0.0175	77	4.1	19.04	61.0	60.0	39	4.1	9.5	30
0.0188	80	4.2	19.04	61.0	60.0	40	4.2	9.5	30
0.0200	83	4.3	19.04	61.0	60.0	41	4.3	9.5	30
0.0213	85	4.5	19.04	61.0	60.0	42	4.5	9.5	30
0.0225	88	4.6	19.04	61.0	60.0	44	4.6	9.5	30
0.0238	90	4.7	19.04	61.0	60.0	45	4.7	9.5	30
0.0250	92	4.9	19.04	61.0	60.0	46	4.8	9.5	30
0.0263	95	5.0	19.04	61.0	60.0	47	5.0	9.5	30
0.0275	97	5.1	19.04	61.0	60.0	48	5.1	9.5	30
0.0288	99	5.2	19.04	61.0	60.0	49	5.2	9.5	30
0.0300	101	5.3	19.04	61.0	60.0	50	5.3	9.5	30
0.0313	103	5.4	19.04	61.0	60.0	51	5.4	9.5	30
0.0325	105	5.5	19.04	61.0	60.0	52	5.5	9.5	30
0.0338	107	5.6	19.04	61.0	60.0	53	5.6	9.5	30
0.0350	109	5.7	19.04	61.0	60.0	54	5.7	9.5	30
0.0363	111	5.8	19.04	61.0	60.0	55	5.8	9.5	30
0.0375	113	5.9	19.04	61.0	60.0	56	5.9	9.5	30
0.0388	115	6.0	19.04	61.0	60.0	57	6.0	9.5	30
0.0400	117	6.1	19.04	61.0	60.0	58	6.1	9.5	30

Street Flows Veritcal Curb (Maximum Flow to Crown of Roadway)									
Channel Slope (ft/ft)	Full Street Width					Half Street Width			
	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Wetted Perimeter (ft)	Top Width (ft)	Discharge (ft³/s)	Velocity (ft/s)	Flow Area (ft²)	Top Width (ft)
0.0050	14	2.2	6.15	35.0	34.0	6.7	2.2	3.0	17
0.0063	15	2.5	6.15	35.0	34.0	7.5	2.5	3.0	17
0.0075	17	2.7	6.15	35.0	34.0	8.2	2.7	3.0	17
0.0088	18	3.0	6.15	35.0	34.0	8.8	2.9	3.0	17
0.0100	19	3.2	6.15	35.0	34.0	9.4	3.1	3.0	17
0.0113	21	3.4	6.15	35.0	34.0	10	3.3	3.0	17
0.0125	22	3.5	6.15	35.0	34.0	11	3.5	3.0	17
0.0138	23	3.7	6.15	35.0	34.0	11	3.7	3.0	17
0.0150	24	3.9	6.15	35.0	34.0	12	3.8	3.0	17
0.0163	25	4.0	6.15	35.0	34.0	12	4.0	3.0	17
0.0175	26	4.2	6.15	35.0	34.0	12	4.1	3.0	17
0.0188	27	4.3	6.15	35.0	34.0	13	4.3	3.0	17
0.0200	28	4.5	6.15	35.0	34.0	13	4.4	3.0	17
0.0213	28	4.6	6.15	35.0	34.0	14	4.6	3.0	17
0.0225	29	4.8	6.15	35.0	34.0	14	4.7	3.0	17
0.0238	30	4.9	6.15	35.0	34.0	15	4.8	3.0	17
0.0250	31	5.0	6.15	35.0	34.0	15	4.9	3.0	17
0.0263	32	5.1	6.15	35.0	34.0	15	5.1	3.0	17
0.0275	32	5.3	6.15	35.0	34.0	16	5.2	3.0	17
0.0288	33	5.4	6.15	35.0	34.0	16	5.3	3.0	17
0.0300	34	5.5	6.15	35.0	34.0	16	5.4	3.0	17
0.0313	34	5.6	6.15	35.0	34.0	17	5.5	3.0	17
0.0325	35	5.7	6.15	35.0	34.0	17	5.6	3.0	17
0.0338	36	5.8	6.15	35.0	34.0	17	5.7	3.0	17
0.0350	36	5.9	6.15	35.0	34.0	18	5.9	3.0	17
0.0363	37	6.0	6.15	35.0	34.0	18	6.0	3.0	17
0.0375	38	6.1	6.15	35.0	34.0	18	6.1	3.0	17
0.0388	38	6.2	6.15	35.0	34.0	19	6.2	3.0	17
0.0400	39	6.3	6.15	35.0	34.0	19	6.3	3.0	17

Appendix C - HEC-HMS Data

Input Data

Windingwalk Filing 1 & 2 PUD

BASIN	AREA		CURVE NO.	PERCENT IMPERV.	LAG TIME (min)	
	(acre)	(mi^2)				
HISTORIC						
OS01	998	1.5594	62.9	0%	35.5	◆◆
OS02	142	0.2219	64.5	13%	25.5	◆◆
OS03	127	0.1984	63.2	8%	23.6	◆◆
OS04	87	0.1359	61.0	0%	21.4	◆◆
HB01	15	0.0234	61.0	0%	12.6	◆◆
HB02	68	0.1063	61.0	0%	16.2	◆◆
HB03	81	0.1266	61.0	0%	13.2	◆◆
HB04	39	0.0609	61.0	0%	14.4	◆◆
HB05	88	0.1375	61.0	0%	15.6	◆◆
HB06	105	0.1641	61.0	0%	18.0	◆◆
HB07	20	0.0313	61.0	0%	10.2	◆◆
HB08	86	0.1344	61.0	0%	21.6	◆◆
HB09	195	0.3047	61.0	0%	33.0	◆◆
HB10	195	0.3047	61.0	0%	24.0	◆◆
HB12	51	0.0797	61.0	0%	18.0	◆◆
B-11	72	0.1125	61.0	0%	25.8	◆◆
B-13	180	0.2813	61.0	0%	33.0	◆◆
B-14	259	0.4039	61.0	0%	34.2	◆◆
B-15	48	0.0750	61.0	0%	27.0	◆◆
OS05	37	0.0578	61.0	0%	15.2	◆◆
OS06	84	0.1313	61.0	0%	18.7	◆◆
OS07	21	0.0328	63.1	7%	15.4	◆◆
OS08	26	0.0406	65.7	17%	15.9	◆◆
OS09	99	0.1547	65.0	0%	29.5	◆◆
OS10	152	0.2375	65.0	0%	27.9	◆◆
OS11	64	0.1000	64.1	3%	30.0	◆◆
HG01	35	0.0547	61.0	0%	19.6	◆◆
HG02	58	0.0906	61.0	0%	25.4	◆◆
HG03	117	0.1828	61.1	0%	33.8	◆◆
HG04	57	0.0891	61.0	0%	30.7	◆◆
HG05	72	0.1125	61.0	0%	31.8	◆◆
HG06A	88	0.1375	61.0	0%	43.2	◆◆
HG06B	66	0.1031	61.0	0%	49.5	◆◆
HG07	63	0.0984	61.0	0%	28.3	◆◆
HG08	85	0.1328	61.0	0%	22.9	◆◆
HG09	114	0.1781	61.0	0%	35.6	◆◆
HG10	88	0.1375	61.0	0%	61.4	◆◆
HG11	131	0.2047	61.0	0%	40.4	◆◆
HG12	83	0.1297	61.0	0%	32.0	◆◆
HG13	54	0.0844	63.1	7%	21.2	◆◆
HG14	147	0.2297	61.0	0%	45.1	◆◆
HG15	164	0.2563	61.0	0%	65.1	◆◆
HG17	85	0.1328	61.9	2%	29.9	◆◆
HG18	21	0.0328	61.0	0%	14.1	◆◆
HG19	3	0.0047	61.0	0%	6.1	◆◆
HG20	1	0.0016	61.0	0%	6.9	◆◆
HG21	14	0.0219	61.0	0%	13.8	◆◆
HH01	63	0.0984	61.0	0%	16.6	◆◆

✧	From Meridian Ranch Drainage Reports (Windingwalk Rational Calcs., September 2017)
◆	From Retrofit Drainage Analysis For Bennett Regional Detention Pond, Jun 2014)
◆◆	From Approved Meridian Ranch MDDP, Aug 2015
✧✧	From Approved Meridian Ranch Final Drainage Reports (Stonebridge Filing 2, Oct 2016)
■	From Estates Filing 2 Final Drainage Report, July 2013
■■	From Estates Filing 3 Final Drainage Report, Nov 2015
❖	From Meridian Ranch Filing 11b Approved Final Drainage Report, Nov 2014
❖❖	From Meridian Ranch Filing 3 Approved Final Drainage Report, Aug 2012
●	From Meridian Ranch Filing 7 Approved Final Drainage Report, Aug 2012
●●	From Meridian Ranch Filing 8 Approved Final Drainage Report, Feb 2015
✓	From Meridian Ranch Filing 9 Approved Final Drainage Report, July 2015
✓✓	From Stonebridge Filing 3 Approved Final Drainage Report, April 2017
◆◆◆	From Approved Meridian Ranch MDDP, Dec 2017

Input Data

Windingwalk Filing 1 & 2 PUD

BASIN	AREA		CURVE NO.	PERCENT IMPERV.	LAG TIME (min)	
	(acre)	(mi^2)				
INTERIM						
OS01	998	1.559	62.9	7%	35.5	◆◆
OS02	142	0.222	64.5	8%	25.5	◆◆
OS03	127	0.198	63.2	5%	23.6	◆◆
OS04	87	0.136	61.0	0%	21.4	◆◆
DB01	46	0.072	69.7	24%	13.7	◆◆
DB02	33	0.052	69.0	22%	10.5	◆◆
DB03	45	0.070	65.8	13%	15.0	◆◆
DB04	27	0.042	66.8	16%	15.3	◆◆
DB05	25	0.038	68.0	20%	19.1	◆◆
DB06	14	0.022	84.0	63%	14.6	◆◆
DB07	16	0.025	70.0	25%	11.7	◆◆
DB08	19	0.030	64.9	10%	11.9	◆◆
DB09	12	0.019	75.0	40%	9.6	◆◆
DB10	23	0.036	75.0	40%	13.7	◆◆
DB11	62	0.097	72.0	31%	18.4	◆◆
DB12	29	0.045	78.2	43%	12.7	◆◆
DB13	45	0.070	73.9	33%	18.6	◆◆
DB14	36	0.056	78.0	43%	14.6	◆◆
DB15	79	0.123	67.1	17%	21.8	◆◆
DB16	37	0.058	78.5	47%	16.4	◆◆
DB17	3	0.005	98.0	100%	7.4	◆◆
DB18	22	0.035	80.0	47%	13.4	◆◆
DB19	18	0.028	72.6	29%	16.2	◆◆
DB20	9	0.015	78.7	46%	15.2	◆◆
DB21	33	0.052	65.6	11%	13.6	◆◆
DB22	33	0.052	80.0	48%	14.8	◆◆
DB23	11	0.017	91.6	81%	11.3	◆◆
DB24	34	0.053	78.5	43%	13.3	◆◆
DB25	14	0.021	80.0	47%	9.7	◆◆
DB26	44	0.069	85.8	72%	16.1	✧✧
DB27	33	0.051	78.1	42%	21.9	✧✧
DB28	**47**	**0.074**	**70.0**	**20%**	**17.6**	✧✧
DB29	109	0.170	68.5	22%	23.9	✧✧
FB01	**24**	**0.037**	**66.6**	**0%**	**14.2**	
FB02	**32**	**0.050**	**79.1**	**45%**	**22.8**	
FB03	**5**	**0.008**	**90.1**	**78%**	**9.0**	
WH-24	85	0.133	79.0	46%	16.0	◆
WH-26	54	0.084	62.0	2%	25.1	◆
WH-27	14	0.022	62.0	2%	8.6	◆
WH-28	26	0.040	78.3	44%	17.7	◆
WH-29	32	0.050	78.0	43%	16.6	◆
WH-30	10	0.016	68.6	19%	6.0	◆
WH-31	26	0.041	80.0	47%	13.2	◆
WH-32	29	0.046	62.0	2%	6.0	◆
WH-33	4	0.006	80.0	47%	13.0	◆
WH-34	29	0.045	75.0	N/A	14.4	◆
WH-35	99	0.155	68.0	N/A	15.0	◆
WH-36	48	0.075	63.0	N/A	15.6	◆

BASIN	AREA		CURVE NO.	PERCENT IMPERV.	LAG TIME (min)	
	(acre)	(mi^2)				
FUTURE						
OS01	998	1.559	62.9	0%	35.5	◆◆
OS02	142	0.222	64.5	13%	25.5	◆◆
OS03	127	0.198	63.2	8%	23.6	◆◆
OS04	87	0.136	61.0	0%	21.4	◆◆
DB01	46	0.072	69.7	24%	13.7	◆◆
DB02	33	0.052	69.0	22%	10.5	◆◆
DB03	45	0.070	65.8	13%	15.0	◆◆
DB04	27	0.042	66.8	16%	15.3	◆◆
DB05	25	0.038	68.0	20%	19.1	◆◆
DB06	14	0.022	84.0	63%	14.6	◆◆
DB07	16	0.025	70.0	25%	11.7	◆◆
DB08	19	0.030	64.9	10%	11.9	◆◆
DB09	12	0.019	75.0	40%	9.6	◆◆
DB10	23	0.036	75.0	40%	13.7	◆◆
DB11	62	0.097	72.0	31%	18.4	◆◆
DB12	29	0.045	78.2	43%	12.7	◆◆
DB13	45	0.070	73.9	33%	18.6	◆◆
DB14	36	0.056	78.0	43%	14.6	◆◆
DB15	79	0.123	67.1	17%	21.8	◆◆
DB16	37	0.058	78.5	47%	16.4	◆◆
DB17	3	0.005	98.0	100%	7.4	◆◆
DB18	22	0.035	80.0	47%	13.4	◆◆
DB19	18	0.028	72.6	29%	16.2	◆◆
DB20	9	0.015	78.7	46%	15.2	◆◆
DB21	33	0.052	65.6	11%	13.6	◆◆
DB22	33	0.052	80.0	48%	14.8	◆◆
DB23	11	0.017	91.6	81%	11.3	◆◆
DB24	34	0.053	78.5	43%	13.3	◆◆
DB25	14	0.021	80.0	47%	9.7	◆◆
DB26	44	0.069	85.8	72%	16.1	✧✧
DB27	33	0.051	78.1	42%	21.9	✧✧
DB28	**47**	**0.074**	**70.7**	**24%**	**17.6**	◆◆◆
DB29	109	0.170	68.5	22%	23.9	✧✧
FB01	**24**	**0.037**	**77.7**	**41%**	**14.2**	◆◆◆
FB02	**32**	**0.050**	**79.1**	**45%**	**22.8**	◆◆◆
FB03	**5**	**0.008**	**90.1**	**78%**	**9.0**	◆◆◆
WH-24	85	0.133	79.0	46%	16.0	◆
WH-26	54	0.084	62.0	2%	25.1	◆
WH-27	14	0.022	62.0	2%	8.6	◆
WH-28	26	0.040	78.3	44%	17.7	◆
WH-29	32	0.050	78.0	43%	16.6	◆
WH-30	10	0.016	68.6	19%	6.0	◆
WH-31	26	0.041	80.0	47%	13.2	◆
WH-32	29	0.046	62.0	2%	6.0	◆
WH-33	4	0.006	80.0	47%	13.0	◆
WH-34	29	0.045	75.0	N/A	14.4	◆
WH-35	99	0.155	68.0	N/A	15.0	◆
WH-36	48	0.075	63.0	N/A	15.6	◆

BASIN	AREA (acre)	AREA (mi²)	CURVE NO.	PERCENT IMPERV.	LAG TIME (min)	
INTERIM						
OS05	37	0.058	61.0	0%	15.2	
OS06	84	0.131	61.0	0%	18.7	
OS07	21	0.033	63.1	5%	15.4	
OS08	26	0.041	65.7	10%	15.9	
OS09	99	0.155	65.0	0%	29.5	
FG01	72	0.113	63.4	6%	33.8	■■
FG02	25	0.039	64.6	10%	16.1	
FG03	13	0.020	68.0	20%	11.6	■■
FG04	11	0.017	68.0	20%	7.6	■■
FG05	59	0.092	66.9	17%	28.7	■
FG06	12	0.019	68.0	20%	15.3	
FG08A	48	0.075	76.8	43%	13.3	✓
FG08B	40	0.063	76.7	40%	16.6	✓
FG09	31	0.048	71.7	27%	20.8	●●
HG10	30	0.047	63.2	6%	23.1	
FG11	40	0.063	78.2	44%	23.2	●
FG12	21	0.033	80.0	47%	16.1	❖❖
FG13	42	0.066	66.9	14%	29.6	
HG15	19	0.030	62.1	3%	35.0	
FG15a	10	0.016	78.7	44%	11.2	❖
FG16	50	0.077	78.8	45%	13.0	❖
FG17a	44	0.069	76.5	39%	14.4	✓✓
FG17b	14	0.021	79.9	47%	11.4	✓✓
FG17c	20	0.031	65.2	10%	11.8	✓✓
FG18	**41**	**0.064**	**70.9**	**18%**	**29.9**	✧
FG19	34	0.053	76.9	39%	15.3	✓✓
FG19a	5	0.008	75.2	36%	16.4	
FG20	7	0.011	92.9	86%	10.1	
FG21	42	0.066	66.9	17%	22.0	
FG22	41	0.064	66.9	16%	27.4	
FG23	52	0.081	66.5	16%	26.5	
FG24	67	0.104	64.9	11%	22.7	
FG25	14	0.022	70.8	26%	26.6	
FG26	52	0.081	72.5	29%	24.8	
FG27a	17	0.026	65.5	12%	31.4	
FG27b	33	0.051	77.2	41%	24.3	
FG28	13	0.020	65.6	11%	17.5	
FG29	66	0.103	61.3	1%	23.3	
HG30	118	0.184	61.0	0%	65.1	
FG31	59	0.092	80.0	52%	24.0	◆◆
FG32	26	0.040	80.0	52%	13.6	
FG33	19	0.030	71.2	27%	12.7	
FG34	59	0.092	63.7	7%	22.7	
FG35	36	0.057	62.7	5%	20.7	
FG36	18	0.028	61.0	0%	24.9	
FG37	51	0.080	61.0	0%	21.8	
FH01	**86**	**0.135**	**73.1**	**27%**	**30.9**	
FH02	**6**	**0.009**	**71.3**	**25%**	**14.6**	
FH03	5	0.008	80.7	52%	14.4	

BASIN	AREA (acre)	AREA (mi²)	CURVE NO.	PERCENT IMPERV.	LAG TIME (min)	
FUTURE						
OS05	37	0.058	61.0	0%	15.2	
OS06	84	0.131	61.0	0%	18.7	
OS07	21	0.033	63.1	7%	15.4	
OS08	26	0.041	65.7	17%	15.9	
OS09	99	0.155	65.0	0%	29.5	
FG01	72	0.113	63.4	6%	33.8	■■
FG02	25	0.039	64.6	10%	16.1	
FG03	13	0.020	68.0	20%	11.6	■■
FG04	11	0.017	68.0	20%	7.6	■■
FG05	59	0.092	66.9	17%	28.7	■
FG06	12	0.019	68.0	20%	15.3	
FG08A	48	0.075	76.8	43%	13.3	✓
FG08B	40	0.063	76.7	40%	16.6	✓
FG09	31	0.048	71.7	27%	20.8	●●
FG10	43	0.067	72.7	29%	41.8	◆◆◆
FG11	40	0.063	78.2	44%	23.2	●
FG12	21	0.033	80.0	47%	16.1	❖❖
FG13	42	0.066	66.9	14%	29.6	
FG14	21	0.033	77.5	42%	20.9	
FG15	65	0.102	72.9	30%	25.9	◆◆◆
FG15a	10	0.016	78.7	44%	11.2	❖
FG16	50	0.077	78.8	45%	13.0	❖
FG17a	44	0.069	76.5	39%	14.4	✓✓
FG17b	14	0.021	79.9	47%	11.4	✓✓
FG17c	20	0.031	65.2	10%	11.8	✓✓
FG18	**41**	**0.064**	**73.5**	**31%**	**29.9**	✧
FG19	34	0.053	80.3	48%	15.3	✓✓
FG19a	4	0.007	71.4	26%	0.0	
FG20	7	0.011	92.9	86%	10.1	
FG21	42	0.066	66.9	17%	22.0	
FG22	41	0.064	66.9	16%	27.4	
FG23	52	0.081	66.5	16%	26.5	
FG24	67	0.104	64.9	11%	22.7	
FG25	14	0.022	70.8	26%	26.6	
FG26	52	0.081	72.5	29%	24.8	
FG27a	17	0.026	65.5	12%	31.4	
FG27b	33	0.051	77.2	41%	24.3	
FG28	13	0.020	65.6	11%	17.5	
FG29	66	0.103	61.3	1%	23.3	
FG30	26	0.040	80.0	52%	10.4	
FG31	59	0.092	80.0	52%	24.0	◆◆
FG32	26	0.040	80.0	52%	13.6	
FG33	19	0.030	71.2	27%	12.7	
FG34	59	0.092	63.7	7%	22.7	
FG35	36	0.057	62.7	5%	20.7	
FG36	18	0.028	61.0	0%	24.9	
FG37	51	0.080	61.0	0%	21.8	
FH01	**86**	**0.134**	**76.2**	**38%**	**23.4**	◆◆◆
FH02	**6**	**0.009**	**71.3**	**25%**	**14.6**	◆◆◆
FH03	5	0.008	80.7	52%	14.4	

NOAA Atlas 14, Volume 8, Version 2
Location name: Peyton, Colorado, USA*
Latitude: 38.9783°, Longitude: -104.6842°
Elevation: 7054.14 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF tabular | PF graphical | Maps & aerials

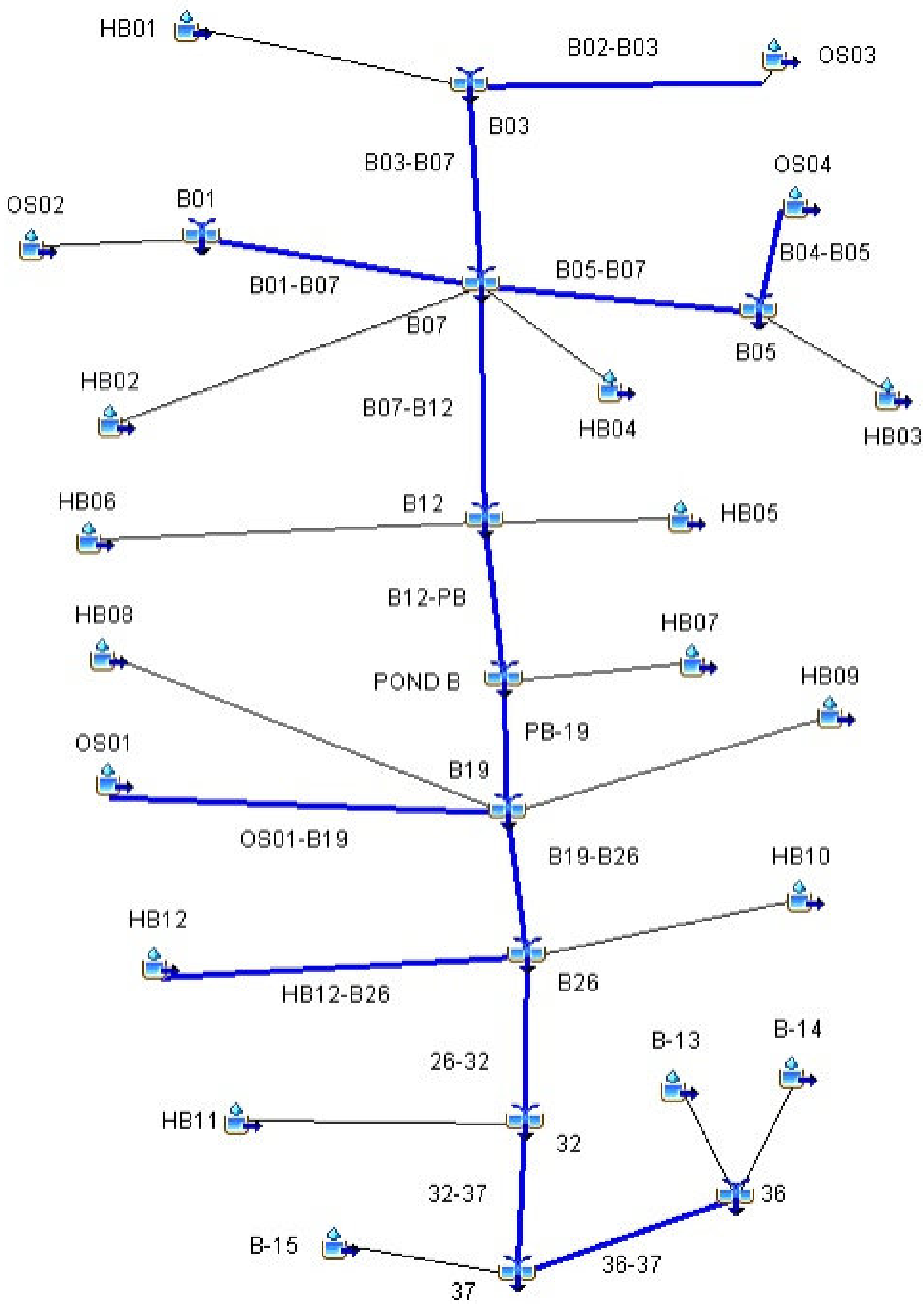
PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.239 (0.190-0.301)	0.291 (0.232-0.367)	0.381 (0.302-0.482)	0.460 (0.363-0.586)	0.576 (0.442-0.764)	0.670 (0.501-0.899)	0.770 (0.556-1.06)	0.878 (0.606-1.23)	1.02 (0.680-1.45)	1.14 (0.737-1.65)
10-min	0.349 (0.278-0.441)	0.426 (0.339-0.538)	0.558 (0.443-0.706)	0.674 (0.532-0.857)	0.843 (0.647-1.12)	0.982 (0.734-1.32)	1.13 (0.814-1.55)	1.28 (0.888-1.80)	1.50 (0.996-2.15)	1.67 (1.08-2.44)
15-min	0.426 (0.340-0.538)	0.519 (0.413-0.656)	0.680 (0.540-0.861)	0.822 (0.648-1.04)	1.03 (0.789-1.36)	1.20 (0.895-1.61)	1.37 (0.993-1.89)	1.56 (1.08-2.20)	1.82 (1.22-2.64)	2.03 (1.31-2.97)
30-min	0.596 (0.485-0.768)	0.741 (0.590-0.936)	0.969 (0.769-1.23)	1.17 (0.923-1.48)	1.46 (1.12-1.94)	1.70 (1.27-2.28)	1.95 (1.41-2.68)	2.21 (1.53-3.12)	2.58 (1.72-3.73)	2.87 (1.86-4.20)
60-min	0.779 (0.620-0.982)	0.934 (0.744-1.18)	1.21 (0.962-1.54)	1.47 (1.16-1.86)	1.84 (1.42-2.46)	2.16 (1.62-2.91)	2.50 (1.81-3.44)	2.87 (1.99-4.05)	3.39 (2.26-4.91)	3.80 (2.46-5.58)
2-hr	0.946 (0.762-1.18)	1.13 (0.905-1.41)	1.46 (1.16-1.83)	1.76 (1.40-2.22)	2.23 (1.73-2.96)	2.62 (1.98-3.51)	3.05 (2.23-4.16)	3.52 (2.47-4.95)	4.19 (2.82-6.04)	4.73 (3.08-6.87)
3-hr	1.04 (0.839-1.29)	1.22 (0.986-1.52)	1.57 (1.26-1.96)	1.90 (1.51-2.38)	2.41 (1.90-3.21)	2.86 (2.16-3.83)	3.35 (2.47-4.58)	3.90 (2.75-5.47)	4.68 (3.16-6.75)	5.33 (3.50-7.71)
6-hr	1.21 (0.980-1.49)	1.40 (1.14-1.73)	1.78 (1.44-2.21)	2.16 (1.74-2.68)	2.76 (2.19-3.65)	3.29 (2.53-4.38)	3.88 (2.86-5.28)	4.53 (3.23-6.34)	5.49 (3.76-7.88)	6.29 (4.17-9.04)
12-hr	1.39 (1.14-1.70)	1.62 (1.33-1.98)	2.06 (1.68-2.53)	2.48 (2.02-3.08)	3.16 (2.53-4.14)	3.76 (2.92-4.96)	4.42 (3.31-5.97)	5.15 (3.70-7.14)	6.22 (4.30-8.86)	7.10 (4.76-10.1)
24-hr	1.61 (1.33-1.95)	1.88 (1.56-2.29)	2.39 (1.97-2.92)	2.88 (2.35-3.52)	3.63 (2.91-4.69)	4.27 (3.34-5.58)	4.98 (3.76-6.86)	5.75 (4.17-7.90)	6.87 (4.76-9.70)	7.79 (5.25-11.1)

HISTORIC 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
OS02	0.2219	140	01Jul2015, 12:18	19
B01	0.2219	140	01Jul2015, 12:18	19
B01-B07	0.2219	139	01Jul2015, 12:24	19
OS03	0.1984	123	01Jul2015, 12:18	16
B02-B03	0.1984	119	01Jul2015, 12:24	16
HB01	0.0234	18	01Jul2015, 12:06	2
B03	0.2218	131	01Jul2015, 12:18	17
B03-B07	0.2218	129	01Jul2015, 12:24	17
OS04	0.1359	77	01Jul2015, 12:18	10
B04-B05	0.1359	76	01Jul2015, 12:24	10
HB03	0.1266	94	01Jul2015, 12:06	9
B05	0.2625	137	01Jul2015, 12:18	19
B05-B07	0.2625	137	01Jul2015, 12:18	19
HB02	0.1063	71	01Jul2015, 12:12	8
HB04	0.0609	43	01Jul2015, 12:12	4
B07	0.8734	490	01Jul2015, 12:18	67
B07-B12	0.8734	486	01Jul2015, 12:24	66
HB05	0.1375	94	01Jul2015, 12:12	10
HB06	0.1641	104	01Jul2015, 12:12	12
B12	1.1750	636	01Jul2015, 12:18	88
B12-PB	1.1750	629	01Jul2015, 12:24	88
HB07	0.0313	27	01Jul2015, 12:06	2
POND B	1.2063	639	01Jul2015, 12:24	90
PB-19	1.2063	636	01Jul2015, 12:24	89
OS01	1.5594	726	01Jul2015, 12:30	122
OS01-B19	1.5594	720	01Jul2015, 12:36	121
HB08	0.1344	76	01Jul2015, 12:18	10
HB09	0.3047	132	01Jul2015, 12:30	22
B19	3.2048	1490	01Jul2015, 12:30	241
B19-B26	3.2048	1475	01Jul2015, 12:30	241
HB10	**0.3047**	**162**	**01Jul2015, 12:18**	**22**
HB12	0.0797	51	01Jul2015, 12:12	6
HB12-B26	0.0797	49	01Jul2015, 12:18	6
B26	3.5892	1651	01Jul2015, 12:30	269
26-32	3.5892	1633	01Jul2015, 12:36	267
HB11	**0.1125**	**57**	**01Jul2015, 12:24**	**8**
32	3.7017	1678	01Jul2015, 12:36	275
32-37	3.7017	1667	01Jul2015, 12:36	273
B-14	0.4039	171	01Jul2015, 12:30	29
B-13	0.2813	122	01Jul2015, 12:30	20
36	0.6852	293	01Jul2015, 12:30	49
36-37	0.6852	290	01Jul2015, 12:36	49
B-15	0.0750	37	01Jul2015, 12:24	5
37	4.4619	1988	01Jul2015, 12:36	327

HISTORIC 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
HG07	0.0984	47	01Jul2015, 12:24	7
HG07-G11	0.0984	47	01Jul2015, 12:30	7
HG08	0.1328	73	01Jul2015, 12:18	10
G11	0.2312	115	01Jul2015, 12:24	17
G11-G12	0.2312	114	01Jul2015, 12:30	16
HG09	0.1781	73	01Jul2015, 12:30	13
G12	0.4093	187	01Jul2015, 12:30	29
G12-H08	0.4093	183	01Jul2015, 12:36	28
HG10	**0.1375**	**39**	**01Jul2015, 13:06**	**10**
H08	**0.5468**	**216**	**01Jul2015, 12:42**	**38**
HG11	**0.2047**	**77**	**01Jul2015, 12:36**	**15**
H09	**0.2047**	**77**	**01Jul2015, 12:36**	**15**
HH01	**0.0984**	**65**	**01Jul2015, 12:12**	**7**
H12	**0.0984**	**65**	**01Jul2015, 12:12**	**7**
HG12	**0.1297**	**57**	**01Jul2015, 12:30**	**9**
H10	**0.1297**	**57**	**01Jul2015, 12:30**	**9**

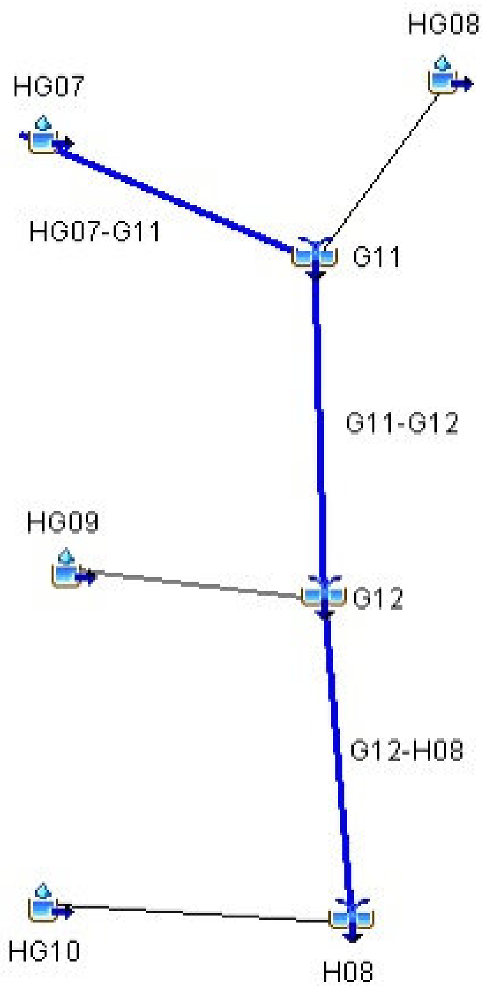
BENNETT HISTORIC



HISTORIC 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
OS02	0.2219	96	01Jul2015, 12:24	14
B01	0.2219	96	01Jul2015, 12:24	14
B01-B07	0.2219	96	01Jul2015, 12:24	13
OS03	0.1984	83	01Jul2015, 12:18	11
B02-B03	0.1984	81	01Jul2015, 12:24	11
HB01	0.0234	12	01Jul2015, 12:06	1
B03	0.2218	88	01Jul2015, 12:18	12
B03-B07	0.2218	88	01Jul2015, 12:24	12
OS04	0.1359	51	01Jul2015, 12:18	7
B04-B05	0.1359	50	01Jul2015, 12:24	7
HB03	0.1266	61	01Jul2015, 12:06	6
B05	0.2625	87	01Jul2015, 12:18	13
B05-B07	0.2625	85	01Jul2015, 12:18	13
HB02	0.1063	47	01Jul2015, 12:12	5
HB04	0.0609	28	01Jul2015, 12:12	3
B07	0.8734	321	01Jul2015, 12:18	47
B07-B12	0.8734	319	01Jul2015, 12:24	47
HB05	0.1375	62	01Jul2015, 12:12	7
HB06	0.1641	68	01Jul2015, 12:12	8
B12	1.1750	415	01Jul2015, 12:24	62
B12-PB	1.1750	413	01Jul2015, 12:24	62
HB07	0.0313	18	01Jul2015, 12:06	2
POND B	1.2063	420	01Jul2015, 12:24	64
PB-19	1.2063	416	01Jul2015, 12:30	63
OS01	1.5594	488	01Jul2015, 12:36	87
OS01-B19	1.5594	487	01Jul2015, 12:42	86
HB08	0.1344	50	01Jul2015, 12:18	7
HB09	0.3047	86	01Jul2015, 12:30	15
B19	3.2048	990	01Jul2015, 12:36	171
B19-B26	3.2048	987	01Jul2015, 12:36	171
HB10	**0.3047**	**105**	**01Jul2015, 12:18**	**15**
HB12	0.0797	33	01Jul2015, 12:12	4
HB12-B26	0.0797	33	01Jul2015, 12:18	4
B26	3.5892	1086	01Jul2015, 12:36	190
26-32	3.5892	1081	01Jul2015, 12:36	189
HB11	**0.1125**	**37**	**01Jul2015, 12:24**	**6**
32	3.7017	1112	01Jul2015, 12:36	194
32-37	3.7017	1104	01Jul2015, 12:42	193
B-14	0.4039	111	01Jul2015, 12:30	20
B-13	0.2813	80	01Jul2015, 12:30	14
36	0.6852	191	01Jul2015, 12:30	34
36-37	0.6852	190	01Jul2015, 12:36	34
B-15	0.0750	24	01Jul2015, 12:24	4
37	4.4619	1306	01Jul2015, 12:42	231

HISTORIC 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
HG07	0.0984	31	01Jul2015, 12:24	5
HG07-G11	0.0984	31	01Jul2015, 12:30	5
HG08	0.1328	48	01Jul2015, 12:18	7
G11	0.2312	75	01Jul2015, 12:24	12
G11-G12	0.2312	75	01Jul2015, 12:30	11
HG09	0.1781	48	01Jul2015, 12:36	9
G12	0.4093	122	01Jul2015, 12:30	20
G12-H08	0.4093	121	01Jul2015, 12:42	20
HG10	**0.1375**	**26**	**01Jul2015, 13:06**	**7**
H08	**0.5468**	**142**	**01Jul2015, 12:42**	**27**
HG11	**0.2047**	**51**	**01Jul2015, 12:42**	**10**
H09	**0.2047**	**51**	**01Jul2015, 12:42**	**10**
HH01	**0.0984**	**43**	**01Jul2015, 12:12**	**5**
H12	**0.0984**	**43**	**01Jul2015, 12:12**	**5**
HG12	**0.1297**	**38**	**01Jul2015, 12:30**	**7**
H10	**0.1297**	**38**	**01Jul2015, 12:30**	**7**

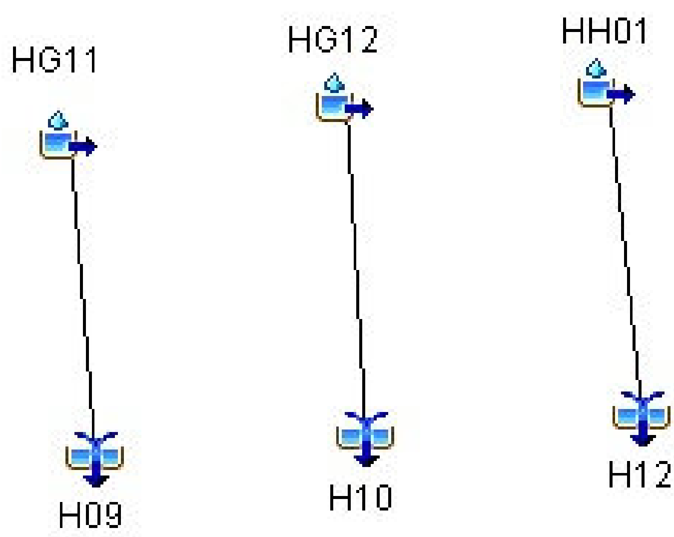
GIECK. HISTORIC



HISTORIC 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
OS02	0.2219	62	01Jul2015, 12:24	9.3
B01	0.2219	62	01Jul2015, 12:24	9.3
B01-B07	0.2219	61	01Jul2015, 12:24	9.2
OS03	0.1984	51	01Jul2015, 12:18	7.7
B02-B03	0.1984	51	01Jul2015, 12:24	7.6
HB01	0.0234	7	01Jul2015, 12:06	0.8
B03	0.2218	55	01Jul2015, 12:24	8.4
B03-B07	0.2218	54	01Jul2015, 12:24	8.4
OS04	0.1359	30	01Jul2015, 12:18	4.5
B04-B05	0.1359	30	01Jul2015, 12:30	4.4
HB03	0.1266	36	01Jul2015, 12:12	4.2
B05	0.2625	50	01Jul2015, 12:24	8.7
B05-B07	0.2625	49	01Jul2015, 12:24	8.7
HB02	0.1063	28	01Jul2015, 12:12	3.6
HB04	0.0609	17	01Jul2015, 12:12	2.0
B07	0.8734	195	01Jul2015, 12:24	31.8
B07-B12	0.8734	193	01Jul2015, 12:30	31.5
HB05	0.1375	37	01Jul2015, 12:12	4.6
HB06	0.1641	40	01Jul2015, 12:12	5.5
B12	1.1750	243	01Jul2015, 12:24	41.6
B12-PB	1.1750	242	01Jul2015, 12:30	41.5
HB07	0.0313	11	01Jul2015, 12:06	1.0
POND B	1.2063	245	01Jul2015, 12:30	42.6
PB-19	1.2063	244	01Jul2015, 12:36	42.2
OS01	1.5594	303	01Jul2015, 12:36	58.6
OS01-B19	1.5594	301	01Jul2015, 12:42	57.8
HB08	0.1344	30	01Jul2015, 12:18	4.5
HB09	0.3047	51	01Jul2015, 12:36	10.1
B19	3.2048	602	01Jul2015, 12:36	114.5
B19-B26	3.2048	599	01Jul2015, 12:42	114.4
HB10	**0.3047**	**63**	**01Jul2015, 12:24**	**10.1**
HB12	0.0797	19	01Jul2015, 12:12	2.7
HB12-B26	0.0797	19	01Jul2015, 12:18	2.6
B26	3.5892	657	01Jul2015, 12:36	127.1
26-32	3.5892	656	01Jul2015, 12:42	126.0
HB11	**0.1125**	**22**	**01Jul2015, 12:24**	**3.7**
32	3.7017	672	01Jul2015, 12:42	129.8
32-37	3.7017	667	01Jul2015, 12:48	128.7
B-14	0.4039	67	01Jul2015, 12:36	13.3
B-13	0.2813	47	01Jul2015, 12:36	9.3
36	0.6852	114	01Jul2015, 12:36	22.6
36-37	0.6852	113	01Jul2015, 12:36	22.5
B-15	0.0750	14	01Jul2015, 12:24	2.5
37	4.4619	782	01Jul2015, 12:48	153.7

HISTORIC 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
HG07	0.0984	18	01Jul2015, 12:30	3.3
HG07-G11	0.0984	18	01Jul2015, 12:30	3.2
HG08	0.1328	28	01Jul2015, 12:18	4.4
G11	0.2312	44	01Jul2015, 12:24	7.6
G11-G12	0.2312	44	01Jul2015, 12:30	7.5
HG09	0.1781	29	01Jul2015, 12:36	5.9
G12	0.4093	72	01Jul2015, 12:36	13.4
G12-H08	0.4093	71	01Jul2015, 12:48	13.0
HG10	**0.1375**	**16**	**01Jul2015, 13:06**	**4.5**
H08	**0.5468**	**85**	**01Jul2015, 12:48**	**17.5**
HG11	**0.2047**	**30**	**01Jul2015, 12:42**	**6.7**
H09	**0.2047**	**30**	**01Jul2015, 12:42**	**6.7**
HH01	**0.0984**	**25**	**01Jul2015, 12:12**	**3.3**
H12	**0.0984**	**25**	**01Jul2015, 12:12**	**3.3**
HG12	**0.1297**	**22**	**01Jul2015, 12:30**	**4.3**
H10	**0.1297**	**22**	**01Jul2015, 12:30**	**4.3**

MISC. HISTORIC



HISTORIC 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
OS02	0.2219	28	01Jul2015, 12:24	5.1
B01	0.2219	28	01Jul2015, 12:24	5.1
B01-B07	0.2219	28	01Jul2015, 12:30	5.0
OS03	0.1984	22	01Jul2015, 12:24	4.1
B02-B03	0.1984	22	01Jul2015, 12:30	4.0
HB01	0.0234	3	01Jul2015, 12:12	0.4
B03	0.2218	23	01Jul2015, 12:24	4.4
B03-B07	0.2218	23	01Jul2015, 12:30	4.4
OS04	0.1359	11	01Jul2015, 12:24	2.3
B04-B05	0.1359	11	01Jul2015, 12:36	2.2
HB03	0.1266	14	01Jul2015, 12:12	2.1
B05	0.2625	19	01Jul2015, 12:30	4.4
B05-B07	0.2625	19	01Jul2015, 12:36	4.4
HB02	0.1063	10	01Jul2015, 12:18	1.8
HB04	0.0609	6	01Jul2015, 12:12	1.0
B07	0.8734	80	01Jul2015, 12:30	16.6
B07-B12	0.8734	79	01Jul2015, 12:36	16.4
HB05	0.1375	14	01Jul2015, 12:12	2.3
HB06	0.1641	15	01Jul2015, 12:18	2.8
B12	1.1750	97	01Jul2015, 12:36	21.5
B12-PB	1.1750	97	01Jul2015, 12:36	21.4
HB07	0.0313	4	01Jul2015, 12:06	0.5
POND B	1.2063	98	01Jul2015, 12:36	21.9
PB-19	1.2063	97	01Jul2015, 12:48	21.6
OS01	1.5594	130	01Jul2015, 12:36	30.9
OS01-B19	1.5594	130	01Jul2015, 12:48	30.3
HB08	0.1344	11	01Jul2015, 12:24	2.3
HB09	0.3047	20	01Jul2015, 12:36	5.1
B19	3.2048	253	01Jul2015, 12:48	59.3
B19-B26	3.2048	252	01Jul2015, 12:48	59.2
HB10	**0.3047**	**24**	**01Jul2015, 12:24**	**5.1**
HB12	0.0797	7	01Jul2015, 12:18	1.3
HB12-B26	0.0797	7	01Jul2015, 12:24	1.3
B26	3.5892	274	01Jul2015, 12:48	65.6
26-32	3.5892	273	01Jul2015, 12:54	65.0
HB11	**0.1125**	**9**	**01Jul2015, 12:30**	**1.9**
32	3.7017	279	01Jul2015, 12:54	66.8
32-37	3.7017	277	01Jul2015, 13:00	66.1
B-14	0.4039	26	01Jul2015, 12:42	6.7
B-13	0.2813	19	01Jul2015, 12:36	4.7
36	0.6852	45	01Jul2015, 12:36	11.4
36-37	0.6852	45	01Jul2015, 12:42	11.3
B-15	0.0750	6	01Jul2015, 12:30	1.3
37	4.4619	320	01Jul2015, 12:54	78.7

HISTORIC 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
HG07	0.0984	7	01Jul2015, 12:30	1.6
HG07-G11	0.0984	7	01Jul2015, 12:36	1.6
HG08	0.1328	11	01Jul2015, 12:24	2.2
G11	0.2312	17	01Jul2015, 12:30	3.9
G11-G12	0.2312	17	01Jul2015, 12:42	3.8
HG09	0.1781	11	01Jul2015, 12:42	3.0
G12	0.4093	28	01Jul2015, 12:42	6.8
G12-H08	0.4093	28	01Jul2015, 13:00	6.5
HG10	**0.1375**	**7**	**01Jul2015, 13:18**	**2.2**
H08	**0.5468**	**34**	**01Jul2015, 13:00**	**8.8**
HG11	**0.2047**	**12**	**01Jul2015, 12:48**	**3.4**
H09	**0.2047**	**12**	**01Jul2015, 12:48**	**3.4**
HH01	**0.0984**	**9**	**01Jul2015, 12:18**	**1.7**
H12	**0.0984**	**9**	**01Jul2015, 12:18**	**1.7**
HG12	**0.1297**	**9**	**01Jul2015, 12:36**	**2.2**
H10	**0.1297**	**9**	**01Jul2015, 12:36**	**2.2**

HISTORIC 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
OS02	0.2219	12.1	01Jul2015, 12:30	2.8
B01	0.2219	12.1	01Jul2015, 12:30	2.8
B01-B07	0.2219	12.1	01Jul2015, 12:36	2.8
OS03	0.1984	8.7	01Jul2015, 12:30	2.2
B02-B03	0.1984	8.7	01Jul2015, 12:30	2.2
HB01	0.0234	0.8	01Jul2015, 12:12	0.2
B03	0.2218	9.3	01Jul2015, 12:30	2.4
B03-B07	0.2218	9.3	01Jul2015, 12:36	2.4
OS04	0.1359	3.8	01Jul2015, 12:30	1.2
B04-B05	0.1359	3.7	01Jul2015, 12:48	1.1
HB03	0.1266	4.2	01Jul2015, 12:18	1.1
B05	0.2625	6.6	01Jul2015, 12:42	2.2
B05-B07	0.2625	6.5	01Jul2015, 12:48	2.2
HB02	0.1063	3.3	01Jul2015, 12:18	0.9
HB04	0.0609	2	01Jul2015, 12:18	0.5
B07	0.8734	30.7	01Jul2015, 12:36	8.9
B07-B12	0.8734	30.7	01Jul2015, 12:48	8.7
HB05	0.1375	4.3	01Jul2015, 12:18	1.2
HB06	0.1641	4.9	01Jul2015, 12:24	1.4
B12	1.175	37.5	01Jul2015, 12:48	11.3
B12-PB	1.175	37.2	01Jul2015, 12:48	11.3
HB07	0.0313	1.2	01Jul2015, 12:12	0.3
POND B	1.2063	37.8	01Jul2015, 12:48	11.5
PB-19	1.2063	37.7	01Jul2015, 13:00	11.3
OS01	1.5594	53.3	01Jul2015, 12:48	16.6
OS01-B19	1.5594	53.1	01Jul2015, 13:00	16.3
HB08	0.1344	3.7	01Jul2015, 12:30	1.2
HB09	0.3047	7.2	01Jul2015, 12:48	2.6
B19	3.2048	100.4	01Jul2015, 13:00	31.3
B19-B26	3.2048	100	01Jul2015, 13:00	31.2
HB10	**0.3047**	**8.1**	**01Jul2015, 12:30**	**2.6**
HB12	0.0797	2.4	01Jul2015, 12:24	0.7
HB12-B26	0.0797	2.3	01Jul2015, 12:30	0.7
B26	3.5892	108.4	01Jul2015, 13:00	34.5
26-32	3.5892	107.8	01Jul2015, 13:06	34
HB11	**0.1125**	**2.9**	**01Jul2015, 12:36**	**1**
32	3.7017	110.2	01Jul2015, 13:06	35
32-37	3.7017	109.3	01Jul2015, 13:18	34.4
B-14	0.4039	9.4	01Jul2015, 12:48	3.4
B-13	0.2813	6.6	01Jul2015, 12:48	2.4
36	0.6852	16	01Jul2015, 12:48	5.8
36-37	0.6852	16	01Jul2015, 12:54	5.8
B-15	0.075	1.9	01Jul2015, 12:36	0.6
37	4.4619	125.5	01Jul2015, 13:12	40.8

HISTORIC 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
HG07	0.0984	2.4	01Jul2015, 12:42	0.8
HG07-G11	0.0984	2.4	01Jul2015, 12:48	0.8
HG08	0.1328	3.6	01Jul2015, 12:30	1.1
G11	0.2312	5.7	01Jul2015, 12:42	2
G11-G12	0.2312	5.6	01Jul2015, 12:54	1.9
HG09	0.1781	4.1	01Jul2015, 12:48	1.5
G12	0.4093	9.7	01Jul2015, 12:54	3.4
G12-H08	0.4093	9.7	01Jul2015, 13:18	3.3
HG10	**0.1375**	**2.6**	**01Jul2015, 13:30**	**1.1**
H08	**0.5468**	**12.1**	**01Jul2015, 13:18**	**4.4**
HG11	**0.2047**	**4.5**	**01Jul2015, 13:00**	**1.7**
H09	**0.2047**	**4.5**	**01Jul2015, 13:00**	**1.7**
HH01	**0.0984**	**3**	**01Jul2015, 12:18**	**0.9**
H12	**0.0984**	**3**	**01Jul2015, 12:18**	**0.9**
HG12	**0.1297**	**3.1**	**01Jul2015, 12:42**	**1.1**
H10	**0.1297**	**3.1**	**01Jul2015, 12:42**	**1.1**

HISTORIC 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
OS02	0.2219	2.50	01Jul2015, 12:48	1.1
B01	0.2219	2.50	01Jul2015, 12:48	1.1
B01-B07	0.2219	2.50	01Jul2015, 13:00	1.1
OS03	0.1984	1.60	01Jul2015, 13:06	0.8
B02-B03	0.1984	1.60	01Jul2015, 13:12	0.8
HB01	0.0234	0.10	01Jul2015, 13:12	0.1
B03	0.2218	1.70	01Jul2015, 13:12	0.9
B03-B07	0.2218	1.70	01Jul2015, 13:18	0.8
OS04	0.1359	0.60	01Jul2015, 13:30	0.4
B04-B05	0.1359	0.60	01Jul2015, 14:00	0.3
HB03	0.1266	0.50	01Jul2015, 13:12	0.3
B05	0.2625	1.10	01Jul2015, 13:42	0.7
B05-B07	0.2625	1.10	01Jul2015, 13:48	0.7
HB02	0.1063	0.40	01Jul2015, 13:24	0.3
HB04	0.0609	0.30	01Jul2015, 13:18	0.2
B07	0.8734	5.60	01Jul2015, 13:30	3.1
B07-B12	0.8734	5.60	01Jul2015, 13:48	3.0
HB05	0.1375	0.60	01Jul2015, 13:18	0.4
HB06	0.1641	0.70	01Jul2015, 13:24	0.4
B12	1.1750	6.80	01Jul2015, 13:42	3.8
B12-PB	1.1750	6.80	01Jul2015, 13:48	3.8
HB07	0.0313	0.10	01Jul2015, 13:06	0.1
POND B	1.2063	6.90	01Jul2015, 13:48	3.9
PB-19	1.2063	6.90	01Jul2015, 14:06	3.7
OS01	1.5594	10.90	01Jul2015, 13:24	5.9
OS01-B19	1.5594	10.90	01Jul2015, 13:48	5.7
HB08	0.1344	0.60	01Jul2015, 13:30	0.4
HB09	0.3047	1.20	01Jul2015, 13:54	0.8
B19	3.2048	19.40	01Jul2015, 13:48	10.6
B19-B26	3.2048	19.40	01Jul2015, 13:54	10.5
HB10	**0.3047**	**1.30**	**01Jul2015, 13:36**	**0.8**
HB12	0.0797	0.30	01Jul2015, 13:24	0.2
HB12-B26	0.0797	0.30	01Jul2015, 13:42	0.2
B26	3.5892	21.00	01Jul2015, 13:54	11.6
26-32	3.5892	21.00	01Jul2015, 14:06	11.2
HB11	**0.1125**	**0.50**	**01Jul2015, 13:42**	**0.3**
32	3.7017	21.40	01Jul2015, 14:06	11.5
32-37	3.7017	21.40	01Jul2015, 14:18	11.2
B-14	0.4039	1.60	01Jul2015, 13:54	1.1
B-13	0.2813	1.10	01Jul2015, 13:54	0.7
36	0.6852	2.70	01Jul2015, 13:54	1.8
36-37	0.6852	2.70	01Jul2015, 14:06	1.8
B-15	0.0750	0.30	01Jul2015, 13:42	0.2
37	4.4619	24.40	01Jul2015, 14:18	13.2

HISTORIC 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
HG07	0.0984	0.40	01Jul2015, 13:42	0.3
HG07-G11	0.0984	0.40	01Jul2015, 14:00	0.3
HG08	0.1328	0.50	01Jul2015, 13:36	0.4
G11	0.2312	0.90	01Jul2015, 13:48	0.6
G11-G12	0.2312	0.90	01Jul2015, 14:12	0.6
HG09	0.1781	0.70	01Jul2015, 13:54	0.5
G12	0.4093	1.60	01Jul2015, 14:06	1.0
G12-H08	0.4093	1.60	01Jul2015, 14:54	0.9
HG10	**0.1375**	**0.50**	**01Jul2015, 14:42**	**0.3**
H08	**0.5468**	**2.10**	**01Jul2015, 14:48**	**1.3**
HG11	**0.2047**	**0.80**	**01Jul2015, 14:06**	**0.5**
H09	**0.2047**	**0.80**	**01Jul2015, 14:06**	**0.5**
HH01	**0.0984**	**0.40**	**01Jul2015, 13:24**	**0.3**
H12	**0.0984**	**0.40**	**01Jul2015, 13:24**	**0.3**
HG12	**0.1297**	**0.50**	**01Jul2015, 13:48**	**0.3**
H10	**0.1297**	**0.50**	**01Jul2015, 13:48**	**0.3**

INTERIM 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
OS01	1.5594	726	01Jul2015, 12:30	122
DB16	0.0578	85	01Jul2015, 12:12	8
B10	1.6172	765	01Jul2015, 12:30	130
B10-B11	1.6172	763	01Jul2015, 12:30	130
DB17	0.0048	15	01Jul2015, 12:00	1
B11	1.6220	765	01Jul2015, 12:30	131
B11-POND C	1.6220	759	01Jul2015, 12:36	131
DB21	0.0519	49	01Jul2015, 12:06	5
DB18	0.0346	60	01Jul2015, 12:06	5
DB19	0.0281	34	01Jul2015, 12:12	3
DB20	0.0147	23	01Jul2015, 12:06	2
POND C	1.7513	727	01Jul2015, 12:48	141
POND C-B16	1.7513	725	01Jul2015, 12:48	141
DB25	0.0211	40	01Jul2015, 12:06	3
B16	1.7724	730	01Jul2015, 12:48	144
B16-B17	1.7724	724	01Jul2015, 12:48	144
DB26	0.0682	124	01Jul2015, 12:06	12
B17	1.8406	751	01Jul2015, 12:48	156
B17-B26	1.8406	748	01Jul2015, 12:54	155
OS03	0.1984	123	01Jul2015, 12:18	16
DB01	0.0719	83	01Jul2015, 12:06	8
B01	0.2703	190	01Jul2015, 12:12	23
B01-B02	0.2703	184	01Jul2015, 12:18	23
OS02	0.2219	140	01Jul2015, 12:18	19
DB02	0.0516	66	01Jul2015, 12:06	5
B02	0.5438	358	01Jul2015, 12:12	48
B02-POND A	0.5438	357	01Jul2015, 12:18	47
OS04	0.1359	77	01Jul2015, 12:18	10
DB03	0.0703	63	01Jul2015, 12:12	6
B03	0.2062	137	01Jul2015, 12:12	16
B03-B04	0.2062	135	01Jul2015, 12:18	16
DB04	0.0422	40	01Jul2015, 12:12	4
DB05	0.0384	35	01Jul2015, 12:12	4
B04	0.2868	201	01Jul2015, 12:18	24
B04-B05	0.2868	201	01Jul2015, 12:18	24
DB06	0.0219	41	01Jul2015, 12:06	4
B05	0.3087	232	01Jul2015, 12:12	28
B05-POND A	0.3087	230	01Jul2015, 12:18	28
DB07	0.0254	33	01Jul2015, 12:06	3
DB08	0.0297	30	01Jul2015, 12:06	3
POND A	0.9076	523	01Jul2015, 12:24	75
POND A-B06	0.9076	523	01Jul2015, 12:30	75
DB09	0.0189	31	01Jul2015, 12:06	2
B06	0.9265	530	01Jul2015, 12:30	77

INTERIM 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
B06-B07	0.9265	530	01Jul2015, 12:30	77
DB11	0.0969	107	01Jul2015, 12:12	11
DB10	0.0364	52	01Jul2015, 12:06	5
B07	1.0598	609	01Jul2015, 12:30	92
B07-B09	1.0598	608	01Jul2015, 12:30	92
DB12	0.0453	76	01Jul2015, 12:06	7
B09	1.1051	632	01Jul2015, 12:30	99
B09-POND B	1.1051	631	01Jul2015, 12:30	99
DB15	0.1234	98	01Jul2015, 12:18	12
DB13	0.0703	84	01Jul2015, 12:12	9
DB14	0.0556	86	01Jul2015, 12:06	8
POND B	1.3544	669	01Jul2015, 12:42	126
POND B-B12	1.3544	669	01Jul2015, 12:42	126
DB22	0.0516	84	01Jul2015, 12:06	8
DB23	0.0172	42	01Jul2015, 12:06	4
B12	1.4232	698	01Jul2015, 12:36	138
B12-B14	1.4232	697	01Jul2015, 12:42	137
DB24	0.0531	88	01Jul2015, 12:06	8
B14	1.4763	719	01Jul2015, 12:36	145
B14-B15	1.4763	716	01Jul2015, 12:36	145
DB28	**0.0741**	**77**	**01Jul2015, 12:12**	**8**
B15	1.5504	749	01Jul2015, 12:36	153
B15-B18	1.5504	748	01Jul2015, 12:42	152
DB29	0.1697	138	01Jul2015, 12:18	17
DB27	0.0508	63	01Jul2015, 12:12	7
B26	3.6115	1569	01Jul2015, 12:48	331
B26-27	3.6115	1566	01Jul2015, 12:48	331
FB-02	**0.0500**	**63**	**01Jul2015, 12:18**	**7**
FB-01	**0.0373**	**36**	**01Jul2015, 12:06**	**4**
FB01-27a	0.0373	35	01Jul2015, 12:12	4
B19	0.0873	97	01Jul2015, 12:12	11
B19-27	0.0873	95	01Jul2015, 12:12	11
FB-03	**0.0078**	**19**	**01Jul2015, 12:00**	**2**
27	3.7066	1603	01Jul2015, 12:48	343
27-32	3.7066	1601	01Jul2015, 12:48	343
WH-24	0.1325	199	01Jul2015, 12:12	20
WH-26	0.0839	46	01Jul2015, 12:18	6
WH-27	0.0217	20	01Jul2015, 12:06	2
30	0.2381	252	01Jul2015, 12:12	28
30-31	0.2381	251	01Jul2015, 12:12	28
WH-28	0.0398	57	01Jul2015, 12:12	6
31	0.2779	308	01Jul2015, 12:12	33
31-32	0.2779	301	01Jul2015, 12:12	33
WH-29	0.0495	71	01Jul2015, 12:12	7
WH-31	0.0406	71	01Jul2015, 12:06	6
WH-30	0.0159	24	01Jul2015, 12:00	2
32	4.0905	1739	01Jul2015, 12:42	391
WH32	0.0458	49	01Jul2015, 12:00	4

INTERIM 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
BEN POND	4.1363	1359	01Jul2015, 13:18	374
WH-33	0.0064	11	01Jul2015, 12:06	1
33	4.1427	1360	01Jul2015, 13:18	375
33-37	4.1427	1357	01Jul2015, 13:18	373
WH35	0.1550	155	01Jul2015, 12:12	15
WH34	0.0450	63	01Jul2015, 12:06	6
B34-36	0.0450	61	01Jul2015, 12:12	6
36	0.2000	216	01Jul2015, 12:12	21
36-37	0.2000	214	01Jul2015, 12:12	21
WH36	0.0750	58	01Jul2015, 12:12	6
37	4.4177	1398	01Jul2015, 13:18	400
FG08A	0.0750	117	01Jul2015, 12:06	10
FG08A-G05	0.0750	111	01Jul2015, 12:12	10
FG08B	0.0630	87	01Jul2015, 12:12	9
FG08B-G05	0.0630	85	01Jul2015, 12:12	9
FG11	0.0625	76	01Jul2015, 12:18	9
FG09	0.0484	49	01Jul2015, 12:12	6
FG09-G05	0.0484	48	01Jul2015, 12:18	6
HG10	0.0467	29	01Jul2015, 12:18	4
G05	0.2956	344	01Jul2015, 12:12	37
FG13	0.0661	44	01Jul2015, 12:24	6
FG12	0.0328	51	01Jul2015, 12:12	5
POND D	0.3945	107	01Jul2015, 13:00	39
POND D-G17	0.3945	107	01Jul2015, 13:00	39
HG15	0.0297	13	01Jul2015, 12:30	2
FG15a	0.0156	28	01Jul2015, 12:06	2
G17	0.4398	119	01Jul2015, 12:54	43
G17-G18	0.4398	119	01Jul2015, 12:54	43
FG16	0.0773	127	01Jul2015, 12:06	11
G18	0.5171	167	01Jul2015, 12:06	54
G18-POND E	0.5171	161	01Jul2015, 12:06	54
HG30	0.1844	50	01Jul2015, 13:06	13
FG30-PONDHS	0.1844	50	01Jul2015, 13:12	13
FG31	0.0922	118	01Jul2015, 12:18	14
POND HS	0.2766	102	01Jul2015, 12:36	27
FG17a	0.0694	108	01Jul2015, 12:06	10
FG17a-POND E	0.0694	106	01Jul2015, 12:06	10
FG18	**0.0644**	**51**	**01Jul2015, 12:24**	**7**
FG18-POND E	0.0644	51	01Jul2015, 12:24	7
FG19	0.0527	75	01Jul2015, 12:06	7
FG17c	0.0313	32	01Jul2015, 12:06	3
FG17b	0.0214	40	01Jul2015, 12:06	3
POND E	**1.0329**	**193**	**01Jul2015, 13:48**	**87**
H08	**1.0329**	**169**	**01Jul2015, 13:48**	**77**
H09	**0.0000**	**24**	**01Jul2015, 13:48**	**11**
FH01	**0.1348**	**115**	**01Jul2015, 12:24**	**16**
POND H	**0.1348**	**42**	**01Jul2015, 13:12**	**13**
FH02	**0.0091**	**11**	**01Jul2015, 12:06**	**1**
FH03	0.0081	14	01Jul2015, 12:06	1
H12	0.1520	46	01Jul2015, 13:06	16

INTERIM 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
OS01	1.5594	488	01Jul2015, 12:36	87
DB16	0.0578	66	01Jul2015, 12:12	7
B10	1.6172	516	01Jul2015, 12:30	93
B10-B11	1.6172	514	01Jul2015, 12:30	93
DB17	0.0048	13	01Jul2015, 12:00	1
B11	1.6220	516	01Jul2015, 12:30	94
B11-POND C	1.6220	515	01Jul2015, 12:36	94
DB21	0.0519	34	01Jul2015, 12:06	3
DB18	0.0346	47	01Jul2015, 12:06	4
DB19	0.0281	25	01Jul2015, 12:12	3
DB20	0.0147	18	01Jul2015, 12:06	2
POND C	1.7513	492	01Jul2015, 12:48	101
POND C-B16	1.7513	488	01Jul2015, 12:48	101
DB25	0.0211	32	01Jul2015, 12:06	3
B16	1.7724	492	01Jul2015, 12:48	103
B16-B17	1.7724	492	01Jul2015, 12:54	103
DB26	0.0682	101	01Jul2015, 12:12	10
B17	1.8406	511	01Jul2015, 12:54	113
B17-B26	1.8406	508	01Jul2015, 12:54	112
OS03	0.1984	83	01Jul2015, 12:18	11
DB01	0.0719	61	01Jul2015, 12:06	6
B01	0.2703	132	01Jul2015, 12:12	17
B01-B02	0.2703	129	01Jul2015, 12:18	17
OS02	0.2219	96	01Jul2015, 12:24	14
DB02	0.0516	48	01Jul2015, 12:06	4
B02	0.5438	249	01Jul2015, 12:18	34
B02-POND A	0.5438	248	01Jul2015, 12:18	34
OS04	0.1359	51	01Jul2015, 12:18	7
DB03	0.0703	45	01Jul2015, 12:12	5
B03	0.2062	92	01Jul2015, 12:12	11
B03-B04	0.2062	92	01Jul2015, 12:18	11
DB04	0.0422	28	01Jul2015, 12:12	3
DB05	0.0384	25	01Jul2015, 12:12	3
B04	0.2868	139	01Jul2015, 12:18	17
B04-B05	0.2868	139	01Jul2015, 12:18	17
DB06	0.0219	33	01Jul2015, 12:06	3
B05	0.3087	162	01Jul2015, 12:18	20
B05-POND A	0.3087	162	01Jul2015, 12:18	20
DB07	0.0254	24	01Jul2015, 12:06	2
DB08	0.0297	21	01Jul2015, 12:06	2
POND A	0.9076	365	01Jul2015, 12:30	53
POND A-B06	0.9076	364	01Jul2015, 12:30	53
DB09	0.0189	24	01Jul2015, 12:06	2
B06	0.9265	370	01Jul2015, 12:30	55

INTERIM 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
B06-B07	0.9265	363	01Jul2015, 12:36	54
DB11	0.0969	80	01Jul2015, 12:12	9
DB10	0.0364	40	01Jul2015, 12:06	4
B07	1.0598	421	01Jul2015, 12:30	67
B07-B09	1.0598	416	01Jul2015, 12:36	66
DB12	0.0453	59	01Jul2015, 12:06	5
B09	1.1051	431	01Jul2015, 12:36	71
B09-POND B	1.1051	430	01Jul2015, 12:36	71
DB15	0.1234	70	01Jul2015, 12:18	9
DB13	0.0703	63	01Jul2015, 12:12	7
DB14	0.0556	66	01Jul2015, 12:06	6
POND B	1.3544	486	01Jul2015, 12:42	92
POND B-B12	1.3544	483	01Jul2015, 12:42	92
DB22	0.0516	66	01Jul2015, 12:06	6
DB23	0.0172	36	01Jul2015, 12:06	3
B12	1.4232	505	01Jul2015, 12:42	101
B12-B14	1.4232	502	01Jul2015, 12:42	101
DB24	0.0531	69	01Jul2015, 12:06	6
B14	1.4763	517	01Jul2015, 12:42	107
B14-B15	1.4763	514	01Jul2015, 12:42	107
DB28	**0.0741**	**57**	**01Jul2015, 12:12**	**6**
B15	1.5504	534	01Jul2015, 12:42	113
B15-B18	1.5504	532	01Jul2015, 12:48	112
DB29	0.1697	100	01Jul2015, 12:18	13
DB27	0.0508	49	01Jul2015, 12:18	6
B26	3.6115	1090	01Jul2015, 12:54	243
B26-27	3.6115	1090	01Jul2015, 12:54	242
FB-02	**0.0500**	**50**	**01Jul2015, 12:18**	**6**
FB-01	**0.0373**	**26**	**01Jul2015, 12:06**	**3**
FB01-27a	0.0373	25	01Jul2015, 12:12	3
B19	0.0873	74	01Jul2015, 12:12	8
B19-27	0.0873	72	01Jul2015, 12:12	8
FB-03	**0.0078**	**16**	**01Jul2015, 12:00**	**1**
27	3.7066	1114	01Jul2015, 12:54	251
27-32	3.7066	1113	01Jul2015, 12:54	251
WH-24	0.1325	156	01Jul2015, 12:12	15
WH-26	0.0839	31	01Jul2015, 12:24	5
WH-27	0.0217	14	01Jul2015, 12:06	1
30	0.2381	191	01Jul2015, 12:12	21
30-31	0.2381	190	01Jul2015, 12:12	21
WH-28	0.0398	44	01Jul2015, 12:12	5
31	0.2779	234	01Jul2015, 12:12	25
31-32	0.2779	227	01Jul2015, 12:12	25
WH-29	0.0495	56	01Jul2015, 12:12	6
WH-31	0.0406	56	01Jul2015, 12:06	5
WH-30	0.0159	18	01Jul2015, 12:00	1
32	4.0905	1201	01Jul2015, 12:54	288
WH32	0.0458	33	01Jul2015, 12:00	3

INTERIM 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
BEN POND	4.1363	943	01Jul2015, 13:18	273
WH-33	0.0064	9	01Jul2015, 12:06	1
33	4.1427	944	01Jul2015, 13:18	274
33-37	4.1427	942	01Jul2015, 13:24	272
WH35	0.1550	112	01Jul2015, 12:12	11
WH34	0.0450	48	01Jul2015, 12:06	5
B34-36	0.0450	46	01Jul2015, 12:12	5
36	0.2000	159	01Jul2015, 12:12	16
36-37	0.2000	156	01Jul2015, 12:12	16
WH36	0.0750	39	01Jul2015, 12:12	4
37	4.4177	971	01Jul2015, 13:24	292
FG08A	0.0750	91	01Jul2015, 12:06	8
FG08A-G05	0.0750	86	01Jul2015, 12:12	8
FG08B	0.0630	67	01Jul2015, 12:12	7
FG08B-G05	0.0630	66	01Jul2015, 12:12	7
FG11	0.0625	59	01Jul2015, 12:18	7
FG09	0.0484	36	01Jul2015, 12:12	4
FG09-G05	0.0484	36	01Jul2015, 12:18	4
HG10	0.0467	20	01Jul2015, 12:18	3
G05	0.2956	261	01Jul2015, 12:12	29
FG13	0.0661	31	01Jul2015, 12:24	5
FG12	0.0328	40	01Jul2015, 12:12	4
POND D	0.3945	70	01Jul2015, 13:12	29
POND D-G17	0.3945	69	01Jul2015, 13:12	29
HG15	0.0297	9	01Jul2015, 12:36	2
FG15a	0.0156	22	01Jul2015, 12:06	2
G17	0.4398	77	01Jul2015, 13:06	32
G17-G18	0.4398	77	01Jul2015, 13:06	32
FG16	0.0773	98	01Jul2015, 12:06	9
G18	0.5171	126	01Jul2015, 12:06	40
G18-POND E	0.5171	121	01Jul2015, 12:06	40
HG30	0.1844	33	01Jul2015, 13:12	9
FG30-PONDHS	0.1844	33	01Jul2015, 13:18	9
FG31	0.0922	92	01Jul2015, 12:18	11
POND HS	0.2766	62	01Jul2015, 12:48	20
FG17a	0.0694	84	01Jul2015, 12:06	8
FG17a-POND E	0.0694	82	01Jul2015, 12:06	8
FG18	**0.0644**	**37**	**01Jul2015, 12:24**	**5**
FG18-POND E	0.0644	37	01Jul2015, 12:24	5
FG19	0.0527	58	01Jul2015, 12:06	6
FG17c	0.0313	22	01Jul2015, 12:06	2
FG17b	0.0214	31	01Jul2015, 12:06	3
POND E	**1.0329**	**115**	**01Jul2015, 14:30**	**60**
H08	**1.0329**	**104**	**01Jul2015, 14:30**	**53**
H09	**0.0000**	**11**	**01Jul2015, 14:30**	**8**
FH01	**0.1348**	**86**	**01Jul2015, 12:24**	**12**
POND H	**0.1348**	**23**	**01Jul2015, 13:30**	**10**
FH02	**0.0091**	**8**	**01Jul2015, 12:06**	**1**
FH03	0.0081	11	01Jul2015, 12:06	1
H12	0.1520	25	01Jul2015, 13:24	11

INTERIM 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
OS01	1.5594	303	01Jul2015, 12:36	59
DB16	0.0578	50	01Jul2015, 12:12	5
B10	1.6172	322	01Jul2015, 12:36	64
B10-B11	1.6172	322	01Jul2015, 12:36	64
DB17	0.0048	11	01Jul2015, 12:00	1
B11	1.6220	323	01Jul2015, 12:36	64
B11-POND C	1.6220	321	01Jul2015, 12:36	64
DB21	0.0519	22	01Jul2015, 12:06	2
DB18	0.0346	36	01Jul2015, 12:06	3
DB19	0.0281	18	01Jul2015, 12:12	2
DB20	0.0147	13	01Jul2015, 12:06	1
POND C	1.7513	302	01Jul2015, 12:54	69
POND C-B16	1.7513	300	01Jul2015, 12:54	68
DB25	0.0211	25	01Jul2015, 12:06	2
B16	1.7724	303	01Jul2015, 12:54	70
B16-B17	1.7724	302	01Jul2015, 13:00	70
DB26	0.0682	80	01Jul2015, 12:12	8
B17	1.8406	315	01Jul2015, 13:00	78
B17-B26	1.8406	315	01Jul2015, 13:00	77
OS03	0.1984	51	01Jul2015, 12:18	8
DB01	0.0719	42	01Jul2015, 12:06	4
B01	0.2703	85	01Jul2015, 12:12	12
B01-B02	0.2703	83	01Jul2015, 12:18	12
OS02	0.2219	62	01Jul2015, 12:24	9
DB02	0.0516	34	01Jul2015, 12:06	3
B02	0.5438	161	01Jul2015, 12:18	24
B02-POND A	0.5438	160	01Jul2015, 12:18	24
OS04	0.1359	30	01Jul2015, 12:18	5
DB03	0.0703	30	01Jul2015, 12:12	3
B03	0.2062	57	01Jul2015, 12:12	8
B03-B04	0.2062	56	01Jul2015, 12:18	8
DB04	0.0422	19	01Jul2015, 12:12	2
DB05	0.0384	17	01Jul2015, 12:12	2
B04	0.2868	88	01Jul2015, 12:18	12
B04-B05	0.2868	88	01Jul2015, 12:18	12
DB06	0.0219	26	01Jul2015, 12:06	2
B05	0.3087	107	01Jul2015, 12:18	14
B05-POND A	0.3087	106	01Jul2015, 12:18	14
DB07	0.0254	17	01Jul2015, 12:06	2
DB08	0.0297	13	01Jul2015, 12:06	1
POND A	0.9076	210	01Jul2015, 12:36	35
POND A-B06	0.9076	209	01Jul2015, 12:36	35
DB09	0.0189	18	01Jul2015, 12:06	1
B06	0.9265	213	01Jul2015, 12:36	37

INTERIM 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
B06-B07	0.9265	211	01Jul2015, 12:42	36
DB11	0.0969	57	01Jul2015, 12:12	6
DB10	0.0364	29	01Jul2015, 12:06	3
B07	1.0598	241	01Jul2015, 12:36	45
B07-B09	1.0598	241	01Jul2015, 12:42	45
DB12	0.0453	45	01Jul2015, 12:06	4
B09	1.1051	250	01Jul2015, 12:42	49
B09-POND B	1.1051	249	01Jul2015, 12:42	49
DB15	0.1234	47	01Jul2015, 12:18	6
DB13	0.0703	46	01Jul2015, 12:12	5
DB14	0.0556	50	01Jul2015, 12:06	5
POND B	1.3544	282	01Jul2015, 12:48	64
POND B-B12	1.3544	279	01Jul2015, 12:54	64
DB22	0.0516	50	01Jul2015, 12:06	5
DB23	0.0172	29	01Jul2015, 12:06	3
B12	1.4232	294	01Jul2015, 12:48	71
B12-B14	1.4232	293	01Jul2015, 12:54	71
DB24	0.0531	52	01Jul2015, 12:06	5
B14	1.4763	301	01Jul2015, 12:54	76
B14-B15	1.4763	301	01Jul2015, 12:54	75
DB28	**0.0741**	**39**	**01Jul2015, 12:12**	**4**
B15	1.5504	312	01Jul2015, 12:54	80
B15-B18	1.5504	311	01Jul2015, 13:00	79
DB29	0.1697	67	01Jul2015, 12:18	9
DB27	0.0508	37	01Jul2015, 12:18	4
B26	3.6115	661	01Jul2015, 13:00	170
B26-27	3.6115	658	01Jul2015, 13:00	169
FB-02	**0.0500**	**38**	**01Jul2015, 12:18**	**4**
FB-01	**0.0373**	**17**	**01Jul2015, 12:12**	**2**
FB01-27a	0.0373	17	01Jul2015, 12:12	2
B19	0.0873	53	01Jul2015, 12:12	6
B19-27	0.0873	52	01Jul2015, 12:18	6
FB-03	**0.0078**	**13**	**01Jul2015, 12:00**	**1**
27	3.7066	674	01Jul2015, 13:00	176
27-32	3.7066	671	01Jul2015, 13:00	176
WH-24	0.1325	119	01Jul2015, 12:12	12
WH-26	0.0839	19	01Jul2015, 12:24	3
WH-27	0.0217	9	01Jul2015, 12:06	1
30	0.2381	139	01Jul2015, 12:12	16
30-31	0.2381	138	01Jul2015, 12:12	16
WH-28	0.0398	33	01Jul2015, 12:12	3
31	0.2779	171	01Jul2015, 12:12	19
31-32	0.2779	165	01Jul2015, 12:12	19
WH-29	0.0495	42	01Jul2015, 12:12	4
WH-31	0.0406	43	01Jul2015, 12:06	4
WH-30	0.0159	12	01Jul2015, 12:00	1
32	4.0905	730	01Jul2015, 13:00	203
WH32	0.0458	20	01Jul2015, 12:00	2

INTERIM 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
BEN POND	4.1363	566	01Jul2015, 13:30	192
WH-33	0.0064	7	01Jul2015, 12:06	1
33	4.1427	567	01Jul2015, 13:30	193
33-37	4.1427	566	01Jul2015, 13:36	191
WH35	0.1550	77	01Jul2015, 12:12	8
WH34	0.0450	35	01Jul2015, 12:06	3
B34-36	0.0450	34	01Jul2015, 12:12	3
36	0.2000	111	01Jul2015, 12:12	11
36-37	0.2000	108	01Jul2015, 12:12	11
WH36	0.0750	25	01Jul2015, 12:12	3
37	4.4177	585	01Jul2015, 13:36	205
FG08A	0.0750	67	01Jul2015, 12:06	6
FG08A-G05	0.0750	65	01Jul2015, 12:12	6
FG08B	0.0630	50	01Jul2015, 12:12	5
FG08B-G05	0.0630	49	01Jul2015, 12:12	5
FG11	0.0625	45	01Jul2015, 12:18	5
FG09	0.0484	26	01Jul2015, 12:18	3
FG09-G05	0.0484	25	01Jul2015, 12:18	3
HG10	0.0467	12	01Jul2015, 12:18	2
G05	0.2956	190	01Jul2015, 12:12	21
FG13	0.0661	20	01Jul2015, 12:24	3
FG12	0.0328	31	01Jul2015, 12:12	3
POND D	0.3945	34	01Jul2015, 13:42	20
POND D-G17	0.3945	34	01Jul2015, 13:42	20
HG15	0.0297	5	01Jul2015, 12:36	1
FG15a	0.0156	17	01Jul2015, 12:06	1
G17	0.4398	38	01Jul2015, 13:30	23
G17-G18	0.4398	38	01Jul2015, 13:36	22
FG16	0.0773	74	01Jul2015, 12:06	7
G18	0.5171	93	01Jul2015, 12:06	29
G18-POND E	0.5171	89	01Jul2015, 12:06	29
HG30	0.1844	20	01Jul2015, 13:12	6
FG30-PONDHS	0.1844	20	01Jul2015, 13:24	6
FG31	0.0922	71	01Jul2015, 12:18	9
POND HS	0.2766	40	01Jul2015, 13:00	14
FG17a	0.0694	63	01Jul2015, 12:06	6
FG17a-POND E	0.0694	61	01Jul2015, 12:06	6
FG18	**0.0644**	**26**	**01Jul2015, 12:24**	**4**
FG18-POND E	0.0644	26	01Jul2015, 12:24	4
FG19	0.0527	43	01Jul2015, 12:12	4
FG17c	0.0313	15	01Jul2015, 12:06	1
FG17b	0.0214	24	01Jul2015, 12:06	2
POND E	**1.0329**	**58**	**01Jul2015, 15:24**	**39**
H08	**1.0329**	**51**	**01Jul2015, 15:24**	**32**
H09	**0.0000**	**7**	**01Jul2015, 15:24**	**6**
FH01	**0.1348**	**61**	**01Jul2015, 12:24**	**9**
POND H	**0.1348**	**13**	**01Jul2015, 13:48**	**7**
FH02	**0.0091**	**6**	**01Jul2015, 12:12**	**1**
FH03	0.0081	8	01Jul2015, 12:06	1
H12	0.1520	15	01Jul2015, 12:06	8

INTERIM 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
OS01	1.5594	130	01Jul2015, 12:36	31
DB16	0.0578	32	01Jul2015, 12:12	3
B10	1.6172	143	01Jul2015, 12:36	34
B10-B11	1.6172	142	01Jul2015, 12:36	34
DB17	0.0048	8	01Jul2015, 12:00	1
B11	1.6220	143	01Jul2015, 12:36	35
B11-POND C	1.6220	143	01Jul2015, 12:42	35
DB21	0.0519	11	01Jul2015, 12:12	1
DB18	0.0346	24	01Jul2015, 12:06	2
DB19	0.0281	11	01Jul2015, 12:12	1
DB20	0.0147	9	01Jul2015, 12:12	1
POND C	1.7513	126	01Jul2015, 13:06	36
POND C-B16	1.7513	126	01Jul2015, 13:06	36
DB25	0.0211	16	01Jul2015, 12:06	1
B16	1.7724	128	01Jul2015, 13:06	37
B16-B17	1.7724	127	01Jul2015, 13:12	37
DB26	0.0682	57	01Jul2015, 12:12	6
B17	1.8406	135	01Jul2015, 13:12	43
B17-B26	1.8406	135	01Jul2015, 13:12	42
OS03	0.1984	22	01Jul2015, 12:24	4
DB01	0.0719	23	01Jul2015, 12:12	2
B01	0.2703	39	01Jul2015, 12:12	7
B01-B02	0.2703	39	01Jul2015, 12:18	7
OS02	0.2219	28	01Jul2015, 12:24	5
DB02	0.0516	18	01Jul2015, 12:06	2
B02	0.5438	75	01Jul2015, 12:18	13
B02-POND A	0.5438	74	01Jul2015, 12:18	13
OS04	0.1359	11	01Jul2015, 12:24	2
DB03	0.0703	14	01Jul2015, 12:12	2
B03	0.2062	24	01Jul2015, 12:18	4
B03-B04	0.2062	24	01Jul2015, 12:24	4
DB04	0.0422	10	01Jul2015, 12:12	1
DB05	0.0384	9	01Jul2015, 12:18	1
B04	0.2868	39	01Jul2015, 12:18	6
B04-B05	0.2868	38	01Jul2015, 12:18	6
DB06	0.0219	18	01Jul2015, 12:06	2
B05	0.3087	51	01Jul2015, 12:18	8
B05-POND A	0.3087	50	01Jul2015, 12:18	8
DB07	0.0254	9	01Jul2015, 12:06	1
DB08	0.0297	6	01Jul2015, 12:06	1
POND A	0.9076	69	01Jul2015, 12:54	18
POND A-B06	0.9076	68	01Jul2015, 12:54	18
DB09	0.0189	11	01Jul2015, 12:06	1
B06	0.9265	70	01Jul2015, 12:54	18

INTERIM 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
B06-B07	0.9265	69	01Jul2015, 13:00	18
DB11	0.0969	32	01Jul2015, 12:12	4
DB10	0.0364	18	01Jul2015, 12:06	2
B07	1.0598	81	01Jul2015, 13:00	24
B07-B09	1.0598	81	01Jul2015, 13:06	24
DB12	0.0453	29	01Jul2015, 12:06	3
B09	1.1051	85	01Jul2015, 13:06	26
B09-POND B	1.1051	85	01Jul2015, 13:06	26
DB15	0.1234	23	01Jul2015, 12:18	3
DB13	0.0703	27	01Jul2015, 12:12	3
DB14	0.0556	32	01Jul2015, 12:06	3
POND B	1.3544	119	01Jul2015, 12:24	35
POND B-B12	1.3544	119	01Jul2015, 12:30	35
DB22	0.0516	33	01Jul2015, 12:06	3
DB23	0.0172	22	01Jul2015, 12:06	2
B12	1.4232	140	01Jul2015, 12:24	40
B12-B14	1.4232	139	01Jul2015, 12:30	40
DB24	0.0531	33	01Jul2015, 12:06	3
B14	1.4763	152	01Jul2015, 12:24	43
B14-B15	1.4763	151	01Jul2015, 12:30	43
DB28	**0.0741**	**21**	**01Jul2015, 12:12**	**3**
B15	1.5504	167	01Jul2015, 12:24	46
B15-B18	1.5504	165	01Jul2015, 12:36	45
DB29	0.1697	35	01Jul2015, 12:24	5
DB27	0.0508	24	01Jul2015, 12:18	3
B26	3.6115	271	01Jul2015, 12:24	95
B26-27	3.6115	265	01Jul2015, 12:30	95
FB-02	**0.0500**	**24**	**01Jul2015, 12:18**	**3**
FB-01	**0.0373**	**9**	**01Jul2015, 12:12**	**1**
FB01-27a	0.0373	8	01Jul2015, 12:12	1
B19	0.0873	32	01Jul2015, 12:18	4
B19-27	0.0873	32	01Jul2015, 12:18	4
FB-03	**0.0078**	**10**	**01Jul2015, 12:06**	**1**
27	3.7066	295	01Jul2015, 12:24	99
27-32	3.7066	293	01Jul2015, 12:30	99
WH-24	0.1325	77	01Jul2015, 12:12	8
WH-26	0.0839	8	01Jul2015, 12:24	2
WH-27	0.0217	4	01Jul2015, 12:06	0
30	0.2381	85	01Jul2015, 12:12	10
30-31	0.2381	84	01Jul2015, 12:12	10
WH-28	0.0398	21	01Jul2015, 12:12	2
31	0.2779	105	01Jul2015, 12:12	12
31-32	0.2779	100	01Jul2015, 12:18	12
WH-29	0.0495	27	01Jul2015, 12:12	3
WH-31	0.0406	28	01Jul2015, 12:06	3
WH-30	0.0159	6	01Jul2015, 12:00	1
32	4.0905	401	01Jul2015, 12:24	117
WH32	0.0458	8	01Jul2015, 12:00	1

INTERIM 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
BEN POND	4.1363	232	01Jul2015, 14:00	109
WH-33	0.0064	4	01Jul2015, 12:06	0
33	4.1427	232	01Jul2015, 14:00	110
33-37	4.1427	232	01Jul2015, 14:06	109
WH35	0.1550	40	01Jul2015, 12:12	5
WH34	0.0450	21	01Jul2015, 12:06	2
B34-36	0.0450	21	01Jul2015, 12:12	2
36	0.2000	61	01Jul2015, 12:12	7
36-37	0.2000	59	01Jul2015, 12:18	7
WH36	0.0750	10	01Jul2015, 12:12	2
37	4.4177	241	01Jul2015, 14:06	117
FG08A	0.0750	42	01Jul2015, 12:06	4
FG08A-G05	0.0750	41	01Jul2015, 12:12	4
FG08B	0.0630	31	01Jul2015, 12:12	3
FG08B-G05	0.0630	30	01Jul2015, 12:12	3
FG11	0.0625	29	01Jul2015, 12:18	4
FG09	0.0484	15	01Jul2015, 12:18	2
FG09-G05	0.0484	14	01Jul2015, 12:18	2
HG10	0.0467	5	01Jul2015, 12:24	1
G05	0.2956	115	01Jul2015, 12:12	13
FG13	0.0661	10	01Jul2015, 12:30	2
FG12	0.0328	20	01Jul2015, 12:12	2
POND D	0.3945	16	01Jul2015, 14:24	12
POND D-G17	0.3945	16	01Jul2015, 14:24	12
HG15	0.0297	2	01Jul2015, 12:42	1
FG15a	0.0156	11	01Jul2015, 12:06	1
G17	0.4398	17	01Jul2015, 13:36	14
G17-G18	0.4398	17	01Jul2015, 13:36	14
FG16	0.0773	47	01Jul2015, 12:06	4
G18	0.5171	59	01Jul2015, 12:06	18
G18-POND E	0.5171	56	01Jul2015, 12:12	18
HG30	0.1844	8	01Jul2015, 13:24	3
FG30-PONDHS	0.1844	8	01Jul2015, 13:36	3
FG31	0.0922	46	01Jul2015, 12:18	6
POND HS	0.2766	27	01Jul2015, 12:42	9
FG17a	0.0694	40	01Jul2015, 12:06	4
FG17a-POND E	0.0694	39	01Jul2015, 12:12	4
FG18	**0.0644**	**14**	**01Jul2015, 12:30**	**2**
FG18-POND E	0.0644	14	01Jul2015, 12:30	2
FG19	0.0527	27	01Jul2015, 12:12	3
FG17c	0.0313	7	01Jul2015, 12:06	1
FG17b	0.0214	16	01Jul2015, 12:06	1
POND E	**1.0329**	**24**	**01Jul2015, 18:48**	**19**
H08	**1.0329**	**18**	**01Jul2015, 18:48**	**15**
H09	**0.0000**	**5**	**01Jul2015, 18:48**	**5**
FH01	**0.1348**	**35**	**01Jul2015, 12:30**	**6**
POND H	**0.1348**	**5**	**01Jul2015, 14:42**	**4**
FH02	**0.0091**	**3**	**01Jul2015, 12:12**	**0**
FH03	0.0081	6	01Jul2015, 12:06	1
H12	0.1520	9	01Jul2015, 12:12	4

INTERIM 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
OS01	1.5594	53	01Jul2015, 12:48	17
DB16	0.0578	22	01Jul2015, 12:12	2
B10	1.6172	60	01Jul2015, 12:42	19
B10-B11	1.6172	60	01Jul2015, 12:42	19
DB17	0.0048	7	01Jul2015, 12:00	1
B11	1.6220	61	01Jul2015, 12:42	19
B11-POND C	1.6220	61	01Jul2015, 12:48	19
DB21	0.0519	5	01Jul2015, 12:12	1
DB18	0.0346	16	01Jul2015, 12:06	2
DB19	0.0281	6	01Jul2015, 12:12	1
DB20	0.0147	6	01Jul2015, 12:12	1
POND C	1.7513	50	01Jul2015, 13:30	19
POND C-B16	1.7513	50	01Jul2015, 13:30	19
DB25	0.0211	11	01Jul2015, 12:06	1
B16	1.7724	51	01Jul2015, 13:30	20
B16-B17	1.7724	51	01Jul2015, 13:36	20
DB26	0.0682	42	01Jul2015, 12:12	4
B17	1.8406	55	01Jul2015, 13:36	24
B17-B26	1.8406	55	01Jul2015, 13:42	24
OS03	0.1984	9	01Jul2015, 12:30	2
DB01	0.0719	12	01Jul2015, 12:12	2
B01	0.2703	18	01Jul2015, 12:12	4
B01-B02	0.2703	18	01Jul2015, 12:18	4
OS02	0.2219	12	01Jul2015, 12:30	3
DB02	0.0516	10	01Jul2015, 12:06	1
B02	0.5438	34	01Jul2015, 12:18	8
B02-POND A	0.5438	34	01Jul2015, 12:24	8
OS04	0.1359	4	01Jul2015, 12:30	1
DB03	0.0703	7	01Jul2015, 12:12	1
B03	0.2062	9	01Jul2015, 12:18	2
B03-B04	0.2062	9	01Jul2015, 12:30	2
DB04	0.0422	5	01Jul2015, 12:12	1
DB05	0.0384	4	01Jul2015, 12:18	1
B04	0.2868	17	01Jul2015, 12:24	4
B04-B05	0.2868	16	01Jul2015, 12:24	4
DB06	0.0219	13	01Jul2015, 12:06	1
B05	0.3087	24	01Jul2015, 12:18	5
B05-POND A	0.3087	23	01Jul2015, 12:24	5
DB07	0.0254	5	01Jul2015, 12:06	1
DB08	0.0297	3	01Jul2015, 12:12	0
POND A	0.9076	18	01Jul2015, 14:06	8
POND A-B06	0.9076	18	01Jul2015, 14:06	8
DB09	0.0189	7	01Jul2015, 12:06	1
B06	0.9265	18	01Jul2015, 14:06	9

INTERIM 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
B06-B07	0.9265	18	01Jul2015, 14:18	9
DB11	0.0969	18	01Jul2015, 12:12	2
DB10	0.0364	11	01Jul2015, 12:06	1
B07	1.0598	32	01Jul2015, 12:18	12
B07-B09	1.0598	31	01Jul2015, 12:24	12
DB12	0.0453	19	01Jul2015, 12:06	2
B09	1.1051	43	01Jul2015, 12:18	14
B09-POND B	1.1051	42	01Jul2015, 12:18	14
DB15	0.1234	11	01Jul2015, 12:24	2
DB13	0.0703	16	01Jul2015, 12:12	2
DB14	0.0556	21	01Jul2015, 12:12	2
POND B	1.3544	67	01Jul2015, 12:30	20
POND B-B12	1.3544	66	01Jul2015, 12:30	20
DB22	0.0516	22	01Jul2015, 12:12	2
DB23	0.0172	17	01Jul2015, 12:06	1
B12	1.4232	80	01Jul2015, 12:30	23
B12-B14	1.4232	80	01Jul2015, 12:30	23
DB24	0.0531	22	01Jul2015, 12:06	2
B14	1.4763	89	01Jul2015, 12:24	25
B14-B15	1.4763	89	01Jul2015, 12:24	25
DB28	**0.0741**	**11**	**01Jul2015, 12:12**	**2**
B15	1.5504	98	01Jul2015, 12:24	27
B15-B18	1.5504	98	01Jul2015, 12:30	26
DB29	0.1697	18	01Jul2015, 12:24	3
DB27	0.0508	16	01Jul2015, 12:18	2
B26	3.6115	168	01Jul2015, 12:24	55
B26-27	3.6115	165	01Jul2015, 12:30	55
FB-02	**0.0500**	**16**	**01Jul2015, 12:18**	**2**
FB-01	**0.0373**	**4**	**01Jul2015, 12:12**	**1**
FB01-27a	0.0373	4	01Jul2015, 12:12	1
B19	0.0873	20	01Jul2015, 12:18	3
B19-27	0.0873	20	01Jul2015, 12:18	3
FB-03	**0.0078**	**8**	**01Jul2015, 12:06**	**1**
27	3.7066	183	01Jul2015, 12:30	58
27-32	3.7066	180	01Jul2015, 12:30	58
WH-24	0.1325	52	01Jul2015, 12:12	5
WH-26	0.0839	3	01Jul2015, 12:30	1
WH-27	0.0217	1	01Jul2015, 12:06	0
30	0.2381	55	01Jul2015, 12:12	6
30-31	0.2381	53	01Jul2015, 12:12	6
WH-28	0.0398	14	01Jul2015, 12:12	2
31	0.2779	68	01Jul2015, 12:12	8
31-32	0.2779	65	01Jul2015, 12:18	8
WH-29	0.0495	18	01Jul2015, 12:12	2
WH-31	0.0406	19	01Jul2015, 12:06	2
WH-30	0.0159	3	01Jul2015, 12:00	0
32	4.0905	243	01Jul2015, 12:30	69
WH32	0.0458	3	01Jul2015, 12:06	1

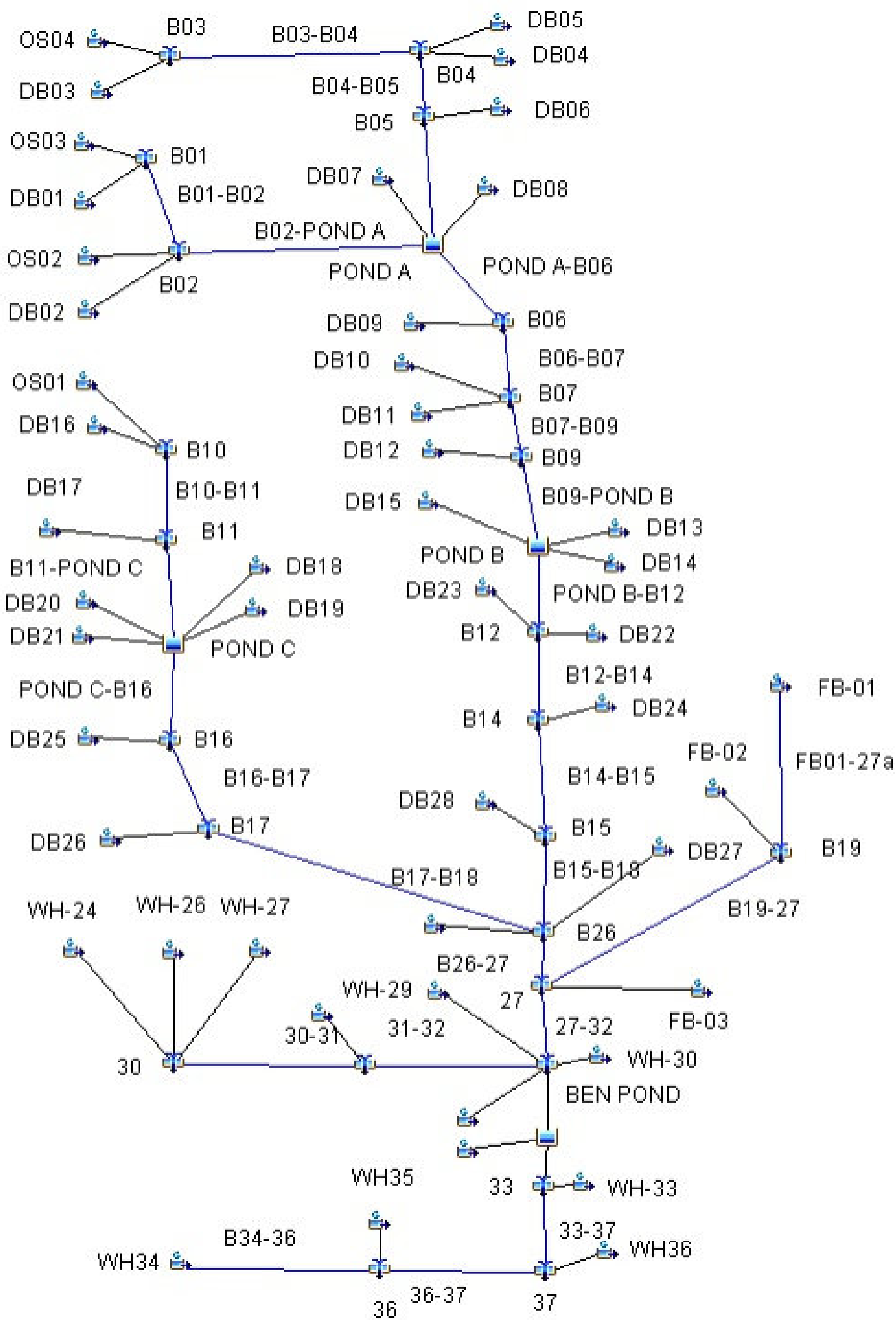
INTERIM 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
BEN POND	4.1363	93	01Jul2015, 14:36	64
WH-33	0.0064	3	01Jul2015, 12:06	0
33	4.1427	94	01Jul2015, 14:30	64
33-37	4.1427	94	01Jul2015, 14:42	63
WH35	0.1550	21	01Jul2015, 12:12	3
WH34	0.0450	13	01Jul2015, 12:12	1
B34-36	0.0450	13	01Jul2015, 12:12	1
36	0.2000	34	01Jul2015, 12:12	4
36-37	0.2000	33	01Jul2015, 12:18	4
WH36	0.0750	4	01Jul2015, 12:18	1
37	4.4177	99	01Jul2015, 14:24	68
FG08A	0.0750	27	01Jul2015, 12:06	3
FG08A-G05	0.0750	27	01Jul2015, 12:12	3
FG08B	0.0630	20	01Jul2015, 12:12	2
FG08B-G05	0.0630	20	01Jul2015, 12:18	2
FG11	0.0625	19	01Jul2015, 12:18	2
FG09	0.0484	8	01Jul2015, 12:18	1
FG09-G05	0.0484	8	01Jul2015, 12:18	1
HG10	0.0467	2	01Jul2015, 12:24	1
G05	0.2956	72	01Jul2015, 12:18	9
FG13	0.0661	5	01Jul2015, 12:30	1
FG12	0.0328	14	01Jul2015, 12:12	1
POND D	0.3945	9	01Jul2015, 14:48	7
POND D-G17	0.3945	9	01Jul2015, 14:54	7
HG15	0.0297	1	01Jul2015, 12:48	0
FG15a	0.0156	7	01Jul2015, 12:06	1
G17	0.4398	10	01Jul2015, 14:30	8
G17-G18	0.4398	10	01Jul2015, 14:36	8
FG16	0.0773	31	01Jul2015, 12:06	3
G18	0.5171	39	01Jul2015, 12:06	11
G18-POND E	0.5171	37	01Jul2015, 12:12	11
HG30	0.1844	3	01Jul2015, 13:36	2
FG30-PONDHS	0.1844	3	01Jul2015, 13:48	2
FG31	0.0922	31	01Jul2015, 12:18	4
POND HS	0.2766	19	01Jul2015, 12:42	5
FG17a	0.0694	26	01Jul2015, 12:12	3
FG17a-POND E	0.0694	26	01Jul2015, 12:12	3
FG18	**0.0644**	**8**	**01Jul2015, 12:30**	**2**
FG18-POND E	0.0644	8	01Jul2015, 12:30	2
FG19	0.0527	18	01Jul2015, 12:12	2
FG17c	0.0313	3	01Jul2015, 12:12	0
FG17b	0.0214	11	01Jul2015, 12:06	1
POND E	**1.0329**	**12**	**01Jul2015, 21:42**	**10**
H08	**1.0329**	**8**	**01Jul2015, 21:42**	**7**
H09	**0.0000**	**3**	**01Jul2015, 21:42**	**3**
FH01	**0.1348**	**21**	**01Jul2015, 12:30**	**4**
POND H	**0.1348**	**2**	**01Jul2015, 18:06**	**2**
FH02	**0.0091**	**2**	**01Jul2015, 12:12**	**0**
FH03	0.0081	4	01Jul2015, 12:06	0
H12	0.1520	6	01Jul2015, 12:12	2

INTERIM 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
OS01	1.5594	11	01Jul2015, 13:24	6
DB16	0.0578	12	01Jul2015, 12:12	1
B10	1.6172	13	01Jul2015, 13:18	7
B10-B11	1.6172	13	01Jul2015, 13:18	7
DB17	0.0048	5	01Jul2015, 12:00	0
B11	1.6220	15	01Jul2015, 12:12	8
B11-POND C	1.6220	14	01Jul2015, 12:24	8
DB21	0.0519	1	01Jul2015, 12:18	0
DB18	0.0346	9	01Jul2015, 12:06	1
DB19	0.0281	3	01Jul2015, 12:12	0
DB20	0.0147	3	01Jul2015, 12:12	0
POND C	1.7513	11	01Jul2015, 15:00	6
POND C-B16	1.7513	11	01Jul2015, 15:06	6
DB25	0.0211	7	01Jul2015, 12:06	1
B16	1.7724	11	01Jul2015, 15:06	7
B16-B17	1.7724	11	01Jul2015, 15:18	7
DB26	0.0682	27	01Jul2015, 12:12	3
B17	1.8406	31	01Jul2015, 12:12	9
B17-B26	1.8406	30	01Jul2015, 12:18	9
OS03	0.1984	2	01Jul2015, 13:06	1
DB01	0.0719	4	01Jul2015, 12:12	1
B01	0.2703	5	01Jul2015, 12:12	2
B01-B02	0.2703	5	01Jul2015, 12:18	2
OS02	0.2219	3	01Jul2015, 12:48	1
DB02	0.0516	3	01Jul2015, 12:06	1
B02	0.5438	8	01Jul2015, 12:18	3
B02-POND A	0.5438	8	01Jul2015, 12:24	3
OS04	0.1359	1	01Jul2015, 13:30	0
DB03	0.0703	1	01Jul2015, 12:18	0
B03	0.2062	2	01Jul2015, 12:54	1
B03-B04	0.2062	2	01Jul2015, 13:12	1
DB04	0.0422	1	01Jul2015, 12:18	0
DB05	0.0384	1	01Jul2015, 12:24	0
B04	0.2868	3	01Jul2015, 12:36	1
B04-B05	0.2868	3	01Jul2015, 12:36	1
DB06	0.0219	8	01Jul2015, 12:06	1
B05	0.3087	10	01Jul2015, 12:12	2
B05-POND A	0.3087	9	01Jul2015, 12:12	2
DB07	0.0254	2	01Jul2015, 12:12	0
DB08	0.0297	0	01Jul2015, 12:18	0
POND A	0.9076	2	02Jul2015, 00:00	1
POND A-B06	0.9076	2	02Jul2015, 00:00	1
DB09	0.0189	3	01Jul2015, 12:06	0
B06	0.9265	3	01Jul2015, 12:06	1

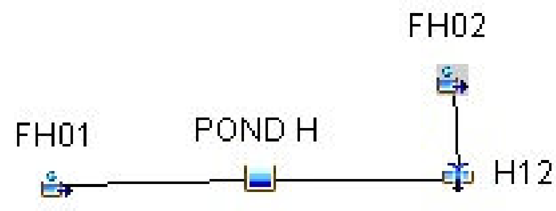
INTERIM 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
B06-B07	0.9265	3	01Jul2015, 12:24	1
DB11	0.0969	8	01Jul2015, 12:18	1
DB10	0.0364	5	01Jul2015, 12:12	1
B07	1.0598	13	01Jul2015, 12:24	3
B07-B09	1.0598	13	01Jul2015, 12:30	3
DB12	0.0453	10	01Jul2015, 12:06	1
B09	1.1051	18	01Jul2015, 12:18	4
B09-POND B	1.1051	18	01Jul2015, 12:24	4
DB15	0.1234	3	01Jul2015, 12:30	1
DB13	0.0703	7	01Jul2015, 12:18	1
DB14	0.0556	11	01Jul2015, 12:12	1
POND B	1.3544	29	01Jul2015, 12:36	7
POND B-B12	1.3544	28	01Jul2015, 12:36	7
DB22	0.0516	13	01Jul2015, 12:12	1
DB23	0.0172	12	01Jul2015, 12:06	1
B12	1.4232	36	01Jul2015, 12:30	10
B12-B14	1.4232	36	01Jul2015, 12:30	10
DB24	0.0531	12	01Jul2015, 12:06	1
B14	1.4763	44	01Jul2015, 12:18	11
B14-B15	1.4763	43	01Jul2015, 12:18	11
DB28	**0.0741**	**4**	**01Jul2015, 12:18**	**1**
B15	1.5504	47	01Jul2015, 12:18	12
B15-B18	1.5504	47	01Jul2015, 12:30	11
DB29	0.1697	6	01Jul2015, 12:30	2
DB27	0.0508	8	01Jul2015, 12:18	1
B26	3.6115	82	01Jul2015, 12:30	23
B26-27	3.6115	81	01Jul2015, 12:36	23
FB-02	**0.0500**	**9**	**01Jul2015, 12:18**	**1**
FB-01	**0.0373**	**1**	**01Jul2015, 12:18**	**0**
FB01-27a	0.0373	1	01Jul2015, 12:18	0
B19	0.0873	10	01Jul2015, 12:18	2
B19-27	0.0873	10	01Jul2015, 12:18	2
FB-03	**0.0078**	**5**	**01Jul2015, 12:06**	**0**
27	3.7066	89	01Jul2015, 12:36	25
27-32	3.7066	88	01Jul2015, 12:36	24
WH-24	0.1325	29	01Jul2015, 12:12	3
WH-26	0.0839	1	01Jul2015, 13:18	0
WH-27	0.0217	0	01Jul2015, 12:48	0
30	0.2381	29	01Jul2015, 12:12	4
30-31	0.2381	28	01Jul2015, 12:12	4
WH-28	0.0398	8	01Jul2015, 12:12	1
31	0.2779	35	01Jul2015, 12:12	4
31-32	0.2779	35	01Jul2015, 12:18	4
WH-29	0.0495	10	01Jul2015, 12:12	1
WH-31	0.0406	11	01Jul2015, 12:06	1
WH-30	0.0159	1	01Jul2015, 12:06	0
32	4.0905	116	01Jul2015, 12:36	31
WH32	0.0458	0	01Jul2015, 12:48	0

INTERIM 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC.
BEN POND	4.1363	44	01Jul2015, 13:48	27
WH-33	0.0064	2	01Jul2015, 12:06	0
33	4.1427	44	01Jul2015, 13:48	27
33-37	4.1427	44	01Jul2015, 14:00	26
WH35	0.1550	6	01Jul2015, 12:18	1
WH34	0.0450	6	01Jul2015, 12:12	1
B34-36	0.0450	6	01Jul2015, 12:12	1
36	0.2000	12	01Jul2015, 12:12	2
36-37	0.2000	12	01Jul2015, 12:24	2
WH36	0.0750	1	01Jul2015, 12:54	0
37	4.4177	47	01Jul2015, 14:00	29
FG08A	0.0750	14	01Jul2015, 12:12	2
FG08A-G05	0.0750	14	01Jul2015, 12:12	2
FG08B	0.0630	10	01Jul2015, 12:12	1
FG08B-G05	0.0630	10	01Jul2015, 12:18	1
FG11	0.0625	10	01Jul2015, 12:18	1
FG09	0.0484	3	01Jul2015, 12:18	1
FG09-G05	0.0484	3	01Jul2015, 12:24	1
HG10	0.0467	0	01Jul2015, 13:00	0
G05	0.2956	36	01Jul2015, 12:18	5
FG13	0.0661	1	01Jul2015, 12:42	1
FG12	0.0328	8	01Jul2015, 12:12	1
POND D	0.3945	3	01Jul2015, 20:06	3
POND D-G17	0.3945	3	01Jul2015, 20:06	3
HG15	0.0297	0	01Jul2015, 13:36	0
FG15a	0.0156	4	01Jul2015, 12:06	0
G17	0.4398	4	01Jul2015, 12:06	4
G17-G18	0.4398	4	01Jul2015, 12:12	3
FG16	0.0773	16	01Jul2015, 12:06	2
G18	0.5171	20	01Jul2015, 12:06	5
G18-POND E	0.5171	20	01Jul2015, 12:12	5
HG30	0.1844	1	01Jul2015, 14:48	1
FG30-PONDHS	0.1844	1	01Jul2015, 15:12	0
FG31	0.0922	18	01Jul2015, 12:18	2
POND HS	0.2766	10	01Jul2015, 12:42	3
FG17a	0.0694	14	01Jul2015, 12:12	2
FG17a-POND E	0.0694	14	01Jul2015, 12:12	2
FG18	**0.0644**	**3**	**01Jul2015, 12:36**	**1**
FG18-POND E	0.0644	3	01Jul2015, 12:36	1
FG19	0.0527	9	01Jul2015, 12:12	1
FG17c	0.0313	1	01Jul2015, 12:18	0
FG17b	0.0214	6	01Jul2015, 12:06	1
POND E	**1.0329**	**6**	**02Jul2015, 00:00**	**5**
H08	**1.0329**	**3**	**02Jul2015, 00:00**	**3**
H09	**0.0000**	**2**	**02Jul2015, 00:00**	**2**
FH01	**0.1348**	**9**	**01Jul2015, 12:30**	**2**
POND H	**0.1348**	**1**	**01Jul2015, 18:30**	**1**
FH02	**0.0091**	**1**	**01Jul2015, 12:12**	**0**
FH03	0.0081	2	01Jul2015, 12:12	0
H12	0.1520	3	01Jul2015, 12:12	2

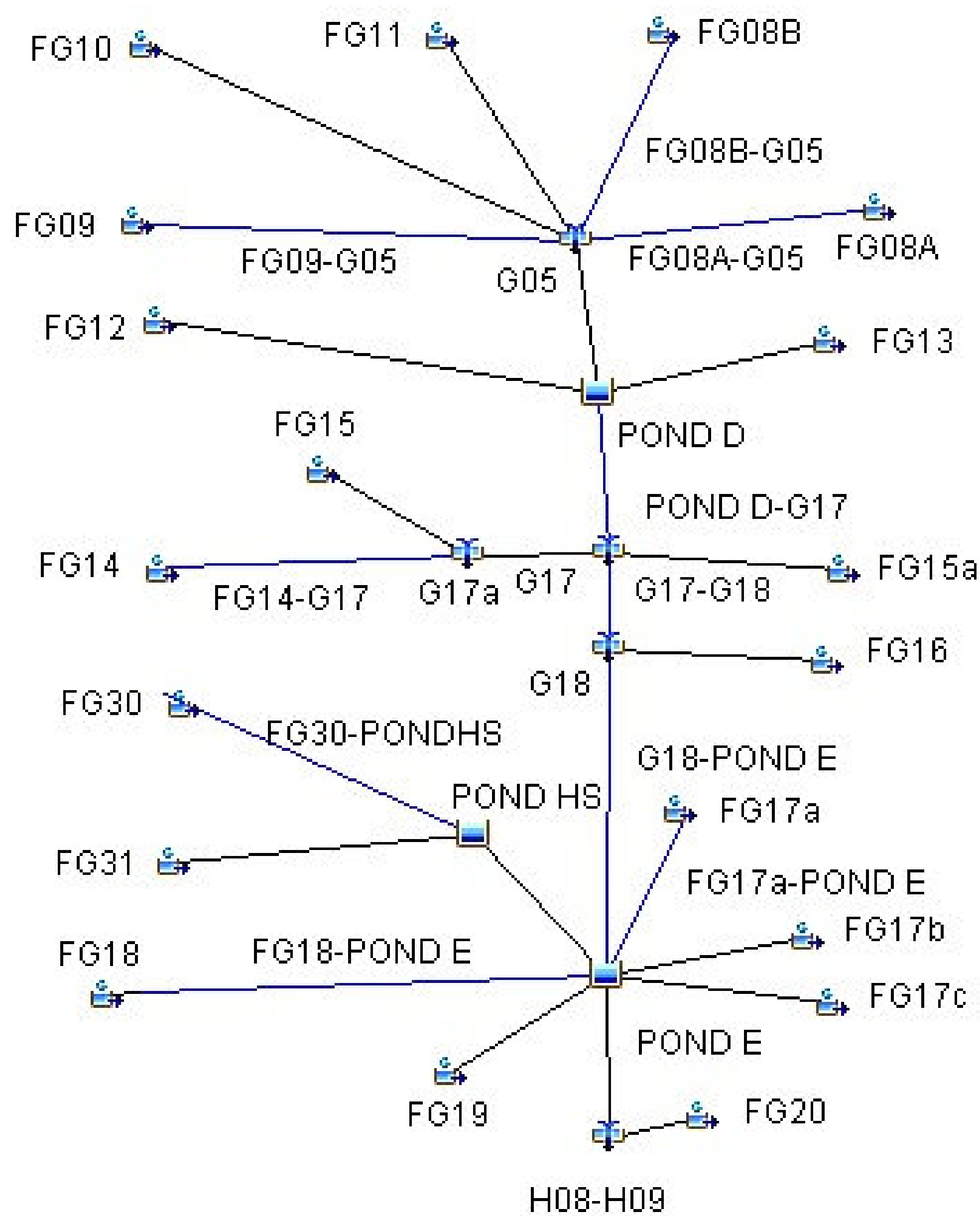
BENNETT INTERIM CONDITIONS



HAEGLER INTERIM CONDITIONS



GIECK INTERIM CONDITIONS



FUTURE 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
OS01	1.5594	726	01Jul2015, 12:30	122
DB16	0.0578	85	01Jul2015, 12:12	8
B10	1.6172	765	01Jul2015, 12:30	130
B10-B11	1.6172	763	01Jul2015, 12:30	130
DB17	0.0048	15	01Jul2015, 12:00	1
B11	1.6220	765	01Jul2015, 12:30	131
B11-POND C	1.6220	759	01Jul2015, 12:36	131
DB21	0.0519	49	01Jul2015, 12:06	5
DB18	0.0346	60	01Jul2015, 12:06	5
DB19	0.0281	34	01Jul2015, 12:12	3
DB20	0.0147	23	01Jul2015, 12:06	2
POND C	1.7513	727	01Jul2015, 12:48	141
POND C-B16	1.7513	725	01Jul2015, 12:48	141
DB25	0.0211	40	01Jul2015, 12:06	3
B16	1.7724	730	01Jul2015, 12:48	144
B16-B17	1.7724	724	01Jul2015, 12:48	144
DB26	0.0682	124	01Jul2015, 12:06	12
B17	1.8406	751	01Jul2015, 12:48	156
B17-B26	1.8406	748	01Jul2015, 12:54	155
OS03	0.1984	123	01Jul2015, 12:18	16
DB01	0.0719	83	01Jul2015, 12:06	8
B01	0.2703	190	01Jul2015, 12:12	23
B01-B02	0.2703	184	01Jul2015, 12:18	23
OS02	0.2219	140	01Jul2015, 12:18	19
DB02	0.0516	66	01Jul2015, 12:06	5
B02	0.5438	358	01Jul2015, 12:12	48
B02-POND A	0.5438	357	01Jul2015, 12:18	47
OS04	0.1359	77	01Jul2015, 12:18	10
DB03	0.0703	63	01Jul2015, 12:12	6
B03	0.2062	137	01Jul2015, 12:12	16
B03-B04	0.2062	135	01Jul2015, 12:18	16
DB04	0.0422	40	01Jul2015, 12:12	4
DB05	0.0384	35	01Jul2015, 12:12	4
B04	0.2868	201	01Jul2015, 12:18	24
B04-B05	0.2868	201	01Jul2015, 12:18	24
DB06	0.0219	41	01Jul2015, 12:06	4
B05	0.3087	232	01Jul2015, 12:12	28
B05-POND A	0.3087	230	01Jul2015, 12:18	28
DB07	0.0254	33	01Jul2015, 12:06	3
DB08	0.0297	30	01Jul2015, 12:06	3
POND A	0.9076	523	01Jul2015, 12:24	75
POND A-B06	0.9076	523	01Jul2015, 12:30	75
DB09	0.0189	31	01Jul2015, 12:06	2
B06	0.9265	530	01Jul2015, 12:30	77
B06-B07	0.9265	530	01Jul2015, 12:30	77
DB11	0.0969	107	01Jul2015, 12:12	11
DB10	0.0364	52	01Jul2015, 12:06	5
B07	1.0598	609	01Jul2015, 12:30	92
B07-B09	1.0598	608	01Jul2015, 12:30	92

FUTURE 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
DB12	0.0453	76	01Jul2015, 12:06	7
B09	1.1051	632	01Jul2015, 12:30	99
B09-POND B	1.1051	631	01Jul2015, 12:30	99
DB15	0.1234	98	01Jul2015, 12:18	12
DB13	0.0703	84	01Jul2015, 12:12	9
DB14	0.0556	86	01Jul2015, 12:06	8
POND B	1.3544	669	01Jul2015, 12:42	126
POND B-B12	1.3544	669	01Jul2015, 12:42	126
DB22	0.0516	84	01Jul2015, 12:06	8
DB23	0.0172	42	01Jul2015, 12:06	4
B12	1.4232	698	01Jul2015, 12:36	138
B12-B14	1.4232	697	01Jul2015, 12:42	137
DB24	0.0531	88	01Jul2015, 12:06	8
B14	1.4763	719	01Jul2015, 12:36	145
B14-B15	1.4763	716	01Jul2015, 12:36	145
DB28	**0.0741**	**79**	**01Jul2015, 12:12**	**8**
B15	1.5504	750	01Jul2015, 12:36	153
B15-B26	1.5504	748	01Jul2015, 12:42	152
DB29	0.1697	138	01Jul2015, 12:18	17
DB27	0.0508	63	01Jul2015, 12:12	7
B26	3.6115	1570	01Jul2015, 12:48	332
B26-27	3.6115	1567	01Jul2015, 12:48	331
FB-02	**0.0500**	**63**	**01Jul2015, 12:18**	**7**
FB-01	**0.0373**	**58**	**01Jul2015, 12:06**	**5**
FB01-B19	0.0373	56	01Jul2015, 12:06	5
B19	0.0873	117	01Jul2015, 12:12	13
B19-27	0.0873	115	01Jul2015, 12:12	13
FB-03	**0.0078**	**19**	**01Jul2015, 12:00**	**2**
27	3.7066	1607	01Jul2015, 12:48	345
27-32	3.7066	1605	01Jul2015, 12:48	345
WH-24	0.1325	199	01Jul2015, 12:12	20
WH-26	0.0839	46	01Jul2015, 12:18	6
WH-27	0.0217	20	01Jul2015, 12:06	2
30	0.2381	252	01Jul2015, 12:12	28
30-31	0.2381	251	01Jul2015, 12:12	28
WH-28	0.0398	57	01Jul2015, 12:12	6
31	0.2779	308	01Jul2015, 12:12	33
31-32	0.2779	301	01Jul2015, 12:12	33
WH-29	0.0495	71	01Jul2015, 12:12	7
WH-31	0.0406	71	01Jul2015, 12:06	6
WH-30	0.0159	24	01Jul2015, 12:00	2
32	4.0905	1744	01Jul2015, 12:42	393
WH32	0.0458	49	01Jul2015, 12:00	4
BEN POND	4.1363	1365	01Jul2015, 13:18	376
WH-33	0.0064	11	01Jul2015, 12:06	1
33	4.1427	1366	01Jul2015, 13:18	377
33-37	4.1427	1363	01Jul2015, 13:18	375
WH35	0.1550	155	01Jul2015, 12:12	15
WH34	0.0450	63	01Jul2015, 12:06	6

FUTURE 100-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{100} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{100} (AC. FT.)
B34-36	0.0450	61	01Jul2015, 12:12	6
36	0.2000	216	01Jul2015, 12:12	21
36-37	0.2000	214	01Jul2015, 12:12	21
WH36	0.0750	58	01Jul2015, 12:12	6
37	4.4177	1404	01Jul2015, 13:18	402
FG08A	0.0750	117	01Jul2015, 12:06	10
FG08A-G05	0.0750	111	01Jul2015, 12:12	10
FG10	0.0669	46	01Jul2015, 12:36	8
FG08B	0.0630	87	01Jul2015, 12:12	9
FG08B-G05	0.0630	85	01Jul2015, 12:12	9
FG11	0.0625	76	01Jul2015, 12:18	9
FG09	0.0484	49	01Jul2015, 12:12	6
FG09-G05	0.0484	48	01Jul2015, 12:18	6
G05	0.3158	342	01Jul2015, 12:12	41
FG13	0.0661	44	01Jul2015, 12:24	6
FG14	0.0331	42	01Jul2015, 12:12	5
FG12	0.0328	51	01Jul2015, 12:12	5
POND D	0.4478	131	01Jul2015, 13:06	47
POND D-G17	0.4478	131	01Jul2015, 13:06	47
FG15	0.1017	95	01Jul2015, 12:18	12
G17a	0.1017	95	01Jul2015, 12:18	12
FG15a	0.0156	28	01Jul2015, 12:06	2
G17	0.5651	184	01Jul2015, 12:30	61
G17-G18	0.5651	184	01Jul2015, 12:36	61
FG16	0.0773	127	01Jul2015, 12:06	11
G18	0.6424	235	01Jul2015, 12:12	72
G18-POND E	0.6424	233	01Jul2015, 12:12	72
FG31	0.0922	118	01Jul2015, 12:18	14
FG30	0.0400	76	01Jul2015, 12:06	6
FG30-PONDHS	0.0400	74	01Jul2015, 12:12	6
POND HS	0.1322	156	01Jul2015, 12:24	20
FG17a	0.0694	102	01Jul2015, 12:06	9
FG17a-POND E	0.0694	100	01Jul2015, 12:06	9
FG18	**0.0644**	**57**	**01Jul2015, 12:24**	**8**
FG18-POND E	0.0644	57	01Jul2015, 12:24	8
FG19	0.0527	85	01Jul2015, 12:06	8
FG17c	0.0313	32	01Jul2015, 12:06	3
FG17b	0.0214	40	01Jul2015, 12:06	3
POND E	**1.0138**	**240**	**01Jul2015, 13:30**	**99**
H08	**1.0138**	**204**	**01Jul2015, 13:30**	**87**
H09	**0.0000**	**36**	**01Jul2015, 13:30**	**13**
FH01	**0.1344**	**152**	**01Jul2015, 12:18**	**18**
POND H	**0.1344**	**57**	**01Jul2015, 12:54**	**15**
FH02	**0.0091**	**11**	**01Jul2015, 12:06**	**1**
FH03	0.0081	14	01Jul2015, 12:06	1
H12	0.1516	62	01Jul2015, 12:48	17

FUTURE 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
OS01	1.5594	488	01Jul2015, 12:36	87
DB16	0.0578	66	01Jul2015, 12:12	7
B10	1.6172	516	01Jul2015, 12:30	93
B10-B11	1.6172	514	01Jul2015, 12:30	93
DB17	0.0048	13	01Jul2015, 12:00	1
B11	1.6220	516	01Jul2015, 12:30	94
B11-POND C	1.6220	515	01Jul2015, 12:36	94
DB21	0.0519	34	01Jul2015, 12:06	3
DB18	0.0346	47	01Jul2015, 12:06	4
DB19	0.0281	25	01Jul2015, 12:12	3
DB20	0.0147	18	01Jul2015, 12:06	2
POND C	1.7513	492	01Jul2015, 12:48	101
POND C-B16	1.7513	488	01Jul2015, 12:48	101
DB25	0.0211	32	01Jul2015, 12:06	3
B16	1.7724	492	01Jul2015, 12:48	103
B16-B17	1.7724	492	01Jul2015, 12:54	103
DB26	0.0682	101	01Jul2015, 12:12	10
B17	1.8406	511	01Jul2015, 12:54	113
B17-B26	1.8406	508	01Jul2015, 12:54	112
OS03	0.1984	83	01Jul2015, 12:18	11
DB01	0.0719	61	01Jul2015, 12:06	6
B01	0.2703	132	01Jul2015, 12:12	17
B01-B02	0.2703	129	01Jul2015, 12:18	17
OS02	0.2219	96	01Jul2015, 12:24	14
DB02	0.0516	48	01Jul2015, 12:06	4
B02	0.5438	249	01Jul2015, 12:18	34
B02-POND A	0.5438	248	01Jul2015, 12:18	34
OS04	0.1359	51	01Jul2015, 12:18	7
DB03	0.0703	45	01Jul2015, 12:12	5
B03	0.2062	92	01Jul2015, 12:12	11
B03-B04	0.2062	92	01Jul2015, 12:18	11
DB04	0.0422	28	01Jul2015, 12:12	3
DB05	0.0384	25	01Jul2015, 12:12	3
B04	0.2868	139	01Jul2015, 12:18	17
B04-B05	0.2868	139	01Jul2015, 12:18	17
DB06	0.0219	33	01Jul2015, 12:06	3
B05	0.3087	162	01Jul2015, 12:18	20
B05-POND A	0.3087	162	01Jul2015, 12:18	20
DB07	0.0254	24	01Jul2015, 12:06	2
DB08	0.0297	21	01Jul2015, 12:06	2
POND A	0.9076	365	01Jul2015, 12:30	53
POND A-B06	0.9076	364	01Jul2015, 12:30	53
DB09	0.0189	24	01Jul2015, 12:06	2
B06	0.9265	370	01Jul2015, 12:30	55
B06-B07	0.9265	363	01Jul2015, 12:36	54
DB11	0.0969	80	01Jul2015, 12:12	9
DB10	0.0364	40	01Jul2015, 12:06	4
B07	1.0598	421	01Jul2015, 12:30	67
B07-B09	1.0598	416	01Jul2015, 12:36	66

FUTURE 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
DB12	0.0453	59	01Jul2015, 12:06	5
B09	1.1051	431	01Jul2015, 12:36	71
B09-POND B	1.1051	430	01Jul2015, 12:36	71
DB15	0.1234	70	01Jul2015, 12:18	9
DB13	0.0703	63	01Jul2015, 12:12	7
DB14	0.0556	66	01Jul2015, 12:06	6
POND B	1.3544	486	01Jul2015, 12:42	92
POND B-B12	1.3544	483	01Jul2015, 12:42	92
DB22	0.0516	66	01Jul2015, 12:06	6
DB23	0.0172	36	01Jul2015, 12:06	3
B12	1.4232	505	01Jul2015, 12:42	101
B12-B14	1.4232	502	01Jul2015, 12:42	101
DB24	0.0531	69	01Jul2015, 12:06	6
B14	1.4763	517	01Jul2015, 12:42	107
B14-B15	1.4763	514	01Jul2015, 12:42	107
DB28	**0.0741**	**59**	**01Jul2015, 12:12**	**6**
B15	1.5504	534	01Jul2015, 12:42	113
B15-B26	1.5504	532	01Jul2015, 12:48	112
DB29	0.1697	100	01Jul2015, 12:18	13
DB27	0.0508	49	01Jul2015, 12:18	6
B26	3.6115	1090	01Jul2015, 12:54	243
B26-27	3.6115	1090	01Jul2015, 12:54	242
FB-02	**0.0500**	**50**	**01Jul2015, 12:18**	**6**
FB-01	**0.0373**	**45**	**01Jul2015, 12:06**	**4**
FB01-B19	0.0373	43	01Jul2015, 12:06	4
B19	0.0873	91	01Jul2015, 12:12	10
B19-27	0.0873	90	01Jul2015, 12:12	10
FB-03	**0.0078**	**16**	**01Jul2015, 12:00**	**1**
27	3.7066	1118	01Jul2015, 12:54	253
27-32	3.7066	1116	01Jul2015, 12:54	253
WH-24	0.1325	156	01Jul2015, 12:12	15
WH-26	0.0839	31	01Jul2015, 12:24	5
WH-27	0.0217	14	01Jul2015, 12:06	1
30	0.2381	191	01Jul2015, 12:12	21
30-31	0.2381	190	01Jul2015, 12:12	21
WH-28	0.0398	44	01Jul2015, 12:12	5
31	0.2779	234	01Jul2015, 12:12	25
31-32	0.2779	227	01Jul2015, 12:12	25
WH-29	0.0495	56	01Jul2015, 12:12	6
WH-31	0.0406	56	01Jul2015, 12:06	5
WH-30	0.0159	18	01Jul2015, 12:00	1
32	4.0905	1205	01Jul2015, 12:54	290
WH32	0.0458	33	01Jul2015, 12:00	3
BEN POND	4.1363	950	01Jul2015, 13:18	275
WH-33	0.0064	9	01Jul2015, 12:06	1
33	4.1427	951	01Jul2015, 13:18	276
33-37	4.1427	948	01Jul2015, 13:24	274
WH35	0.1550	112	01Jul2015, 12:12	11
WH34	0.0450	48	01Jul2015, 12:06	5

FUTURE 50-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{50} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{50} (AC. FT.)
B34-36	0.0450	46	01Jul2015, 12:12	5
36	0.2000	159	01Jul2015, 12:12	16
36-37	0.2000	156	01Jul2015, 12:12	16
WH36	0.0750	39	01Jul2015, 12:12	4
37	4.4177	977	01Jul2015, 13:24	294
FG08A	0.0750	91	01Jul2015, 12:06	8
FG08A-G05	0.0750	86	01Jul2015, 12:12	8
FG10	0.0669	34	01Jul2015, 12:36	6
FG08B	0.0630	67	01Jul2015, 12:12	7
FG08B-G05	0.0630	66	01Jul2015, 12:12	7
FG11	0.0625	59	01Jul2015, 12:18	7
FG09	0.0484	36	01Jul2015, 12:12	4
FG09-G05	0.0484	36	01Jul2015, 12:18	4
G05	0.3158	262	01Jul2015, 12:12	32
FG13	0.0661	31	01Jul2015, 12:24	5
FG14	0.0331	32	01Jul2015, 12:12	4
FG12	0.0328	40	01Jul2015, 12:12	4
POND D	0.4478	89	01Jul2015, 13:12	35
POND D-G17	0.4478	89	01Jul2015, 13:12	35
FG15	0.1017	71	01Jul2015, 12:18	9
G17a	0.1017	71	01Jul2015, 12:18	9
FG15a	0.0156	22	01Jul2015, 12:06	2
G17	0.5651	121	01Jul2015, 12:42	46
G17-G18	0.5651	121	01Jul2015, 12:42	46
FG16	0.0773	98	01Jul2015, 12:06	9
G18	0.6424	177	01Jul2015, 12:12	54
G18-POND E	0.6424	176	01Jul2015, 12:12	54
FG31	0.0922	92	01Jul2015, 12:18	11
FG30	0.0400	60	01Jul2015, 12:06	5
FG30-PONDHS	0.0400	59	01Jul2015, 12:12	5
POND HS	0.1322	107	01Jul2015, 12:30	16
FG17a	0.0694	79	01Jul2015, 12:06	7
FG17a-POND E	0.0694	77	01Jul2015, 12:06	7
FG18	**0.0644**	**43**	**01Jul2015, 12:24**	**6**
FG18-POND E	0.0644	42	01Jul2015, 12:24	6
FG19	0.0527	67	01Jul2015, 12:06	6
FG17c	0.0313	22	01Jul2015, 12:06	2
FG17b	0.0214	31	01Jul2015, 12:06	3
POND E	**1.0138**	**151**	**01Jul2015, 14:00**	**71**
H08	**1.0138**	**136**	**01Jul2015, 14:00**	**62**
H09	**0.0000**	**16**	**01Jul2015, 14:00**	**9**
FH01	**0.1344**	**117**	**01Jul2015, 12:18**	**14**
POND H	**0.1344**	**32**	**01Jul2015, 13:06**	**11**
FH02	**0.0091**	**8**	**01Jul2015, 12:06**	**1**
FH03	0.0081	11	01Jul2015, 12:06	1
H12	0.1516	35	01Jul2015, 13:00	13

FUTURE 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
OS01	1.5594	303	01Jul2015, 12:36	58.6
DB16	0.0578	50	01Jul2015, 12:12	5.0
B10	1.6172	322	01Jul2015, 12:36	63.6
B10-B11	1.6172	322	01Jul2015, 12:36	63.5
DB17	0.0048	11	01Jul2015, 12:00	0.9
B11	1.6220	323	01Jul2015, 12:36	64.4
B11-POND C	1.6220	321	01Jul2015, 12:36	64.0
DB21	0.0519	22	01Jul2015, 12:06	2.3
DB18	0.0346	36	01Jul2015, 12:06	3.2
DB19	0.0281	18	01Jul2015, 12:12	1.9
DB20	0.0147	13	01Jul2015, 12:06	1.3
POND C	1.7513	302	01Jul2015, 12:54	68.6
POND C-B16	1.7513	300	01Jul2015, 12:54	68.4
DB25	0.0211	25	01Jul2015, 12:06	2.0
B16	1.7724	303	01Jul2015, 12:54	70.3
B16-B17	1.7724	302	01Jul2015, 13:00	69.9
DB26	0.0682	80	01Jul2015, 12:12	8.0
B17	1.8406	315	01Jul2015, 13:00	77.8
B17-B26	1.8406	315	01Jul2015, 13:00	77.4
OS03	0.1984	51	01Jul2015, 12:18	7.7
DB01	0.0719	42	01Jul2015, 12:06	4.1
B01	0.2703	85	01Jul2015, 12:12	11.7
B01-B02	0.2703	83	01Jul2015, 12:18	11.7
OS02	0.2219	62	01Jul2015, 12:24	9.3
DB02	0.0516	34	01Jul2015, 12:06	2.8
B02	0.5438	161	01Jul2015, 12:18	23.8
B02-POND A	0.5438	160	01Jul2015, 12:18	23.8
OS04	0.1359	30	01Jul2015, 12:18	4.5
DB03	0.0703	30	01Jul2015, 12:12	3.2
B03	0.2062	57	01Jul2015, 12:12	7.7
B03-B04	0.2062	56	01Jul2015, 12:18	7.7
DB04	0.0422	19	01Jul2015, 12:12	2.0
DB05	0.0384	17	01Jul2015, 12:12	2.0
B04	0.2868	88	01Jul2015, 12:18	11.7
B04-B05	0.2868	88	01Jul2015, 12:18	11.7
DB06	0.0219	26	01Jul2015, 12:06	2.4
B05	0.3087	107	01Jul2015, 12:18	14.1
B05-POND A	0.3087	106	01Jul2015, 12:18	14.0
DB07	0.0254	17	01Jul2015, 12:06	1.5
DB08	0.0297	13	01Jul2015, 12:06	1.3
POND A	0.9076	210	01Jul2015, 12:36	35.3
POND A-B06	0.9076	209	01Jul2015, 12:36	35.3
DB09	0.0189	18	01Jul2015, 12:06	1.4
B06	0.9265	213	01Jul2015, 12:36	36.7
B06-B07	0.9265	211	01Jul2015, 12:42	36.4
DB11	0.0969	57	01Jul2015, 12:12	6.2
DB10	0.0364	29	01Jul2015, 12:06	2.7
B07	1.0598	241	01Jul2015, 12:36	45.2
B07-B09	1.0598	241	01Jul2015, 12:42	44.9

FUTURE 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
DB12	0.0453	45	01Jul2015, 12:06	3.9
B09	1.1051	250	01Jul2015, 12:42	48.8
B09-POND B	1.1051	249	01Jul2015, 12:42	48.8
DB15	0.1234	47	01Jul2015, 12:18	6.0
DB13	0.0703	46	01Jul2015, 12:12	4.9
DB14	0.0556	50	01Jul2015, 12:06	4.7
POND B	1.3544	282	01Jul2015, 12:48	64.0
POND B-B12	1.3544	279	01Jul2015, 12:54	63.9
DB22	0.0516	50	01Jul2015, 12:06	4.8
DB23	0.0172	29	01Jul2015, 12:06	2.5
B12	1.4232	294	01Jul2015, 12:48	71.1
B12-B14	1.4232	293	01Jul2015, 12:54	70.9
DB24	0.0531	52	01Jul2015, 12:06	4.6
B14	1.4763	301	01Jul2015, 12:54	75.5
B14-B15	1.4763	301	01Jul2015, 12:54	75.4
DB28	**0.0741**	**41**	**01Jul2015, 12:12**	**4.4**
B15	1.5504	312	01Jul2015, 12:54	79.8
B15-B26	1.5504	311	01Jul2015, 13:00	78.9
DB29	0.1697	67	01Jul2015, 12:18	9.0
DB27	0.0508	37	01Jul2015, 12:18	4.3
B26	3.6115	661	01Jul2015, 13:00	169.7
B26-27	3.6115	658	01Jul2015, 13:00	169.0
FB-02	**0.0500**	**38**	**01Jul2015, 12:18**	**4.4**
FB-01	**0.0373**	**34**	**01Jul2015, 12:06**	**3.1**
FB01-B19	0.0373	32	01Jul2015, 12:12	3.1
B19	0.0873	69	01Jul2015, 12:12	7.5
B19-27	0.0873	67	01Jul2015, 12:12	7.5
FB-03	**0.0078**	**13**	**01Jul2015, 12:00**	**1.1**
27	3.7066	677	01Jul2015, 13:00	177.6
27-32	3.7066	674	01Jul2015, 13:00	177.2
WH-24	0.1325	119	01Jul2015, 12:12	11.7
WH-26	0.0839	19	01Jul2015, 12:24	3.0
WH-27	0.0217	9	01Jul2015, 12:06	0.8
30	0.2381	139	01Jul2015, 12:12	15.5
30-31	0.2381	138	01Jul2015, 12:12	15.5
WH-28	0.0398	33	01Jul2015, 12:12	3.4
31	0.2779	171	01Jul2015, 12:12	18.9
31-32	0.2779	165	01Jul2015, 12:12	18.8
WH-29	0.0495	42	01Jul2015, 12:12	4.2
WH-31	0.0406	43	01Jul2015, 12:06	3.8
WH-30	0.0159	12	01Jul2015, 12:00	0.9
32	4.0905	733	01Jul2015, 13:00	204.8
WH32	0.0458	20	01Jul2015, 12:00	1.6
BEN POND	4.1363	571	01Jul2015, 13:30	193.5
WH-33	0.0064	7	01Jul2015, 12:06	0.6
33	4.1427	572	01Jul2015, 13:30	194.1
33-37	4.1427	571	01Jul2015, 13:36	192.6
WH35	0.1550	77	01Jul2015, 12:12	8.0
WH34	0.0450	35	01Jul2015, 12:06	3.3

FUTURE 25-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{25} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{25} (AC. FT.)
B34-36	0.0450	34	01Jul2015, 12:12	3.3
36	0.2000	111	01Jul2015, 12:12	11.3
36-37	0.2000	108	01Jul2015, 12:12	11.3
WH36	0.0750	25	01Jul2015, 12:12	2.9
37	4.4177	590	01Jul2015, 13:36	206.7
FG08A	0.0750	67	01Jul2015, 12:06	6.0
FG08A-G05	0.0750	65	01Jul2015, 12:12	6.0
FG10	0.0669	24	01Jul2015, 12:36	4.4
FG08B	0.0630	50	01Jul2015, 12:12	5.0
FG08B-G05	0.0630	49	01Jul2015, 12:12	5.0
FG11	0.0625	45	01Jul2015, 12:18	5.3
FG09	0.0484	26	01Jul2015, 12:18	3.0
FG09-G05	0.0484	25	01Jul2015, 12:18	3.0
G05	0.3158	192	01Jul2015, 12:12	23.7
FG13	0.0661	20	01Jul2015, 12:24	3.2
FG14	0.0331	24	01Jul2015, 12:12	2.7
FG12	0.0328	31	01Jul2015, 12:12	3.0
POND D	0.4478	51	01Jul2015, 13:30	24.6
POND D-G17	0.4478	51	01Jul2015, 13:30	24.6
FG15	0.1017	51	01Jul2015, 12:18	6.8
G17a	0.1017	51	01Jul2015, 12:18	6.8
FG15a	0.0156	17	01Jul2015, 12:06	1.4
G17	0.5651	72	01Jul2015, 12:24	32.7
G17-G18	0.5651	72	01Jul2015, 12:24	32.6
FG16	0.0773	74	01Jul2015, 12:06	6.5
G18	0.6424	127	01Jul2015, 12:12	39.1
G18-POND E	0.6424	126	01Jul2015, 12:12	39.1
FG31	0.0922	71	01Jul2015, 12:18	8.5
FG30	0.0400	46	01Jul2015, 12:06	3.7
FG30-PONDHS	0.0400	45	01Jul2015, 12:12	3.7
POND HS	0.1322	60	01Jul2015, 12:36	12.1
FG17a	0.0694	58	01Jul2015, 12:06	5.5
FG17a-POND E	0.0694	57	01Jul2015, 12:12	5.5
FG18	**0.0644**	**31**	**01Jul2015, 12:24**	**4.4**
FG18-POND E	0.0644	30	01Jul2015, 12:24	4.4
FG19	0.0527	51	01Jul2015, 12:06	4.9
FG17c	0.0313	15	01Jul2015, 12:06	1.4
FG17b	0.0214	24	01Jul2015, 12:06	2.0
POND E	**1.0138**	**81**	**01Jul2015, 14:36**	**47.1**
H08	**1.0138**	**73**	**01Jul2015, 14:36**	**40.3**
H09	**0.0000**	**8**	**01Jul2015, 14:36**	**6.8**
FH01	**0.1344**	**87**	**01Jul2015, 12:18**	**10.5**
POND H	**0.1344**	**18**	**01Jul2015, 13:18**	**7.9**
FH02	**0.0091**	**6**	**01Jul2015, 12:12**	**0.6**
FH03	0.0081	8	01Jul2015, 12:06	0.8
H12	0.1516	20	01Jul2015, 13:12	9.2

FUTURE 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
OS01	1.5594	130	01Jul2015, 12:36	30.9
DB16	0.0578	32	01Jul2015, 12:12	3.3
B10	1.6172	143	01Jul2015, 12:36	34.1
B10-B11	1.6172	142	01Jul2015, 12:36	34.1
DB17	0.0048	8	01Jul2015, 12:00	0.7
B11	1.6220	143	01Jul2015, 12:36	34.8
B11-POND C	1.6220	143	01Jul2015, 12:42	34.5
DB21	0.0519	11	01Jul2015, 12:12	1.3
DB18	0.0346	24	01Jul2015, 12:06	2.1
DB19	0.0281	11	01Jul2015, 12:12	1.1
DB20	0.0147	9	01Jul2015, 12:12	0.8
POND C	1.7513	126	01Jul2015, 13:06	36.3
POND C-B16	1.7513	126	01Jul2015, 13:06	36.1
DB25	0.0211	16	01Jul2015, 12:06	1.3
B16	1.7724	128	01Jul2015, 13:06	37.4
B16-B17	1.7724	127	01Jul2015, 13:12	37.1
DB26	0.0682	57	01Jul2015, 12:12	5.6
B17	1.8406	135	01Jul2015, 13:12	42.7
B17-B26	1.8406	135	01Jul2015, 13:12	42.4
OS03	0.1984	22	01Jul2015, 12:24	4.1
DB01	0.0719	23	01Jul2015, 12:12	2.4
B01	0.2703	39	01Jul2015, 12:12	6.5
B01-B02	0.2703	39	01Jul2015, 12:18	6.5
OS02	0.2219	28	01Jul2015, 12:24	5.1
DB02	0.0516	18	01Jul2015, 12:06	1.7
B02	0.5438	75	01Jul2015, 12:18	13.2
B02-POND A	0.5438	74	01Jul2015, 12:18	13.1
OS04	0.1359	11	01Jul2015, 12:24	2.3
DB03	0.0703	14	01Jul2015, 12:12	1.8
B03	0.2062	24	01Jul2015, 12:18	4.1
B03-B04	0.2062	24	01Jul2015, 12:24	4.0
DB04	0.0422	10	01Jul2015, 12:12	1.2
DB05	0.0384	9	01Jul2015, 12:18	1.1
B04	0.2868	39	01Jul2015, 12:18	6.3
B04-B05	0.2868	38	01Jul2015, 12:18	6.3
DB06	0.0219	18	01Jul2015, 12:06	1.6
B05	0.3087	51	01Jul2015, 12:18	8.0
B05-POND A	0.3087	50	01Jul2015, 12:18	8.0
DB07	0.0254	9	01Jul2015, 12:06	0.9
DB08	0.0297	6	01Jul2015, 12:06	0.7
POND A	0.9076	69	01Jul2015, 12:54	17.6
POND A-B06	0.9076	68	01Jul2015, 12:54	17.6
DB09	0.0189	11	01Jul2015, 12:06	0.9
B06	0.9265	70	01Jul2015, 12:54	18.4
B06-B07	0.9265	69	01Jul2015, 13:00	18.2
DB11	0.0969	32	01Jul2015, 12:12	3.8
DB10	0.0364	18	01Jul2015, 12:06	1.7
B07	1.0598	81	01Jul2015, 13:00	23.7
B07-B09	1.0598	81	01Jul2015, 13:06	23.5

FUTURE 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
DB12	0.0453	29	01Jul2015, 12:06	2.5
B09	1.1051	85	01Jul2015, 13:06	26.0
B09-POND B	1.1051	85	01Jul2015, 13:06	26.0
DB15	0.1234	23	01Jul2015, 12:18	3.4
DB13	0.0703	27	01Jul2015, 12:12	3.1
DB14	0.0556	32	01Jul2015, 12:06	3.1
POND B	1.3544	119	01Jul2015, 12:24	35.3
POND B-B12	1.3544	119	01Jul2015, 12:30	35.2
DB22	0.0516	33	01Jul2015, 12:06	3.2
DB23	0.0172	22	01Jul2015, 12:06	1.8
B12	1.4232	140	01Jul2015, 12:24	40.2
B12-B14	1.4232	139	01Jul2015, 12:30	40.0
DB24	0.0531	33	01Jul2015, 12:06	3.0
B14	1.4763	152	01Jul2015, 12:24	43.0
B14-B15	1.4763	151	01Jul2015, 12:30	43.0
DB28	**0.0741**	**23**	**01Jul2015, 12:12**	**2.7**
B15	1.5504	168	01Jul2015, 12:24	45.6
B15-B26	1.5504	166	01Jul2015, 12:30	44.9
DB29	0.1697	35	01Jul2015, 12:24	5.2
DB27	0.0508	24	01Jul2015, 12:18	2.8
B26	3.6115	273	01Jul2015, 12:24	95.4
B26-27	3.6115	267	01Jul2015, 12:30	94.8
FB-02	**0.0500**	**24**	**01Jul2015, 12:18**	**2.9**
FB-01	**0.0373**	**21**	**01Jul2015, 12:06**	**2.0**
FB01-B19	0.0373	21	01Jul2015, 12:12	2.0
B19	0.0873	44	01Jul2015, 12:12	5.0
B19-27	**0.0873**	43	01Jul2015, 12:12	5.0
FB-03	**0.0078**	**10**	**01Jul2015, 12:06**	**0.8**
27	3.7066	304	01Jul2015, 12:24	100.5
27-32	3.7066	300	01Jul2015, 12:30	100.2
WH-24	0.1325	77	01Jul2015, 12:12	7.7
WH-26	0.0839	8	01Jul2015, 12:24	1.5
WH-27	0.0217	4	01Jul2015, 12:06	0.4
30	0.2381	85	01Jul2015, 12:12	9.7
30-31	0.2381	84	01Jul2015, 12:12	9.7
WH-28	0.0398	21	01Jul2015, 12:12	2.2
31	0.2779	105	01Jul2015, 12:12	11.9
31-32	0.2779	100	01Jul2015, 12:18	11.9
WH-29	0.0495	27	01Jul2015, 12:12	2.7
WH-31	0.0406	28	01Jul2015, 12:06	2.5
WH-30	0.0159	6	01Jul2015, 12:00	0.5
32	4.0905	411	01Jul2015, 12:24	117.8
WH32	0.0458	8	01Jul2015, 12:00	0.9
BEN POND	4.1363	235	01Jul2015, 14:00	110.4
WH-33	0.0064	4	01Jul2015, 12:06	0.4
33	4.1427	236	01Jul2015, 14:00	110.8
33-37	4.1427	236	01Jul2015, 14:06	109.7
WH35	0.1550	40	01Jul2015, 12:12	4.6
WH34	0.0450	21	01Jul2015, 12:06	2.1

FUTURE 10-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_{10} (CFS)	TIME OF PEAK	TOTAL VOLUME Q_{10} (AC. FT.)
B34-36	0.0450	21	01Jul2015, 12:12	2.1
36	0.2000	61	01Jul2015, 12:12	6.7
36-37	0.2000	59	01Jul2015, 12:18	6.7
WH36	0.0750	10	01Jul2015, 12:12	1.5
37	4.4177	245	01Jul2015, 14:06	117.9
FG08A	0.0750	42	01Jul2015, 12:06	3.9
FG08A-G05	0.0750	41	01Jul2015, 12:12	3.9
FG10	0.0669	14	01Jul2015, 12:42	2.7
FG08B	0.0630	31	01Jul2015, 12:12	3.2
FG08B-G05	0.0630	30	01Jul2015, 12:12	3.2
FG11	0.0625	29	01Jul2015, 12:18	3.5
FG09	0.0484	15	01Jul2015, 12:18	1.8
FG09-G05	0.0484	14	01Jul2015, 12:18	1.8
G05	0.3158	117	01Jul2015, 12:18	15.1
FG13	0.0661	10	01Jul2015, 12:30	1.8
FG14	0.0331	15	01Jul2015, 12:18	1.8
FG12	0.0328	20	01Jul2015, 12:12	2.0
POND D	0.4478	19	01Jul2015, 14:30	15.0
POND D-G17	0.4478	19	01Jul2015, 14:30	15.0
FG15	0.1017	29	01Jul2015, 12:24	4.2
G17a	0.1017	29	01Jul2015, 12:24	4.2
FG15a	0.0156	11	01Jul2015, 12:06	0.9
G17	0.5651	40	01Jul2015, 12:24	20.0
G17-G18	0.5651	40	01Jul2015, 12:30	20.0
FG16	0.0773	47	01Jul2015, 12:06	4.2
G18	0.6424	77	01Jul2015, 12:12	24.2
G18-POND E	0.6424	77	01Jul2015, 12:12	24.2
FG31	0.0922	46	01Jul2015, 12:18	5.7
FG30	0.0400	31	01Jul2015, 12:06	2.5
FG30-PONDHS	0.0400	29	01Jul2015, 12:12	2.4
POND HS	0.1322	37	01Jul2015, 12:42	8.1
FG17a	0.0694	36	01Jul2015, 12:06	3.5
FG17a-POND E	0.0694	36	01Jul2015, 12:12	3.5
FG18	**0.0644**	**18**	**01Jul2015, 12:24**	**2.7**
FG18-POND E	0.0644	18	01Jul2015, 12:30	2.7
FG19	0.0527	33	01Jul2015, 12:12	3.3
FG17c	0.0313	7	01Jul2015, 12:06	0.8
FG17b	0.0214	16	01Jul2015, 12:06	1.3
POND E	**1.0138**	**30**	**01Jul2015, 17:42**	**24.6**
H08	**1.0138**	**24**	**01Jul2015, 17:42**	**19.2**
H09	**0.0000**	**6**	**01Jul2015, 17:42**	**5.4**
FH01	**0.1344**	**53**	**01Jul2015, 12:18**	**6.7**
POND H	**0.1344**	**8**	**01Jul2015, 13:54**	**4.6**
FH02	**0.0091**	**3**	**01Jul2015, 12:12**	**0.3**
FH03	0.0081	6	01Jul2015, 12:06	0.5
H12	0.1516	10	01Jul2015, 12:12	5.5

FUTURE 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
OS01	1.5594	53	01Jul2015, 12:48	16.6
DB16	0.0578	22	01Jul2015, 12:12	2.3
B10	1.6172	60	01Jul2015, 12:42	18.9
B10-B11	1.6172	60	01Jul2015, 12:42	18.9
DB17	0.0048	7	01Jul2015, 12:00	0.6
B11	1.6220	61	01Jul2015, 12:42	19.4
B11-POND C	1.6220	61	01Jul2015, 12:48	19.2
DB21	0.0519	5	01Jul2015, 12:12	0.7
DB18	0.0346	16	01Jul2015, 12:06	1.5
DB19	0.0281	6	01Jul2015, 12:12	0.7
DB20	0.0147	6	01Jul2015, 12:12	0.6
POND C	1.7513	50	01Jul2015, 13:30	19.3
POND C-B16	1.7513	50	01Jul2015, 13:30	19.2
DB25	0.0211	11	01Jul2015, 12:06	0.9
B16	1.7724	51	01Jul2015, 13:30	20.1
B16-B17	1.7724	51	01Jul2015, 13:36	19.9
DB26	0.0682	42	01Jul2015, 12:12	4.1
B17	1.8406	55	01Jul2015, 13:36	24.0
B17-B26	1.8406	55	01Jul2015, 13:42	23.8
OS03	0.1984	9	01Jul2015, 12:30	2.2
DB01	0.0719	12	01Jul2015, 12:12	1.5
B01	0.2703	18	01Jul2015, 12:12	3.7
B01-B02	0.2703	18	01Jul2015, 12:18	3.7
OS02	0.2219	12	01Jul2015, 12:30	2.8
DB02	0.0516	10	01Jul2015, 12:06	1.0
B02	0.5438	34	01Jul2015, 12:18	7.5
B02-POND A	0.5438	34	01Jul2015, 12:24	7.5
OS04	0.1359	4	01Jul2015, 12:30	1.2
DB03	0.0703	7	01Jul2015, 12:12	1.0
B03	0.2062	9	01Jul2015, 12:18	2.2
B03-B04	0.2062	9	01Jul2015, 12:30	2.2
DB04	0.0422	5	01Jul2015, 12:12	0.7
DB05	0.0384	4	01Jul2015, 12:18	0.7
B04	0.2868	17	01Jul2015, 12:24	3.5
B04-B05	0.2868	16	01Jul2015, 12:24	3.5
DB06	0.0219	13	01Jul2015, 12:06	1.2
B05	0.3087	24	01Jul2015, 12:18	4.7
B05-POND A	0.3087	23	01Jul2015, 12:24	4.7
DB07	0.0254	5	01Jul2015, 12:06	0.5
DB08	0.0297	3	01Jul2015, 12:12	0.4
POND A	0.9076	18	01Jul2015, 14:06	8.2
POND A-B06	0.9076	18	01Jul2015, 14:06	8.2
DB09	0.0189	7	01Jul2015, 12:06	0.6
B06	0.9265	18	01Jul2015, 14:06	8.8
B06-B07	0.9265	18	01Jul2015, 14:18	8.6
DB11	0.0969	18	01Jul2015, 12:12	2.4
DB10	0.0364	11	01Jul2015, 12:06	1.1
B07	1.0598	32	01Jul2015, 12:18	12.1
B07-B09	1.0598	31	01Jul2015, 12:24	12.0

FUTURE 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
DB12	0.0453	19	01Jul2015, 12:06	1.7
B09	1.1051	43	01Jul2015, 12:18	13.7
B09-POND B	1.1051	42	01Jul2015, 12:18	13.7
DB15	0.1234	11	01Jul2015, 12:24	2.0
DB13	0.0703	16	01Jul2015, 12:12	2.0
DB14	0.0556	21	01Jul2015, 12:12	2.1
POND B	1.3544	67	01Jul2015, 12:30	19.6
POND B-B12	1.3544	66	01Jul2015, 12:30	19.6
DB22	0.0516	22	01Jul2015, 12:12	2.2
DB23	0.0172	17	01Jul2015, 12:06	1.4
B12	1.4232	80	01Jul2015, 12:30	23.2
B12-B14	1.4232	80	01Jul2015, 12:30	23.1
DB24	0.0531	22	01Jul2015, 12:06	2.1
B14	1.4763	89	01Jul2015, 12:24	25.2
B14-B15	1.4763	89	01Jul2015, 12:24	25.1
DB28	**0.0741**	**13**	**01Jul2015, 12:12**	**1.7**
B15	1.5504	99	01Jul2015, 12:24	26.8
B15-B26	1.5504	99	01Jul2015, 12:30	26.2
DB29	0.1697	18	01Jul2015, 12:24	3.2
DB27	0.0508	16	01Jul2015, 12:18	1.9
B26	3.6115	169	01Jul2015, 12:24	55.1
B26-27	3.6115	166	01Jul2015, 12:30	54.7
FB-02	**0.0500**	**16**	**01Jul2015, 12:18**	**2.0**
FB-01	**0.0373**	**14**	**01Jul2015, 12:06**	**1.4**
FB01-B19	0.0373	14	01Jul2015, 12:12	1.4
B19	0.0873	29	01Jul2015, 12:12	3.4
B19-27	0.0873	28	01Jul2015, 12:18	3.4
FB-03	**0.0078**	**8**	**01Jul2015, 12:06**	**0.6**
27	3.7066	189	01Jul2015, 12:30	58.7
27-32	3.7066	186	01Jul2015, 12:30	58.4
WH-24	0.1325	52	01Jul2015, 12:12	5.4
WH-26	0.0839	3	01Jul2015, 12:30	0.8
WH-27	0.0217	1	01Jul2015, 12:06	0.2
30	0.2381	55	01Jul2015, 12:12	6.4
30-31	0.2381	53	01Jul2015, 12:12	6.4
WH-28	0.0398	14	01Jul2015, 12:12	1.5
31	0.2779	68	01Jul2015, 12:12	7.9
31-32	0.2779	65	01Jul2015, 12:18	7.9
WH-29	0.0495	18	01Jul2015, 12:12	1.9
WH-31	0.0406	19	01Jul2015, 12:06	1.8
WH-30	0.0159	3	01Jul2015, 12:00	0.3
32	4.0905	249	01Jul2015, 12:30	70.2
WH32	0.0458	3	01Jul2015, 12:06	0.5
BEN POND	4.1363	95	01Jul2015, 14:30	64.4
WH-33	0.0064	3	01Jul2015, 12:06	0.3
33	4.1427	95	01Jul2015, 14:30	64.7
33-37	4.1427	95	01Jul2015, 14:42	63.9
WH35	0.1550	21	01Jul2015, 12:12	2.8
WH34	0.0450	13	01Jul2015, 12:12	1.4

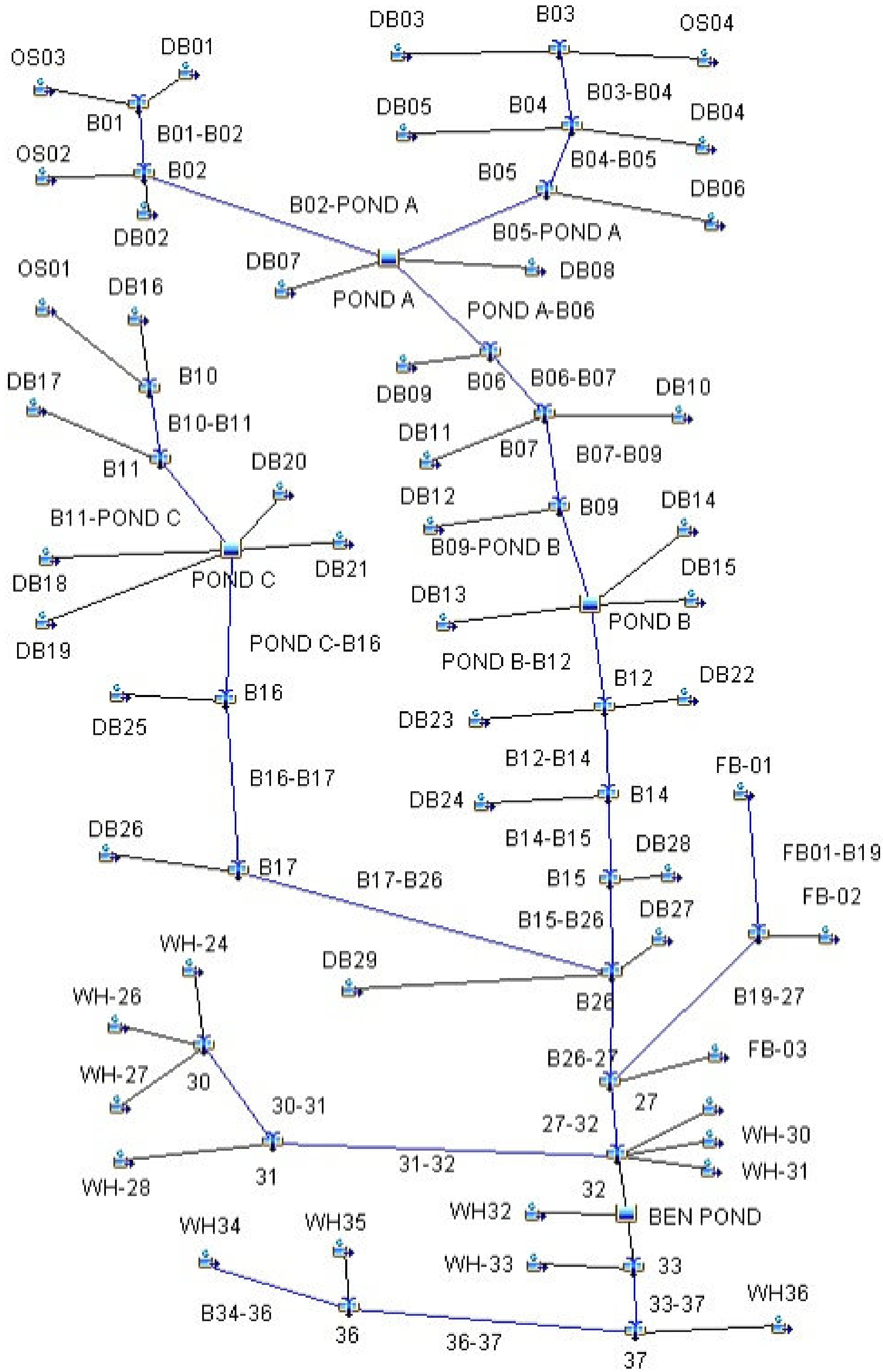
FUTURE 5-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_5 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_5 (AC. FT.)
B34-36	0.0450	13	01Jul2015, 12:12	1.4
36	0.2000	34	01Jul2015, 12:12	4.2
36-37	0.2000	33	01Jul2015, 12:18	4.2
WH36	0.0750	4	01Jul2015, 12:18	0.8
37	4.4177	100	01Jul2015, 14:24	68.8
FG08A	0.0750	27	01Jul2015, 12:06	2.6
FG08A-G05	0.0750	27	01Jul2015, 12:12	2.6
FG10	0.0669	8	01Jul2015, 12:42	1.7
FG08B	0.0630	20	01Jul2015, 12:12	2.2
FG08B-G05	0.0630	20	01Jul2015, 12:18	2.2
FG11	0.0625	19	01Jul2015, 12:18	2.4
FG09	0.0484	8	01Jul2015, 12:18	1.2
FG09-G05	0.0484	8	01Jul2015, 12:18	1.2
G05	0.3158	75	01Jul2015, 12:18	10.1
FG13	0.0661	5	01Jul2015, 12:30	1.1
FG14	0.0331	10	01Jul2015, 12:18	1.2
FG12	0.0328	14	01Jul2015, 12:12	1.4
POND D	0.4478	12	01Jul2015, 14:42	9.3
POND D-G17	0.4478	12	01Jul2015, 14:42	9.3
FG15	0.1017	18	01Jul2015, 12:24	2.7
G17a	0.1017	18	01Jul2015, 12:24	2.7
FG15a	0.0156	7	01Jul2015, 12:06	0.6
G17	0.5651	23	01Jul2015, 12:18	12.6
G17-G18	0.5651	23	01Jul2015, 12:24	12.6
FG16	0.0773	31	01Jul2015, 12:06	2.9
G18	0.6424	49	01Jul2015, 12:12	15.5
G18-POND E	0.6424	48	01Jul2015, 12:12	15.5
FG31	0.0922	31	01Jul2015, 12:18	4.0
FG30	0.0400	21	01Jul2015, 12:06	1.7
FG30-PONDHS	0.0400	20	01Jul2015, 12:12	1.7
POND HS	0.1322	27	01Jul2015, 12:36	5.7
FG17a	0.0694	23	01Jul2015, 12:12	2.4
FG17a-POND E	0.0694	23	01Jul2015, 12:12	2.4
FG18	**0.0644**	**11**	**01Jul2015, 12:30**	**1.8**
FG18-POND E	0.0644	11	01Jul2015, 12:30	1.8
FG19	0.0527	23	01Jul2015, 12:12	2.3
FG17c	0.0313	3	01Jul2015, 12:12	0.4
FG17b	0.0214	11	01Jul2015, 12:06	0.9
POND E	**1.0138**	**16**	**01Jul2015, 20:06**	**13.1**
H08	**1.0138**	**12**	**01Jul2015, 20:06**	**9.3**
H09	**0.0000**	**4**	**01Jul2015, 20:06**	**3.8**
FH01	**0.1344**	**34**	**01Jul2015, 12:18**	**4.5**
POND H	**0.1344**	**3**	**01Jul2015, 15:24**	**2.6**
FH02	**0.0091**	**2**	**01Jul2015, 12:12**	**0.2**
FH03	0.0081	4	01Jul2015, 12:06	0.4
H12	0.1516	6	01Jul2015, 12:12	3.2

FUTURE 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
OS01	1.5594	10.9	01Jul2015, 13:24	5.9
DB16	0.0578	11.8	01Jul2015, 12:12	1.3
B10	1.6172	13.0	01Jul2015, 13:18	7.3
B10-B11	1.6172	13.0	01Jul2015, 13:18	7.2
DB17	0.0048	5.3	01Jul2015, 12:00	0.4
B11	1.6220	14.5	01Jul2015, 12:12	7.7
B11-POND C	1.6220	14.1	01Jul2015, 12:24	7.5
DB21	0.0519	1.0	01Jul2015, 12:18	0.3
DB18	0.0346	9.0	01Jul2015, 12:06	0.9
DB19	0.0281	2.6	01Jul2015, 12:12	0.4
DB20	0.0147	3.2	01Jul2015, 12:12	0.3
POND C	1.7513	10.9	01Jul2015, 15:00	6.3
POND C-B16	1.7513	10.9	01Jul2015, 15:06	6.2
DB25	0.0211	6.6	01Jul2015, 12:06	0.5
B16	1.7724	11.2	01Jul2015, 15:06	6.7
B16-B17	1.7724	11.2	01Jul2015, 15:18	6.6
DB26	0.0682	27.1	01Jul2015, 12:12	2.7
B17	1.8406	30.6	01Jul2015, 12:12	9.3
B17-B26	1.8406	30.2	01Jul2015, 12:18	9.1
OS03	0.1984	1.6	01Jul2015, 13:06	0.8
DB01	0.0719	4.3	01Jul2015, 12:12	0.7
B01	0.2703	4.6	01Jul2015, 12:12	1.5
B01-B02	0.2703	4.6	01Jul2015, 12:18	1.5
OS02	0.2219	2.5	01Jul2015, 12:48	1.1
DB02	0.0516	2.9	01Jul2015, 12:06	0.5
B02	0.5438	8.1	01Jul2015, 12:18	3.1
B02-POND A	0.5438	8.1	01Jul2015, 12:24	3.1
OS04	0.1359	0.6	01Jul2015, 13:30	0.4
DB03	0.0703	1.4	01Jul2015, 12:18	0.4
B03	0.2062	1.5	01Jul2015, 12:54	0.8
B03-B04	0.2062	1.5	01Jul2015, 13:12	0.8
DB04	0.0422	1.1	01Jul2015, 12:18	0.3
DB05	0.0384	1.3	01Jul2015, 12:24	0.3
B04	0.2868	3.4	01Jul2015, 12:36	1.4
B04-B05	0.2868	3.3	01Jul2015, 12:36	1.4
DB06	0.0219	7.8	01Jul2015, 12:06	0.8
B05	0.3087	9.6	01Jul2015, 12:12	2.2
B05-POND A	0.3087	9.4	01Jul2015, 12:12	2.1
DB07	0.0254	1.7	01Jul2015, 12:12	0.3
DB08	0.0297	0.4	01Jul2015, 12:18	0.2
POND A	0.9076	1.5	02Jul2015, 00:00	1.1
POND A-B06	0.9076	1.5	02Jul2015, 00:00	1.1
DB09	0.0189	3.4	01Jul2015, 12:06	0.3
B06	0.9265	3.4	01Jul2015, 12:06	1.4
B06-B07	0.9265	3.2	01Jul2015, 12:24	1.4
DB11	0.0969	7.6	01Jul2015, 12:18	1.2
DB10	0.0364	5.3	01Jul2015, 12:12	0.6
B07	1.0598	13.4	01Jul2015, 12:24	3.2
B07-B09	1.0598	12.7	01Jul2015, 12:30	3.2

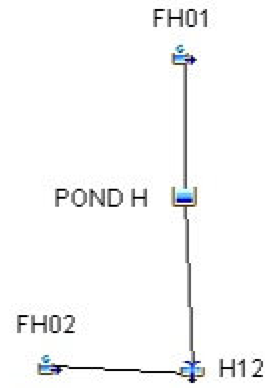
FUTURE 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
DB12	0.0453	10.1	01Jul2015, 12:06	1.0
B09	1.1051	17.5	01Jul2015, 12:18	4.2
B09-POND B	1.1051	17.5	01Jul2015, 12:24	4.2
DB15	0.1234	3.1	01Jul2015, 12:30	0.9
DB13	0.0703	7.4	01Jul2015, 12:18	1.1
DB14	0.0556	11.3	01Jul2015, 12:12	1.2
POND B	1.3544	28.5	01Jul2015, 12:36	7.3
POND B-B12	1.3544	28.3	01Jul2015, 12:36	7.3
DB22	0.0516	12.8	01Jul2015, 12:12	1.3
DB23	0.0172	12.3	01Jul2015, 12:06	1.0
B12	1.4232	36.4	01Jul2015, 12:30	9.6
B12-B14	1.4232	36.2	01Jul2015, 12:30	9.5
DB24	0.0531	11.8	01Jul2015, 12:06	1.2
B14	1.4763	43.7	01Jul2015, 12:18	10.8
B14-B15	1.4763	43.4	01Jul2015, 12:18	10.7
DB28	**0.0741**	**4.7**	**01Jul2015, 12:18**	**0.8**
B15	1.5504	48.0	01Jul2015, 12:18	11.5
B15-B26	1.5504	47.3	01Jul2015, 12:30	11.2
DB29	0.1697	5.8	01Jul2015, 12:30	1.5
DB27	0.0508	8.3	01Jul2015, 12:18	1.1
B26	3.6115	82.7	01Jul2015, 12:30	23.0
B26-27	3.6115	81.5	01Jul2015, 12:36	22.7
FB-02	**0.0500**	**8.9**	**01Jul2015, 12:18**	**1.2**
FB-01	**0.0373**	**7.4**	**01Jul2015, 12:12**	**0.8**
FB01-B19	0.0373	7.3	01Jul2015, 12:12	0.8
B19	0.0873	15.4	01Jul2015, 12:12	2.0
B19-27	0.0873	15.4	01Jul2015, 12:18	2.0
FB-03	**0.0078**	**5.2**	**01Jul2015, 12:06**	**0.4**
27	3.7066	92.1	01Jul2015, 12:36	25.1
27-32	3.7066	91.2	01Jul2015, 12:36	24.9
WH-24	0.1325	28.8	01Jul2015, 12:12	3.2
WH-26	0.0839	0.5	01Jul2015, 13:18	0.3
WH-27	0.0217	0.1	01Jul2015, 12:48	0.1
30	0.2381	28.9	01Jul2015, 12:12	3.5
30-31	0.2381	27.6	01Jul2015, 12:12	3.5
WH-28	0.0398	7.6	01Jul2015, 12:12	0.9
31	0.2779	35.2	01Jul2015, 12:12	4.4
31-32	0.2779	34.7	01Jul2015, 12:18	4.4
WH-29	0.0495	9.5	01Jul2015, 12:12	1.1
WH-31	0.0406	10.7	01Jul2015, 12:06	1.1
WH-30	0.0159	1.0	01Jul2015, 12:06	0.1
32	4.0905	119.9	01Jul2015, 12:36	31.6
WH32	0.0458	0.3	01Jul2015, 12:48	0.2
BEN POND	4.1363	45.3	01Jul2015, 13:48	27.2
WH-33	0.0064	1.7	01Jul2015, 12:06	0.2
33	4.1427	45.4	01Jul2015, 13:48	27.4
33-37	4.1427	45.4	01Jul2015, 14:00	26.9
WH35	0.1550	5.8	01Jul2015, 12:18	1.3
WH34	0.0450	6.4	01Jul2015, 12:12	0.8

FUTURE 2-YEAR				
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q_2 (CFS)	TIME OF PEAK	TOTAL VOLUME Q_2 (AC. FT.)
B34-36	0.0450	6.1	01Jul2015, 12:12	0.8
36	0.2000	11.8	01Jul2015, 12:12	2.0
36-37	0.2000	11.7	01Jul2015, 12:24	2.0
WH36	0.0750	0.6	01Jul2015, 12:54	0.3
37	4.4177	48.7	01Jul2015, 13:54	29.2
FG08A	0.0750	13.6	01Jul2015, 12:12	1.5
FG08A-G05	0.0750	13.6	01Jul2015, 12:12	1.5
FG10	0.0669	3.6	01Jul2015, 12:48	0.9
FG08B	0.0630	10.3	01Jul2015, 12:12	1.3
FG08B-G05	0.0630	10.1	01Jul2015, 12:18	1.2
FG11	0.0625	10.0	01Jul2015, 12:18	1.4
FG09	0.0484	3.3	01Jul2015, 12:18	0.6
FG09-G05	0.0484	3.3	01Jul2015, 12:24	0.6
G05	0.3158	37.9	01Jul2015, 12:18	5.6
FG13	0.0661	1.4	01Jul2015, 12:42	0.5
FG14	0.0331	5.2	01Jul2015, 12:18	0.7
FG12	0.0328	7.9	01Jul2015, 12:12	0.9
POND D	0.4478	4.5	01Jul2015, 17:48	4.1
POND D-G17	0.4478	4.5	01Jul2015, 17:54	4.1
FG15	0.1017	7.5	01Jul2015, 12:24	1.4
G17a	0.1017	7.5	01Jul2015, 12:24	1.4
FG15a	0.0156	4.0	01Jul2015, 12:06	0.4
G17	0.5651	10.8	01Jul2015, 12:24	5.9
G17-G18	0.5651	10.7	01Jul2015, 12:30	5.9
FG16	0.0773	16.1	01Jul2015, 12:06	1.7
G18	0.6424	24.4	01Jul2015, 12:12	7.6
G18-POND E	0.6424	23.9	01Jul2015, 12:12	7.6
FG31	0.0922	17.5	01Jul2015, 12:18	2.4
FG30	0.0400	12.2	01Jul2015, 12:06	1.0
FG30-PONDHS	0.0400	11.3	01Jul2015, 12:18	1.0
POND HS	0.1322	15.1	01Jul2015, 12:42	3.4
FG17a	0.0694	11.9	01Jul2015, 12:12	1.4
FG17a-POND E	0.0694	11.8	01Jul2015, 12:12	1.4
FG18	**0.0644**	**4.8**	**01Jul2015, 12:30**	**0.9**
FG18-POND E	0.0644	4.7	01Jul2015, 12:30	0.9
FG19	0.0527	13.3	01Jul2015, 12:12	1.4
FG17c	0.0313	0.5	01Jul2015, 12:18	0.2
FG17b	0.0214	6.2	01Jul2015, 12:06	0.6
POND E	**1.0138**	**6.6**	**02Jul2015, 00:00**	**6.1**
H08	**1.0138**	**4.1**	**02Jul2015, 00:00**	**3.7**
H09	**0.0000**	**2.5**	**02Jul2015, 00:00**	**2.4**
FH01	**0.1344**	**16.6**	**01Jul2015, 12:18**	**2.5**
POND H	**0.1344**	**1.2**	**01Jul2015, 18:36**	**1.4**
FH02	**0.0091**	**0.7**	**01Jul2015, 12:12**	**0.1**
FH03	0.0081	2.2	01Jul2015, 12:12	0.2
H12	0.1516	3.5	01Jul2015, 12:12	1.7

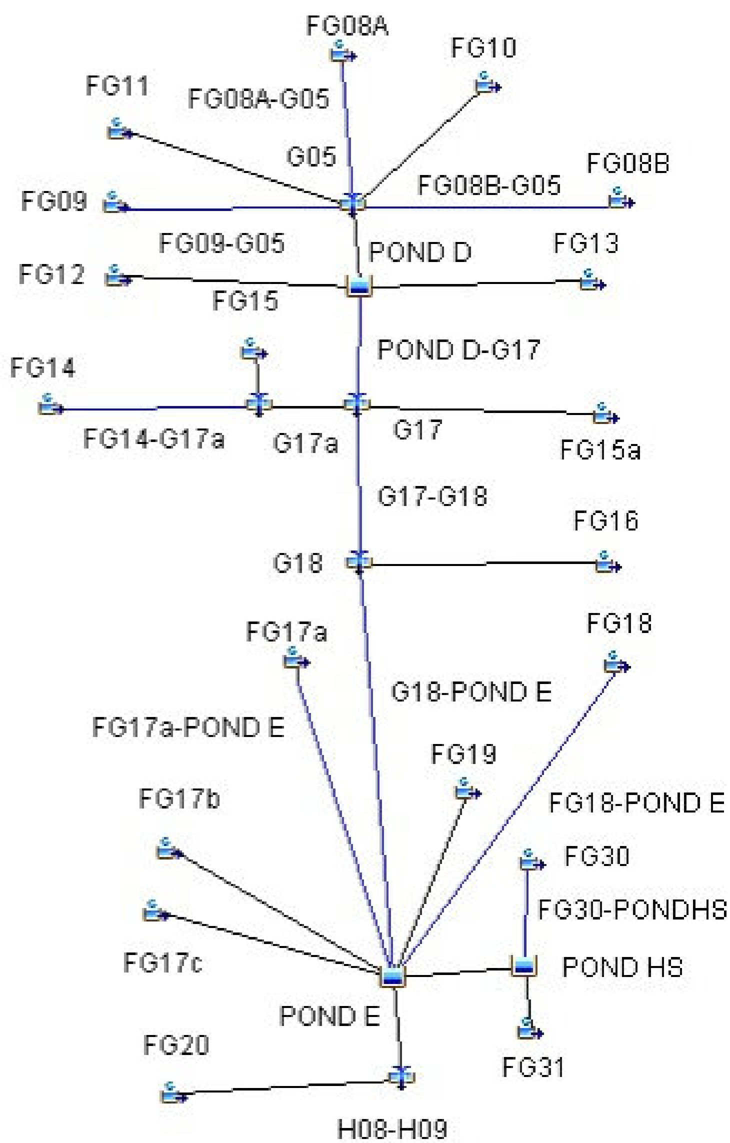
BENNETT FUTURE CONDITIONS



HAEGLER FUTURE CONDITIONS



GIECK FUTURE CONDITIONS



Appendix D - Detention Pond Information

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Proposed Detention Pond H-INTERIM

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	500
embankment elev =	6976
spillway length =	50
spillway elevation =	6974.5
100 year storage elev.=	6973.3
100 year storage vol.=	7.4
100 year discharge=	51
5 year storage elev.=	6971.9
5 year storage vol.=	3.1
5 year discharge=	4.1
WQCV storage elev.=	6970.3
WQCV storage vol.=	0.5
1/2 WQCV storage elev.=	6969.9
1/2 WQCV storage vol.=	0.25

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		Bottom
Rectangular	Orifice 1:	V	0.0195	1.33		Area =	0.026	Invert Elev =	6968.5
Rectangular	Orifice 2:	V	4.5000	1.40		Area =	6.300	Invert Elev =	6971.50
None Selected	Orifice 3:	V				Area =	0.000	Invert Elev =	
Circular	Orifice 4:	H			6	Area =	0.196	Invert Elev =	6970

Stand Pipe Dimensions

Rec Grate		9	x	4.5	Elev =	6972.90
Circ. Grate			dia.		Elev =	6972.90

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6968.5		6972.38		
Wall Thick.	4.5	in.			

50 year storage elev.=	6973.3
50 year discharge=	35
25 year storage elev.=	6972.9
25 year discharge=	22
10 year storage elev.=	6972.3
10 year discharge=	9.8
2 year storage elev.=	6970.1
2 year discharge=	0.6

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6968.5	0	0	0.00	0.0	0.0			-	-	-	-	-	-		-	-
6969	0.5	477	0.01	0.00	0.003	-	-	0.02	-	-	-	-	1		0.02	0.021
6969.5	1	11450	0.26	0.07	0.07	-	-	0.06	-	-	-	-	5		0.06	0.059
6970	1.5	22422	0.51	0.26	0.27	-	-	0.11	-	-	-	-	10		0.1	0.107
6970.25	1.75	33514	0.77	0.16	0.43	-	-	0.13	-	-	0.5	-	14		0.6	0.603
6970.5	2	44606	1.02	0.78	0.78	-	-	0.14	-	-	0.7	-	18		0.8	0.813
6971	2.5	67898	1.56	1.04	1.30	-	-	0.17	-	-	0.9	-	27		1.1	1.115
6971.5	3	92319	2.12	0.92	2.22	-	-	0.19	-	-	1.2	-	36		1.3	1.349
6971.75	3.25	104529	2.40	0.56	2.79	-	-	0.20	1.7	-	1.3	-	42		3.1	3.139
6972	3.5	116739	2.68	1.20	3.42	-	-	0.21	4.8	-	1.3	-	47		6.3	6.321
6972.5	4	125636	2.88	1.39	4.81	-	-	0.23	13.5	-	1.5	-	58		15.2	15.223
6973	4.5	134533	3.09	1.49	6.31	-	-	0.25	24.8	-	1.6	2	70		28.4	28.391
6973.5	5	141972	3.26	1.59	7.89	-	-	0.26	34.6	-	1.8	25	79		62	61.713
6974	5.5	149410	3.43	1.67	9.57	-	-	0.28	40.7	-	1.9	62	86		86	85.780
6975	6.5	165140	3.79	3.61	13.18	53.0	53.0	0.30	50.8	-	2.1	164	98		98	151.443
6976	7.5	192114	4.41	4.10	17.28	275.6	275.6	0.33	59.1	-	2.3	295	110		110	385.158

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Proposed Detention Pond H-FUTURE

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	500
embankment elev =	6976
spillway length =	50
spillway elevation =	6974.5
100 year storage elev.=	6973.4
100 year storage vol.=	7.7
100 year discharge=	57
5 year storage elev.=	6971.7
5 year storage vol.=	2.8
5 year discharge=	3.0
WQCV storage elev.=	6970.3
WQCV storage vol.=	0.5
1/2 WQCV storage elev.=	6969.9
1/2 WQCV storage vol.=	0.25

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		Bottom
Rectangular	Orifice 1:	V	0.0195	1.33		Area =	0.026	Invert Elev =	6968.5
Rectangular	Orifice 2:	V	4.5000	1.40		Area =	6.300	Invert Elev =	6971.50
None Selected	Orifice 3:	V				Area =	0.000	Invert Elev =	
Circular	Orifice 4:	H			6	Area =	0.196	Invert Elev =	6970

Stand Pipe Dimensions

Rec Grate	9	x	4.5	Elev =	6972.90
Circ. Grate		dia.		Elev =	6972.90

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6968.5		6972.38		
Wall Thick.	4.5	in.			

50 year storage elev.=	6973.1
50 year discharge=	32
25 year storage elev.=	6972.6
25 year discharge=	18
10 year storage elev.=	6972.1
10 year discharge=	7.8
2 year storage elev.=	6971.2
2 year discharge=	1.20

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6968.5	0	0	0.00	0.0	0.0			-	-	-	-	-	-		-	-
6969	0.5	477	0.01	0.00	0.003	-	-	0.02	-	-	-	-	1		0.02	0.02
6969.5	1	11450	0.26	0.07	0.07	-	-	0.06	-	-	-	-	5		0.06	0.06
6970	1.5	22422	0.51	0.26	0.27	-	-	0.11	-	-	-	-	10		0.1	0.11
6970.25	1.75	33514	0.77	0.16	0.43	-	-	0.13	-	-	0.5	-	14		0.6	0.60
6970.5	2	44606	1.02	0.78	0.78	-	-	0.14	-	-	0.7	-	18		0.8	0.81
6971	2.5	67898	1.56	1.04	1.30	-	-	0.17	-	-	0.9	-	27		1.1	1.1
6971.5	3	92319	2.12	0.92	2.22	-	-	0.19	-	-	1.2	-	36		1.3	1.3
6971.75	3.25	104529	2.40	0.56	2.79	-	-	0.20	1.7	-	1.3	-	42		3.1	3.1
6972	3.5	116739	2.68	1.20	3.42	-	-	0.21	4.8	-	1.3	-	47		6.3	6.3
6972.5	4	125636	2.88	1.39	4.81	-	-	0.23	13.5	-	1.5	-	58		15	15
6973	4.5	134533	3.09	1.49	6.31	-	-	0.25	24.8	-	1.6	2	70		28	28
6973.5	5	141972	3.26	1.59	7.89	-	-	0.26	34.6	-	1.8	25	79		62	62
6974	5.5	149410	3.43	1.67	9.57	-	-	0.28	40.7	-	1.9	62	86		86	86
6975	6.5	165140	3.79	3.61	13.18	53.0	53.0	0.30	50.8	-	2.1	164	98		98	151
6976	7.5	192114	4.41	4.10	17.28	275.6	275.6	0.33	59.1	-	2.3	295	110		110	385

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

FUTURE POND H

WQCV Control Riser Calculations

TRIBUTARY AREA		86	acres
DRAIN TIME		40	hr
	a	1	
IMPERVIOUSNESS RATIO	*i*	0.38	
DEPTH OF OUTLET		1.8	
WQCV		0.17	inches
WQCV DESIGN VOL		**0.5**	ac-ft
	K_{40}	0.34	
AREA PER RISER[1]	a	3.46	in^2
No. of Columns		1	
No. of Holes		3	per column
Area per Hole		1.15	in^2
Hole size		1 1/4	in
Steel Plate Thickness		1/4	in

[1] AREA PER ROW PER RISER

Actual area per row per hole:	1.23	in^2
Actual area per riser:	3.7	in^2
Actual area per riser:	0.026	ft^2

TABLE SB-2

Hole Dia (in)		Area per Row (in^2)					
Holes per Row		1	2	3	4	5	6
Min steel thickness		1/4	5/16	3/8	3/8	3/8	1/2
1/4	0.2500	0.05	0.10	0.15	0.20	0.25	0.29
5/16	0.3125	0.08	0.15	0.23	0.31	0.38	0.46
3/8	0.3750	0.11	0.22	0.33	0.44	0.55	0.66
7/16	0.4375	0.15	0.30	0.45	0.60	0.75	0.90
1/2	0.5000	0.20	0.39	0.59	0.79	0.98	1.18
9/16	0.5625	0.25	0.50	0.75	0.99	1.24	1.49
5/8	0.6250	0.31	0.61	0.92	1.23	1.53	1.84
11/16	0.6875	0.37	0.74	1.11	1.48	1.86	2.23
3/4	0.7500	0.44	0.88	1.33	1.77	2.21	2.65
7/8	0.8750	0.60	1.20	1.80	2.41	3.01	3.61
1	1.0000	0.79	1.57	2.36	3.14	3.93	4.71
1 1/8	1.1250	0.99	1.99	2.98	3.98	4.97	5.96
1 1/4	1.2500	1.23	2.45	3.68	4.91	6.14	7.36
1 3/8	1.3750	1.48	2.97	4.45	5.94	7.42	8.91
1 1/2	1.5000	1.77	3.53	5.30	7.07	8.84	10.60
1 5/8	1.6250	2.07	4.15	6.22	8.30	10.37	12.44
1 3/4	1.7500	2.41	4.81	7.22	9.62	12.03	14.43
1 7/8	1.8750	2.76	5.52	8.28	11.04	13.81	16.57
2	2.0000	3.14	6.28	9.42	12.57	15.71	18.85

n = Number of columns of perforations

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E- FINAL INTERIM (TOTAL FLOWS)

Gieck Basin - El Paso County, Colorado

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974.5
100 year storage elev.=	6973.3
100 year storage vol.=	39.2
100 year discharge=	193
5 year storage elev.=	6971.1
5 year storage vol.=	15.7
5 year discharge=	12
WQCV storage elev.=	6968.9
WQCV storage vol.=	1.5
WQCV depth =	1.9
1/2 WQCV storage elev.=	6968.3
1/2 WQCV storage vol.=	0.8

50 year storage elev.=	6972.8
50 year storage vol.=	33.2
50 year discharge=	115
25 year storage elev.=	6972.3
25 year storage vol.=	27.5
25 year discharge=	58
10 year storage elev.=	6971.7
10 year storage vol.=	21.1
10 year discharge=	24
2 year storage elev.=	6970.3
2 year storage vol.=	8.6
2 year discharge=	5.5

STAGE		STORAGE				TOTAL DISCHARGE											
ELEV	HEIGHT	AREA		VOLUME		TOP OF BANK	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)		PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft			1	2	3	4	**Rectangular**		1	2		
6967	0	1808	0.04	0.0	0.00			-	-	-	-	-	-	1.4	-	-	-
6967.5	0.5	16136.5	0.37	0.1	0.10	-	-	0.0	-	-	-	-	-	13	-	0.03	0.03
6968	1	30465	0.70	0.3	0.37	-	-	0.1	-	-	-	-	-	26	-	0.11	0.11
6968.5	1.5	81028.5	1.86	0.6	1.01	-	-	0.2	-	-	-	-	-	47	-	0.23	0.23
6969	2	131592	3.02	1.2	2.23	-	-	0.4	-	-	-	-	-	77	-	0.4	0.37
6969.5	2.5	201294.5	4.62	1.9	4.14	-	-	0.5	-	3.0	-	-	-	110	-	3.5	3.5
6970	3	270997	6.22	4.6	6.85	-	-	0.6	-	4.3	-	-	-	146	-	5	4.9
6970.5	3.5	329360	7.56	3.4	10.30	-	-	0.6	0.2	5.3	-	-	-	183	-	6	6.1
6970.75	3.75	358540.75	8.23	2.0	12.27			0.7	1.2	5.7	-	-	-	203	-	8	7.6
6971	4	387722	8.90	7.6	14.41	-	-	0.7	3.1	6.1	-	-	-	218	-	10	10
6971.25	4.25	408751	9.38	2.3	16.70	-	-	0.7	5.5	6.5	0.2	-	-	236	-	13	13
6971.5	4.5	429780	9.87	4.7	19.10	-	-	0.7	7.9	6.8	3.0	-	-	252	-	18	18
6971.75	4.75	450809	10.35	2.5	21.63	-	-	0.8	9.8	7.1	7.3	-	-	266	-	25	25
6972	5	471838	10.83	5.2	24.28	-	-	0.8	11.6	7.5	12.9	2.4	-	280	-	35	35
6972.25	5.25	482595.75	11.08	2.7	27.02	-	-	0.8	12.9	7.8	16.9	15.5	-	292	-	54	54
6972.5	5.5	493354	11.33	5.5	29.82	-	-	0.8	14.1	8.1	20.2	34.9	-	304	-	78	78
6973	6	514869	11.82	5.8	35.60	-	-	0.9	16.2	8.6	29.5	86.5	-	327	-	142	142
6973.25	6.25	518272	11.90	3.0	38.57	-	-	0.9	17.2	8.9	35.0	121.5	-	338	-	183	183
6973.5	6.5	521675	11.98	5.9	41.55	-	-	0.9	18.1	9.1	40.8	162.7	-	349	-	232	232
6974	7	528481	12.13	12.0	47.58	-	-	1.0	19.8	9.6	53.4	259.0	-	369	-	307	307
6976	9	553685	12.71	24.8	72.42	-	1,102	1.1	25.4	11.4	82.8	729.0	-	443	-	443	1,545

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E-FINAL INTERIM (H08)

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974
100 year storage elev.=	6973.3
100 year storage vol.=	39.2
100 year discharge=	169
5 year storage elev.=	6971.15
5 year storage vol.=	15.7
5 year discharge=	8.2
WQCV storage elev.=	6968.9
WQCV storage vol.=	1.5
1/2 WQCV storage elev.=	6968.3
1/2 WQCV storage vol.=	0.8

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		
Rectangular	Orifice 1:	V	0.0248	1.65		Area =	0.041	Invert Elev =	6967.18
Rectangular	Orifice 2:	V	2	0.8		Area =	1.600	Invert Elev =	6970.40
Circular	Orifice 3:	H			10	Area =	0.545	Invert Elev =	6969.00
Rectangular	Orifice 4:	V	6	0.7		Area =	4.200	Invert Elev =	6971.20

Stand Pipe Dimensions

Rec Grate	11	x	7	Elev =	6971.90
Circ. Grate		dia.		Elev =	6971.90

50 year storage elev.=	6972.8
50 year discharge=	104
25 year storage elev.=	6972.3
25 year discharge=	51
10 year storage elev.=	6971.7
10 year discharge=	18
2 year storage elev.=	6970.3
2 year discharge=	3

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6966.8		6970.58		
Wall Thick.	4	in.			

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA sqft	AREA acre	VOLUME acft	VOLUME cum acft	TOP OF BANK	SPILLWAY	ORIFICE (max outflow) 1	ORIFICE 2	ORIFICE 3	4	GRATE (max outflow) **Rectangular**	PIPE 1	PIPE 2	REALIZED CULVERT OUTFLOW	TOTAL FLOW
6967	0	1808	0.04	0.0	0.0			-	-	-	-	-	1		-	-
6967.5	0.5	16136.5	0.37	0.1	0.1			0.0	-	-	-	-	8		0.01	0.01
6968	1	30465	0.70	0.3	0.4			0.1	-	-	-	-	18		0.06	0.06
6968.5	1.5	81028.5	1.86	0.6	1.0			0.1	-	-	-	-	30		0.11	0.11
6969	2	131592	3.02	1.2	2.2			0.2	-	-	-	-	52		0.2	0.18
6969.5	2.5	201294.5	4.62	1.9	4.1			0.2	-	1.9	-	-	75		2.1	2.1
6970	3	270997	6.22	4.6	6.9			0.3	-	2.6	-	-	97		2.9	2.9
6970.5	3.5	329359.5	7.56	3.4	10			0.3	0.2	3.2	-	-	122		3.7	3.7
6970.75	3.75	358540.75	8.23	2.0	12.3			0.3	1.2	3.5	-	-	135		5	5.0
6971	4	387722	8.90	7.6	14			0.3	2.8	3.7	-	-	146		7	6.8
6971.25	4.25	408751	9.38	2.3	17			0.4	4.7	3.9	0.2	-	157		9	9.2
6971.5	4.5	429780	9.87	4.7	19			0.4	6.4	4.2	3.0	-	167		14	14
6971.75	4.75	450809	10.35	2.5	22			0.4	7.5	4.4	7.3	-	176		20	20
6972	5	471838	10.83	5.2	24			0.4	8.4	4.5	12.9	2	185		29	29
6972.25	5.25	482595.75	11.08	2.7	27			0.4	9.3	4.7	16.9	16	193		47	47
6972.5	5.5	493354	11.33	5.5	30			0.4	10.0	4.9	19.7	35	201		70	70
6973	6	514869	11.82	5.8	36			0.4	11.4	5.3	24.4	87	217		128	128
6973.25	6.25	518272	11.90	3.0	39			0.5	12.1	5.4	26.4	118	224		162	162
6973.5	6.5	521675	11.98	5.9	42			0.5	12.7	5.6	28.2	152	231		199	199
6974	7	528481	12.13	12.0	48			0.5	13.8	5.9	31.7	228	244		244	244
6976	9	553685	12.71	24.8	72			0.6	17.6	6.9	42.7	623	291		291	291

Notes:

1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)

2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)

3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)

4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E-FINAL INTERIM (H09)

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974.5
100 year storage elev.=	6973.3
100 year storage vol.=	39.2
100 year discharge=	24
5 year storage elev.=	6971.15
5 year storage vol.=	15.7
5 year discharge=	3.4
WQCV storage elev.=	6968.9
WQCV storage vol.=	1.5
1/2 WQCV storage elev.=	6968.3
1/2 WQCV storage vol.=	0.8

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		
Rectangular	Orifice 1:	V	0.0248	1.65		Area =	0.041	Invert Elev =	6967.18
Rectangular	Orifice 2:	V	0.75	1		Area =	0.750	Invert Elev =	6970.75
Circular	Orifice 3:	H			8	Area =	0.349	Invert Elev =	6969.00
Rectangular	Orifice 4:	V	3.5	1.25		Area =	4.375	Invert Elev =	6971.75

Stand Pipe Dimensions

Rec Grate		4.25	x	3	Elev =	6973.00
Circ. Grate			dia.		Elev =	6973.00

50 year storage elev.=	6972.79
50 year discharge=	11
25 year storage elev.=	6972.29
25 year discharge=	7.2
10 year storage elev.=	6971.70
10 year discharge=	5.2
2 year storage elev.=	6970.26
2 year discharge=	2.2

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6966.8		6970.7		
Wall Thick.	5	in.			

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6967	0	1808	0.04	0.0	0.0			-	-	-	-	-	0.5		-	-
6967.5	0.5	16136.5	0.37	0.1	0.1			0.0	-	-	-	-	5.0		0.01	0.01
6968	1	30465	0.70	0.3	0.4			0.1	-	-	-	-	8.8		0.06	0.06
6968.5	1.5	81028.5	1.86	0.6	1.0			0.1	-	-	-	-	17.0		0.11	0.11
6969	2	131592	3.02	1.2	2.2			0.2	-	-	-	-	25.8		0.2	0.18
6969.5	2.5	201294.5	4.62	1.9	4.1			0.2	-	1.2	-	-	35.0		1.4	1.4
6970	3	270997	6.22	4.6	6.9			0.3	-	1.7	-	-	48.4		2.0	2.0
6970.5	3.5	329359.5	7.56	3.4	10.3			0.3	-	2.1	-	-	60.7		2.4	2.4
6970.75	3.75	358540.75	8.23	2.0	12.3			0.3	-	2.2	-	-	68.0		2.6	2.6
6971	4	387722	8.90	7.6	14.4			0.3	0.3	2.4	-	-	72.6		3.0	3.0
6971.25	4.25	408751	9.38	2.3	16.7			0.4	0.8	2.5	-	-	78.9		3.7	3.7
6971.5	4.5	429780	9.87	4.7	19.1			0.4	1.5	2.7	-	-	84.7		4.5	4.5
6971.75	4.75	450809	10.35	2.5	21.6			0.4	2.3	2.8	-	-	90.1		5.4	5.4
6972	5	471838	10.83	5.2	24.3			0.4	3.1	2.9	-	-	94.8		6.4	6.4
6972.25	5.25	482595.75	11.08	2.7	27.0			0.4	3.6	3.0	-	-	98.7		7.0	7.0
6972.5	5.5	493354	11.33	5.5	29.8			0.4	4.0	3.1	0.5	-	102.7		8	8.1
6973	6	514869	11.82	5.8	35.6			0.4	4.8	3.4	5.2	-	110.5		14	14
6973.25	6.25	518272	11.90	3.0	38.6			0.5	5.1	3.5	8.6	4	114.3		21	21
6973.5	6.5	521675	11.98	5.9	41.6			0.5	5.4	3.6	12.5	11	118.1		33	33
6974	7	528481	12.13	12.0	47.6			0.5	6.0	3.8	21.8	31	125.3		63	63
6976	9	553685	12.71	24.8	72.4			0.6	7.9	4.4	40.1	106	151.4		151	151

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)

4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E- FINAL FUTURE (TOTAL FLOWS)

Gieck Basin - El Paso County, Colorado

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974.5
100 year storage elev.=	6973.6
100 year storage vol.=	42.2
100 year discharge=	240
5 year storage elev.=	6971.4
5 year storage vol.=	18.0
5 year discharge=	16
WQCV storage elev.=	6968.9
WQCV storage vol.=	1.5
WQCV depth =	1.9
1/2 WQCV storage elev.=	6968.3
1/2 WQCV storage vol.=	0.8

50 year storage elev.=	6973.1
50 year storage vol.=	36.3
50 year discharge=	151
25 year storage elev.=	6972.5
25 year storage vol.=	30.1
25 year discharge=	81
10 year storage elev.=	6971.9
10 year storage vol.=	23.0
10 year discharge=	30
2 year storage elev.=	6970.6
2 year storage vol.=	11.0
2 year discharge=	6.6

STAGE		STORAGE				TOTAL DISCHARGE											
ELEV	HEIGHT	AREA		VOLUME		TOP OF BANK	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)		PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft			1	2	3	4	**Rectangular**		1	2		
6967	0	1808	0.04	0.0	0.00			-	-	-	-	-	-	1.4	-	-	-
6967.5	0.5	16136.5	0.37	0.1	0.10	-	-	0.0	-	-	-	-	-	13	-	0.03	0.03
6968	1	30465	0.70	0.3	0.37	-	-	0.1	-	-	-	-	-	26	-	0.11	0.11
6968.5	1.5	81028.5	1.86	0.6	1.01	-	-	0.2	-	-	-	-	-	47	-	0.23	0.23
6969	2	131592	3.02	1.2	2.23	-	-	0.4	-	-	-	-	-	77	-	0.4	0.37
6969.5	2.5	201294.5	4.62	1.9	4.14	-	-	0.5	-	3.0	-	-	-	110	-	3.5	3.5
6970	3	270997	6.22	4.6	6.85	-	-	0.6	-	4	-	-	-	146	-	5	4.9
6970.5	3.5	329360	7.56	3.4	10.30	-	-	0.6	0.2	5	-	-	-	183	-	6	6.1
6970.75	3.75	358540.75	8.23	2.0	12.27			0.7	1.2	6	-	-	-	203	-	8	7.6
6971	4	387722	8.90	7.6	14.41	-	-	0.7	3.1	6	-	-	-	218	-	10	9.8
6971.25	4.25	408751	9.38	2.3	16.70	-	-	0.7	5.5	6	0.20	-	-	236	-	13	13
6971.5	4.5	429780	9.87	4.7	19.10	-	-	0.7	8	7	3.0	-	-	252	-	18	18
6971.75	4.75	450809	10.35	2.5	21.63	-	-	0.8	10	7	7.3	-	-	266	-	25	25
6972	5	471838	10.83	5.2	24.28	-	-	0.8	12	7	13	2.4	-	280	-	35	35
6972.25	5.25	482595.75	11.08	2.7	27.02	-	-	0.8	13	8	17	16	-	292	-	54	54
6972.5	5.5	493354	11.33	5.5	29.82	-	-	0.8	14	8	20	35	-	304	-	78	78
6973	6	514869	11.82	5.8	35.60	-	-	0.9	16	9	30	87	-	327	-	142	142
6973.25	6.25	518272	11.90	3.0	38.57	-	-	0.9	17	9	35	121	-	338	-	183	183
6973.5	6.5	521675	11.98	5.9	41.55	-	-	0.9	18	9	41	163	-	349	-	232	232
6974	7	528481	12.13	12.0	47.58	-	-	1.0	20	10	53	259	-	369	-	307	307
6976	9	553685	12.71	24.8	72.42	-	1,102	1.1	25	11	83	729	-	443	-	443	1,545

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E-FINAL FUTURE (H08)

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974
100 year storage elev.=	6973.6
100 year storage vol.=	42.2
100 year discharge=	204
5 year storage elev.=	6971.4
5 year storage vol.=	18.0
5 year discharge=	12
WQCV storage elev.=	6968.9
WQCV storage vol.=	1.5
1/2 WQCV storage elev.=	6968.3
1/2 WQCV storage vol.=	0.8

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		
Rectangular	Orifice 1:	V	0.0248	1.65		Area =	0.041	Invert Elev =	6967.18
Rectangular	Orifice 2:	V	2	0.8		Area =	1.600	Invert Elev =	6970.40
Circular	Orifice 3:	H			10	Area =	0.545	Invert Elev =	6969.00
Rectangular	Orifice 4:	V	6	0.7		Area =	4.200	Invert Elev =	6971.20

Stand Pipe Dimensions

Rec Grate		11	x	7	Elev = 6971.90
Circ. Grate			dia.		Elev = 6971.90

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6966.8		6970.58		
Wall Thick.	4	in.			

50 year storage elev.=	6973.1
50 year discharge=	136
25 year storage elev.=	6972.5
25 year discharge=	73
10 year storage elev.=	6971.9
10 year discharge=	24
2 year storage elev.=	6970.6
2 year discharge=	4.2

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6967	0	1808	0.04	0.0	0.0			-	-	-	-	-	0.91		-	-
6967.5	0.5	16136.5	0.37	0.1	0.1			0.0	-	-	-	-	8.0		0.01	0.01
6968	1	30465	0.70	0.3	0.4			0.1	-	-	-	-	18		0.06	0.06
6968.5	1.5	81028.5	1.86	0.6	1.0			0.1	-	-	-	-	30		0.11	0.11
6969	2	131592	3.02	1.2	2.2			0.2	-	-	-	-	52		0.2	0.2
6969.5	2.5	201294.5	4.62	1.9	4.1			0.2	-	1.9	-	-	75		2.1	2.1
6970	3	270997	6.22	4.6	6.9			0.3	-	2.6	-	-	97		2.9	2.9
6970.5	3.5	329359.5	7.56	3.4	10			0.3	0.2	3.2	-	-	122		3.7	3.7
6970.75	3.75	358540.75	8.23	2.0	12.3			0.3	1.2	3.5	-	-	135		5	5.0
6971	4	387722	8.90	7.6	14			0.3	2.8	3.7	-	-	146		7	6.8
6971.25	4.25	408751	9.38	2.3	17			0.4	4.7	3.9	0.2	-	157		9	9.2
6971.5	4.5	429780	9.87	4.7	19			0.4	6.4	4	3.0	-	167		14	14
6971.75	4.75	450809	10.35	2.5	22			0.4	7.5	4	7.3	-	176		20	20
6972	5	471838	10.83	5.2	24			0.4	8	5	13	2	185		29	29
6972.25	5.25	482595.75	11.08	2.7	27			0.4	9	5	17	16	193		47	47
6972.5	5.5	493354	11.33	5.5	30			0.4	10	5	20	35	201		70	70
6973	6	514869	11.82	5.8	36			0.4	11	5	24	87	217		128	128
6973.25	6.25	518272	11.90	3.0	39			0.5	12	5	26	118	224		162	162
6973.5	6.5	521675	11.98	5.9	42			0.5	13	6	28	152	231		199	199
6974	7	528481	12.13	12.0	48			0.5	14	6	32	228	244		244	244
6976	9	553685	12.71	24.8	72			0.6	18	7	43	623	291		291	291

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

STAGE/STORAGE/DISCHARGE CURVES FOR DETENTION POND ANALYSIS

Meridian Ranch Existing Detention Pond E-FINAL FUTURE (H09)

Gieck Basin - El Paso County, Colorado

Data for spillway and embankment:

embankment length =	1860
embankment elev =	6976
spillway length =	200
spillway elevation =	6974.5
100 year storage elev.=	6973.6
100 year storage vol.=	42.2
100 year discharge=	36
5 year storage elev.=	6971.4
5 year storage vol.=	18.0
5 year discharge=	4.1
WQCV storage elev.=	6968.9
WQCV storage vol.=	1.5
1/2 WQCV storage elev.=	6968.3
1/2 WQCV storage vol.=	0.8

Data for outlet pipe and grate:

Type		H or V	Dimensions Width (ft.)	X Height (ft.)	Dia.(in)		(sqft)		
Rectangular	Orifice 1:	V	0.0248	1.65		Area =	0.041	Invert Elev =	6967.18
Rectangular	Orifice 2:	V	0.75	1		Area =	0.750	Invert Elev =	6970.75
Circular	Orifice 3:	H			8	Area =	0.349	Invert Elev =	6969.00
Rectangular	Orifice 4:	V	3.5	1.25		Area =	4.375	Invert Elev =	6971.75

Stand Pipe Dimensions

Rec Grate		4.25	x	3	Elev =	6973.00
Circ. Grate			dia.		Elev =	6973.00

Outlet Culvert Dimensions

	Width (ft.)		Height (ft.)	Dia. (ft.)	Type
Outlet Culvert		x		3.5	**Circular**
Area	9.6		TOP		
Outlet I. E.	6966.8		6970.7		
Wall Thick.	5	in.			

50 year storage elev.=	6973.1
50 year discharge=	15
25 year storage elev.=	6972.5
25 year discharge=	8.4
10 year storage elev.=	6971.9
10 year discharge=	5.9
2 year storage elev.=	6970.6
2 year discharge=	2.4

STAGE		STORAGE				DISCHARGE										
ELEV	HEIGHT	AREA		VOLUME		TOP OF	SPILLWAY	ORIFICE (max outflow)				GRATE (max outflow)	PIPE		REALIZED CULVERT OUTFLOW	TOTAL FLOW
		sqft	acre	acft	cum acft	BANK		1	2	3	4	**Rectangular**	1	2		
6967	0	1808	0.04	0.0	0.0			-	-	-	-	-	0.45		-	-
6967.5	0.5	16136.5	0.37	0.1	0.1			0.0	-	-	-	-	5.0		0.01	0.01
6968	1	30465	0.70	0.3	0.4			0.1	-	-	-	-	8.8		0.06	0.06
6968.5	1.5	81028.5	1.86	0.6	1.0			0.1	-	-	-	-	17		0.11	0.11
6969	2	131592	3.02	1.2	2.2			0.2	-	-	-	-	26		0.2	0.18
6969.5	2.5	201294.5	4.62	1.9	4.1			0.2	-	1.2	-	-	35		1.4	1.4
6970	3	270997	6.22	4.6	6.9			0.3	-	1.7	-	-	48		2.0	2.0
6970.5	3.5	329359.5	7.56	3.4	10.3			0.3	-	2.1	-	-	61		2.4	2.4
6970.75	3.75	358540.75	8.23	2.0	12.3			0.3	-	2.2	-	-	68		2.6	2.6
6971	4	387722	8.90	7.6	14.4			0.3	0.3	2.4	-	-	73		3.0	3.0
6971.25	4.25	408751	9.38	2.3	16.7			0.4	0.8	2.5	-	-	79		3.7	3.7
6971.5	4.5	429780	9.87	4.7	19.1			0.4	1.5	2.7	-	-	85		4.5	4.5
6971.75	4.75	450809	10.35	2.5	21.6			0.4	2.3	2.8	-	-	90		5.4	5.4
6972	5	471838	10.83	5.2	24.3			0.4	3.1	2.9	-	-	95		6.4	6.4
6972.25	5.25	482595.75	11.08	2.7	27.0			0.4	3.6	3.0	-	-	99		7.0	7.0
6972.5	5.5	493354	11.33	5.5	29.8			0.4	4.0	3.1	0.5	-	103		8	8.1
6973	6	514869	11.82	5.8	35.6			0.4	4.8	3.4	5.2	-	111		14	14
6973.25	6.25	518272	11.90	3.0	38.6			0.5	5.1	3.5	8.6	4	114		21	21
6973.5	6.5	521675	11.98	5.9	41.6			0.5	5.4	3.6	13	11	118		33	33
6974	7	528481	12.13	12.0	47.6			0.5	6.0	3.8	22	31	125		63	63
6976	9	553685	12.71	24.8	72.4			0.6	7.9	4.4	40	106	151		151	151

Notes:
1) Top-of-bank and spillway flows are weir equations from section 11.3.1 in the DCM. Q=CLH^1.5 (C=3.0)
2) Orifice flows are also from section 11.3.1. Q=CA(2gH)^.5 (C=.6)
3) Grate flows are determined from equations 7-2 and 7-3. Weir Flow Q=(3PH^1.5)/F, Orifice Flow Q=4.815*AH^0.5)
4) Pipe flows use the lesser of: 1) Inlet control equations 27 & 28, page 146 of HDS No. 5 - or - 2) Allowable Pipe Flow equation on page 11-9 of the DCM. Use Table 9, page 147-148, HDS No. 5 for formulas 26 & 27.

FUTURE POND E

WQCV Control Riser Calculations

TRIBUTARY AREA		290 acres
DRAIN TIME		40 hr
	a	1
IMPERVIOUSNESS RATIO	*i*	0.36
DEPTH OF OUTLET		2.0
WQCV		0.17 inches
WQCV DESIGN VOL		**1.5** ac-ft
	K_{40}	0.39
AREA PER RISER[1]	a	5.69 in^2
No. of Columns		1
No. of Holes		4 per column
Area per Hole		1.42 in^2
Hole size		1 3/8 in
Steel Plate Thickness		1/4 in

[1] AREA PER ROW PER RISER

Actual area per row per hole:	1.48 in^2
Actual area per riser:	5.9 in^2
Actual area per riser:	0.041 ft^2

TABLE SB-2

Hole Dia (in)		Area per Row (in^2)					
Holes per Row		1	2	3	4	5	6
Min steel thickness		1/4	5/16	3/8	3/8	3/8	1/2
1/4	0.2500	0.05	0.10	0.15	0.20	0.25	0.29
5/16	0.3125	0.08	0.15	0.23	0.31	0.38	0.46
3/8	0.3750	0.11	0.22	0.33	0.44	0.55	0.66
7/16	0.4375	0.15	0.30	0.45	0.60	0.75	0.90
1/2	0.5000	0.20	0.39	0.59	0.79	0.98	1.18
9/16	0.5625	0.25	0.50	0.75	0.99	1.24	1.49
5/8	0.6250	0.31	0.61	0.92	1.23	1.53	1.84
11/16	0.6875	0.37	0.74	1.11	1.48	1.86	2.23
3/4	0.7500	0.44	0.88	1.33	1.77	2.21	2.65
7/8	0.8750	0.60	1.20	1.80	2.41	3.01	3.61
1	1.0000	0.79	1.57	2.36	3.14	3.93	4.71
1 1/8	1.1250	0.99	1.99	2.98	3.98	4.97	5.96
1 1/4	1.2500	1.23	2.45	3.68	4.91	6.14	7.36
1 3/8	1.3750	1.48	2.97	4.45	5.94	7.42	8.91
1 1/2	1.5000	1.77	3.53	5.30	7.07	8.84	10.60
1 5/8	1.6250	2.07	4.15	6.22	8.30	10.37	12.44
1 3/4	1.7500	2.41	4.81	7.22	9.62	12.03	14.43
1 7/8	1.8750	2.76	5.52	8.28	11.04	13.81	16.57
2	2.0000	3.14	6.28	9.42	12.57	15.71	18.85

n = Number of columns of perforations

WINDINGWALK FILING 1 INTERIM CONDITION

Simulation Run: WWI-100 YR Reservoir: POND H

Start of Run:	01Jul2015, 00:00	Basin Model:	WW Grading
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 100YR
Compute Time:	14Mar2018 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	115(CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:12
Peak Outflow:	42 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 07:24
Total Inflow :	16.1 (AC-FT)	Peak Storage:	7.0 (AC-FT)
Total Outflow:	13.3 (AC-FT)	Peak Elevation:	6973.2 (FT)

Simulation Run: WWI-005 YR Reservoir: POND H

Start of Run:	01Jul2015, 00:00	Basin Model:	WW Grading
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 005YR
Compute Time:	14Mar2018 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	21 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:14
Peak Outflow:	1.9 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 08:24
Total Inflow :	3.6 (AC-FT)	Peak Storage:	2.4 (AC-FT)
Total Outflow:	1.9 (AC-FT)	Peak Elevation:	6971.6 (FT)

Simulation Run: WWI-100 YR Reservoir: POND E

Start of Run:	01Jul2015, 00:00	Basin Model:	WW Grading
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 100YR
Compute Time:	14Mar2018 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	471 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:12
Peak Outflow:	193 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 07:24
Total Inflow :	111.1 (AC-FT)	Peak Storage:	39.1 (AC-FT)
Total Outflow:	87.1 (AC-FT)	Peak Elevation:	6973.3 (FT)

Simulation Run: WWI-005 YR Reservoir: POND E

Start of Run:	01Jul2015, 00:00	Basin Model:	WW Grading
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 005YR
Compute Time:	14Mar2018 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	107 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:14
Peak Outflow:	12 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 08:24
Total Inflow :	23.8 (AC-FT)	Peak Storage:	15.6 (AC-FT)
Total Outflow:	9.8 (AC-FT)	Peak Elevation:	6971.1 (FT)

WINDINGWALK FILING 1 FUTURE CONDITION
Simulation Run: F-100 YR Reservoir: POND H

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 100YR
Compute Time:	14Mar2018 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	152(CFS)	Date/Time of Peak Inflow:	01Jul2015, 12:06
Peak Outflow:	57 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 12:32
Total Inflow :	18.0 (AC-FT)	Peak Storage:	7.7 (AC-FT)
Total Outflow:	15.2 (AC-FT)	Peak Elevation:	6973.4 (FT)

Simulation Run: F-005 YR Reservoir: POND H

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 005YR
Compute Time:	14Mar2018 13:26:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	34 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:14
Peak Outflow:	3.1 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 08:24
Total Inflow :	4.5 (AC-FT)	Peak Storage:	2.8 (AC-FT)
Total Outflow:	2.6 (AC-FT)	Peak Elevation:	6971.7 (FT)

Simulation Run: F-100 YR Reservoir: POND E

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 100YR
Compute Time:	14Mar2018 13:11:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	609 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 12:06
Peak Outflow:	240 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 12:32
Total Inflow :	123.4 (AC-FT)	Peak Storage:	42.2 (AC-FT)
Total Outflow:	99.4 (AC-FT)	Peak Elevation:	6973.6 (FT)

Simulation Run: F-005 YR Reservoir: POND E

Start of Run:	01Jul2015, 00:00	Basin Model:	Future SCS
End of Run:	02Jul2015, 00:00	Meteorologic Model:	SCS TYPE IIA 005YR
Compute Time:	14Mar2018 13:26:34	Control Specifications:	24 HR-2 MIN.

Volume Units: AC-FT

Computed Results:

Peak Inflow:	126 (CFS)	Date/Time of Peak Inflow:	01Jul2015, 06:14
Peak Outflow:	16 (CFS)	Date/Time of Peak Outflow:	01Jul2015, 08:24
Total Inflow :	29.0 (AC-FT)	Peak Storage:	17.9 (AC-FT)
Total Outflow:	13.1 (AC-FT)	Peak Elevation:	6971.9 (FT)

UD-Detention Worksheet

Appendix E – SDI Design Data

Remove the SDI Worksheet from the Drainage Report and upload as an additional document in eDARP.

Stormwater Detention and Infiltration Design Data Sheet

Workbook Protected   Worksheet Protected

Stormwater Facility Name: POND H

Facility Location & Jurisdiction: WINDINGWALK FILING 1, MSMD, 38°58'N, 104°35'E

User Input: Watershed Characteristics

Watershed Slope =	0.029	ft/ft
Watershed Length =	4540	ft
Watershed Area =	86.00	acres
Watershed Imperviousness =	37.6%	percent
Percentage Hydrologic Soil Group A =		percent
Percentage Hydrologic Soil Group B =	100.0%	percent
Percentage Hydrologic Soil Groups C/D =		percent

Location for 1-hr Rainfall Depths (use dropdown):

User Input

WQCV Treatment Method = Extended Detention

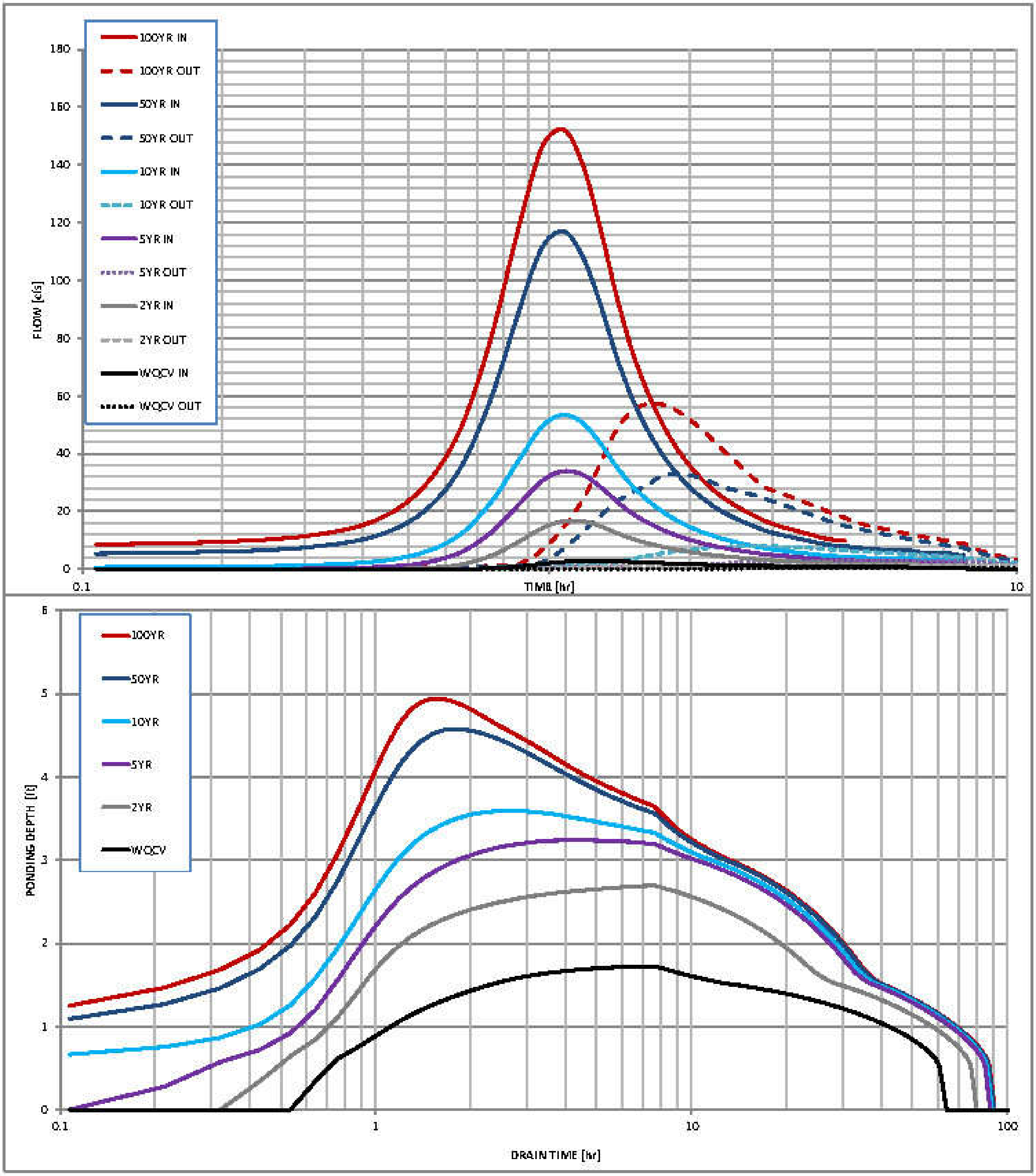
User Defined Stage [ft]	User Defined Area [ft^2]	User Defined Stage [ft]	User Defined Discharge [cfs]
0.00	0	0.00	0.00
0.50	[illegible]	0.50	0.02
1.00	11456	1.00	0.06
1.50	22122	1.50	0.11
1.75	33514	1.75	0.60
2.00	44404	2.00	0.81
2.50	67898	2.50	1.11
3.00	92319	3.00	1.35
3.25	104529	3.25	3.14
3.50	114739	3.50	6.32
4.00	125434	4.00	15.22
4.50	134533	4.50	28.39
5.00	141972	5.00	61.71
5.50	149410	5.50	85.78
6.50	165140	6.50	151.44
7.50	192114	7.50	385.16

After completing and printing this worksheet to a pdf, go to:
https://maperture.digitaldataservices.com/gvh/?viewer=cswdif
create a new stormwater facility, and
attach the pdf of this worksheet to that record.

Routed Hydrograph Results

Design Storm Return Period =	WQCV	2 Year	5 Year	10 Year	50 Year	100 Year	
One-Hour Rainfall Depth =							in
Calculated Runoff Volume =	1.243	0.000	0.000	0.000	0.000	0.000	acre-ft
OPTIONAL Override Runoff Volume =	0.80	2.50	4.50	6.70	13.90	18.00	acre-ft
Inflow Hydrograph Volume =	0.609	2.235	4.090	6.155	12.892	16.601	acre-ft
Time to Drain 97% of Inflow Volume =	54.9	58.4	56.4	48.6	34.5	32.7	hours
Time to Drain 99% of Inflow Volume =	59.3	69.3	72.6	69.0	58.0	52.9	hours
Maximum Ponding Depth =	1.72	2.69	3.24	3.59	4.57	4.94	ft
Maximum Ponded Area =	0.74	1.77	2.38	2.72	3.11	3.24	acres
Maximum Volume Stored =	0.401	1.602	2.730	3.651	6.505	7.662	acre-ft

Stormwater Detention and Infiltration Design Data Sheet



Appendix F – Outlet Protection

RIP RAP PLUNGE POOL

Urban Drainage & Flood Control District Pipe Outlet Design

Low Tailwater Design ($y_t \le D/3$)

OUTLET #	POND H

Outlet Size (D) :	42	in.	Discharge (q):	51	CFS
Capacity (Q): (full flow)	71	CFS	Flow depth (d): (calculated)	2.23	ft.

Q_{full} =	71 CFS		q/Q_{full} =	0.72
A_{full} =	9.6 SF			
V_{full} =	7.4 FPS		$Q/D^{2.5}$ =	2.2

d/D	0.70	from HS-20a using q/Q_{full}
d/D	0.50	from HS-20b using $Q/D^{2.5}$

A' (A/A_{full})	0.50	from HS-20a using smaller d/D from above	Flow Area ($a=A' \times A_{full}$)	4.8	SF

Outlet Velocity (V = q/a) 10.6 FPS

$P_d = (V^2 + gd)^{1/2}$ = 13

RIP-RAP SIZE: L from HS-20c

d_{50}= 9 in $T=1.75xd_{50}$ 1.313 ft

Basin Length (L)	14.0 FT.	Cutoff Wall Depth (B=D/2+T)	3.063	FT
Basin Width (W)	14.0 FT.			

RIP RAP PLUNGE POOL

Urban Drainage & Flood Control District Pipe Outlet Design

Low Tailwater Design ($y_t \leq D/3$)

OUTLET # OS-2

Outlet Size (D) :	30	in.	Discharge (q):	25	CFS
Capacity (Q): (full flow)	23	CFS	Flow depth (d): (calculated)	1.8	ft.

Q_{full} =	23	CFS	q/Q_{full} =	1.07
A_{full} =	4.9	SF		
V_{full} =	4.7	FPS	$Q/D^{2.5}$ =	2.5

d/D	0.95	from HS-20a using q/Q_{full}
d/D	0.55	from HS-20b using $Q/D^{2.5}$

A' (A/A_{full})	0.55	from HS-20a using smaller d/D from above	Flow Area ($a = A' \times A_{full}$)	2.7	SF

Outlet Velocity (V = q/a) 9.3 FPS

$P_d = (V^2 + gd)^{1/2}$ = 11

RIP-RAP SIZE: L from HS-20c

d_{50}= 9 in $T = 1.75 x d_{50}$ 1.313 ft

Basin Length (L)	10.0	FT.	Cutoff Wall Depth (B=D/2+T)	2.563	FT
Basin Width (W)	10.0	FT.			

RIP RAP PLUNGE POOL

Urban Drainage & Flood Control District Pipe Outlet Design

Low Tailwater Design ($y_t \leq D/3$)

OUTLET # OS-3

Outlet Size (D) :	48	in.	Discharge (q):	191	CFS
Capacity (Q): (full flow)	135	CFS	Flow depth (d): (calculated)	4	ft.

Q_{full} =	135	CFS	q/Q_{full} =	1.41
A_{full} =	12.6	SF		
V_{full} =	10.7	FPS	$Q/D^{2.5}$ =	6.0

d/D	1.00	from HS-20a using q/Q_{full}
d/D	0.91	from HS-20b using $Q/D^{2.5}$

A' (A/A_{full})	0.91	from HS-20a using smaller d/D from above	Flow Area ($a = A' \times A_{full}$)	11.4	SF

Outlet Velocity (V = q/a) 16.7 FPS

$P_d = (V^2 + gd)^{1/2}$ = 20

RIP-RAP SIZE: M from HS-20c

d_{50}= 12 in $T=1.75xd_{50}$ 1.75 ft

Basin Length (L)	16.7	FT.	Cutoff Wall Depth (B=D/2+T)	3.75	FT
Basin Width (W)	16.0	FT.			

RIP RAP PLUNGE POOL

Urban Drainage & Flood Control District Pipe Outlet Design

Low Tailwater Design ($y_t \leq D/3$)

OUTLET # OS-4

Outlet Size (D) :	24	in.	Discharge (q):	16	CFS
Capacity (Q): (full flow)	23	CFS	Flow depth (d): (calculated)	1.6	ft.

Q_{full} =	23 CFS	q/Q_{full} =	0.69
A_{full} =	3.1 SF		
V_{full} =	7.4 FPS	$Q/D^{2.5}$ =	2.8

d/D	0.67	from HS-20a using q/Q_{full}
d/D	0.68	from HS-20b using $Q/D^{2.5}$

A' (A/A_{full})	0.67	from HS-20a using smaller d/D from above	Flow Area ($a = A' \times A_{full}$)	2.1	SF

Outlet Velocity (V = q/a) 7.6 FPS

$P_d = (V^2 + gd)^{1/2}$ = 10

RIP-RAP SIZE: L from HS-20c

d_{50}= 9 in $T=1.75xd_{50}$ 1.313 ft

Basin Length (L)	8.0 FT.	Cutoff Wall Depth (B=D/2+T)	2.313	FT
Basin Width (W)	8.0 FT.			

RIP RAP PLUNGE POOL

Urban Drainage & Flood Control District Pipe Outlet Design

Low Tailwater Design ($y_t \leq D/3$)

OUTLET #	OS-5				
Outlet Size (D) :	24	in.	Discharge (q):	25	CFS
Capacity (Q): (full flow)	23	CFS	Flow depth (d): (calculated)	1.8	ft.
Q_{full} =	23	CFS	q/Q_{full} =	1.07	
A_{full} =	3.1	SF			
V_{full} =	7.4	FPS	$Q/D^{2.5}$ =	4.4	

d/D	0.95	from HS-20a using q/Q_{full}
d/D	0.74	from HS-20b using $Q/D^{2.5}$

A' (A/A_{full})	0.74	from HS-20a using smaller d/D from above	Flow Area ($a=A' \times A_{full}$)	2.3	SF

Outlet Velocity (V = q/a) 10.8 FPS

$P_d = (V^2 + gd)^{1/2}$ = 13

RIP-RAP SIZE: L from HS-20c

d_{50}= 9 in $T=1.75xd_{50}$ 1.313 ft

Basin Length (L)	8.0	FT.	Cutoff Wall Depth (B=D/2+T)	2.313	FT
Basin Width (W)	8.0	FT.			

Appendix G – Sideyard Overflow Analysis

Worksheet for Sump Inlets 11 & 12

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.02000	ft/ft
Left Side Slope	10.00	ft/ft (H:V)
Right Side Slope	10.00	ft/ft (H:V)
Discharge	23.00	ft³/s

Results

Normal Depth	0.83	ft
Flow Area	6.90	ft²
Wetted Perimeter	16.70	ft
Hydraulic Radius	0.41	ft
Top Width	16.62	ft
Critical Depth	0.80	ft
Critical Slope	0.02438	ft/ft
Velocity	3.33	ft/s
Velocity Head	0.17	ft
Specific Energy	1.00	ft
Froude Number	0.91	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.83	ft
Critical Depth	0.80	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.02438	ft/ft

Worksheet for Sump Inlets 18 & 19

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.02000	ft/ft
Left Side Slope	10.00	ft/ft (H:V)
Right Side Slope	10.00	ft/ft (H:V)
Discharge	17.00	ft^3/s

Results

Normal Depth	0.74	ft
Flow Area	5.50	ft^2
Wetted Perimeter	14.91	ft
Hydraulic Radius	0.37	ft
Top Width	14.84	ft
Critical Depth	0.71	ft
Critical Slope	0.02538	ft/ft
Velocity	3.09	ft/s
Velocity Head	0.15	ft
Specific Energy	0.89	ft
Froude Number	0.89	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.74	ft
Critical Depth	0.71	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.02538	ft/ft

Worksheet for Sump Inlets 33 & 34

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.035	
Channel Slope	0.02000	ft/ft
Left Side Slope	10.00	ft/ft (H:V)
Right Side Slope	10.00	ft/ft (H:V)
Discharge	28.00	ft^3/s

Results

Normal Depth	0.89	ft
Flow Area	8.00	ft^2
Wetted Perimeter	17.97	ft
Hydraulic Radius	0.44	ft
Top Width	17.88	ft
Critical Depth	0.87	ft
Critical Slope	0.02375	ft/ft
Velocity	3.50	ft/s
Velocity Head	0.19	ft
Specific Energy	1.08	ft
Froude Number	0.92	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.89	ft
Critical Depth	0.87	ft
Channel Slope	0.02000	ft/ft
Critical Slope	0.02375	ft/ft

Appendix H – Downstream Analysis

Tech Contractors
ENGINEERING GROUP

Approved
By:Jennifer Irvine, County Engineer
Date:03/07/2018
El Paso County Department of Public Works

March 6, 2018

Jennifer Irvine
El Paso County Development of Public Works
3275 Akers Drive
Colorado Springs, CO 80922

Re: **Meridian Ranch Sketch Plan Amendment (SKP171)**
Master Development Drainage Plan (MDDP)

Ms Irvine,

This letter is in response to our phone call on February 28, 2018, regarding the County's concerns related to the discharge of detained flow from the Meridian Ranch Pond E southerly outlet (DP-H09) and the request found in the MDDP to allow for the 100% of historic flow rates to be released from Meridian Ranch detention ponds. The County has expressed concerns relayed to them from homeowners of ongoing erosion on the property downstream of the detention pond.

The Meridian Ranch Pond E is located along the westerly side of Eastonville Road, south of Londonderry Drive and has been in operation since 2014 when it was constructed as a part of the grading operations associated with Meridian Ranch Filing 11. At the time of construction the pond outlets (DP-H08 & DP-H09) were outfitted with temporary CMP riser structures. The pond outlets were located upstream of the existing culverts under Eastonville Road at the historic discharge points for that portion of Meridian Ranch. The temporary structures are to be replaced with permanent concrete structures when the developed release rate approached the historic flow rate. The Pond E outlet structures are to be replaced with the permanent concrete structures as part of the WindingWalk grading plans currently awaiting final approval.

The home located on lot 41 of 4-Way Ranch downstream of DP-H09 was constructed in 2017 and at that time the home builder filled in some of the existing natural swale, blocking the historic overland route of the surface discharge. The 4-Way Ranch Final plat was recorded with a drainage easement in this location with an analyzed FEMA Floodplain shown on the final plat. The original developer did not construct an improved ditch for the historic flow entering the property and only anticipated the continued use of the natural swale located within the mapped FEMA floodplain. The home builder later re-graded the area, however the natural shape of the swale and native vegetation protecting the drainage way has been removed altering the original drainage course. The drainage swale is now experiencing erosion and side slope erosive cutting as a result of the fill, grading and alteration to the original natural drainage (see attached pictures). The area downstream of the erosion has remained stable with no signs of erosion or degradation to the natural drainage course.

The developer is currently processing a Sketch Plan Amendment for Meridian Ranch and has requested relief from the original condition to release developed flows from the property across Eastonville Road to approximately 80% of the historic flow rates. The reduced discharge rate was a result of the 2000 Meridian Ranch Sketch Plan approval to address concerns over flooding of undeveloped areas downstream of the Meridian Ranch. Since then, the development of 4-Way Ranch has constructed drainage facilities designed to capture 100% historic flow rates from Meridian Ranch and release from 4-

		Billing Address
Telephone No.: 719.495.7444	12311 Rex Road	P. O. Box 80036
Fax No.: 719.495.3349	Falcon CO. 80831	San Diego, CA 92138

Way Ranch at the 100% historic flow rates. It is the development of the downstream property that should allow for the relief from the earlier imposed condition of approval.

We recognized the difficulties present downstream of DP-H09 during the development of the design of the permanent outlet structures for Pond E and sought to alleviate the potential future problems on the property immediately downstream of the Eastonville culvert. The outlet structure was designed to reduce the release rates to less than the earlier agreed upon 80% historic rate (see table below).

MERIDIAN RANCH POND E DISCHARGE DESIGN POINTS						
		PEAK DISCHARGE Q_{100} (CFS)	PEAK DISCHARGE Q_{50} (CFS)	PEAK DISCHARGE Q_{25} (CFS)	PEAK DISCHARGE Q_{10} (CFS)	PEAK DISCHARGE Q_{5} (CFS)
H08 - EASTONVILLE ROAD	Historic	227	149	89	35	13
	Developed	194	130	70	24	12
	% of Historic	86%	87%	79%	69%	91%
H09 - EASTONVILLE ROAD	Historic	80	53	31	13	5
	Developed	61	27	16	7	5
	% of Historic	76%	51%	52%	57%	100%

The original Letter of Map Revision prepared by Kiowa Engineering shows the 100-year historic peak flow rate at DP-H09 to be 90 CFS, the design release rate at this design point for the permanent concrete control structure is calculated to be 61 CFS or 68% of the Kiowa calculated historic flow rate. Taking a look at the other full spectrum of design storms for this particular design point; the developed release rates for this point are significantly below the historic release rates in most cases. These reduced flow rates are lower than the current interim flow rates generated by the temporary outlet structures.

The request for relief from the 80% condition of approval is intended to be for all release points from Meridian Ranch, but Meridian recognizes the difficulties with the property downstream of DP-H09 and will further restrict the flow in order to reduce the chances of adversely impacting this property. The intent of the request is to allow more flexibility in the design of future detention ponds located within Meridian Ranch and bring the condition of detention pond release rates in line with other developments within the El Paso County. Future pond design will take into account the appropriate care and engineering judgment necessary to analyze the impacts to downstream properties and size the outlets appropriately.

If you should have any questions or require any additional information, please do not hesitate to call me at 495-7444.

Sincerely,
Tech Contractors

COLORADO REGISTERED THOMAS A. KERBY 31429 PROFESSIONAL ENGINEER

Thomas A. Kerby, PE

Telephone No.: *719.495.7444*
Fax No.: *719.495.3349*

12311 Rex Road
Falcon CO. 80831

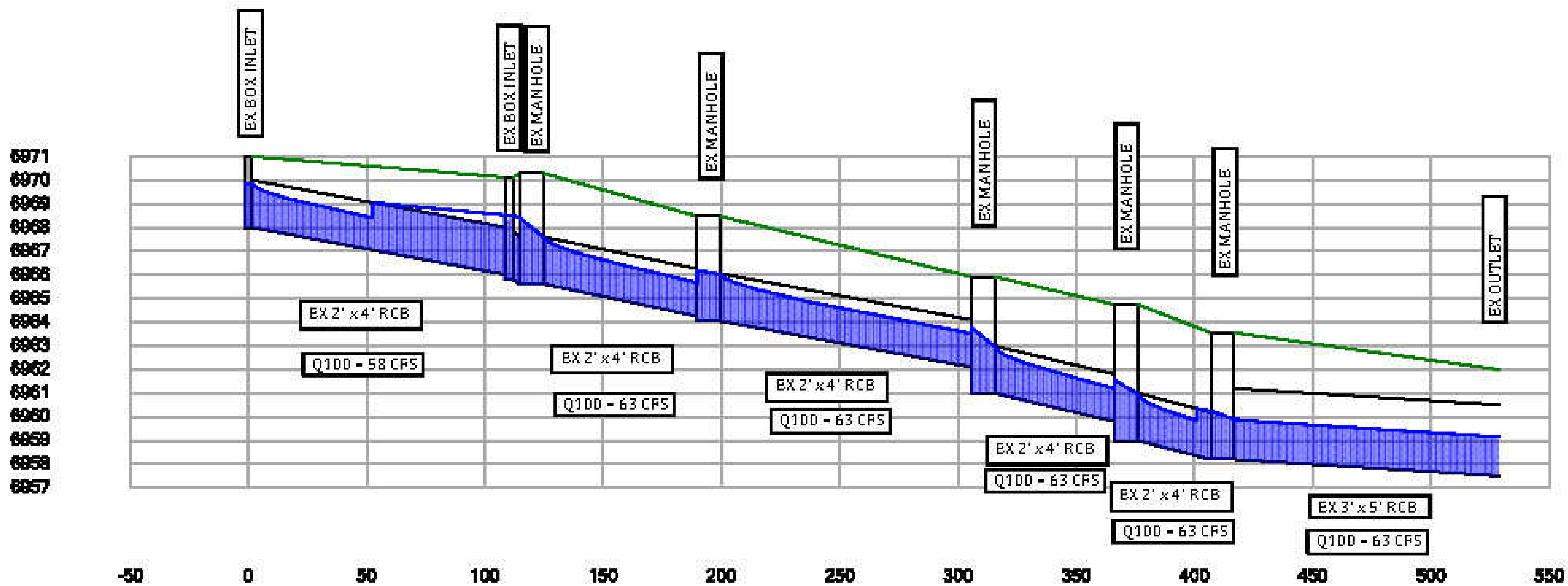
Billing Address
P. O. Box 80036
San Diego, CA 92138

Figure 1 Lot 41 Sept 2011

Figure 2 Lot 41 2017

Figure 3 Lot 41 2017

STAPLETON DRIVE BOX CULVERT PROFILE



Provide an exhibit identifying the locations for each of the Stapleton Channel sections.

Stapleton Channel - 1 185' DOWNSTREAM

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01850	ft/ft
Discharge	63.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
0+00	6960.00
0+67	6958.00
0+81	6958.00
1+41	6960.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6960.00)	(1+41, 6960.00)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.61	ft
Elevation Range	6958.00 to 6960.00 ft	
Flow Area	20.52	ft²
Wetted Perimeter	52.95	ft
Hydraulic Radius	0.39	ft
Top Width	52.93	ft
Normal Depth	0.61	ft
Critical Depth	0.57	ft
Critical Slope	0.02498	ft/ft

Stapleton Channel - 1 185' DOWNSTREAM

Results

Velocity		3.07	ft/s
Velocity Head		0.15	ft
Specific Energy		0.76	ft
Froude Number		0.87	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.61	ft
Critical Depth	0.57	ft
Channel Slope	0.01850	ft/ft
Critical Slope	0.02498	ft/ft

Stapleton Channel - 2 350' DOWNSTREAM

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03150	ft/ft
Discharge	63.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
0+00	6956.00
0+49	6954.00
0+98	6952.00
1+81	6952.00
2+17	6954.00
2+31	6956.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6956.00)	(2+31, 6956.00)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.25	ft
Elevation Range	6952.00 to 6956.00 ft	
Flow Area	21.99	ft²
Wetted Perimeter	93.60	ft
Hydraulic Radius	0.23	ft
Top Width	93.59	ft
Normal Depth	0.25	ft

Stapleton Channel - 2 350' DOWNSTREAM

Results

Critical Depth		0.26	ft
Critical Slope		0.02869	ft/ft
Velocity		2.86	ft/s
Velocity Head		0.13	ft
Specific Energy		0.38	ft
Froude Number		1.04	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.25	ft
Critical Depth	0.26	ft
Channel Slope	0.03150	ft/ft
Critical Slope	0.02869	ft/ft

Stapleton Channel - 3 - 545' DOWNSTREAM

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03150	ft/ft
Discharge	63.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	6946.00
0+46	6944.00
0+98	6944.00
1+34	6946.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6946.00)	(1+34, 6946.00)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.32	ft
Elevation Range	6944.00 to 6946.00 ft	
Flow Area	19.03	ft²
Wetted Perimeter	65.32	ft
Hydraulic Radius	0.29	ft
Top Width	65.30	ft
Normal Depth	0.32	ft
Critical Depth	0.34	ft
Critical Slope	0.02653	ft/ft

Stapleton Channel - 3 - 545' DOWNSTREAM

Results

Velocity		3.31	ft/s
Velocity Head		0.17	ft
Specific Energy		0.49	ft
Froude Number		1.08	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.32	ft
Critical Depth	0.34	ft
Channel Slope	0.03150	ft/ft
Critical Slope	0.02653	ft/ft

Stapleton Channel - 4 -870' DOWNSTREAM

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03150	ft/ft
Discharge	63.00	ft³/s
Section Definitions		

Station (ft)	Elevation (ft)
0+00	6940.00
0+16	6938.00
0+58	6938.00
0+84	6940.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 6940.00)	(0+84, 6940.00)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.37	ft
Elevation Range	6938.00 to 6940.00 ft	
Flow Area	17.08	ft²
Wetted Perimeter	49.85	ft
Hydraulic Radius	0.34	ft
Top Width	49.81	ft
Normal Depth	0.37	ft
Critical Depth	0.40	ft
Critical Slope	0.02500	ft/ft

Stapleton Channel - 4 -870' DOWNSTREAM

Results

Velocity		3.69	ft/s
Velocity Head		0.21	ft
Specific Energy		0.58	ft
Froude Number		1.11	
Flow Type	Supercritical		

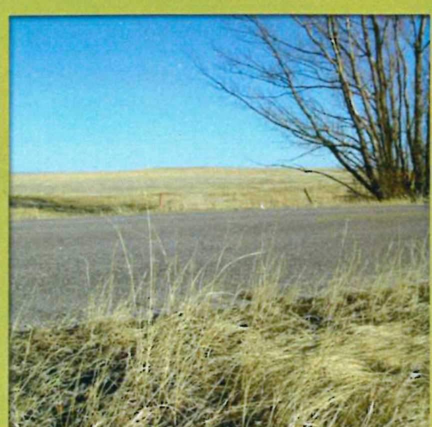
GVF Input Data

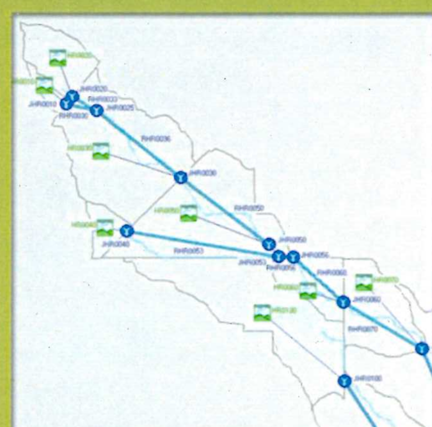
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.37	ft
Critical Depth	0.40	ft
Channel Slope	0.03150	ft/ft
Critical Slope	0.02500	ft/ft

Appendix I – Select Sheets from Gieck Basin DBPS





Haegler Ranch Basin

Drainage Basin Planning Study

January 2009

URS

Grass channels are designed for depths and velocities to be within the limits of allowable shear stress. Grass lined channels are limited to 1.0 psf shear stress. If calculated shear stress is above this, drop structures must be added to flatten the natural slope of the channel.

Using these criteria, several channel sections were developed to accommodate a range of future flow rates from 100 cfs to 3500 cfs, as shown in Table 6-2. The approximate channel sections were used in the alternatives to accommodate future flows as necessary,

Table 6-2 Channel Dimensions based on Flow Rates

Q (cfs)	Grass		
	Sideslope (h:v)	Bottom (ft)	Depth (ft)
300	4	6	5
500	4	8	5
600	4	15	5
800	4	20	5
900	4	25	5
1000	4	30	5
1500	4	50	5
2000	4	80	5
3000	4	120	5
3500	4	140	5

6.2.2. Culvert Design

Culvert sizes for use in alternative evaluation were estimated based on full flow capacity of reinforced concrete pipe with a minimum slope of 0.50% and concrete end sections. For flows up to 300 cfs single RC pipe culverts with a maximum of 72" diameter were used. For greater flows, multiple RC pipes or 6-foot by 6-foot concrete box culverts with headwalls and flared wingwalls were used. Proposed culverts sizes based on existing flow rates are listed in Table 6-3.

Table 6-3 Existing Conditions Culvert Design

Facility Number	Road Crossing	Channel	Existing Size	Existing 100-yr Flow (cfs)	Deficiency	Necessary Facility
N/A	Peyton Highway	Tributary 1 (T1)	No Culvert	500	Overtops	2-72" RCPs
N/A	Falcon Highway	Tributary 1 (T1)	No Culvert	33	Overtops	36" RCP
301	Peyton Highway	Main Stem (MS-02)	2-33"X48" CMPs	2,500	Overtops	7-6'X6' RCBs
401	Jones Road	Tributary 1 (T1)	2-24" CMPs	370	Overtops	6'X6' RCB
403	Jones Road	Main Stem (MS-03)	3-60" CMPs	2,300	Overtops	6-6'X6' RCBs
405	Murr Road	Main Stem (MS-04)	66" RCP	1,700	Overtops	5-6'X6' RCBs
407	Murr Road	Tributary 3 (T3-01)	66" RCP	670	Overtops	2-6'X6' RCBs
507	Peerless Farms Road	Tributary 3 (T3-01)	60" CMP	600	Overtops	2-6'X6' RCBs
509	Murr Road	Tributary 1 (T1)	2-15" RCPs	220	Overtops	66" RCP
601	Whiting Way	Tributary 1 (T1)	24" CMP	220	Overtops	66" RCP
604	Max Road	Tributary 1 (T1)	18" CMP	220	Overtops	66" RCP
609	Falcon Highway	Tributary 3 (T3-02)	18" CMP	180	Overtops	66" RCP
610	Falcon Highway	Tributary 4 (T4)	24" CMP	200	Overtops	66" RCP
612	Falcon Highway	Tributary 5 (T5)	24" CMP	150	Overtops	60" RCP
628	Falcon Highway	Main Stem (MS-05)	2-60" CMPs	1,000	Overtops	3-6'X6' RCBs
702	Curtis Road	Tributary 6 (T6)	36" CMP	120	Overtops	54" RCP
703	Curtis Road	Main Stem (MS-06)	24" CMP	590	Overtops	2-6'X6' RCBs
704	Judge Orr Road	Main Stem (MS-06)	Blocked Culvert	540	Overtops	2-72" RCPs
801	Pedestrain Bridge	Main Stem (MS-06)	Bridge	350	Meets Capacity	Existing Bridge
802	US24	Main Stem (MS-06)	2-66" CMPs	350	Meets Capacity	Existing Culvert
803	Eastonville Road	Main Stem (MS-07)	27"X21" CMP	25	Overtops	30" RCP
804	Eastonville Road	Tributary 7 (T7)	18" CMP	99	Overtops	48" RCP

6.2.3. Detention Design

All detention pond design is based on Chapter 10, Storage, of the UDFCD SDCM. All ponds were assumed to be "full spectrum" per the SDCM. For final design to be performed later, some of the ponds may be separated into a water quality pond and an off-line major detention pond.

For the Regional Detention Alternative, either the simplified full spectrum sizing method or the hydrograph method was used to size the facility. If the contributing area is less than 160 acres and no

Table 6-8 Subregional Detention Pond Summary

Pond	Size (AF)	Peak Inflow (cfs)		Peak Outflow (cfs)	
		2-yr	100-yr	2-yr	100-yr
SR-01	10	100	320	8	90
SR-02	5	14	300	3	250
SR-03	16	210	640	29	530
SR-04	25	200	1120	33	740
SR-05	24	76	570	9	250
SR-06	[illegible]	[illegible]	[illegible]	[illegible]	20
SR-07	[illegible]	[illegible]	[illegible]	[illegible]	88
SR-08	[illegible]	[illegible]	[illegible]	[illegible]	210
SR-09	[illegible]	[illegible]	[illegible]	[illegible]	66
SR-10	[illegible]	[illegible]	[illegible]	[illegible]	600
SR-11	2	3	70	1	61
SR-12	9	19	140	1	35
SR-13	3	12	120	6	110

POND H:
7.7 AC-FT
Q2 IN=17 CFS, Q100 IN=152 CFS
Q2 OUT=1.2 CFS, Q100 OUT=57 CFS

Subregional ponds have been sized using the hydrograph routing method described above. In this alternative, all proposed channels and culverts are sized for the existing 100-year peak flow rates, except within proposed developments where it is necessary to provide conveyance for developed flow rates. Flood impacts for the 100-year peak flow downstream of the subregional, full spectrum detention ponds will not increase.

6.3.2.1. Channels

In this alternative, only channel improvements through proposed developments are included, unless an area is undersized for existing conditions. Existing deficiencies are the responsibility of the current land owner or the County, and not the developer, and corrective measures for existing deficiencies are not included in the cost estimates. Proposed channel improvements along the corresponding reaches are summarized in Table 6-9.

Table 6-9 Channel Design for Subregional Detention Alternative

Channel	Existing 100-yr Flow (cfs)	Proposed 100-yr Flow (cfs)	Design Flow (cfs)	Channel Length (ft)	Material
Main Stem (MS-05)	1460	1680	2000	1560	Grass
Main Stem (MS-06)	660	530	600	3120	Grass
Main Stem (MS-06)	720	970	1000	4535	Grass
Main Stem (MS-06)	750	740	800	3190	Grass
Tributary 3 (T3-01)	600	600	600	5000	Grass
Tributary 3 (T3-02)	220	500	500	420	Grass
Tributary 4 (T4)	220	500	500	940	Grass
Tributary 6 (T6)	200	440	500	4280	Grass
Tributary 6 (T6)	240	250	300	1400	Grass

6.3.2.2. Culverts

As with the channels, only the culverts through proposed developments will be effected unless an area is undersized for existing conditions. Any existing deficiencies in the roadway culverts are the responsibility of the County and not the developer, and required culvert improvements are not included in the cost estimates for the alternative. Proposed culvert improvements are summarized in Table 6-10.

Table 6-10 Culvert Design for Subregional Detention Alternative

Facility Number	Road Crossing	Channel	Proposed 100-yr Flow (cfs)	Deficiency	Necessary Facility for Proposed 100-year Flow
301	Peyton Highway	Main Stem (MS-02)	3,370	Overtops	9-6'X6' RCBs
403	Jones Road	Main Stem (MS-03)	2,970	Overtops	8-6'X6' RCBs
405	Murr Road	Main Stem (MS-04)	2,870	Overtops	8-6'X6' RCBs
609	Falcon Highway	Tributary 3 (T3-02)	460	Overtops	2-6'X6' RCBs
1001	Future Pastura Street	Main Stem (MS-06)	930	Future Road	3-6'X6' RCBs
1002	Future Arroyo Hondo Blvd. N.	Main Stem (MS-06)	930	Future Road	3-6'X6' RCBs
1003	Future Arroyo Hondo Blvd. S.	Main Stem (MS-06)	1500	Future Road	4-6'X6' RCBs
1004	Future Pastura Street	Tributary 6 (T6)	440	Future Road	2-66" RCPs
1005	Future El Vado Road	Tributary 6 (T6)	440	Future Road	2-66" RCPs
1006	Future Socorro Trail	Tributary 6 (T6)	440	Future Road	2-66" RCPs

Presented in Table 7-4 are the reimbursable costs calculated for the Haegler Ranch Basin. These costs are based on improvements required under existing conditions. The calculated drainage basin fee found was $ 14,521 per impervious acre, and the bridge fee is $1,375 per impervious acre.

POND H

The term "reimbursable costs" used on Table 7-4 means those costs that have been used in estimation of drainage basin fees. Costs considered "non-reimbursable" are costs for the replacement of existing, undersized culverts, or costs to rehabilitate or maintain an existing lined segment of drainageway. For the most part, all of the drainageway costs for Haegler Ranch Basin are considered reimbursable.

Table 7-2 Drainage Basin Fee Calculations

Channel Improvements					
Channel	**Basins**	**Channel Construction Cost**	**Drop Structure Construction Cost**	**Contingency Cost**	**Total Cost**
Main Stem (MS-05)	HR0200	$224,000	$363,600	$264,420	$852,020
Main Stem (MS-06)	HR0070	$162,000	$295,400	$205,830	$633,230
Main Stem (MS-06)	HR0080	$331,000	$374,500	$317,475	$1,022,975
Main Stem (MS-06)	HR0090	$188,000	$368,000	$250,200	$806,200
Tributary 3 (T3-01)	HR0330	$259,000	$422,000	$306,450	$987,450
Tributary 3 (T3-02)	HR0300	$18,000	$37,000	$24,750	$79,750
Tributary 4 (T4)	HR0300	$40,000	$74,000	$51,300	$165,300
Tributary 6 (T6)	HR0110	$179,000	$333,000	$230,400	$742,400
Tributary 6 (T6)	HR0120	$55,000	$106,500	$72,675	$234,175
Subtotal Channel Costs					$5,553,500
Culvert Improvements					
Culvert	**Road Crossing**	**Channel**	**Culvert Construction Cost**	**Contingency Cost**	**Total Cost**
609	Falcon Highway	Tributary 3 (T3-02)	$106,301	$47,836	$154,137
N/A	Falcon Highway	Tributary 1 (T1)	$19,500	$8,775	$28,275
1001	Future Pastura Street	Main Stem (MS-06)	$106,301	$47,836	$154,137
1002	Future Arroyo Hondo Blvd. N.	Main Stem (MS-06)	$87,301	$39,286	$126,587
1003	Future Arroyo Hondo Blvd. N.	Main Stem (MS-06)	$87,301	$39,286	$126,587
1004	Future Pasture Street	Tributary 6 (T6)	$51,000	$22,950	$73,950
1005	Future El Vado Road	Tributary 6 (T6)	$19,500	$8,775	$28,275
1006	Future Socorro Trail	Tributary 6 (T6)	$42,800	$19,260	$62,060
Subtotal Culvert Costs					$754,007
Detention Improvements					
Facility	**Storage (AF)**	**Construction Cost**		**Contingency Cost**	**Total Cost**
SR-01	10	$296,701		$133,516	$430,217
SR-02	5	$207,949		$93,577	$301,525
SR-03	16	$186,252		$83,814	$270,066
SR-04	25	$390,182		$175,582	$565,764
SR-05	24	$455,235		$204,856	$660,091
SR-06	9	$140,670		$63,301	$203,971
SR-07	5	$162,046		$72,921	$234,967
SR-08	5	$87,489		$39,370	$126,860
SR-09	20	$188,250		$84,713	$272,963
SR-10	23	$331,635		$149,236	$480,871
SR-11	2	$56,880		$25,596	$82,476
SR-12	9	$108,987		$49,044	$158,031
SR-13	3	$107,812		$48,515	$156,327
Subtotal Detention Costs					$3,944,129
Total Cost					**$10,251,636**
Total Unplatted Impervious Acres					**$1,343**
Fee Per Impervious Acre					**$7,633**

Table 7-3 Bridge Fee Calculation

301	Peyton Highway	Main Stem (MS-02)	401,710	$180,770	$582,480
403	Jones Road	Main Stem (MS-03)	358,123	$161,155	$519,278
405	Murr Road	Main Stem (MS-04)	282,941	$127,323	$410,264
Subtotal Bridge Costs					$1,512,022
Total Cost					**$1,512,022**
Total Unplatted Impervious Acres					**$1,343**
Bridge Fee Per Impervious Acre					**$1,126**

Table C9

Regional Ponds

Note: Total Costs in Bold have used a minimum expected cost instead of QTY * COST/UNIT

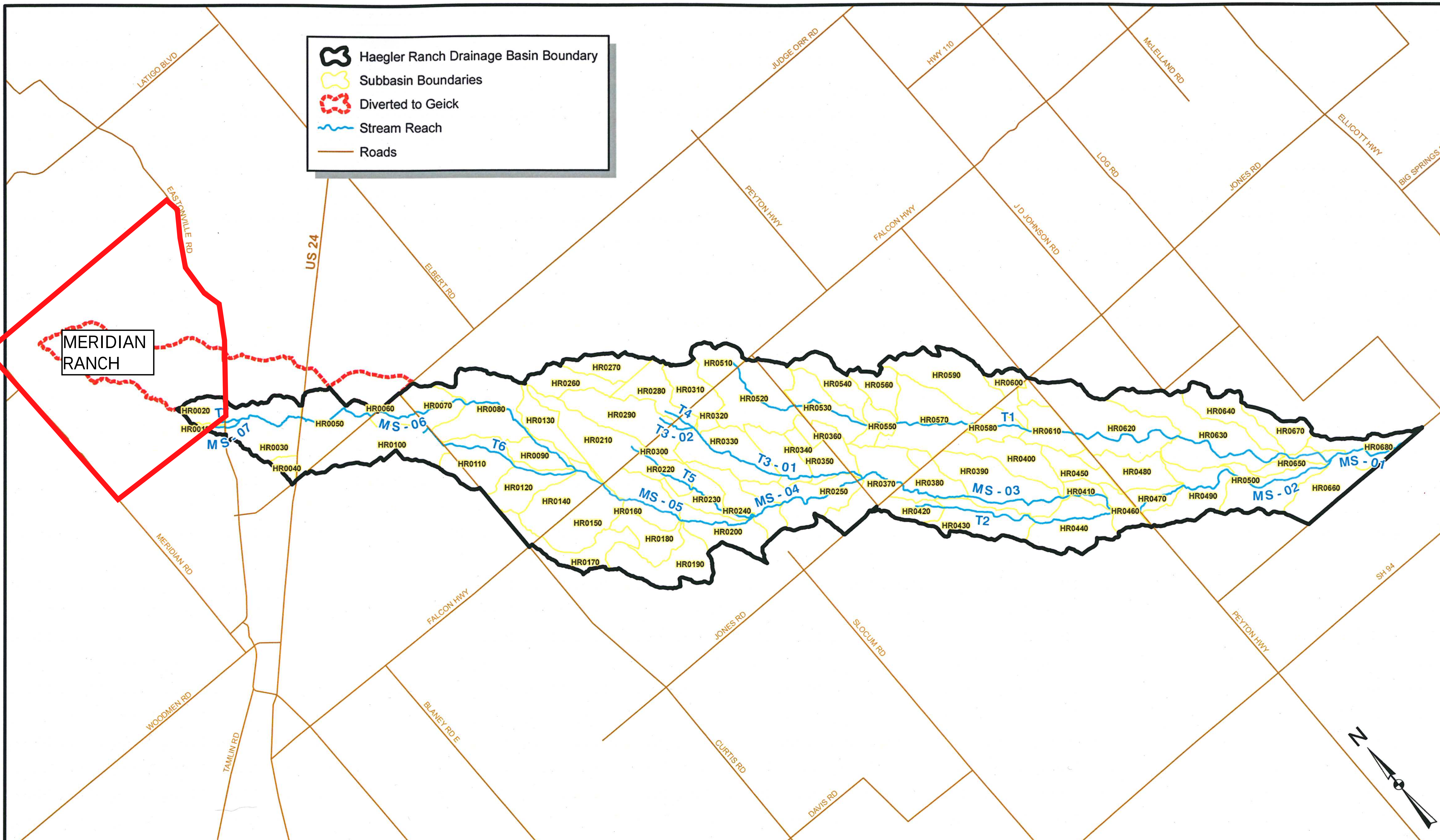
Item	UNIT	QTY	COST/UNIT	TOTAL COST
Pond RG-01				
Detention Reservoir Excavation	CY	14,552	$15	$218,284
Seeding	Acre	2	$580	**$2,500**
Topsoil	CY	970	$8	$7,761
Outlet Culvert	EACH	1	$14,150	$14,150
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$249,975
			30% Construction Contingency	$74,993
			15% Engineering Contingency	$37,496
			Total	**$362,464**
Pond RG-02				
Detention Reservoir Excavation	CY	104,092	$15	$1,561,384
Seeding	Acre	13	$580	$7,484
Topsoil	CY	6,939	$8	$55,516
Outlet Culvert	EACH	1	$382,950	$382,950
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$2,014,614
			30% Construction Contingency	$604,384
			15% Engineering Contingency	$302,192
			Total	**$2,921,191**
Pond RG-03				
Detention Reservoir Excavation	CY	65	$7	**$5,000**
Seeding	Acre	1	$580	**$2,500**
Topsoil	CY	538	$8	**$5,000**
Outlet Culvert	EACH	1	$12,500	$12,500
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$32,280
			30% Construction Contingency	$9,684
			15% Engineering Contingency	$4,842
			Total	**$46,806**
Pond RG-04				
Detention Reservoir Excavation	CY	1,726	$7	$12,084
Seeding	Acre	1	$580	**$2,500**
Topsoil	CY	538	$8	**$5,000**
Outlet Culvert	EACH	1	$14,400	$14,400
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$41,264
			30% Construction Contingency	$12,379
			15% Engineering Contingency	$6,190
			Total	**$59,833**
Pond RG-05				
Detention Reservoir Excavation	CY	48	$7	**$5,000**
Seeding	Acre	1	$580	**$2,500**
Topsoil	CY	538	$8	**$5,000**
Outlet Culvert	EACH	1	$12,475	$12,475
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$32,255
			30% Construction Contingency	$9,677
			15% Engineering Contingency	$4,838
			Total	**$46,770**
			Subtotal Regional Ponds	**$3,437,063**

Sub-Regional Ponds

Note: Total Costs in Bold have used a minimum expected cost instead of QTY * COST/UNIT

Item	UNIT	QTY	COST/UNIT	TOTAL COST
Pond SR-01				
Detention Reservoir Excavation	CY	26,800	$9	$241,200
Seeding	Acre	5	$580	$2,726
Topsoil	CY	2,528	$8	$20,220
Outlet Culvert	EACH	1	$25,275	$25,275
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$296,701
			30% Construction Contingency	$89,010
			15% Engineering Contingency	$44,505
			Total	**$430,217**
Pond SR-02				
Detention Reservoir Excavation	CY	18,339	$9	$165,051
Seeding	Acre	3	$580	**$2,500**
Topsoil	CY	1,828	$8	$14,628
Outlet Culvert	EACH	1	$18,490	$18,490
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$207,949
			30% Construction Contingency	$62,385
			15% Engineering Contingency	$31,192
			Total	**$301,525**
Pond SR-03				
Detention Reservoir Excavation	CY	14,141	$9	$127,269
Seeding	Acre	6	$580	$3,480
Topsoil	CY	3,227	$8	$25,813
Outlet Culvert	EACH	1	$22,410	$22,410
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$186,252
			30% Construction Contingency	$55,876
			15% Engineering Contingency	$27,938
			Total	**$270,066**
Pond SR-04				
Detention Reservoir Excavation	CY	29,750	$9	$267,750
Seeding	Acre	9	$580	$5,162
Topsoil	CY	4,786	$8	$38,290
Outlet Culvert	EACH	3	$23,900	$71,700
Outlet Structure	EACH	1	$7,280	$7,280
			Subtotal	$390,182
			30% Construction Contingency	$117,055
			15% Engineering Contingency	$58,527
			Total	**$565,764**

SR01
POND H



URS
9960 Federal Dr.
Suite 300
Colorado Springs, CO 80921
719.531.0001

5,000 2,500 0 5,000 Feet

1" = 5,000'

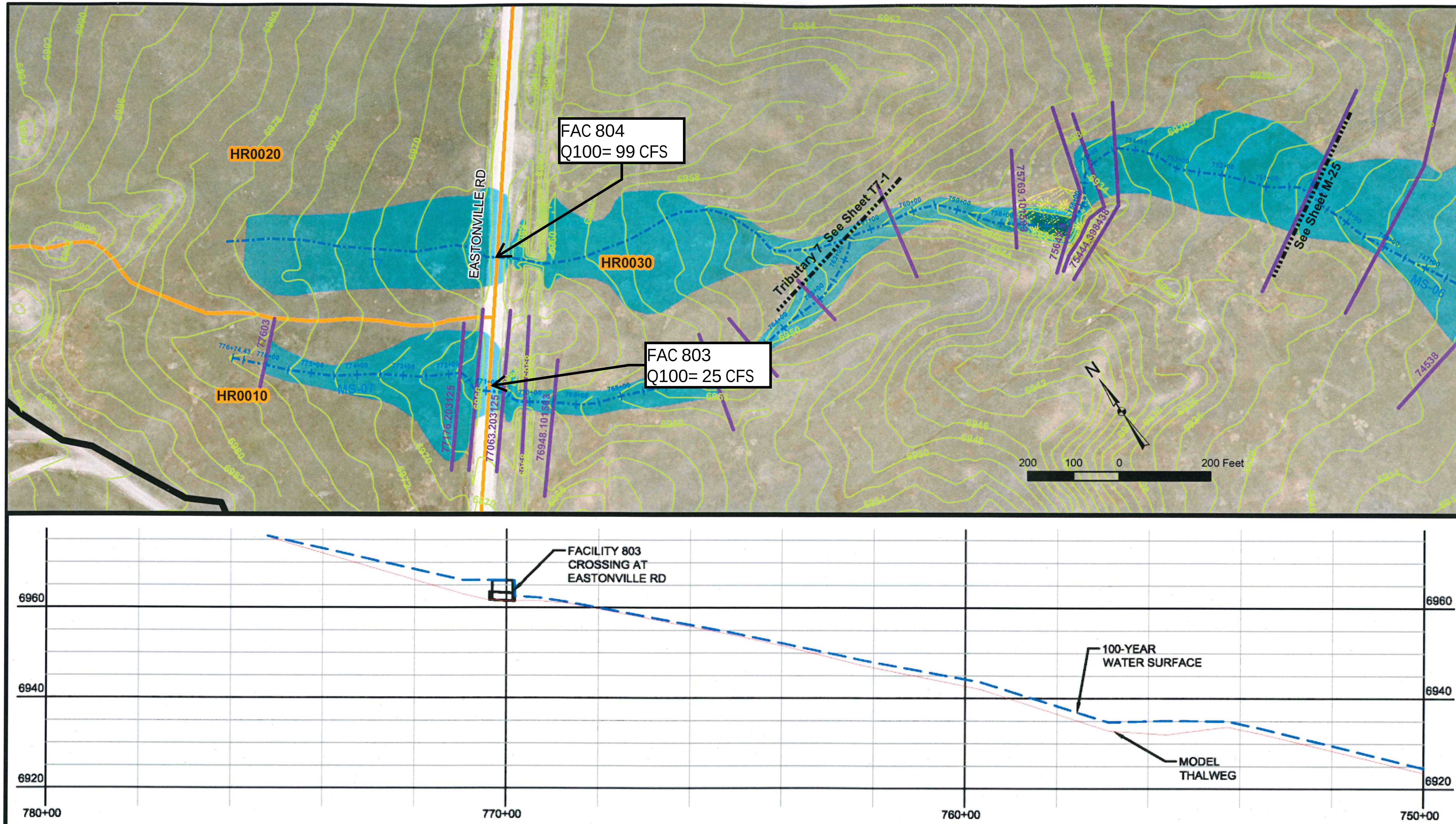
DATE: 09/08

HAEGLER RANCH DRAINAGE BASIN

SUBBASIN DELINEATION

FIGURE 4-1

URS NO. 21711039



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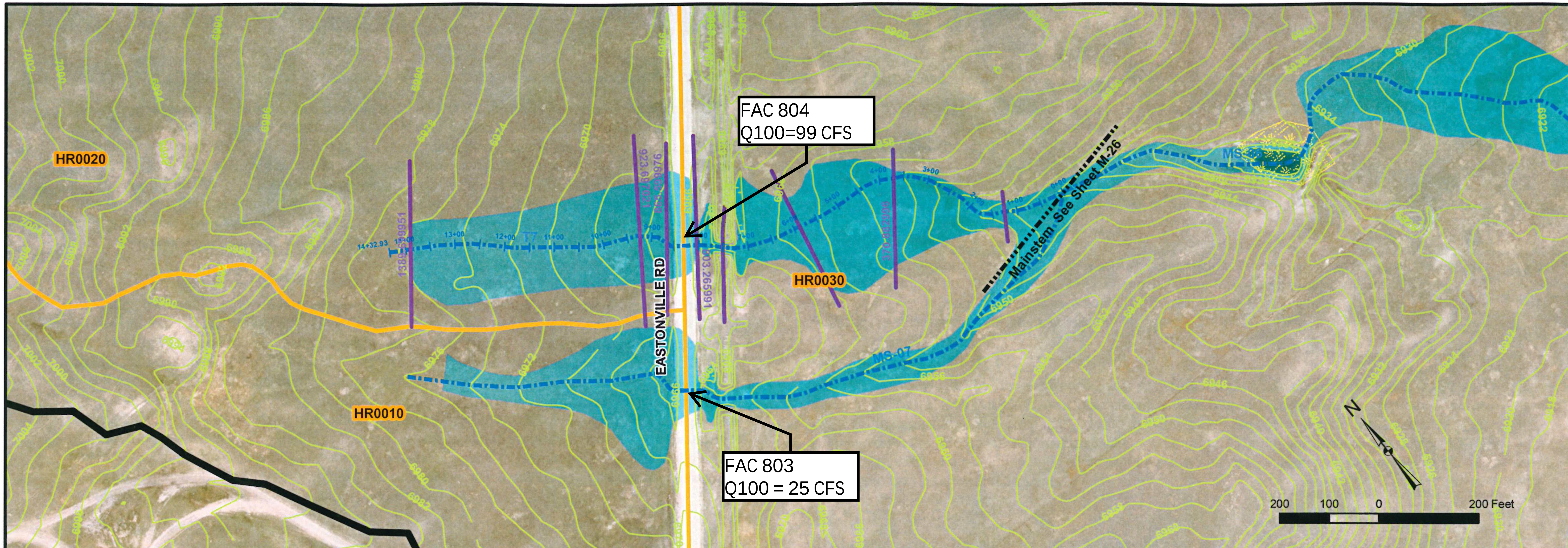
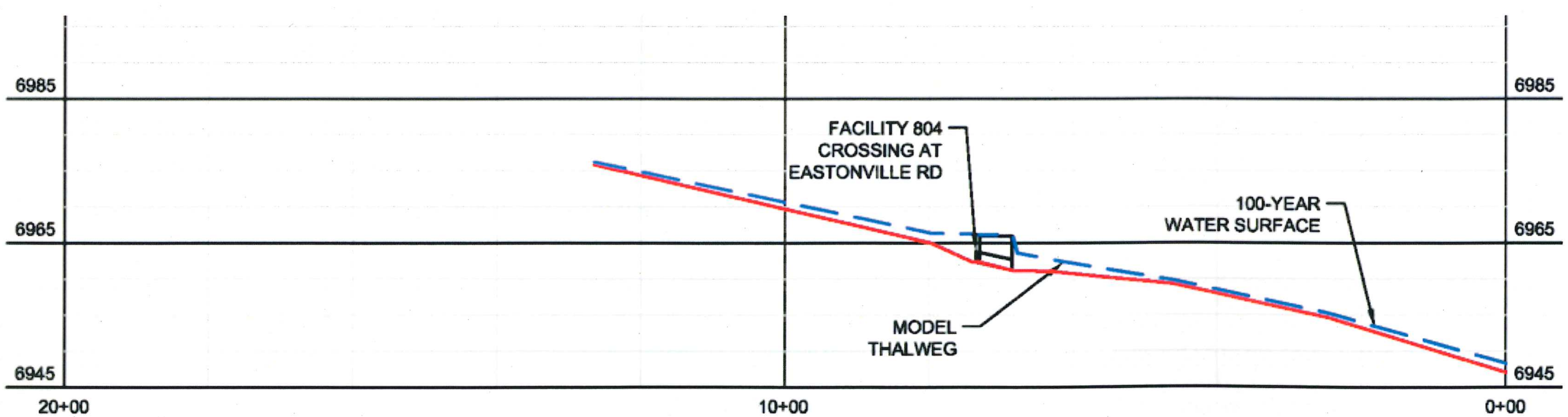
Haegler Basin Boundary
Potential Wetlands
Subbasin Boundaries
Approximate 100-Year Floodplain
Thalweg
Cross Sections
2' Contours

DATE: 05/08

HAEGLER RANCH DRAINAGE BASIN
APPROXIMATE 100-YEAR FLOOD LIMITS
SHEET M-26
FIGURE 5-4

URS NO. 21711039





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9960 Federal Dr.
Suite 300
Colorado Springs, CO 80921
719.531.0001

Haegler Basin Boundary
Potential Wetlands
Subbasin Boundaries
Approximate 100-Year Floodplain
Thalweg
Cross Sections
2' Contours

DATE: 05/08

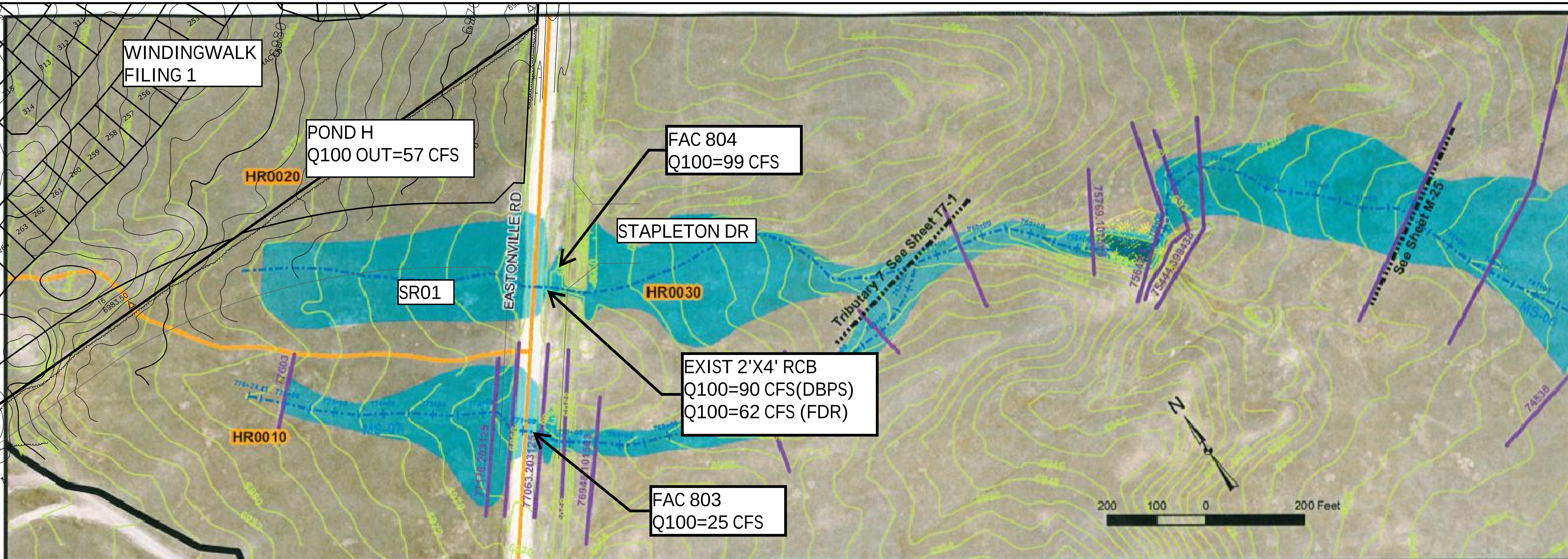
HAEGLER RANCH DRAINAGE BASIN

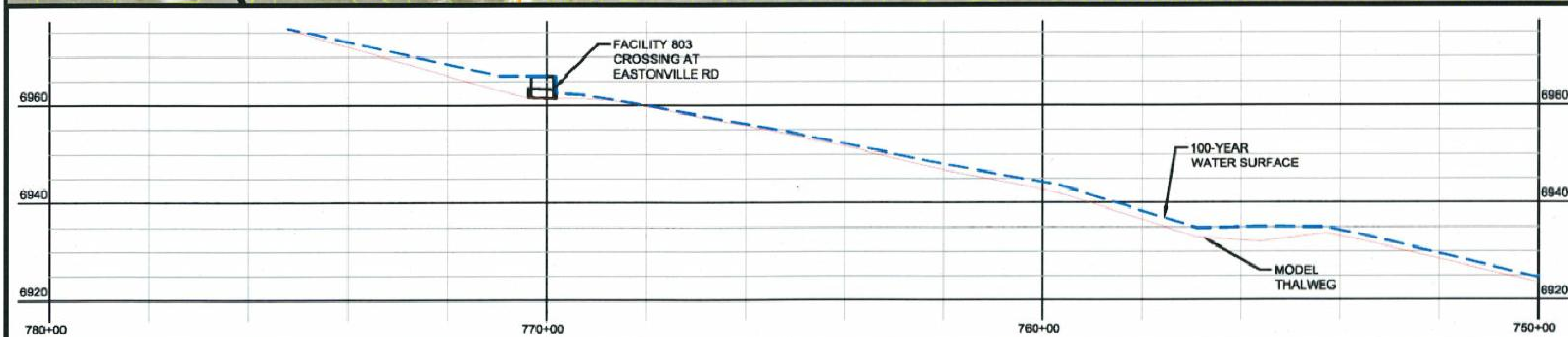
APPROXIMATE 100-YEAR FLOOD LIMITS

SHEET T7-1

FIGURE 5-4

URS NO. 21711039





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Haegler Basin Boundary
Potential Wetlands
Subbasin Boundaries
Approximate 100-Year Floodplain
Thalweg
Cross Sections
2" Contours

DATE: 05/08

HAEGLER RANCH DRAINAGE BASIN
APPROXIMATE 100-YEAR FLOOD LIMITS
SHEET M-26
FIGURE 5-4

URS NO. 21711039

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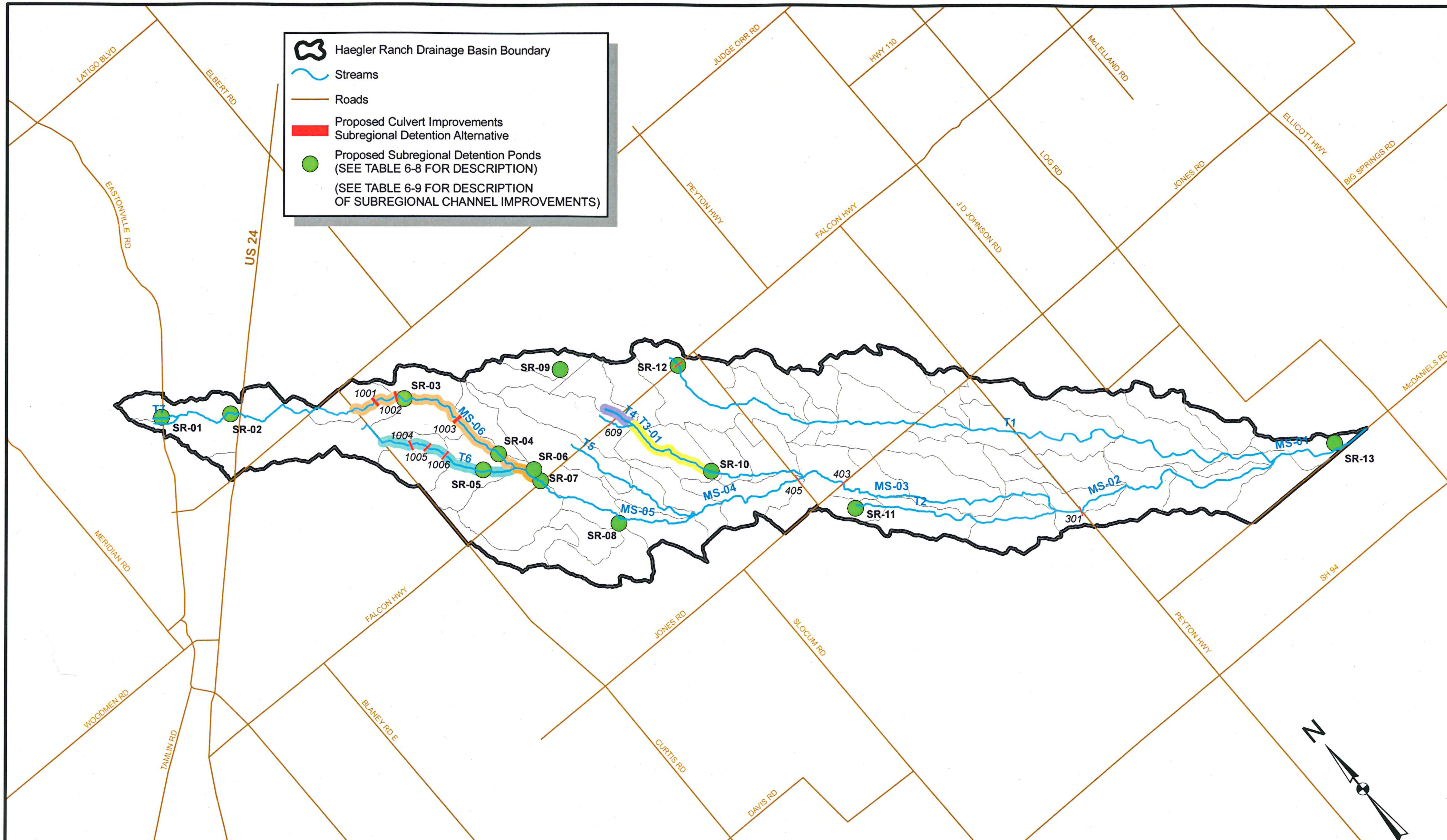

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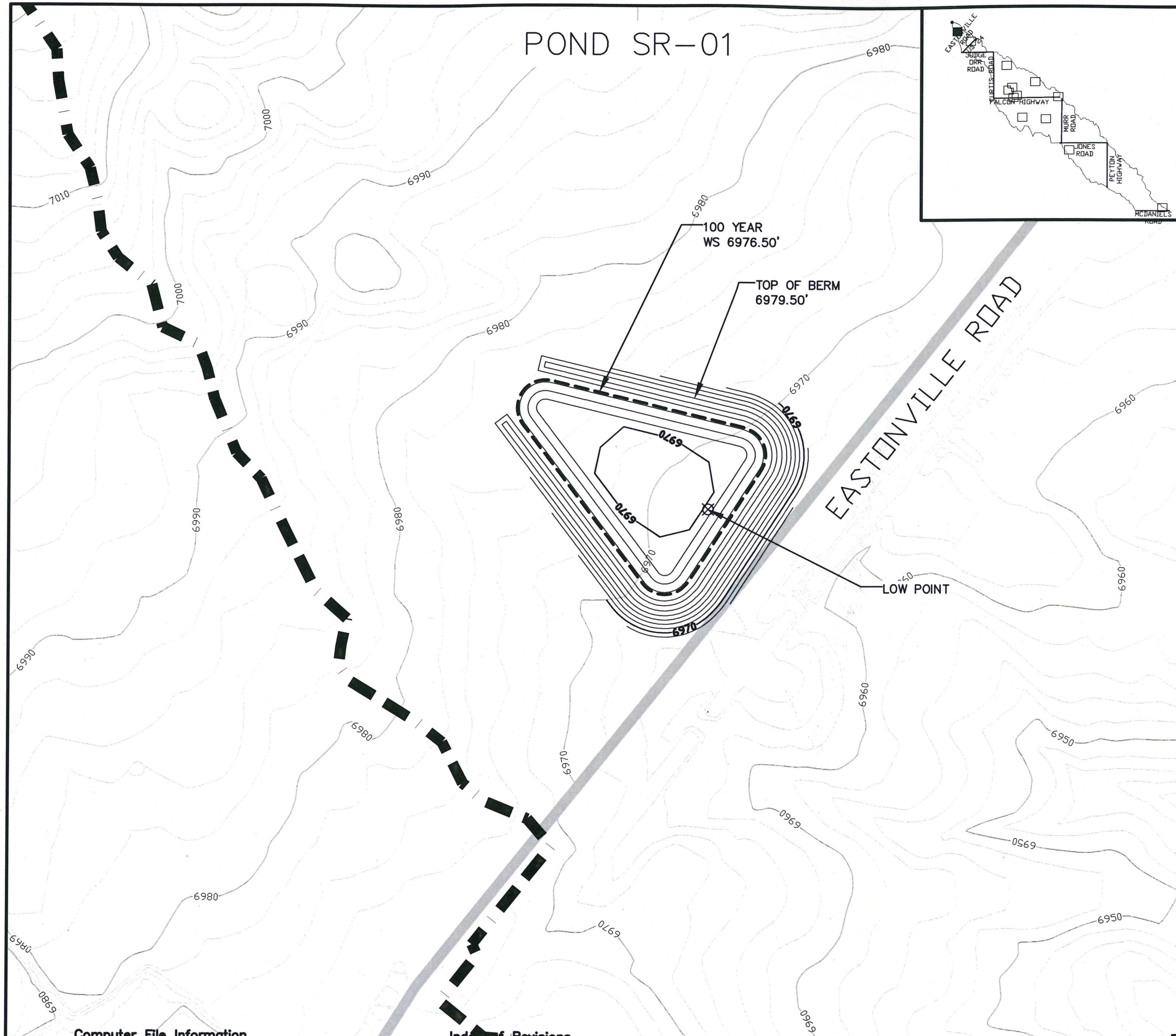
DATE: 05/08

HAEGLER RANCH DRAINAGE BASIN
SUBREGIONAL DETENTION ALTERNATIVES
FIGURE 6-2

URS NO. 21711039



LEGEND

6630	PROPOSED CONTOURS – MAJOR ELEVATION
	PROPOSED CONTOURS – MINOR ELEVATION
6630	EXISTING CONTOURS – MAJOR ELEVATION
	EXISTING CONTOURS – MINOR ELEVATION
	WATERSHED BOUNDARY
	ROADS
	RIVER
	100 YEAR WATER SURFACE ELEVATION
⊠	OUTLET

POND SR-01
DISCHARGE

Q100	90 CFS
Q2	8 CFS
POND VOLUME AC FT	10
BERM WIDTH	10'
SIDESLOPE	8:1

N

1"=200'

200 0 200 400

Computer File Information

Full Path:	P:\21711039\CAD\PLANSHTS
Drawing File Name:	PONDS.DWG
Acad. Ver. 2006	Scale: 1"=200' Units: Feet

Index of Revisions

Profiles

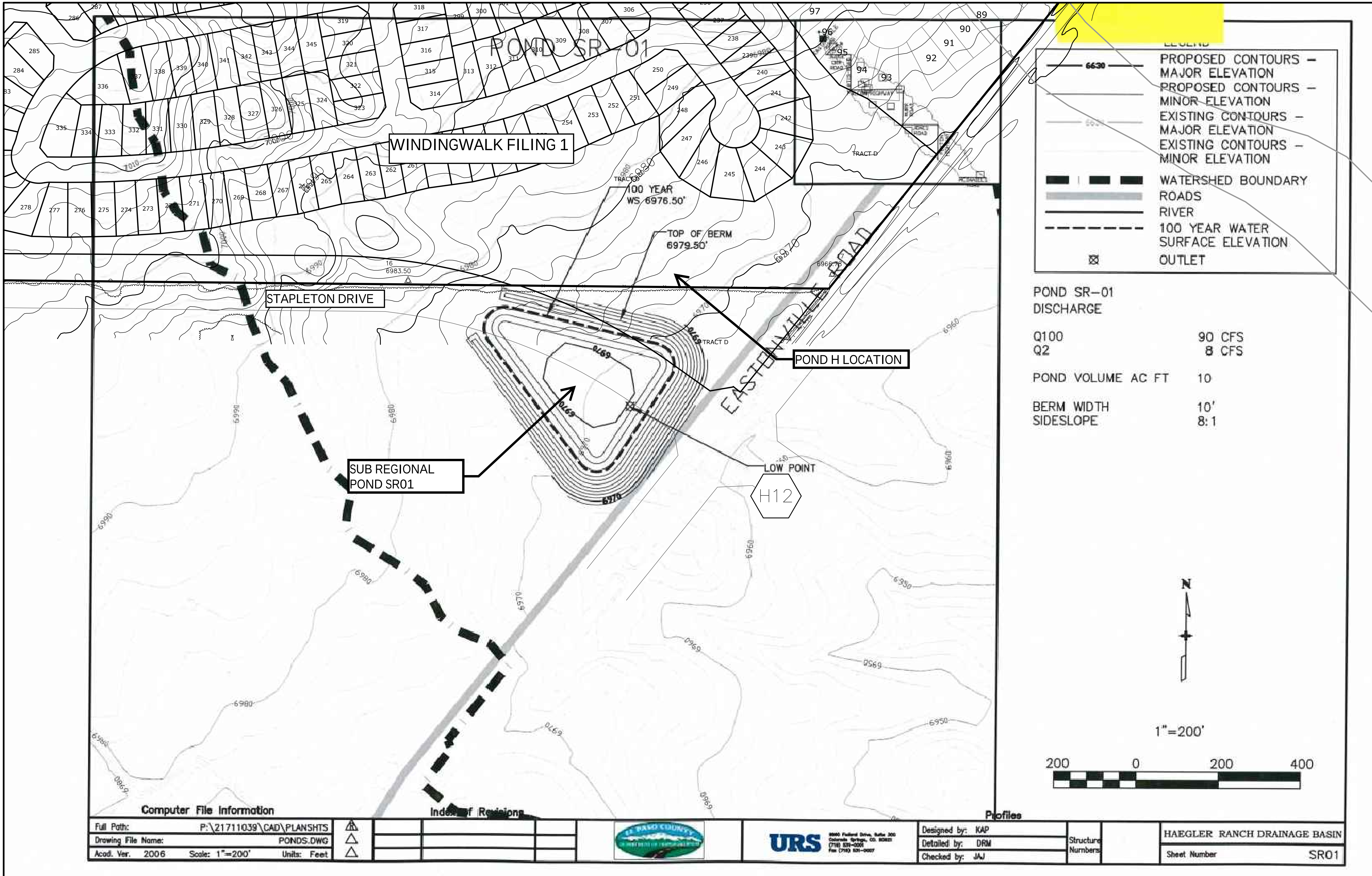
URS 5960 Federal Drive, Suite 300 Colorado Springs, CO. 80921 (719) 531-0001 Fax (719) 531-0007

Designed by: KAP
Detailed by: DRM
Checked by: JAJ

Structure Numbers

HAEGLER RANCH DRAINAGE BASIN

Sheet Number SR01



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Appendix J – Soil Resource Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for

El Paso County Area, Colorado

Windingwalk and the Enclave

November 10, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Soil Map

N

Map Scale: 1:9,510 if printed on A landscape (11" x 8.5") sheet.

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 15, Oct 10, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 22, 2016—Mar 9, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
19	Columbine gravelly sandy loam, 0 to 3 percent slopes	15.8	5.5%
83	Stapleton sandy loam, 3 to 8 percent slopes	272.3	94.5%
Totals for Area of Interest		**288.1**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

El Paso County Area, Colorado

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

Map Unit Setting

National map unit symbol: 367p
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Columbine

Setting

Landform: Fan terraces, fans, flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium

Typical profile

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

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Ecological site: Gravelly Foothill (R049BY214CO)
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls

Percent of map unit:
Landform: Swales
Hydric soil rating: Yes

Other soils

Percent of map unit:

Hydric soil rating: No

Pleasant

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

83—Stapleton sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 369z
Elevation: 6,500 to 7,300 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 125 to 145 days
Farmland classification: Not prime farmland

Map Unit Composition

Stapleton and similar soils: 80 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stapleton

Setting

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

Typical profile

A - 0 to 11 inches: sandy loam
Bw - 11 to 17 inches: gravelly sandy loam
C - 17 to 60 inches: gravelly loamy sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural 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 storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Ecological site: Gravelly Foothill (R049BY214CO)
Hydric soil rating: No

Minor Components

Fluvaquentic haplaquolls
Percent of map unit:
Landform: Swales
Hydric soil rating: Yes

Other soils
Percent of map unit:
Hydric soil rating: No

Pleasant
Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes

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Figure 4 - Meridian Ranch Rational Basin Map

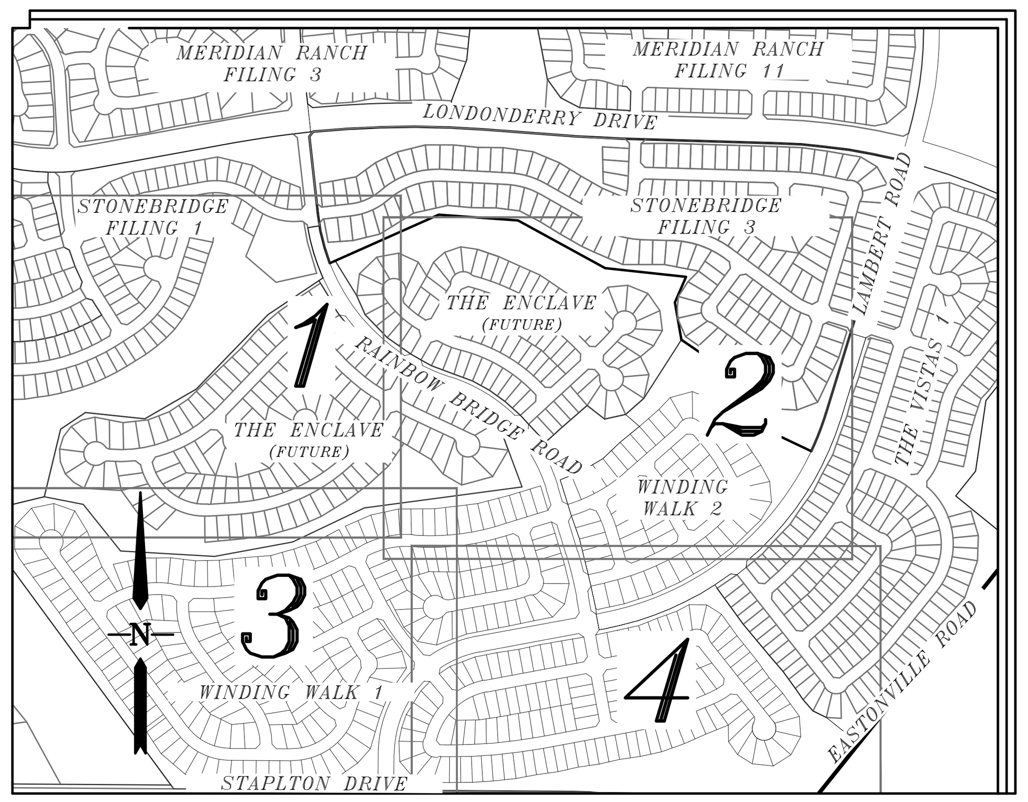
Figure 5 - Meridian Ranch SCS Method – Historic Basins Map

Figure 6 - Meridian Ranch SCS Method – Interim Basins Map

Figure 7 - Meridian Ranch SCS Method – Future Basins Map

DP	BASIN	AREA (AC)	Q(10) (CFS)	Q(100) (CFS)		INLET	PIPE
I01	B01	1.89	2.6	6.0		PR 5 ' SUMP	18 " RCP
I02	B02	1.90	2.7	6.3		PR 10 ' FLOW-BY	18 " RCP
J01							18 " RCP
J02							18 " RCP
J03							24 " RCP
I03	B03	4.40	7.2	16		PR 15 ' FORCED SUMP	18 " RCP
J04							24 " RCP
I04	B04	7.40	9.2	23		PR 15 ' SUMP	18 " RCP
J05							24 " RCP
I05	B05	2.50	3.3	7.6		PR 10 ' SUMP	24 " RCP
J06							30 " RCP
CB01	B06	5.82	6.6	17		PR Type C	36 " RCP
I06	B07	3.34	4.7	11		PR 10 ' SUMP	36 " RCP
I07	B08	3.18	5.2	12		PR 15 ' FORCED SUMP	18 " RCP
J07							36 " RCP
I08	B09	2.43	3.9	9.0		PR 15 ' FORCED SUMP	18 " RCP
J08							42 " RCP
J09							42 " RCP
J10							42 " RCP
I09	B10	4.07	5.7	13		PR 15 ' FORCED SUMP	18 " RCP
J11							18 " RCP
I10	B11	3.25	4.7	11		PR 10 ' FORCED SUMP	18 " RCP
J12							18 " RCP
I11	B12	7.07	10	24		PR 15 ' SUMP	18 " RCP
J13							24 " RCP
I12	B13	2.28	3.6	12		PR 10 ' SUMP	30 " RCP
J14							36 " RCP
J15							48 " RCP
I13	B14	4.94	12	25		PR 20 ' SUMP	24 " RCP
I14	B15	1.43	3.8	12		PR 20 ' FLOW-BY	18 " RCP
J16							48 " RCP
EI15	B16	3.24	8.1	16		PR 20 ' FLOW-BY	24 " RCP
EI16	B17	1.72	5.8	10		PR 20 ' FLOW-BY	30 " RCP
EJ16							48 " RCP
EJ17							48 " RCP
EI17	E15	1.71	5.1	10		PR 5 ' SUMP	24 " RCP
EI18	E16	1.51	4.1	7.7		PR 12 ' SUMP	24 " RCP
EJ18							54 " RCP
EJ19							54 " RCP
CB02	B18	6.13	6.2	16		PR Type C	24 " RCP
J17							24 " RCP
I17	B19	4.07	5.9	14		PR 10 ' SUMP	18 " RCP
J18							30 " RCP
J19							30 " RCP
J20							30 " RCP
I18	B20	3.26	4.6	12		PR 5 ' SUMP	18 " RCP
J21							30 " RCP
DP05	H01	0.99	1.5	3.5			
I19	B21	2.00	2.7	6.1		PR 10 ' SUMP	30 " RCP
I20	H02	3.48	7.4	16		PR 15 ' FORCED SUMP	18 " RCP
J22							18 " RCP
J23							18 " RCP
DP07	H06	2.52	4.3	9.9			
I23	H07	3.14	8.4	20		PR 15 ' FORCED SUMP	24 " RCP
J24							24 " RCP
DP06	H03	2.97	5.8	12			
I21	H04	2.37	9.0	19		PR 20 ' FORCED SUMP	24 " RCP
J25A							24 " RCP
I22	H05	2.04	3.5	7.9		PR 10 ' SUMP	24 " RCP
J25B							24 " RCP
J26							30 " RCP
CB03	H08	4.40	4.6	12		PR Type C	18 " RCP
CB04	H09	2.78	3.1	8.0		PR Type C	18 " RCP
J27							42 " RCP
I24	H10	4.98	8.2	18		PR 10 ' FORCED SUMP	18 " RCP
I25	H11	1.98	3.8	11		PR 10 ' FORCED SUMP	18 " RCP
J28							42 " RCP
I26	H12	4.88	6.9	16		PR 5 ' SUMP	18 " RCP
I27	H13	1.28	2.1	8.7		PR 10 ' SUMP	24 " RCP
J29							42 " RCP
DP08	H14	1.53	2.7	6.2			
I28	H15	1.88	5.8	13		PR 15 ' FORCED SUMP	18 " RCP
J30							42 " RCP
I29	H16	4.15	7.7	21		PR 20 ' FORCED SUMP	24 " RCP
J31							48 " RCP
I30	H17	3.44	6.2	13		PR 10 ' FORCED SUMP	18 " RCP
J32							48 " RCP
I31	H18	5.99	8.6	22		PR 20 ' FORCED SUMP	24 " RCP
J33							48 " RCP
J34							48 " RCP
I32	H19	3.83	5.4	12		PR 10 ' FORCED SUMP	24 " RCP
I33	H20	4.59	7.0	16		PR 5 ' SUMP	18 " RCP
J35							48 " RCP
I34	H21	4.01	5.0	17		PR 10 ' SUMP	48 " RCP
I35	H22	3.03	5.7	12		PR 5 ' SUMP	18 " RCP
I36	H23	1.02	3.0	5.7		PR 5 ' SUMP	24 " RCP
OS4	H24	3.28	11	24			
POND	H25	11.31	12	32			
EI37a	H26	3.60	4.6	12		EX 20 ' FLOW-BY	30 " RCP
EI37b			0.9	4.0		EX 20 ' FLOW-BY	30 " RCP

DP	BASIN	AREA (AC)	Q(10) (CFS)	Q(100) (CFS)		INLET	PIPE
DP09	H27	2.21	5.7	15			
EI38	H28	1.68	5.7	10		EX 20 ' FLOW-BY	30 " RCP
EI39			1.3	3.2		EX 20 ' FLOW-BY	
DP10	G01	2.70	4.6	11			
I40	G02	4.36	9.7	22		PR 10 ' SUMP	18 " RCP
I41	G03	1.21	2.1	8.1		PR 10 ' SUMP	24 " RCP
J33							24 " RCP
DP11	G04	1.64	2.9	6.6			
I42	G05	3.42	8.3	19		PR 10 ' SUMP	18 " RCP
I43	G06	3.53	4.7	12		PR 10 ' SUMP	24 " RCP
J37							30 " RCP
J38							30 " RCP
DP12	E02	18.07	17.2	42			
DP13	E03	6.26	19.4	48			42 " RCP
I44	E04	3.91	8.4	17		PR 10 ' SUMP	42 " RCP
J39							24 " RCP
I45	E05	1.72	3.6	7.5		PR 10 ' SUMP	42 " RCP
EI04	E06	5.41	8.4	19		EX 10 ' SUMP	42 " RCP
EI05	E07	4.88	6.9	16		EX 10 ' FORCED SUMP	18 " RCP
EJ04							42 " RCP
DP1	E09	2.93	4.3	9.8			
EI06	E10	4.87	9.2	21			
DP2	E11	2.98	4.4	10			
EI06	E12	2.59	7.5	17			
EI06			15.8	36		EX 20 ' SUMP	24 " RCP
EI07	E13	3.17	5.8	20			
EI07	E08	1.24	2.3	7.5		EX 15 ' SUMP	24 " RCP
EJ05							36 " RCP
EJ06							48 " RCP
DP01	B22	11.57	13.2	32.1			
DP02	B23	9.82	18.4	45.9			
DP03	B24	9.08	19.3	48.6			
DP04	B25	1.53	2.0	4.9			



INDEX MAP

N.T.S.

G01 — BASIN DESIGNATION
SUB-WATERSHED DESIGNATION
MINOR/MAJOR STORM COEFFICIENT
BASIN AREA IN ACRES
61 — DESIGN POINT DESIGNATION
MAJOR BASIN BOUNDARY
SUB-BASIN BOUNDARY
6130 — EXISTING CONTOUR
6130 — PROPOSED COUNTOUR
PROPOSED STORM SEWER
INITIAL OVERLAND TIME (Ti)
TRAVEL TIME (Tt)
OVERLAND TIME (To)

NOTE:

COUNTY PLAN REVIEW IS PROVIDED ONLY FOR GNERAL CONFORMANCE WITH COUNTY DESIGN CRITERIA. THE COUNTY IS NOT RESPONSIBLE FOR THE ACCURACY AND ADEQUACY OF THE DESIGN, DIMENSIONS, AND/OR ELEVATIONS WHICH SHALL BE CONFIRMED AT THE JOB SITE. THE COUNTY THROUGH THE APPROVAL OF THIS DOCUMENT ASSUMES NO RESPONSIBILITY FOR THE COMPLETENESS AND/OR ACCURACY OF THIS DOCUMENT.

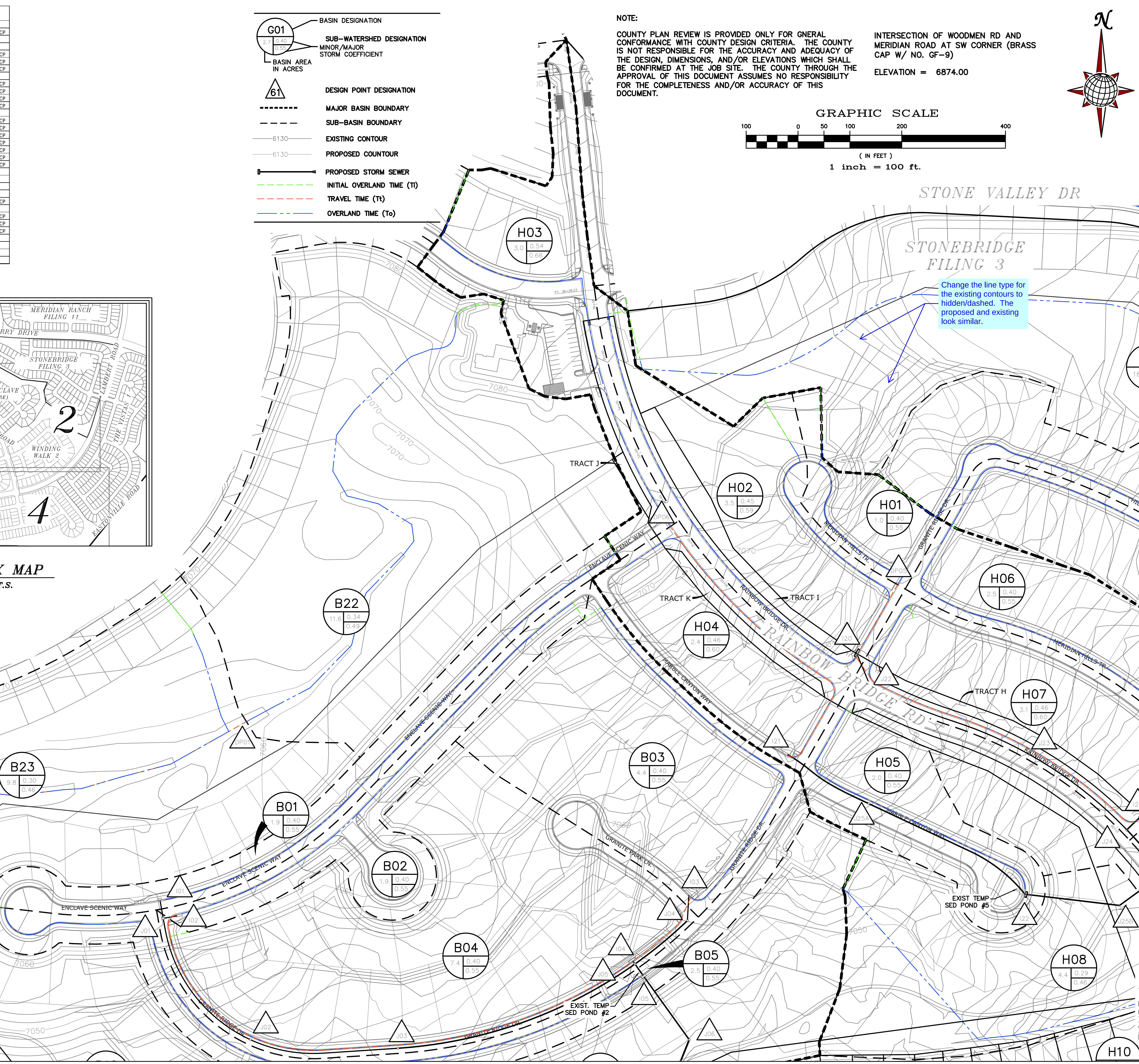
INTERSECTION OF WOODMEN RD AND MERIDIAN ROAD AT SW CORNER (BRASS CAP W/ NO. GF-9)

ELEVATION = 6874.00

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.



No. | Revisions | Date | Init. | Appr. | Date

TECH CONTRACTORS
12311 REX ROAD
FALCON, CO 80831
TELEPHONE: 719.495.7444
FAX: 719.495.2457

MERIDIAN RANCH

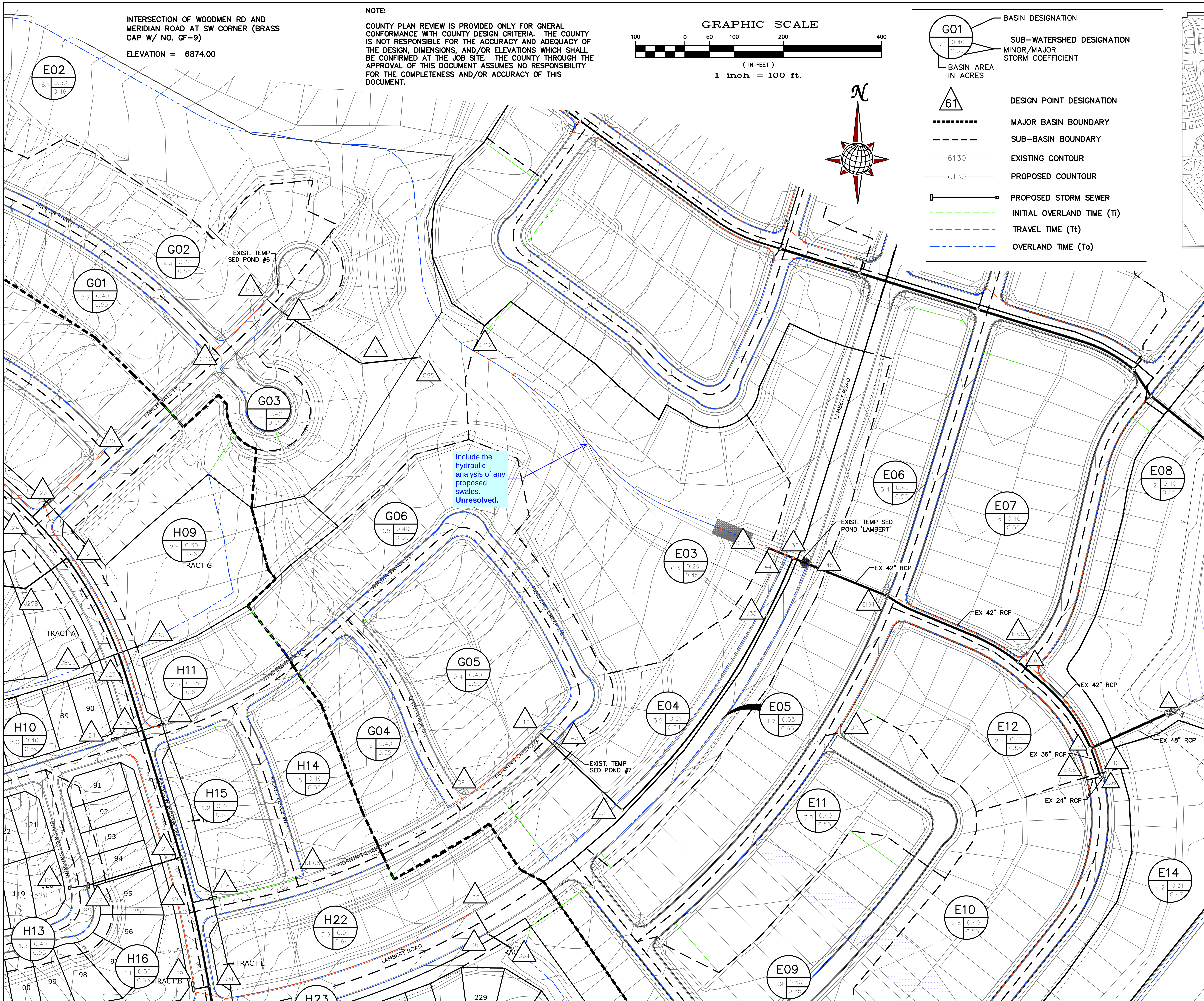
RATIONAL DRAINAGE MAP
FINAL DRAINAGE REPORT
WINDINGWALK FILING 3

Drawn by LCG
Checked by TAK
Date DEC 2017

Scale AS SHOWN

FIGURE 4

1 of 4



INTERSECTION OF WOODMEN RD AND MERIDIAN ROAD AT SW CORNER (BRASS CAP W/ NO. GF-9)

ELEVATION = 6874.00

NOTE:

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GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

N

G01 — BASIN DESIGNATION; SUB-WATERSHED DESIGNATION; MINOR/MAJOR STORM COEFFICIENT; BASIN AREA IN ACRES

61 — DESIGN POINT DESIGNATION

MAJOR BASIN BOUNDARY

SUB-BASIN BOUNDARY

6130 EXISTING CONTOUR

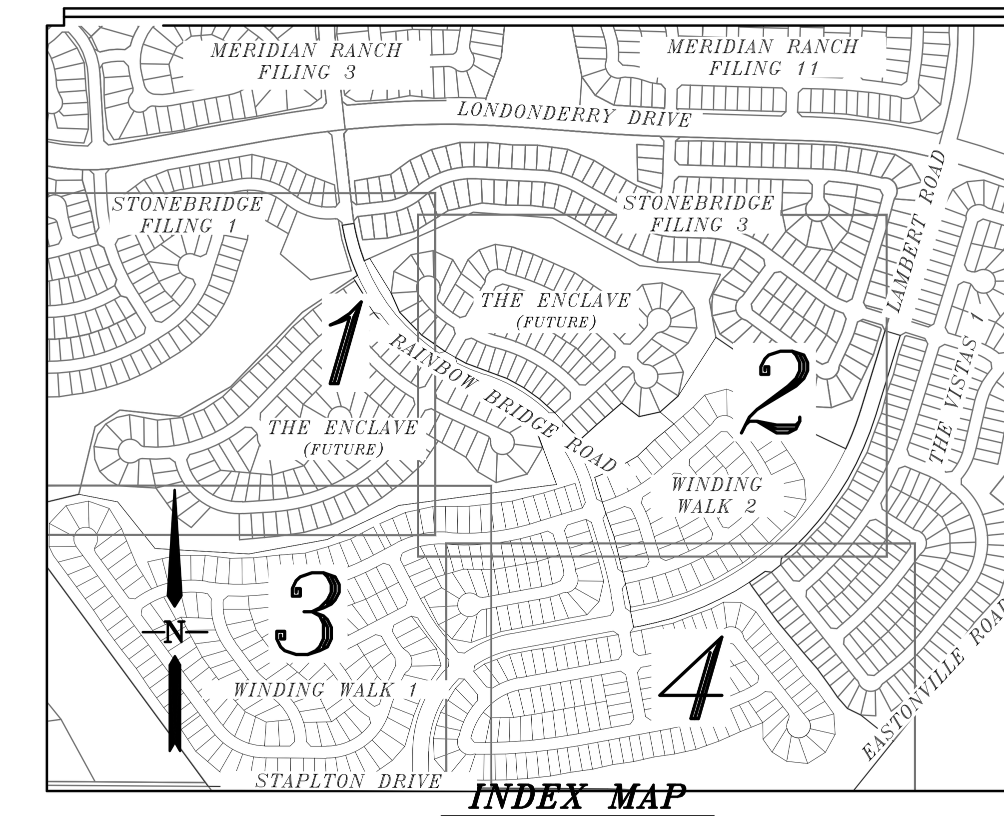
6130 PROPOSED COUNTOUR

PROPOSED STORM SEWER

INITIAL OVERLAND TIME (Ti)

TRAVEL TIME (Tt)

OVERLAND TIME (To)



INDEX MAP

N.T.S.

DP	BASIN	AREA (AC)	Q(10) (CFS)	Q(100) (CFS)	INLET	PIPE
I01	B01	1.89	2.6	6.0	PR 5 ' SUMP	18 " RCP
I02	B02	1.90	2.7	6.3	PR 10 ' FLOW-BY	18 " RCP
J01						18 " RCP
J02						18 " RCP
J03						24 " RCP
I03	B03	4.40	7.2	16	PR 15 ' FORCED SUMP	18 " RCP
J04						24 " RCP
I04	B04	7.40	9.2	23	PR 15 ' SUMP	18 " RCP
J05						24 " RCP
I05	B05	2.50	3.3	7.6	PR 10 ' SUMP	24 " RCP
J06						30 " RCP
CB01	B06	5.82	6.6	17	PR Type C	36 " RCP
I06	B07	3.34	4.7	11	PR 10 ' SUMP	36 " RCP
I07	B08	3.18	5.2	12	PR 15 ' FORCED SUMP	18 " RCP
J07						36 " RCP
I08	B09	2.43	3.9	9.0	PR 15 ' FORCED SUMP	18 " RCP
J08						42 " RCP
J09						42 " RCP
J10						42 " RCP
I09	B10	4.07	5.7	13	PR 15 ' FORCED SUMP	18 " RCP
J11						18 " RCP
I10	B11	3.25	4.7	11	PR 10 ' FORCED SUMP	18 " RCP
J12						18 " RCP
I11	B12	7.07	10	24	PR 15 ' SUMP	18 " RCP
J13						24 " RCP
I12	B13	2.28	3.6	12	PR 10 ' SUMP	30 " RCP
J14						36 " RCP
J15						48 " RCP
I13	B14	4.94	12	25	PR 20 ' SUMP	24 " RCP
I14	B15	1.43	3.8	12	PR 20 ' FLOW-BY	18 " RCP
J16						48 " RCP
EI15	B16	3.24	8.1	16	PR 20 ' FLOW-BY	24 " RCP
EI16	B17	1.72	5.8	10	PR 20 ' FLOW-BY	30 " RCP
EJ16						48 " RCP
EJ17						48 " RCP
EI17	E15	1.71	5.1	10	PR 5 ' SUMP	24 " RCP
EI18	E16	1.51	4.1	7.7	PR 12 ' SUMP	24 " RCP
EJ18						54 " RCP
EJ19						54 " RCP
CB02	B18	6.13	6.2	16	PR Type C	24 " RCP
J17						24 " RCP
I17	B19	4.07	5.9	14	PR 10 ' SUMP	18 " RCP
J18						30 " RCP
J19						30 " RCP
J20						30 " RCP
I18	B20	3.26	4.6	12	PR 5 ' SUMP	18 " RCP
J21						30 " RCP
DP05	H01	0.99	1.5	3.5		
I19	B21	2.00	2.7	6.1	PR 10 ' SUMP	30 " RCP
I20	H02	3.48	7.4	16	PR 15 ' FORCED SUMP	18 " RCP
J22						18 " RCP
J23						18 " RCP
DP07	H06	2.52	4.3	9.9		
I23	H07	3.14	8.4	20	PR 15 ' FORCED SUMP	24 " RCP
J24						24 " RCP
DP06	H03	2.97	5.8	12		
I21	H04	2.37	9.0	19	PR 20 ' FORCED SUMP	24 " RCP
J25A						24 " RCP
I22	H05	2.04	3.5	7.9	PR 10 ' SUMP	24 " RCP
J25B						24 " RCP
J26						30 " RCP
CB03	H08	4.40	4.6	12	PR Type C	18 " RCP
CB04	H09	2.78	3.1	8.0	PR Type C	18 " RCP
J27						42 " RCP
I24	H10	4.98	8.2	18	PR 10 ' FORCED SUMP	18 " RCP
I25	H11	1.98	3.8	11	PR 10 ' FORCED SUMP	18 " RCP
J28						42 " RCP
I26	H12	4.88	6.9	16	PR 5 ' SUMP	18 " RCP
I27	H13	1.28	2.1	8.7	PR 10 ' SUMP	24 " RCP
J29						42 " RCP
DP08	H14	1.53	2.7	6.2		
I28	H15	1.88	5.8	13	PR 15 ' FORCED SUMP	18 " RCP
J30						42 " RCP
I29	H16	4.15	7.7	21	PR 20 ' FORCED SUMP	24 " RCP
J31						48 " RCP
I30	H17	3.44	6.2	13	PR 10 ' FORCED SUMP	18 " RCP
J32						48 " RCP
I31	H18	5.99	8.6	22	PR 20 ' FORCED SUMP	24 " RCP
J33						48 " RCP
J34						48 " RCP
I32	H19	3.83	5.4	12	PR 10 ' FORCED SUMP	24 " RCP
I33	H20	4.59	7.0	16	PR 5 ' SUMP	18 " RCP
J35						48 " RCP
I34	H21	4.01	5.0	17	PR 10 ' SUMP	48 " RCP
I35	H22	3.03	5.7	12	PR 5 ' SUMP	18 " RCP
I36	H23	1.02	3.0	5.7	PR 5 ' SUMP	24 " RCP
OS4	H24	3.28	11	24		
POND	H25	11.31	12	32		
EI37a	H26	3.60	4.6	12	EX 20 ' FLOW-BY	30 " RCP
EI37b			0.9	4.0	EX 20 ' FLOW-BY	30 " RCP
DP09	H27	2.21	5.7	14.6		
EI38	H28	1.68	5.7	10	EX 20 ' FLOW-BY	30 " RCP
EI39			1.3	3.2	EX 20 ' FLOW-BY	
DP10	G01	2.70	4.6	11		
I40	G02	4.36	9.7	22	PR 10 ' SUMP	18 " RCP
I41	G03	1.21	2.1	8.1	PR 10 ' SUMP	24 " RCP
J33						24 " RCP
DP11	G04	1.64	2.9	6.6		
I42	G05	3.42	8.3	19	PR 10 ' SUMP	18 " RCP
I43	G06	3.53	4.7	12	PR 10 ' SUMP	24 " RCP
J37						30 " RCP
J38						30 " RCP
DP12	E02	18.07	17	42		
DP13	E03	6.26	19	48		42 " RCP
I44	E04	3.91	8.4	17	PR 10 ' SUMP	42 " RCP
J39						24 " RCP
I45	E05	1.72	3.6	7.5	PR 10 ' SUMP	42 " RCP
EI04	E06	5.41	8.4	19	EX 10 ' SUMP	42 " RCP
EI05	E07	4.88	6.9	16	EX 10 ' FORCED SUMP	18 " RCP
EJ04						42 " RCP
DP1	E09	2.93	4.3	9.8		
EI06	E10	4.87	9.2	21		
DP2	E11	2.98	4.4	10		
EI06	E12	2.59	7.5	17		
EI06	0	0.00	15.8	36	EX 20 ' SUMP	24 " RCP
EI07	E13	3.17	5.8	20		
EI07	E08	1.24	2.3	7.5	EX 15 ' SUMP	24 " RCP
EJ05						36 " RCP
EJ06						48 " RCP
DP01	B22	11.57	13	32		
DP02	B23	9.82	18	46		
DP03	B24	9.08	19	49		
DP04	B25	1.53	2.0	4.9		

No.	Revisions	Date	Int.	Appr.	Date
-	-	-	-		

TECH CONTRACTORS
12311 REX ROAD
FALCON, CO 80831
TELEPHONE: 719.495.7444
FAX: 719.495.2457

MERIDIAN RANCH

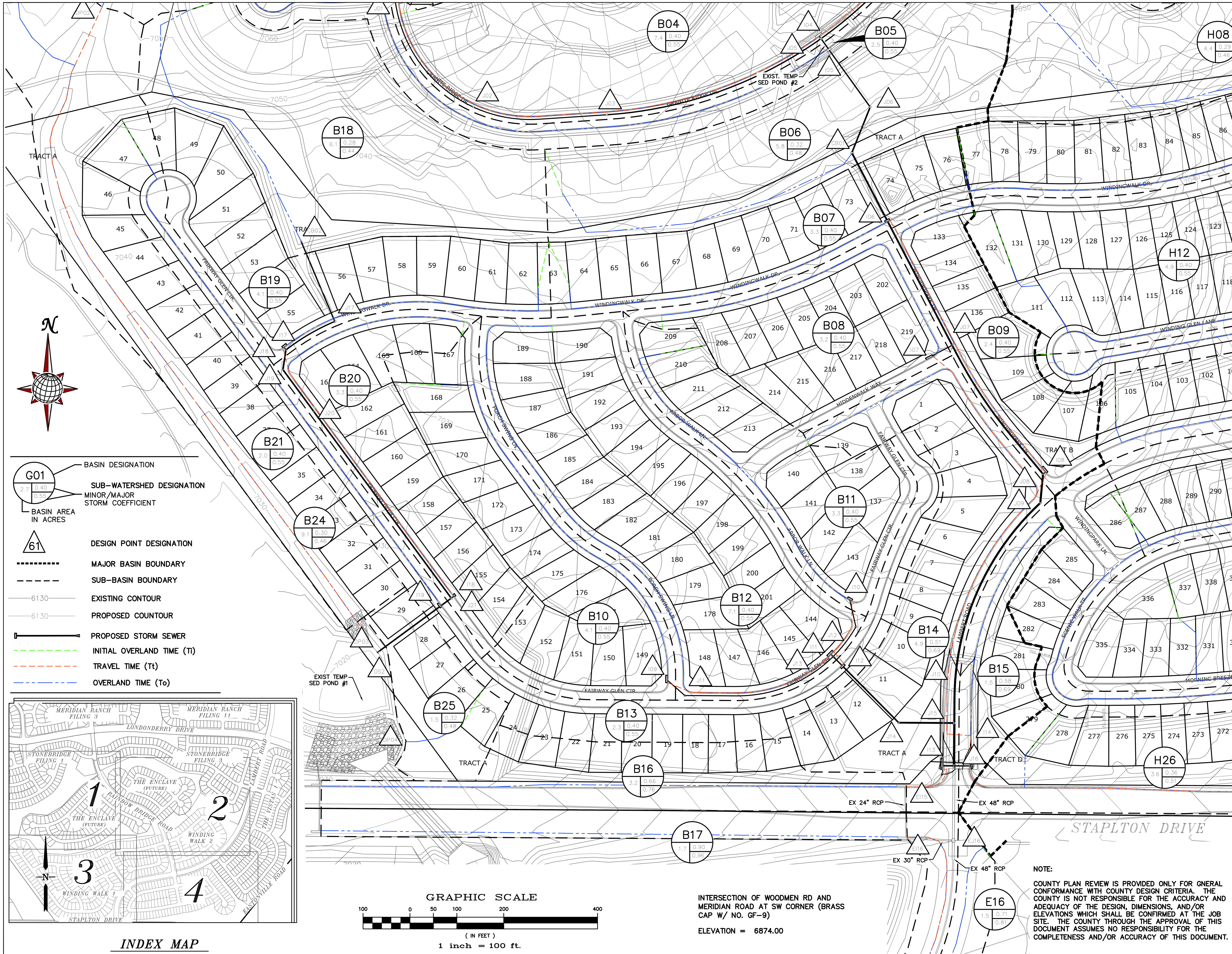
RATIONAL DRAINAGE MAP
FINAL DRAINAGE REPORT
WINDINGWALK FILING 1

Drawn by LCG
Checked by TAK
Date DEC 2017
Scale AS SHOWN

2 of 4

FIGURE 4

S:\CivilProj\Winding Walk Filing 1\DWG\PLAN SHEETS\BASIN MAPS\PDR-FDR\PDR-FDR-WW1-RATIONAL.dwg, DFR2, 3/26/2018 12:13:55 PM



INTERSECTION OF WOODMEN RD AND MERIDIAN ROAD AT SW CORNER (BRASS CAP W/ NO. GF-9)

ELEVATION = 6874.00

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DP	BASIN	AREA (AC)	Q(10) (CFS)	Q(100) (CFS)		INLET	PIPE
I01	B01	1.89	2.6	6.0		PR 5 ' SUMP	18 " RCP
I02	B02	1.90	2.7	6.3		PR 10 ' FLOW-BY	18 " RCP
J01							18 " RCP
J02							18 " RCP
J03							24 " RCP
I03	B03	4.40	7.2	16		PR 15 ' FORCED SUMP	18 " RCP
J04							24 " RCP
I04	B04	7.40	9.2	23		PR 15 ' SUMP	18 " RCP
J05							24 " RCP
I05	B05	2.50	3.3	7.6		PR 10 ' SUMP	24 " RCP
J06							30 " RCP
CB01	B06	5.82	6.6	17		PR Type C	36 " RCP
I06	B07	3.34	4.7	11		PR 10 ' SUMP	36 " RCP
I07	B08	3.18	5.2	12		PR 15 ' FORCED SUMP	18 " RCP
J07							36 " RCP
I08	B09	2.43	3.9	9.0		PR 15 ' FORCED SUMP	18 " RCP
J08							42 " RCP
J09							42 " RCP
J10							42 " RCP
I09	B10	4.07	5.7	13		PR 15 ' FORCED SUMP	18 " RCP
J11							18 " RCP
I10	B11	3.25	4.7	11		PR 10 ' FORCED SUMP	18 " RCP
J12							18 " RCP
I11	B12	7.07	10	24		PR 15 ' SUMP	18 " RCP
J13							24 " RCP
I12	B13	2.28	3.6	12		PR 10 ' SUMP	30 " RCP
J14							36 " RCP
J15							48 " RCP
I13	B14	4.94	12	25		PR 20 ' SUMP	24 " RCP
I14	B15	1.43	3.8	12		PR 20 ' FLOW-BY	18 " RCP
J16							48 " RCP
EI15	B16	3.24	8.1	16		PR 20 ' FLOW-BY	24 " RCP
EI16	B17	1.72	5.8	10		PR 20 ' FLOW-BY	30 " RCP
EJ16							48 " RCP
EJ17							48 " RCP
EI17	E15	1.71	5.1	10		PR 5 ' SUMP	24 " RCP
EI18	E16	1.51	4.1	7.7		PR 12 ' SUMP	24 " RCP
EJ18							54 " RCP
EJ19							54 " RCP
CB02	B18	6.13	6.2	16		PR Type C	24 " RCP
J17							24 " RCP
I17	B19	4.07	5.9	14		PR 10 ' SUMP	18 " RCP
J18							30 " RCP
J19							30 " RCP
J20							30 " RCP
I18	B20	3.26	4.6	12		PR 5 ' SUMP	18 " RCP
J21							30 " RCP
DP05	H01	0.99	1.5	3.5			
I19	B21	2.00	2.7	6.1		PR 10 ' SUMP	30 " RCP
I20	H02	3.48	7.4	16		PR 15 ' FORCED SUMP	18 " RCP
J22							18 " RCP
J23							18 " RCP
DP07	H06	2.52	4.3	9.9			
I23	H07	3.14	8.4	20		PR 15 ' FORCED SUMP	24 " RCP
J24							24 " RCP
DP06	H03	2.97	5.8	12			
I21	H04	2.37	9.0	19		PR 20 ' FORCED SUMP	24 " RCP
J25A							24 " RCP
I22	H05	2.04	3.5	7.9		PR 10 ' SUMP	24 " RCP
J25B							24 " RCP
J26							30 " RCP
CB03	H08	4.40	4.6	12		PR Type C	18 " RCP
CB04	H09	2.78	3.1	8.0		PR Type C	18 " RCP
J27							42 " RCP
I24	H10	4.98	8.2	18		PR 10 ' FORCED SUMP	18 " RCP
I25	H11	1.98	3.8	11		PR 10 ' FORCED SUMP	18 " RCP
J28							42 " RCP
I26	H12	4.88	6.9	16		PR 5 ' SUMP	18 " RCP
I27	H13	1.28	2.1	8.7		PR 10 ' SUMP	24 " RCP
J29							42 " RCP
DP08	H14	1.53	2.7	6.2			
I28	H15	1.88	5.8	13		PR 15 ' FORCED SUMP	18 " RCP
J30							42 " RCP
I29	H16	4.15	7.7	21		PR 20 ' FORCED SUMP	24 " RCP
J31							48 " RCP
I30	H17	3.44	6.2	13		PR 10 ' FORCED SUMP	18 " RCP
J32							48 " RCP
I31	H18	5.99	8.6	22		PR 20 ' FORCED SUMP	24 " RCP
J33							48 " RCP
J34							48 " RCP
I32	H19	3.83	5.4	12		PR 10 ' FORCED SUMP	24 " RCP
I33	H20	4.59	7.0	16		PR 5 ' SUMP	18 " RCP
J35							48 " RCP
I34	H21	4.01	5.0	17		PR 10 ' SUMP	48 " RCP
I35	H22	3.03	5.7	12		PR 5 ' SUMP	18 " RCP
I36	H23	1.02	3.0	5.7		PR 5 ' SUMP	24 " RCP
OS4	H24	3.28	11	24			
POND	H25	11.31	12	32			
EI37a	H26	3.60	4.6	12		EX 20 ' FLOW-BY	30 " RCP
EI37b			0.9	4.0		EX 20 ' FLOW-BY	30 " RCP
DP09	H27	2.21	5.7	14.6			
EI38	H28	1.68	5.7	10		EX 20 ' FLOW-BY	30 " RCP
EI39			1.3	3.2		EX 20 ' FLOW-BY	
DP10	G01	2.70	4.6	11			
I40	G02	4.36	9.7	22		PR 10 ' SUMP	18 " RCP
I41	G03	1.21	2.1	8.1		PR 10 ' SUMP	24 " RCP
J33							24 " RCP
DP11	G04	1.64	2.9	6.6			
I42	G05	3.42	8.3	19		PR 10 ' SUMP	18 " RCP
I43	G06	3.53	4.7	12		PR 10 ' SUMP	24 " RCP
J37							30 " RCP
J38							30 " RCP
DP12	E02	18.07	17	42			
DP13	E03	6.26	19	48			42 " RCP
I44	E04	3.91	8.4	17		PR 10 ' SUMP	42 " RCP
J39							24 " RCP
I45	E05	1.72	3.6	7.5		PR 10 ' SUMP	42 " RCP
EI04	E06	5.41	8.4	19		EX 10 ' SUMP	42 " RCP
EI05	E07	4.88	6.9	16		EX 10 ' FORCED SUMP	18 " RCP
EJ04							42 " RCP
DP1	E09	2.93	4.3	9.8			
EI06	E10	4.87	9.2	21			
DP2	E11	2.98	4.4	10			
EI06	E12	2.59	7.5	17			
EI06	0	0.00	15.8	36		EX 20 ' SUMP	24 " RCP
EI07	E13	3.17	5.8	20			
EI07	E08	1.24	2.3	7.5		EX 15 ' SUMP	24 " RCP
EJ05							36 " RCP
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DP01	B22	11.57	13	32			
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MERIDIAN RANCH

RATIONAL DRAINAGE MAP
FINAL DRAINAGE REPORT
WINDINGWALK FILING 1

No. | Revisions | Date | Init. | Appr. | Date

Drawn by LCG
Checked by TAK
Date DEC 2017
Scale AS SHOWN

FIGURE 4

3 of 4

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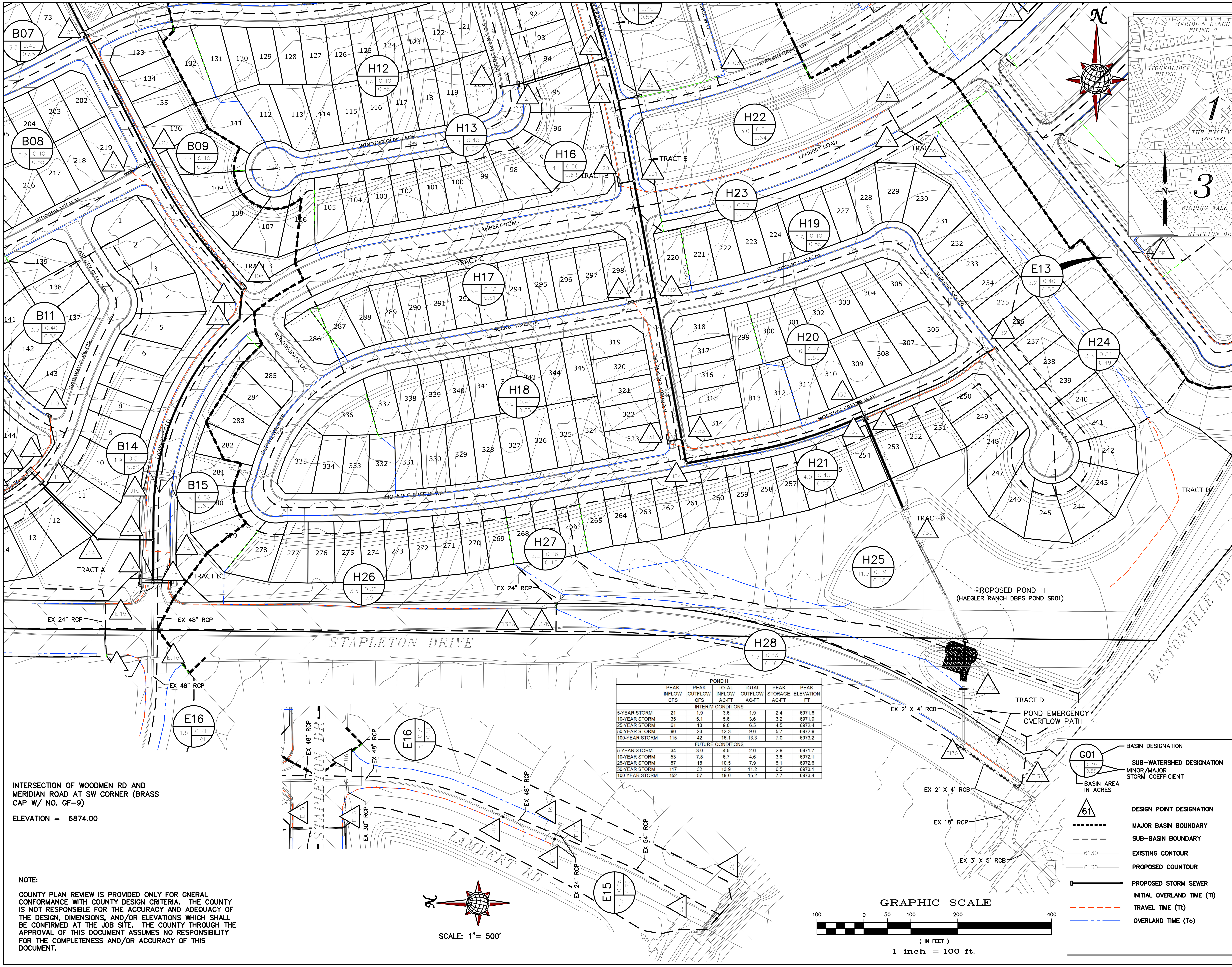

POND H						
	PEAK INFLOW	PEAK OUTFLOW	TOTAL INFLOW	TOTAL OUTFLOW	PEAK STORAGE	PEAK ELEVATION
	CFS	CFS	AC-FT	AC-FT	AC-FT	FT
INTERIM CONDITIONS						
5-YEAR STORM	21	1.9	3.6	1.9	2.4	6971.6
10-YEAR STORM	35	5.1	5.6	3.6	3.2	6971.9
25-YEAR STORM	61	13	9.0	6.5	4.5	6972.4
50-YEAR STORM	86	23	12.3	9.6	5.7	6972.8
100-YEAR STORM	115	42	16.1	13.3	7.0	6973.2
FUTURE CONDITIONS						
5-YEAR STORM	34	3.0	4.5	2.6	2.8	6971.7
10-YEAR STORM	53	7.8	6.7	4.6	3.6	6972.1
25-YEAR STORM	87	18	10.5	7.9	5.1	6972.6
50-YEAR STORM	117	32	13.9	11.2	6.5	6973.1
100-YEAR STORM	152	57	18.0	15.2	7.7	6973.4

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SCALE: 1"= 500'

GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)

1 inch = 100 ft.

G01 — BASIN DESIGNATION
SUB-WATERSHED DESIGNATION
MINOR/MAJOR STORM COEFFICIENT
BASIN AREA IN ACRES

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MAJOR BASIN BOUNDARY

SUB-BASIN BOUNDARY

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6130 PROPOSED COUNTOUR

PROPOSED STORM SEWER

INITIAL OVERLAND TIME (Ti)

TRAVEL TIME (Tt)

OVERLAND TIME (To)

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J02							18 " RCP
J03							24 " RCP
I03	B03	4.40	7.2	16		PR 15 ' FORCED SUMP	18 " RCP
J04							24 " RCP
I04	B04	7.40	9.2	23		PR 15 ' SUMP	18 " RCP
J05							24 " RCP
I05	B05	2.50	3.3	7.6		PR 10 ' SUMP	24 " RCP
J06							30 " RCP
CB01	B06	5.82	6.6	17		PR Type C	36 " RCP
I06	B07	3.34	4.7	11		PR 10 ' SUMP	36 " RCP
I07	B08	3.18	5.2	12		PR 15 ' FORCED SUMP	18 " RCP
J07							36 " RCP
I08	B09	2.43	3.9	9.0		PR 15 ' FORCED SUMP	18 " RCP
J08							42 " RCP
J09							42 " RCP
J10							42 " RCP
I09	B10	4.07	5.7	13		PR 15 ' FORCED SUMP	18 " RCP
J11							18 " RCP
I10	B11	3.25	4.7	11		PR 10 ' FORCED SUMP	18 " RCP
J12							18 " RCP
I11	B12	7.07	10	24		PR 15 ' SUMP	18 " RCP
J13							24 " RCP
I12	B13	2.28	3.6	12		PR 10 ' SUMP	30 " RCP
J14							36 " RCP
J15							48 " RCP
I13	B14	4.94	12	25		PR 20 ' SUMP	24 " RCP
I14	B15	1.43	3.8	12		PR 20 ' FLOW-BY	18 " RCP
J16							48 " RCP
EI15	B16	3.24	8.1	16		PR 20 ' FLOW-BY	24 " RCP
EI16	B17	1.72	5.8	10		PR 20 ' FLOW-BY	30 " RCP
EJ16							48 " RCP
EJ17							48 " RCP
EI17	E15	1.71	5.1	10		PR 5 ' SUMP	24 " RCP
EI18	E16	1.51	4.1	7.7		PR 12 ' SUMP	24 " RCP
EJ18							54 " RCP
EJ19							54 " RCP
CB02	B18	6.13	6.2	16		PR Type C	24 " RCP
J17							24 " RCP
I17	B19	4.07	5.9	14		PR 10 ' SUMP	18 " RCP
J18							30 " RCP
J19							30 " RCP
J20							30 " RCP
I18	B20	3.26	4.6	12		PR 5 ' SUMP	18 " RCP
J21							30 " RCP
DP05	H01	0.99	1.5	3.5			
I19	B21	2.00	2.7	6.1		PR 10 ' SUMP	30 " RCP
I20	H02	3.48	7.4	16		PR 15 ' FORCED SUMP	18 " RCP
J22							18 " RCP
J23							18 " RCP
DP07	H06	2.52	4.3	9.9			
I23	H07	3.14	8.4	20		PR 15 ' FORCED SUMP	24 " RCP
J24							24 " RCP
DP06	H03	2.97	5.8	12			
I21	H04	2.37	9.0	19		PR 20 ' FORCED SUMP	24 " RCP
J25A							24 " RCP
I22	H05	2.04	3.5	7.9		PR 10 ' SUMP	24 " RCP
J25B							24 " RCP
J26							30 " RCP
CB03	H08	4.40	4.6	12		PR Type C	18 " RCP
CB04	H09	2.78	3.1	8.0		PR Type C	18 " RCP
J27							42 " RCP
I24	H10	4.98	8.2	18		PR 10 ' FORCED SUMP	18 " RCP
I25	H11	1.98	3.8	11		PR 10 ' FORCED SUMP	18 " RCP
J28							42 " RCP
I26	H12	4.88	6.9	16		PR 5 ' SUMP	18 " RCP
I27	H13	1.28	2.1	8.7		PR 10 ' SUMP	24 " RCP
J29							42 " RCP
DP08	H14	1.53	2.7	6.2			
I28	H15	1.88	5.8	13		PR 15 ' FORCED SUMP	18 " RCP
J30							42 " RCP
I29	H16	4.15	7.7	21		PR 20 ' FORCED SUMP	24 " RCP
J31							48 " RCP
I30	H17	3.44	6.2	13		PR 10 ' FORCED SUMP	18 " RCP
J32							48 " RCP
I31	H18	5.99	8.6	22		PR 20 ' FORCED SUMP	24 " RCP
J33							48 " RCP
J34							48 " RCP
I32	H19	3.83	5.4	12		PR 10 ' FORCED SUMP	24 " RCP
I33	H20	4.59	7.0	16		PR 5 ' SUMP	18 " RCP
J35							48 " RCP
I34	H21	4.01	5.0	17		PR 10 ' SUMP	48 " RCP
I35	H22	3.03	5.7	12		PR 5 ' SUMP	18 " RCP
I36	H23	1.02	3.0	5.7		PR 5 ' SUMP	24 " RCP
OS4	H24	3.28	11	24			
POND	H25	11.31	12	32			
EI37a	H26	3.60	4.6	12		EX 20 ' FLOW-BY	30 " RCP
EI37b			0.9	4.0		EX 20 ' FLOW-BY	30 " RCP
DP09	H27	2.21	5.7	14.6			
EI38	H28	1.68	5.7	10		EX 20 ' FLOW-BY	30 " RCP
EI39			1.3	3.2		EX 20 ' FLOW-BY	
DP10	G01	2.70	4.6	11			
I40	G02	4.36	9.7	22		PR 10 ' SUMP	18 " RCP
I41	G03	1.21	2.1	8.1		PR 10 ' SUMP	24 " RCP
J33							24 " RCP
DP11	G04	1.64	2.9	6.6			
I42	G05	3.42	8.3	19		PR 10 ' SUMP	18 " RCP
I43	G06	3.53	4.7	12		PR 10 ' SUMP	24 " RCP
J37							30 " RCP
J38							30 " RCP
DP12	E02	18.07	17	42			
DP13	E03	6.26	19	48			42 " RCP
I44	E04	3.91	8.4	17		PR 10 ' SUMP	42 " RCP
J39							24 " RCP
I45	E05	1.72	3.6	7.5		PR 10 ' SUMP	42 " RCP
EI04	E06	5.41	8.4	19		EX 10 ' SUMP	42 " RCP
EI05	E07	4.88	6.9	16		EX 10 ' FORCED SUMP	18 " RCP
EJ04							42 " RCP
DP1	E09	2.93	4.3	9.8			
EI06	E10	4.87	9.2	21			
DP2	E11	2.98	4.4	10			
EI06	E12	2.59	7.5	17			
EI06	0	0.00	15.8	36		EX 20 ' SUMP	24 " RCP
EI07	E13	3.17	5.8	20			
EI07	E08	1.24	2.3	7.5		EX 15 ' SUMP	24 " RCP
EJ05							36 " RCP
EJ06							48 " RCP
DP01	B22	11.57	13	32			
DP02	B23	9.82	18	46			
DP03	B24	9.08	19	49			
DP04	B25	1.53	2.0	4.9			

FIGURE 4

No. | Revisions | Date | Init. | Appr. | Date

TECH CONTRACTORS
12311 REX ROAD
FALCON, CO 80831
TELEPHONE: 719.495.7444
FAX: 719.495.2457

MERIDIAN RANCH

RATIONAL DRAINAGE MAP
FINAL DRAINAGE REPORT
WINDINGWALK FILING 1

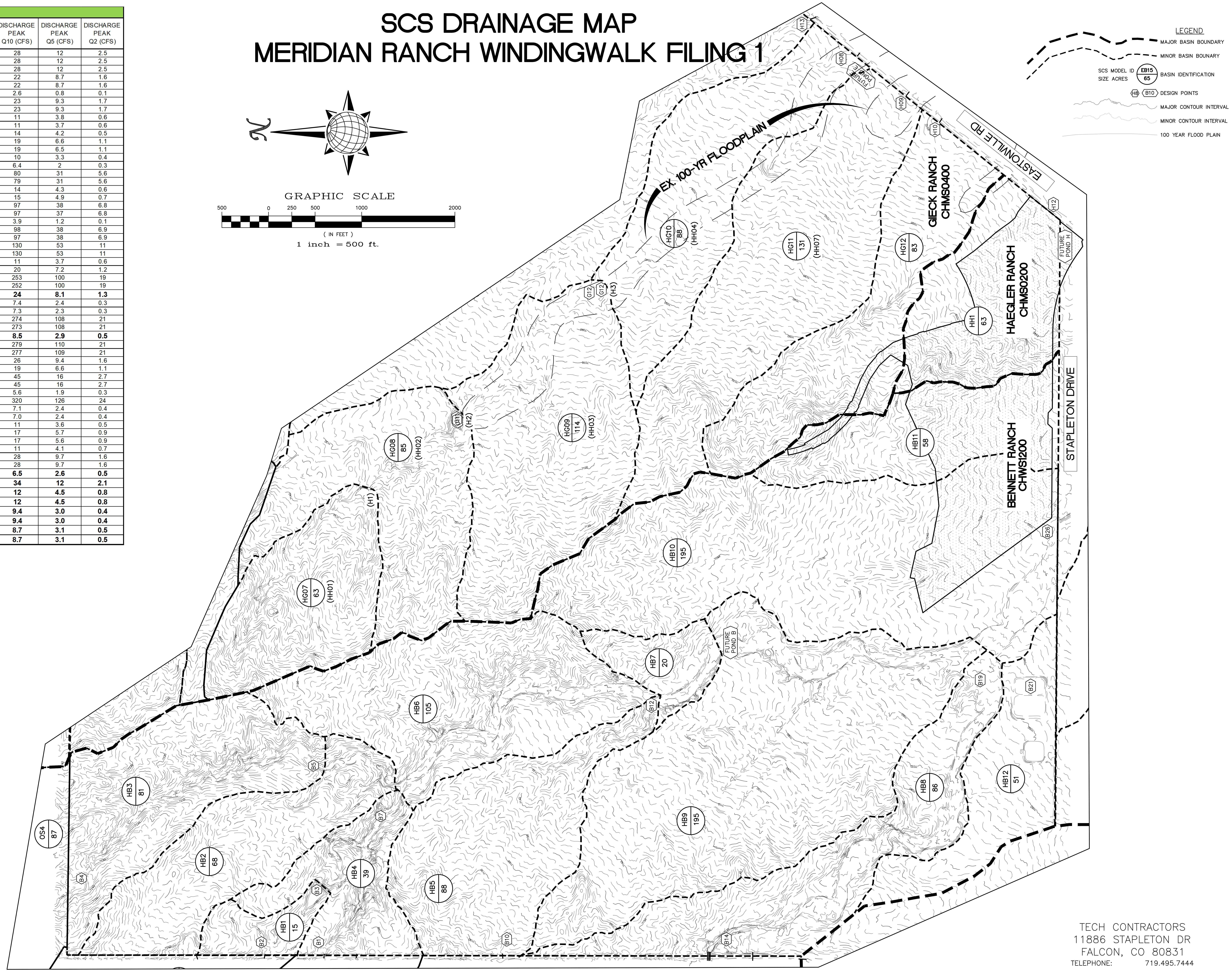
Drawn by LCG
Checked by TAK
Date DEC 2017
Scale AS SHOWN

4 of 4

S:\Civil\Proj\Winding Walk Filing 1\DWG\PLAN SHEETS\BASIN MAPS\PDR-FDR\PDR-FDR-WW1-RATIONAL.dwg, DFR4, 3/26/2018 12:08:41 PM

SCS DRAINAGE MAP
MERIDIAN RANCH WINDINGWALK FILING 1

HISTORIC							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
OS02	0.2219	140	96	62	28	12	2.5
B01	0.2219	140	96	62	28	12	2.5
B01-B07	0.2219	139	96	61	28	12	2.5
OS03	0.1984	123	83	51	22	8.7	1.6
B02-B03	0.1984	119	81	51	22	8.7	1.6
HB01	0.0234	18	12	6.8	2.6	0.8	0.1
B03	0.2218	131	88	55	23	9.3	1.7
B03-B07	0.2218	129	88	54	23	9.3	1.7
OS04	0.1359	77	51	30	11	3.8	0.6
B04-B05	0.1359	76	50	30	11	3.7	0.6
HB03	0.1266	94	61	36	14	4.2	0.5
B05	0.2625	137	87	50	19	6.6	1.1
B05-B07	0.2625	137	85	49	19	6.5	1.1
HB02	0.1063	71	47	28	10	3.3	0.4
HB04	0.0609	43	28	17	6.4	2	0.3
B07	0.8734	490	321	195	80	31	5.6
B07-B12	0.8734	486	319	193	79	31	5.6
HB05	0.1375	94	62	37	14	4.3	0.6
HB06	0.1641	104	68	40	15	4.9	0.7
B12	1.175	636	415	243	97	38	6.8
B12-PB	1.175	629	413	242	97	37	6.8
HB07	0.0313	27	18	11	3.9	1.2	0.1
POND B	1.2063	639	420	245	98	38	6.9
PB-19	1.2063	636	416	244	97	38	6.9
OS01	1.5594	726	488	303	130	53	11
OS01-B19	1.5594	720	487	301	130	53	11
HB08	0.1344	76	50	30	11	3.7	0.6
HB09	0.3047	132	86	51	20	7.2	1.2
B19	3.2048	1490	990	602	253	100	19
B19-B26	3.2048	1475	987	599	252	100	19
HB10	**0.3047**	**162**	**105**	**63**	**24**	**8.1**	**1.3**
HB12	0.0797	51	33	19	7.4	2.4	0.3
HB12-B26	0.0797	49	33	19	7.3	2.3	0.3
B26	3.5892	1651	1086	657	274	108	21
26-32	3.5892	1633	1081	656	273	108	21
HB11	**0.1125**	**57**	**37**	**22**	**8.5**	**2.9**	**0.5**
32	3.7017	1678	1112	672	279	110	21
32-37	3.7017	1667	1104	667	277	109	21
B-14	0.4039	171	111	67	26	9.4	1.6
B-13	0.2813	122	80	47	19	6.6	1.1
36	0.6852	293	191	114	45	16	2.7
36-37	0.6852	290	190	113	45	16	2.7
B-15	0.075	37	24	14	5.6	1.9	0.3
37	4.4619	1988	1306	782	320	126	24
HG07	0.0984	47	31	18	7.1	2.4	0.4
HG07-G11	0.0984	47	31	18	7.0	2.4	0.4
HG08	0.1328	73	48	28	11	3.6	0.5
G11	0.2312	115	75	44	17	5.7	0.9
G11-G12	0.2312	114	75	44	17	5.6	0.9
HG09	0.1781	73	48	29	11	4.1	0.7
G12	0.4093	187	122	72	28	9.7	1.6
G12-H08	0.4093	183	121	71	28	9.7	1.6
HG10	**0.1375**	**39**	**26**	**16**	**6.5**	**2.6**	**0.5**
H08	**0.5468**	**216**	**142**	**85**	**34**	**12**	**2.1**
HG11	**0.2047**	**77**	**51**	**30**	**12**	**4.5**	**0.8**
H09	**0.2047**	**77**	**51**	**30**	**12**	**4.5**	**0.8**
HH01	**0.0984**	**65**	**43**	**25**	**9.4**	**3.0**	**0.4**
H12	**0.0984**	**65**	**43**	**25**	**9.4**	**3.0**	**0.4**
HG12	**0.1297**	**57**	**38**	**22**	**8.7**	**3.1**	**0.5**
H10	**0.1297**	**57**	**38**	**22**	**8.7**	**3.1**	**0.5**



TECH CONTRACTORS
11886 STAPLETON DR
FALCON, CO 80831
TELEPHONE: 719.495.7444

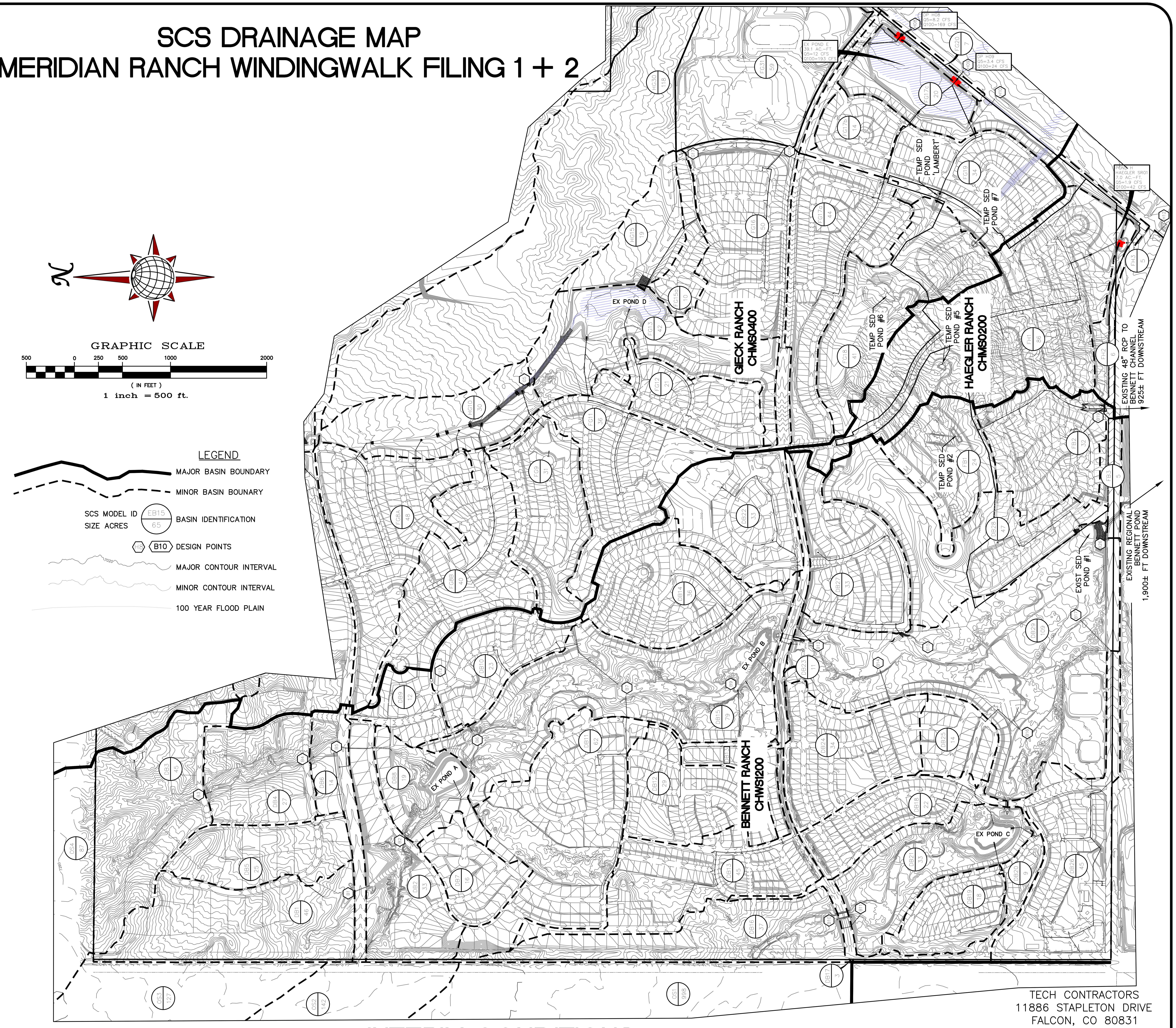
HISTORIC CONDITIONS

FIGURE 5

MAR 2018

SCS DRAINAGE MAP
MERIDIAN RANCH WINDINGWALK FILING 1 + 2

HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
INTERIM CONDITIONS							
OS01	1.5594	726	488	303	130	53	11
DB16	0.0578	85	66	50	32	22	12
B10	1.6172	765	516	322	143	60	13
B10-B11	1.6172	763	514	322	142	60	13
DB17	0.0048	15	13	11	8.3	6.9	5.3
B11	1.622	765	516	323	143	61	15
B11-POND C	1.622	759	515	321	143	61	14
DB21	0.0519	49	34	22	11	4.9	1.0
DB18	0.0346	60	47	36	24	16	9.0
DB19	0.0281	34	25	18	11	6.2	2.6
DB20	0.0147	23	18	13	8.5	5.8	3.2
POND C	1.7513	727	492	302	126	50	11
POND C-B16	1.7513	725	488	300	126	50	11
DB25	0.0211	40	32	25	16	11	6.6
B16	1.7724	730	492	303	128	51	11
B16-B17	1.7724	724	492	302	127	51	11
DB26	0.0682	124	101	80	57	42	27
B17	1.8406	751	511	315	135	55	31
B17-B26	1.8406	748	508	315	135	55	30
OS03	0.1984	123	83	51	22	8.7	1.6
DB01	0.0719	83	61	42	23	12	4.3
B01	0.2703	190	132	85	39	18	4.6
B01-B02	0.2703	184	129	83	39	18	4.6
OS02	0.2219	140	96	62	28	12	2.5
DB02	0.0516	66	48	34	18	9.6	2.9
B02	0.5438	358	249	161	75	34	8.1
B02-POND A	0.5438	357	248	160	74	34	8.1
OS04	0.1359	77	51	30	11	3.8	0.6
DB03	0.0703	63	45	30	14	6.5	1.4
B03	0.2062	137	92	57	24	9.4	1.5
B03-B04	0.2062	135	92	56	24	9.1	1.5
DB04	0.0422	40	28	19	9.6	4.6	1.1
DB05	0.0384	35	25	17	8.6	4.4	1.3
B04	0.2868	201	139	88	39	16.60	3.4
B04-B05	0.2868	201	139	88	38	16.30	3.3
DB06	0.0219	41	33	26	18	12.60	7.8
B05	0.3087	232	162	107	51	23.70	9.6
B05-POND A	0.3087	230	162	106	50	23.40	9.4
DB07	0.0254	33	24	17	9.2	5.0	1.7
DB08	0.0297	30	21	13	6.0	2.6	0.4
POND A	0.9076	523	365	210	69	18	1.5
POND A-B06	0.9076	523	364	209	68	18	1.5
DB09	0.0189	31	24	18	11	7.0	3.4
B06	0.9265	530	370	213	70	18	3.4
B06-B07	0.9265	530	363	211	69	18	3.2
DB11	0.0969	107	80	57	32	18	7.6
DB10	0.0364	52	40	29	18	11	5.3
B07	1.0598	609	421	241	81	32	13
B07-B09	1.0598	608	416	241	81	31	13
DB12	0.0453	76	59	45	29	19	10
B09	1.1051	632	431	250	85	43	18
B09-POND B	1.1051	631	430	249	85	42	18
DB15	0.1234	98	70	47	23	11	3.1
DB13	0.0703	84	63	46	27	16	7.4
DB14	0.0556	86	66	50	32	21	11
POND B	1.3544	669	486	282	119	67	29
POND B-B12	1.3544	669	483	279	119	66	28
DB22	0.0516	84	66	50	33	22	13
DB23	0.0172	42	36	29	22	17	12
B12	1.4232	698	505	294	140	80	36
B12-B14	1.4232	697	502	293	139	80	36
DB24	0.0531	88	69	52	33	22	12
B14	1.4763	719	517	301	152	89	44
B14-B15	1.4763	716	514	301	151	89	43
DB28	**0.0741**	**77**	**57**	**39**	**21**	**11**	**4.1**
B15	1.5504	749	534	312	167	98	47
B15-B18	1.5504	748	532	311	165	98	47
DB29	0.1697	138	100	67	35	18	5.8
DB27	0.0508	63	49	37	24	16	8.3
B26	3.6115	1569	1090	661	271	168	82
B26-27	3.6115	1566	1090	658	265	165	81
FB-02	**0.05**	**63**	**50**	**38**	**24**	**16**	**8.9**
FB-01	**0.0373**	**36**	**26**	**17**	**8.6**	**4.1**	**1.0**
FB01-27a	0.0373	35	25	17	8.4	3.9	1.0
B19	0.0873	97	74	53	32	20	9.9
B19-27	0.0873	95	72	52	32	20	9.6
FB-03	**0.0078**	**19**	**16**	**13**	**10**	**7.5**	**5.2**
27	3.7066	1603	1114	674	295	183	89
27-32	3.7066	1601	1113	671	293	180	88
WH-24	0.1325	199	156	119	77	52	29
WH-26	0.0839	46	31	19	7.5	2.8	0.5
WH-27	0.0217	20	14	8.7	3.6	1.2	0.1
30	0.2381	252	191	139	85	55	29
30-31	0.2381	251	190	138	84	53	28
WH-28	0.0398	57	44	33	21	14	7.6
31	0.2779	308	234	171	105	68	35
31-32	0.2779	301	227	165	100	65	35
WH-29	0.0495	71	56	42	27	18	10
WH-31	0.0406	71	56	43	28	19	11
WH-30	0.0159	24	18	12	6.4	3.3	1.0
32	4.0905	1739	1201	730	401	243	116
WH32	0.0458	49	33	20	7.9	2.8	0.3
BEN POND	4.1363	1359	943	566	232	93	44
WH-33	0.0064	11	8.9	6.8	4.4	3.0	1.7
33	4.1427	1360	944	567	232	94	44
33-37	4.1427	1357	942	566	232	94	44
WH35	0.155	155	112	77	40	21	5.8
WH34	0.045	63	48	35	21	13	6.4
B34-36	0.045	61	46	34	21	13	6.1
36	0.2	216	159	111	61	34	12
36-37	0.2	214	156	108	59	33	12
WH36	0.075	58	39	25	10	3.9	0.6
37	4.4177	1398	971	585	241	99	47
FG13	0.0661	44	31	20	10	4.9	1.4
FG12	0.0328	51	40	31	20	13.9	7.9
POND D	0.3945	107	70	34	16	9.1	2.9
POND D-G17	0.3945	107	69	34	16	9.1	2.9
HG15	0.0297	13	8.8	5.4	2.2	0.9	0.2
FG15a	0.0156	28	22	17	11	7.3	4.0
G17	0.4398	119	77	38	17	9.9	4.4
G17-G18	0.4398	119	77	38	17	9.9	4.2
FG16	0.0773	127	98	74	47	31	16
G18	0.5171	167	126	93	59	39	20
G18-POND E	0.5171	161	121	89	56	37	20
HG30	0.1844	50	33	20	8.4	3.3	0.7
FG30-PONDHS	0.1844	50	33	20	8.4	3.3	0.7
FG31	0.0922	118	92	71	46	31	18
POND HS	0.2766	102	62	40	27	19	10
FG17a	0.0694	108	84	63	40	26	14
FG17a-POND E	0.0694	106	82	61	39	26	14
FG18	**0.0644**	**51**	**37**	**26**	**14**	**8.1**	**3.1**
FG18-POND E	0.0644	51	37	26	14	8.1	3.1
FG19	0.0527	75	58	43	27	18	9.3
FG17c	0.0313	32	22	15	7	2.9	0.5
FG17b	0.0214	40	31	24	16	11	6.2
POND E	**1.0329**	**193**	**115**	**58**	**24**	**12**	**5.5**
H08		**169**	**104**	**51**	**18**	**8.2**	**3.3**
H09		**24**	**11**	**7.3**	**5.3**	**3.4**	**2.2**
FH01	**0.1348**	**115**	**86**	**61**	**35**	**21**	**9.2**
POND H	**0.1348**	**42**	**23**	**13**	**5.1**	**1.9**	**1.1**
FH02	**0.0091**	**11**	**8.0**	**5.6**	**3.2**	**1.9**	**0.7**
FH03	0.0081	14	11	8.3	5.5	3.8	2.2
H12	0.152	46	25	15	9.2	6.1	3.0



TECH CONTRACTORS
11886 STAPLETON DRIVE
FALCON, CO 80831
TELEPHONE: 719.495.7444

INTERIM CONDITIONS

FIGURE 6

MAR 2018

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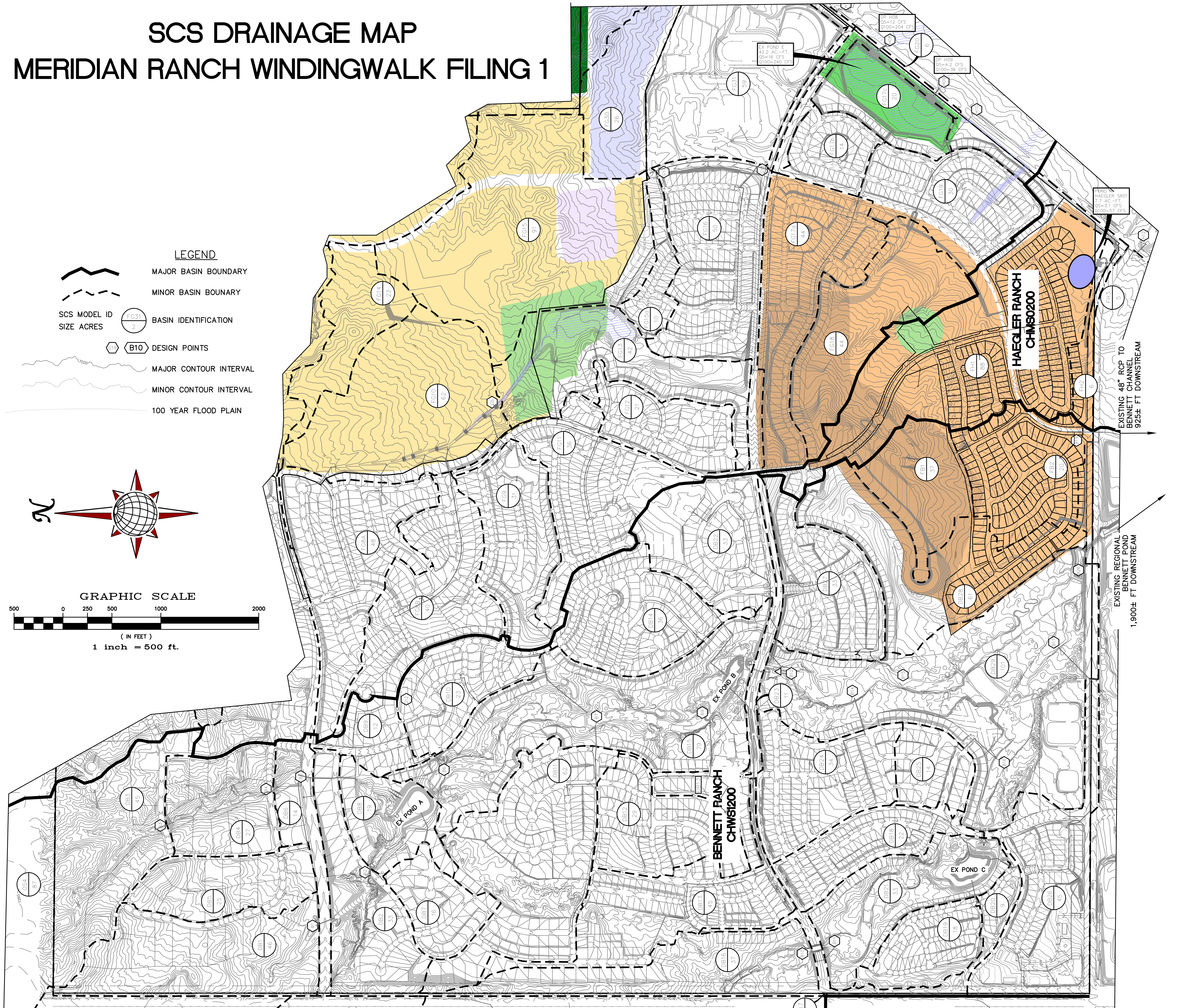
SCS DRAINAGE MAP
MERIDIAN RANCH WINDINGWALK FILING 1



FUTURE CONDITIONS							
HYDROLOGIC ELEMENT	DRAINAGE AREA (SQ. MI.)	DISCHARGE PEAK Q100 (CFS)	DISCHARGE PEAK Q50 (CFS)	DISCHARGE PEAK Q25 (CFS)	DISCHARGE PEAK Q10 (CFS)	DISCHARGE PEAK Q5 (CFS)	DISCHARGE PEAK Q2 (CFS)
OS01	1.5594	726	488	303	130	53	11
DB16	0.0578	85	66	50	32	22	12
B10	1.6172	765	516	322	143	60	13
B10-B11	1.6172	763	514	322	142	60	13
DB17	0.0048	15	13	11	8	7	5
B11	1.6220	765	516	323	143	61	15
B11-POND C	1.6220	759	515	321	143	61	14
DB21	0.0519	49	34	22	11	5	1
DB18	0.0346	60	47	36	24	16	9
DB19	0.0281	34	25	18	11	6	3
DB20	0.0147	23	18	13	9	6	3
POND C	1.7513	727	492	302	126	50	11
POND C-B16	1.7513	725	488	300	126	50	11
DB25	0.0211	40	32	25	16	11	7
B16	1.7724	730	492	303	128	51	11
B16-B17	1.7724	724	492	302	127	51	11
DB26	0.0682	124	101	80	57	42	27
B17	1.8406	751	511	315	135	55	31
B17-B26	1.8406	748	508	315	135	55	30
OS03	0.1984	123	83	51	22	9	2
DB01	0.0719	83	61	42	23	12	4
B01	0.2703	190	132	85	39	18	5
B01-B02	0.2703	184	129	83	39	18	5
OS02	0.2219	140	96	62	28	12	3
DB02	0.0516	66	48	34	18	10	3
B02	0.5438	358	249	161	75	34	8
B02-POND A	0.5438	357	248	160	74	34	8
OS04	0.1359	77	51	30	11	4	1
DB03	0.0703	63	45	30	14	7	1
B03	0.2062	137	92	57	24	9	2
B03-B04	0.2062	135	92	56	24	9	2
DB04	0.0422	40	28	19	10	5	1
DB05	0.0384	35	25	17	9	4	1
B04	0.2868	201	139	88	39	17	3
B04-B05	0.2868	201	139	88	38	16	3
DB06	0.0219	41	33	26	18	13	7.8
B05	0.3087	232	162	107	51	24	10
B05-POND A	0.3087	230	162	106	50	23	9
DB07	0.0254	33	24	17	9	5	1.7
DB08	0.0297	30	21	13	6	3	0.4
POND A	0.9076	523	365	210	69	18	1.5
POND A-B06	0.9076	523	364	209	68	18	1.5
DB09	0.0189	31	24	18	11	7	3.4
B06	0.9265	530	370	213	70	18	3.4
B06-B07	0.9265	530	363	211	69	18	3.2
DB11	0.0969	107	80	57	32	18	7.6
DB10	0.0364	52	40	29	18	11	5.3
B07	1.0598	609	421	241	81	32	13
B07-B09	1.0598	608	416	241	81	31	13
DB12	0.0453	76	59	45	29	19	10
B09	1.1051	632	431	250	85	43	18
B09-POND B	1.1051	631	430	249	85	42	18
DB15	0.1234	98	70	47	23	11	3.1
DB13	0.0703	84	63	46	27	16	7.4
DB14	0.0556	86	66	50	32	21	11
POND B	1.3544	669	486	282	119	67	29
POND B-B12	1.3544	669	483	279	119	66	28
DB22	0.0516	84	66	50	33	22	13
DB23	0.0172	42	36	29	22	17	12
B12	1.4232	698	505	294	140	80	36
B12-B14	1.4232	697	502	293	139	80	36
DB24	0.0531	88	69	52	33	22	12
B14	1.4763	719	517	301	152	89	44
B14-B15	1.4763	716	514	301	151	89	43
DB28	**0.0741**	**79**	**59**	**41**	**23**	**13**	**4.7**
B15	1.5504	750	534	312	168	99	48
B15-B26	1.5504	748	532	311	166	99	47
DB29	0.1697	138	100	67	35	18	5.8
DB27	0.0508	63	49	37	24	16	8.3
B26	3.6115	1570	1090	661	273	169	83
B26-27	3.6115	1567	1090	658	267	166	82
FB-02	**0.0500**	**63**	**50**	**38**	**24**	**16**	**8.9**
FB-01	**0.0373**	**58**	**45**	**34**	**21**	**14**	**7.4**
FB01-B19	0.0373	56	43	32	21	14	7.3
B19	0.0873	117	91	69	44	29	15
B19-27	0.0873	115	90	67	43	28	15
FB-03	**0.0078**	**19**	**16**	**13**	**10**	**7.5**	**5.2**
27	3.7066	1607	1118	677	304	189	92
27-32	3.7066	1605	1116	674	300	186	91
WH-24	0.1325	199	156	119	77	52	29
WH-26	0.0839	46	31	19	7.5	2.8	0.5
WH-27	0.0217	20	14	9	3.6	1.2	0.1
30	0.2381	252	191	139	85	55	29
30-31	0.2381	251	190	138	84	53	28
WH-28	0.0398	57	44	33	21	14	7.6
31	0.2779	308	234	171	105	68	35
31-32	0.2779	301	227	165	100	65	35
WH-29	0.0495	71	56	42	27	18	10
WH-31	0.0406	71	56	43	28	19	11
WH-30	0.0159	24	18	12	6.4	3.3	1.0
32	4.0905	1744	1205	733	411	249	120
WH32	0.0458	49	33	20	8	2.8	0.3
BEN POND	4.1363	1365	950	571	235	95	45
WH-33	0.0064	11	8.9	6.8	4.4	3.0	1.7
33	4.1427	1366	951	572	236	95	45
33-37	4.1427	1363	948	571	236	95	45
WH35	0.1550	155	112	77	40	21	5.8
WH34	0.0450	63	48	35	21	13	6.4
B34-36	0.0450	61	46	34	21	13	6.1
36	0.2000	216	159	111	61	34	12
36-37	0.2000	214	156	108	59	33	12
WH36	0.0750	58	39	25	10	3.9	0.6
37	4.4177	1404	977	590	245	100	49
FG08A	0.0750	117	91	67	42	27	14
FG08A-G05	0.0750	111	86	65	41	27	14
FG10	0.0669	46	34	24	14	8.3	3.6
FG08B	0.0630	87	67	50	31	20	10
FG08B-G05	0.0630	85	66	49	30	20	10
FG11	0.0625	76	59	45	29	19	10
FG09	0.0484	49	36	26	15	8.4	3.3
FG09-G05	0.0484	48	36	25	14	8.2	3.3
G05	0.3158	342	262	192	117	75	38
FG13	0.0661	44	31	20	10	4.9	1.4
FG14	0.0331	42	32	24	15	10	5.2
FG12	0.0328	51	40	31	20	14	7.9
POND D	0.4478	131	89	51	19	12	4.5
POND D-G17	0.4478	131	89	51	19	12	4.5
FG15	0.1017	95	71	51	29	18	7.5
G17a	0.1017	95	71	51	29	18	7.5
FG15a	0.0156	28	22	17	11	7.3	4.0
G17	0.5651	184	121	72	40	23	11
G17-G18	0.5651	184	121	72	40	23	11
FG16	0.0773	127	98	74	47	31	16
G18	0.6424	235	177	127	77	49	24
G18-POND E	0.6424	233	176	126	77	48	24
FG31	0.0922	118	92	71	46	31	18
FG30	0.0400	76	60	46	31	21	12
FG30-PONDHS	0.0400	74	59	45	29	20	11
POND HS	0.1322	156	107	60	37	27	15
FG17a	0.0694	102	79	58	36	23	12
FG17a-POND E	0.0694	100	77	57	36	23	12
FG18	**0.0644**	**57**	**43**	**31**	**18**	**11**	**4.8**
FG18-POND E	0.0644	57	42	30	18	11	4.7
FG19	0.0527	85	67	51	33	23	13
FG17c	0.0313	32	22	15	6.7	2.9	0.5
FG17b	0.0214	40	31	24	16	11	6.2
POND E	**1.0138**	**240**	**151**	**81**	**30**	**16**	**7**
H08	**1.0138**	**204**	**136**	**73**	**24**	**12**	**4.1**
H09	**0.0000**	**36**	**16**	**8**	**6.0**	**4.2**	**2.5**
FH01	**0.1344**	**152**	**117**	**87**	**53**	**34**	**17**
POND H	**0.1344**	**57**	**32**	**18**	**7.8**	**3.0**	**1.2**
FH02	**0.0091**	**11**	**8.0**	**5.6**	**3.2**	**1.9**	**0.7**
FH03	0.0081	14	11	8	5.5	3.8	2.2
H12	0.1516	62	35	20	10	6.3	3.5

TECH CONTRACTORS
11886 STAPLETON DRIVE
FALCON, CO 80831
TELEPHONE: 719.495.7444

FUTURE CONDITIONS

FIGURE 7

MAR 2018

Markup Summary

dsdlaforce (11)

Subject: Callout
Page Label: 29
Lock: Unlocked
Author: dsdlaforce
Date: 5/3/2018 12:14:28 PM

Describe what happens during emergency spillway.

Subject: Callout
Page Label: 29
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Author: dsdlaforce
Date: 5/3/2018 12:13:20 PM

incomplete sentence.

Subject: Callout
Page Label: 34
Lock: Unlocked
Author: dsdlaforce
Date: 5/7/2018 9:17:21 AM

Describe the emergency path if I27 is clogged.

Subject: Callout
Page Label: 39
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Author: dsdlaforce
Date: 5/3/2018 2:25:35 PM

Historic Rates for comparison is missing on the referenced Table 6, but identified in Table 9. Update either the sentence or Table 6.

Subject: Callout
Page Label: 43
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Author: dsdlaforce
Date: 5/3/2018 2:27:45 PM

Also add a statement with your conclusion on the current condition of the Bennett pond and whether or not additional improvements outside of the typical maintenance are necessary.

Subject: Callout
Page Label: 47
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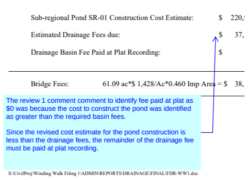
Author: dsdlaforce
Date: 5/3/2018 4:41:16 PM

With available credits being used, add a row identifying Bridge Fees due at plat recording is $0.



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Page Label: 48
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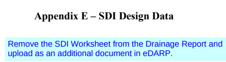
Author: dsdlaforce
Date: 5/3/2018 4:44:28 PM

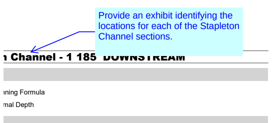
The review 1 comment comment to identify fee paid at plat as $0 was because the cost to construct the pond was identified as greater than the required basin fees.

Since the revised cost estimate for the pond construction is less than the drainage fees, the remainder of the drainage fee must be paid at plat recording.



Subject: Text Box
Page Label: 159
Lock: Unlocked
Author: dsdlaforce
Date: 5/3/2018 11:59:21 AM

Remove the SDI Worksheet from the Drainage Report and upload as an additional document in eDARP.



Subject: Callout
Page Label: 185
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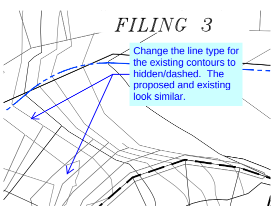
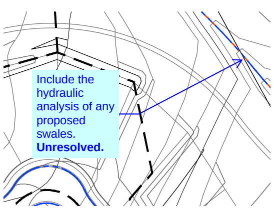
Author: dsdlaforce
Date: 5/3/2018 4:38:52 PM

Provide an exhibit identifying the locations for each of the Stapleton Channel sections.



Subject: Callout
Page Label: 227
Lock: Unlocked
Author: dsdlaforce
Date: 5/3/2018 1:55:43 PM

Change the line type for the existing contours to hidden/dashed. The proposed and existing look similar.



Subject: Callout
Page Label: 228
Lock: Unlocked
Author: dsdlaforce
Date: 5/7/2018 9:02:30 AM

Include the hydraulic analysis of any proposed swales.
Unresolved.